

**IBN HALDUN UNIVERSITY
SCHOOL OF GRADUATE STUDIES
DEPARTMENT OF ECONOMICS**

DOCTORAL THESIS

**INSTITUTIONAL QUALITY, FINANCIAL STABILITY,
AND THE ACHIEVEMENT OF THE SUSTAINABLE
DEVELOPMENT GOALS 1, 2, AND 3 IN SUB-SAHARAN
AFRICA**

MOHAMMED MUNTAKA ABDUL RAHMAN

**THESIS ADVISOR
ASSIST. PROF. ASAD UL ISLAM KHAN**

ISTANBUL, 2025

**IBN HALDUN UNIVERSITY
SCHOOL OF GRADUATE STUDIES
DEPARTMENT OF ECONOMICS**

DOCTORAL THESIS

**INSTITUTIONAL QUALITY, FINANCIAL STABILITY,
AND THE ACHIEVEMENT OF THE SUSTAINABLE
DEVELOPMENT GOALS 1, 2, AND 3 IN SUB-SAHARAN
AFRICA**

by

MOHAMMED MUNTAKA ABDUL RAHMAN

**A thesis submitted to the School of Graduate Studies in partial
fulfillment of the requirements for the degree of Doctor of
Philosophy in Economics**

THESIS JURY MEMBERS

ASSIST. PROF. ASAL UL ISLAM KHAN (THESIS ADVISOR)

PROF. MUHITTİN KAPLAN

PROF. HASAN VERGİL

ASSIST. PROF. WAQAR BADSHAH

ASSIST. PROF. ÖNDER YERLIKAYA

ISTANBUL, 2025

ACADEMIC HONESTY ATTESTATION

I hereby declare that all information in this document has been obtained and presented in accordance with academic rules and ethical conduct. I also declare that, as required by these rules and conduct, I have fully cited and referenced all material and results that are not original to this work.

Full Name: Mohammed Muntaka ABDUL RAHMAN

Signature:

ÖZ

SAHRA ALTI AFRİKA'DA KURUMSAL KALİTE, FİNANSAL İSTİKRAR VE SÜRDÜRÜLEBİLİR KALKINMA HEDEFLERİ 1, 2 VE 3'E ULAŞILMASI

Abdul Rahman, Mohammed Muntaka

İktisat Doktora

Öğrenci No: 204003002

Open Researcher and Contributor ID (ORC-ID): 0000-0002-3425-1997

Ulusal Tez Merkezi Referans No.: 10718835

Tez Danışmanı: Dr. Öğr. Üyesi Asad Ul Islam Khan

Haziran 2025, 188 Sayfa

Bu tez, SSA'da kurumsal kalite, finansal istikrar ve SKH 1 (Yoksulluğun Ortadan Kaldırılması), 2 (Açlığın Ortadan Kaldırılması) ve 3 (Sağlık ve Refah) arasındaki ilişkiyi inceleyen üç ampirik bölümden (bölüm 3-5) oluşmaktadır. İkinci bölümde kurumsal kalite ve finansal istikrar teorileri incelenmiş ve kurumların nasıl etkili (tamamlayıcı ve birbirini destekleyici) veya zayıf (ikame edici ve rekabetçi) hale geldiği vurgulanmıştır. Tezde, 2002-2021 yılları arasında 23 ila 28 SSA ülkesinden elde edilen panel verileri kullanılmıştır.

Üçüncü bölüm, kurumsal kalite ve finansal istikrarın refah (SKH 3) üzerindeki etkisini sorgularken, yoksulluk ve gıda güvensizliğinin rollerini de incelemektedir. Yaşam Kalitesi (QoL) teorisini kullanarak, bu bölüm kişisel özgürlük, ekonomik özgürlük ve yaşam beklentisi verilerini içeren kapsamlı bir refah endeksi oluşturmaktadır. Analiz, kurumsal kalite, finansal istikrar, gıda güvenliği ve çevresel kalitenin insanların refahına olumlu katkı sağladığını, yoksulluk ve enflasyonun ise refah üzerinde olumsuz bir etkiye sahip olduğunu ortaya koymaktadır.

Dördüncü bölüm, kurumsal kalite ve finansal istikrarın SKH 1'in (Yoksulluğun Ortadan Kaldırılması) gerçekleştirilmesine doğrudan etkisini değerlendiriyor ve açlık, refah ve sömürge mirasının rolünü açıklıyor. Bulgular, güçlü kurumlar ve istikrarlı bir finansal sistemin bölgedeki yoksulluğun azaltılmasında kilit faktörler olduğunu ve

sömürge mirasının etkisinin İngilizce konuşulan ülkelere kıyasla Fransızca konuşulan ülkelerde daha belirgin olduğunu göstermektedir. Ayrıca, refahın artmasının yoksulluğu azalttığı görülürken, açlık yoksulluğu sürekli olarak artırmaktadır.

Beşinci bölümde, kurumsal kalite, finansal istikrar, yoksulluk ve refahın gıda güvenliği (SKH2) ve boyutları olan erişilebilirlik, satın alınabilirlik, kalite ve sürdürülebilirlik üzerindeki karmaşık etkileşimi incelenmektedir. Bulgular, gıda güvenliğinin sağlanmasında kurumsal kalitenin temel rolünü vurgulamaktadır. Araştırma ayrıca, finansal istikrarın özellikle gıdanın satın alınabilirliğini ve sürdürülebilirliğini iyileştirdiğini ortaya koymaktadır.

Bu tez, SSA ülkelerinin SDG 1, 2 ve 3'e ulaşabilmesi için başlangıç noktasının kurumsal kalite ve finansal sistemlerin güçlendirilmesine odaklanmak olması gerektiğine dair güçlü kanıtlara dayalı argümanlar sunmaktadır.

Anahtar Kelimeler: Finansal İstikrar, Gıda Güvenliği, Kurumsal Kalite, Refah, Sahra Altı Afrika, Sürdürülebilir Kalkınma Hedefleri, Yoksulluk.

ABSTRACT

INSTITUTIONAL QUALITY, FINANCIAL STABILITY, AND THE ACHIEVEMENT OF THE SUSTAINABLE DEVELOPMENT GOALS 1, 2, AND 3 IN SUB-SAHARAN AFRICA.

Abdul Rahman, Mohammed Muntaka

PhD in Economics

Student ID: 204003002

Open Researcher and Contributor ID (ORC-ID): 0000-0002-3425-1997

National Thesis Center Reference No.: 10718835

Thesis Supervisor: Assist. Prof. Asad Ul Islam Khan

June 2025, 188 Pages

This thesis is made up of three empirical chapters that examine the relationship between institutional quality, financial stability, and SDGs 1 (No Poverty), 2 (Zero Hunger), and 3 (Good Health and Well-being) in SSA. Chapter 2 reviewed institutional quality and financial stability theories and emphasized how institutions become effective (complementary and mutually supportive) or weak (substitutive and competitive). The thesis employed panel data from 23 to 28 SSA countries from 2002 to 2021.

Chapter three interrogates the influence of institutional quality and financial stability on well-being (SDG 3), while also exploring the roles of poverty and food insecurity. Using the Quality of Life (QoL) theory, this chapter constructs a comprehensive well-being index with personal freedom, economic freedom, and life expectancy data. The analysis reveals that institutional quality, financial stability, food security, and environmental quality all positively contribute to people's well-being, while poverty and inflation have a detrimental impact on well-being.

Chapter four assesses the direct impact of institutional quality and financial stability on achieving SDG 1 (No Poverty) and accounts for the role of hunger, well-being, and colonial legacies. The findings indicate that strong institutions and a stable financial

system are key drivers in reducing poverty across the region and that the impact of the colonial footprint is more pronounced in French-speaking countries compared to their English-speaking counterparts. Furthermore, while improved well-being is shown to reduce poverty, hunger consistently increases it.

Chapter five examines the intricate interplay of institutional quality, financial stability, poverty, and well-being on food security (SDG2) and its dimensions: availability, affordability, quality, and sustainability. The findings underscore the essential role of institutional quality in ensuring food security. The research also highlights that financial stability specifically improves food affordability and sustainability.

This thesis provides strong evidence-based arguments that for SSA countries to achieve SDGs 1, 2, and 3, the starting point must be a concerted focus on strengthening institutional quality and financial systems.

Keywords: Financial Stability, Food Security, Institutional Quality, Poverty, Sub-Saharan Africa, Sustainable Development Goals, Well-being.

DEDICATION

This thesis is dedicated to my dad, Abdul Rahman Awudu, for your unwavering advice during my educational journey. Although you are no longer with us, your mark on my life has made me who I am today. May Allah have mercy on him and grant him Jannah. I also want to dedicate my thesis to my mom, Salamatu Iddrisu, for being my anchor, pillar, and support after my dad. Indeed, your prayers, support, and motherly care have transformed you to be compassionate and resolute in all adversities.

I would also like to dedicate this thesis to my supportive wife for being there with me for all these years. You have been a great companion, a friend, a partner, a sister, and a mother. I am blessed to have a family with you.

I further dedicate this thesis to my supportive uncle, Chief Alhassan Iddrisu Kande, Samilewura of Ashiaman. Indeed, throughout my educational life, you have been my mentor and my advisor regarding key decisions in my life. May Allah continue to grace you with wisdom. Additionally, I extend much gratitude to my grandmother, siblings (Hummu and Abdul Basit), cousins (especially Jamila), family friends (Hajia Barkisu and her husband Alhaji Amadu), Alhaji Hassan, and my friends (Taufiq, Alhassan Tahir, Oluwaseun O. Adeoye (Luqman), and Eric Elolo Adzati). You have all played some significant role in my educational and academic journey, and I dedicate this thesis to you all.

ACKNOWLEDGEMENT

First of all, I want to thank Allah (SWT) for granting me life and energy and bringing me this far. Without His Grace, Sustenance, and bountifulness, I would not have attained this success. All I can say is ALHAMDULILLAHI RABBIL A'ALAMIN.

I want to thank my valuable advisor, Assistant Professor Asad Ul Islam Khan, who guided me in this research and helped me overcome my difficulties. I want to thank my valuable lecturers, Professor Hasan Vergil (Head of the Economics Department) and Professor Muhittin Kaplan (Dean of the Faculty of Humanities and Social Sciences), who provided constructive insights and criticism, which have built and sharpened my research skills.

I want to thank all the staff at the Department of Economics, including Dr. Ayuba Napari, and staff at the project support office (PDO), especially Associate Professor Ahmet Göçen, Harun Samı Çiftci, and Gülcan Güven Yeşilgül, for their material and moral support in conducting the research and engaging in the Erasmus project.

I want to thank the Ibn Haldun Project Support Office and the BAP project coordinator for financially supporting my thesis with Project No. 23024262.

I present my endless love and respect to my family, who did not leave me alone at every stage of my thesis.

Mohammed Muntaka ABDUL RAHMAN

ISTANBUL, 2025

TABLE OF CONTENTS

ÖZ	iv
ABSTRACT	vi
DEDICATION	viii
ACKNOWLEDGEMENT	ix
TABLE OF CONTENTS	x
LIST OF TABLES	xiv
LIST OF FIGURES	xv
LIST OF SYMBOLS AND ABBREVIATIONS	xvi
CHAPTER I INTRODUCTION.....	1
1.1. Background	1
1.2. Research Gaps	3
1.3. Motivation of the Thesis.....	6
1.4. Research Questions	7
1.5. Research Objectives	7
1.6. General Theoretical Simultaneous Model.....	8
1.7. Research Hypotheses.....	8
1.8. Significance/Contribution of the Thesis.....	9
1.9. Limitations of the Study	10
1.10. Summary of Thesis Chapters	11
CHAPTER II THEORIES OF INSTITUTIONAL QUALITY AND FINANCIAL STABILITY	13
2.1. Introduction	13
2.2. Institutional Theory Review	13
2.3. Types of Institutions	17
2.3.1. Economic and Political Institutional Discourse	21
2.3.2. Critiques of Mainstream Institutional Theory	23
2.4. Financial Stability Theory	25
2.4.1. Asset Price Bubble Hypothesis	26
2.4.2. Central Bank Checks and Balance Hypothesis	29
2.4.3. The Global Imbalance Hypothesis	31
2.4.4. Banking Regulation Hypothesis	32
2.4.5. Competition in Financial Service Hypothesis	34

CHAPTER III BEYOND ECONOMIC GROWTH: EXPLORING THE DETERMINANTS OF WELL-BEING IN SUB-SAHARAN AFRICA	36
3.1. Introduction	36
3.2. Literature Review	41
3.2.1. Theoretical Literature	41
3.2.1.1. Capability Approach.....	41
3.2.1.2. Subjective Well-Being	42
3.2.1.3. Income-Based Theory	43
3.2.1.4. Quality of Life Theory	44
3.2.1.5. Psychological Well-Being Theories	45
3.2.2. Empirical Literature	46
3.2.2.1. Institutional Quality and Well-Being	46
3.2.2.2. Financial Stability and Well-Being	48
3.2.2.3. Poverty Gap and Well-Being	49
3.2.2.4. Food Security and Well-Being	50
3.2.2.5. Inflation and Well-Being.....	51
3.2.2.6. Air Quality and Well-Being	52
3.3. Methodology	53
3.3.1. Data Sources.....	53
3.3.2. Theoretical Method	54
3.3.3. Econometric Model	55
3.4. Results and Discussion	60
3.4.1. Descriptive Statistics and Pairwise Correlation	60
3.4.2. Cross-Sectional Dependency and Slope Heterogeneity Results	62
3.4.3. Unit Root and Kao Cointegration Results	63
3.4.4. Estimation Results	64
3.5. Conclusion and Recommendation.....	68
3.5.1. Conclusion.....	68
3.5.2. Recommendation.....	69
CHAPTER IV INSTITUTIONAL QUALITY, FINANCIAL STABILITY, AND SUSTAINABLE DEVELOPMENT GOAL 1 IN SUB-SAHARAN AFRICA ...	71
4.1. Introduction	71
4.2. Literature Review	78
4.2.1. Institutional Quality and Poverty	78

4.2.2. Financial Stability and Poverty	80
4.3. Methodology	83
4.3.1. Data and PCA Results	83
4.3.2. Principal Component Analysis Results	86
4.3.3. Theoretical Model of Poverty.....	89
4.3.4. FGT Category of Poverty Index	90
4.3.5. Average Exit Time from Poverty	92
4.4. Empirical Methodology and Econometric Method	93
4.4.1. Model Specification	93
4.4.2. Cross-Sectional Dependency (CSD) Test	97
4.4.3. Unit Root Test	99
4.5. Results and Discussion.....	99
4.5.1. Descriptive Statistics	99
4.5.2. CSD and Unit Root Results.....	101
4.5.3. Results Discussion.....	102
4.6. Conclusion and Recommendation.....	109
4.6.1. Conclusion.....	109
4.6.2. Recommendations	111
CHAPTER V REDUCING FOOD INSECURITY IN SUB-SAHARAN AFRICA: THE ROLE OF INSTITUTIONS AND FINANCIAL STABILITY	112
5.1. Introduction	112
5.1.1. Food Security in Sub-Saharan Africa.....	115
5.1.2. Financial Systems in Sub-Saharan Africa	117
5.2. Literature Review	120
5.2.1. Food Security Theories	120
5.2.2. Empirical Review	124
5.3. Methodology	128
5.3.1. Data Sources.....	128
5.3.2. Theoretical Model of Food Security	131
5.3.3. Empirical Model.....	135
5.4. Results and Discussion.....	138
5.4.1. Descriptive Statistics	138
5.4.2. Pairwise Correlation.....	139
5.4.3. Unit Root and Cross-Sectional Dependency Results	141

5.4.4. GMM Results and Discussion.....	142
5.5. Robustness Check and Pathways Impact	149
5.6. Conclusion and Recommendation.....	153
5.6.1. Conclusion.....	153
5.6.2. Recommendation.....	154
CHAPTER VI CONCLUSION.....	155
REFERENCES.....	157
CURRICULUM VITAE.....	187



LIST OF TABLES

Table 2.1. Types of Informal Institutions.....	18
Table 3.1. Variable Description	53
Table 3.2. Descriptive Statistics.....	61
Table 3.3. Pairwise Correlation Results.....	61
Table 3.4. Cross-Sectional Dependency Test	62
Table 3.5. Slope Heterogeneity Results	62
Table 3.6. PESCADF Unit Root Results	63
Table 3.7. Kao Cointegration Results	63
Table 3.8. FMOLS and DOLS Results	64
Table 3.9. Robustness Check Results	67
Table 4.1. Poverty Changes by Region and Poverty.....	72
Table 4.2. List of Countries.....	83
Table 4.3. Data Description	84
Table 4.4. PCA Results for Institutional Quality	88
Table 4.5. PCA Results for Financial Stability	88
Table 4.6. Descriptive Statistics.....	100
Table 4.7. Pairwise Correlations	100
Table 4.8. Cross-Sectional Dependency Test	101
Table 4.9. CIPS and CADF Results	101
Table 4.10. Two-Step System GMM	102
Table 5.1. Variable Description	129
Table 5.2. Descriptive Statistics.....	139
Table 5.3. Pairwise Correlation.....	140
Table 5.4. Cross-Sectional Dependency Test	141
Table 5.5. PESCADF Unit Root Test	142
Table 5.6. Two-Step System GMM Results I.....	143
Table 5.7. Two-Step System GMM Results II.....	150

LIST OF FIGURES

Figure 1.1. Trilithic Relationship Between SDG 1-2, 2-3 and the Role of Institutional Quality and Financial Stability.....	5
Figure 2.1. Summary of Institutional Discourse	23
Figure 4.1. Global and Regional Poverty	74
Figure 4.2. Orthonormal Loading for Financial Stability Index	87
Figure 4.3. Orthonormal Loadings for Institutional Quality Index.....	89
Figure 4.4. Share of Extreme Poverty vs Poverty Gap Index, 2019	104
Figure 4.5. Income Losses During COVID-19	105
Figure 4.6. Transparency International CPI 2020-2023.....	106
Figure 5.1. Prevalence of Undernourishment in the World, Africa, and Subregions, and the Number of Undernourished in Africa	116
Figure 5.2. Growth of Bank Accounts in SSA.....	119

LIST OF SYMBOLS AND ABBREVIATIONS

AfCFTA	African Continental Free Trade Area
AFF	Food Affordability
AGRL	Agricultural Land
AIDS	Acquired Immune Deficiency Syndrome
AQT	Air Quality
ATMs	Automated Teller Machines
AVA	Food Availability
BAC	Bank Concentration
BACD	Bank Credit to Bank Depositors
BRI	Belt and Road Initiative
BZS	Banking Z-score
CA	Capability Approach
CIPS	Cross Sectionally Augmented IPS
COC	Control of Corruption
COVID-19	Corona Virus Disease 2019
CPI	Consumer Price Index
CPR	Cereal Production
CSD	Cross Sectional Dependency
DHE	Domestic Health Expenditure
DOLS	Dynamic Ordinary Least Square
FAD	Food Availability Decline
FAO	Food and Agricultural Organization
FED	Food Entitlement Decline
FGT	Foster-Greer-Thorbecke
FIDI	Financial Institution Development Index
FMOLS	Fully Modified Ordinary Least Squares
FS	Food Security
FSI	Financial Stability
FST	Food Sovereignty Theory
GDPC	Gross Domestic Product per Capita
GDP	Gross Domestic Product
GFD	Global Financial Development

GFSI	Global Food Security Index
GEF	Governance Effectiveness
GMM	Generalized Method of Moments
GRFC	Global Report on Food Crisis
HEXP	Health Expenditure
HIV	Human Immune Virus
HRBA	Human Rights-Based Approach
HUN	Hunger
IMF	International Monetary Fund
INF	Inflation
ISQ	Institutional Quality
LLGDP	Liquidity Liabilities of Bank to GDP
MDGs	Millennium Development Goals
NLP	Nonperforming Loans
NTT	Nutrition Transition Theory
OECD	Organization for Economic Co-operation and Development
OGI	Overlapping Generation Model
Panel EGLS	Panel Estimated Generalized Least Squares
PCA	Principal Component Analysis
PESCADF	Pesaran Cross Sectionally Augmented Dickey Fuller
PGP	Poverty Gap
PIP	Poverty and Inequality Platform
PoU	Prevalence of Undernourishment
POL	Political Stability
POP	Population Growth
PPP	Purchasing Power Parity
PWB	Psychological Well-being
QAS	Food Quality and Safety
QoL	Quality of Life
REG	Regional Dummy
REQ	Regulatory Quality
ROL	Rule of Law
SDGs	Sustainable Development Goals
SLA	Sustainable Livelihood Approach

SMEs	Small and Medium Scale Enterprises
SPL	Societal Poverty Line
SSA	Sub-Saharan Africa
SUS	Food Sustainability
SWB	Subjective Well-being
UTI	Food Utilization
UNDP	United Nations Development Programme
UNESCO	United Nations Educational, Scientific, and Cultural Organization
US	United States
VAC	Voice and Accountability
vs	Versus
WDI	World Development Index
WGI	World Governance Index
WHO	World Health Organization

CHAPTER I

INTRODUCTION

1.1. Background

Sub-Saharan Africa (SSA) is one of the regions where, despite the shift from Millennium Development Goals (MDGs) to Sustainable Development Goals (SDGs), a significant gap remains in development, economic growth, and sustainability. The region is plagued by persistent poverty, food insecurity, fragile institutions, and unstable financial systems, which have hindered the progress made under the MDGs and SDGs. SSA still accounts for only 13% of the global population but is home to over 40% of the world's extremely poor, with nearly 460 million people living below the global poverty line of \$2.15 per day. At the same time, the region faces severe food insecurity, with 22% (almost 280 million people) being undernourished. The region's development and economic challenges are worsened by weak institutions and volatile financial systems that fail to convert economic growth into sustainable development. This is a significant gap remains in development, economic growth, and sustainability. The region is plagued by persistent poverty, food insecurity, fragile institutions, and unstable financial systems, which have hindered the progress made under the MDGs and SDGs. SSA still accounts for only 13% of the global population but is home to over 40% of the world's extremely poor, with nearly 460 million people living below the global poverty line of \$2.15 per day. At the same time, the region faces severe food insecurity, with 22% (almost 280 million people) being undernourished. The region's development and economic challenges are worsened by weak institutions and volatile financial systems that fail to convert economic growth into sustainable development (Acemoglu & Robinson, 2012a).

On the other hand, institutional quality, especially governance effectiveness, the rule of law, control of corruption, and political stability, are fundamental to sustainable development (Roy & Tisdell, 1998). In contrast, the institutional environment of SSA suffers from systemic inefficiencies. For instance, Transparency International's 2022 Corruption Perceptions Index ranked 44 of 49 SSA countries below the global average, reflecting widespread governance deficits that stifle public service delivery and resource allocation (Transparency International, 2023). Countries like Nigeria and the Democratic Republic of Congo exemplify how extractive institutions perpetuate elite capture, diverting resources from poverty alleviation programs (D. North et al., 2000). Conversely, Rwanda's post-genocide institutional reforms, particularly accountability and decentralization, have reduced poverty by 15% since 2000, demonstrating the transformative potential of strong governance (World Bank, 2020).

Furthermore, developing resilient banking systems with inclusive credit markets in an environment that fully recognizes financial stability is critical. The financial sector in SSA is still not fully developed, and only 34% of adults in the region gain access to formal financial services (Demirgüç-Kunt et al., 2022a). Overreliance on informal financial mechanisms such as rotating savings groups like “tontines”¹ or “susu”² in West Africa severely limits capital build-up for smallholder farmers and SMEs. Recent financial shocks, such as Ghana's sovereign debt default in 2022 and Nigeria's banking sector crisis, have reiterated the fragility of SSA financial systems and what it means for food prices and social stability (IMF, 2024).

Nonetheless, the interrelationship between institutional quality and financial stability is significant for achieving the SDGs. Botswana, for example, has strong institutions and sound public financial management that prevented the country from falling into the "resource curse" trap. Botswana used all the diamond revenue for universal education and healthcare, which reduced poverty from 30% to 11% between 2002 and 2022 (UNDP, 2024). In contrast, South Sudan has about 70% of its population facing food insecurity due to weak institutions (particularly political instability, which resulted in a prolonged conflict) and perennial financial instability, although they have vast oil reserves (FAO et al., 2023). This creates a clear need for integrated frameworks that address institutional weakness and financial instability in the development of SSA. This framework should impact core human development outcomes such as poverty, food security, and well-being.

The challenges in SSA are further exacerbated by a complex interplay of historical legacies, socio-political dynamics, and environmental vulnerabilities. The legacy of colonialism has left many SSA countries with weak institutions, underdeveloped infrastructure, and economies heavily reliant on the extraction of natural resources (Rodney, 2018). This has created a path dependency that hinders sustainable development and perpetuates inequality. Moreover, many SSA countries grapple with

¹ Tontine is a traditional investment scheme where a group of people pool money together, and returns are distributed among surviving members. Tontines were popular in the 17th-19th Century Europe and Early America.

² Susu is similar to tontines and widely practiced in West Africa and the Caribbean. Susu is a form of rotating credit association where members contribute a fixed amount regularly to a common pool, and each member takes turns receiving the entire pot.

diverse ethnic and social structures, which can lead to political instability and conflict, further undermining institutional capacity and economic progress (Fearon & Laitin, 2003).

Additionally, climate change presents another significant threat to SSA's development trajectory. The region is disproportionately affected by climate change, which has increased the frequency and intensity of droughts, floods, and other extreme weather events (Calvin et al., 2023). These phenomena exacerbate food insecurity, disrupt agricultural production, and undermine the livelihoods of vulnerable populations in SSA. Additionally, the degradation of natural resources, such as deforestation and land degradation, compounds these challenges. This creates a vicious cycle of poverty and reduction in environmental quality (Millennium Ecosystem Assessment, 2005). Therefore, a holistic and integrated approach that considers the multifaceted challenges and complex interactions between institutional quality, financial stability, socio-economic well-being, and environmental quality is required. This constitutes the fundamental research motivation for this dissertation.

This thesis contributes to the understanding of these multifaceted frameworks and relationships by examining the interconnectedness of poverty, food security, and well-being in SSA. Additionally, it provides an intriguing insight into the critical role of institutional quality and financial stability in shaping this interconnectedness for sustainable development. The thesis aims to provide valuable empirical evidence for policymakers and development practitioners seeking to foster sustainable and inclusive development pathways in sub-Saharan Africa. The findings of this thesis have the potential to inform the design of more effective interventions and policies that address the root causes of poverty, food insecurity, and poor well-being in SSA.

1.2. Research Gaps

SSA countries are still faced with significant challenges in achieving SDG 1 (no poverty), 2 (zero hunger and food security), and 3 (good health and well-being). Despite some progress in achieving these three goals, institutional inefficiencies and non-robust financial systems have derailed this progress, which has resulted in deep-rooted poverty, food insecurity, poor quality of life, and well-being.

Studies on institutional quality, financial stability, and the first three SDGs nexus focus on the individual relationships between each of the three SDG goals and institutional quality, financial inclusion, financial development, or financial literacy. These relationships have been widely studied. However, there is a lack of literature that emphasizes the interlocking relationship between poverty, hunger, or food insecurity and well-being. There exists a trilithic relationship between these three goals. There is no study that explores this trilithic relationship for SSA in particular and for any group of countries in general. Therefore, this thesis explores this trilithic relationship (Figure 1) while accounting for the critical role of institutional quality and financial stability. Poverty increases hunger, which results in poor well-being (Rojas, 2020). Chowdhury et al. (2013) posit that poor well-being worsens hunger situations through poverty. They further contended that severe hunger affects well-being, which increases poverty. Addressing this interlocking relationship requires a simultaneous improvement of institutional quality dimensions (such as governance effectiveness, quality regulation, rule of law, control of corruption, and political stability) and financial stability that facilitates economic development (H. Khan et al., 2022). A stable financial system will require efficient resource allocation, risk management, investment incentives, and increased savings through an improved financial inclusion infrastructure (T. Beck et al., 2004).

However, the socio-political landscape of SSA is complicated, with colonial legacies, ethnic diversity, and fragmented, informal financial systems. This thesis investigates the relationship between institutional quality and financial stability toward achieving SDGs 1, 2, and 3, as well as gives further insight into Sen's capability theory (Sen, 1999a), the quality-of-life hypothesis (Alborz, 2017a), and the pathways to realizing sustainable development in the region. Therefore, analyzing these three SDGs as an interconnected system influenced by institutional quality and financial stability is the novelty and comprehensive perspective of this thesis.

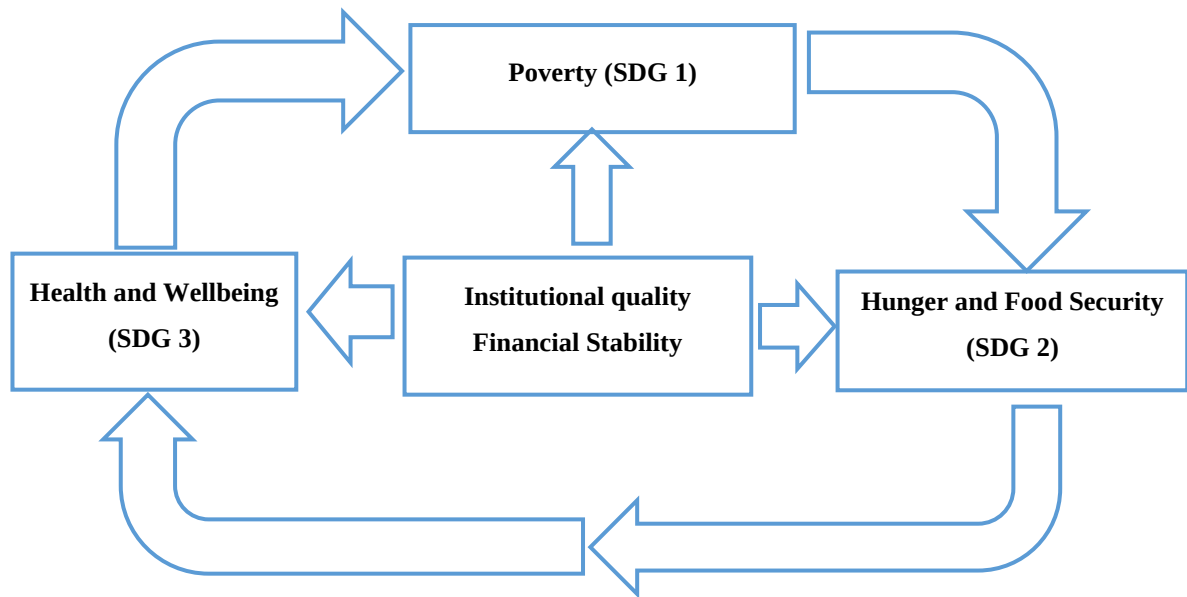


Figure 1.1. Trilitic Relationship Between SDG 1-2, 2-3 and the Role of Institutional Quality and Financial Stability

Reference: Author's drawing

The main gap filled by this thesis is the application of the simultaneous equation model to the literature. Thus, most studies focus on the Sustainable Development Goal individually. However, these three goals are interlocking and interrelated. Therefore, this thesis focuses on this interlocking relationship and develops a simultaneous equation to ascertain this relationship. This thesis fills the following specific research gaps:

- a) Previous studies examined the trilitic relationships individually, rather than as an interconnected system. Hence, this thesis aims to explore the trilitic relationship between these three goals to fill this gap. First, there are no existing studies that focus on the impact of institutional quality, financial stability, and well-being at the macro level through the lens of the quality-of-life theory, which has not been studied yet. Thus, while most studies focus on subjective well-being, life satisfaction, and happiness as well-being proxies, this chapter looks at combining life expectancy and personal economic freedoms as a proxy for well-being in the analysis. This is to give a holistic understanding of well-being. Additionally, it explores the relationship between environmental quality, poverty, and food security.

- b) The second analysis also explores the relationship between institutional quality, financial stability, and poverty. It also explores the impact of well-being and hunger while accounting for the role of colonial footprint as a mediating factor. The second analysis of this thesis fills this gap. Additionally, the analysis checks the feasibility of Sen's capability theory, which has not been done by previous studies.
- c) The final gap filled by this thesis is exploring the impact of institutional quality and financial stability on food insecurity. There is still insufficient evidence in the literature that addresses the impact of institutional quality and financial stability on food security and its dimensions. This thesis fills this gap by exploring this relationship not only with food security but also its dimensions. Furthermore, the trilateral relationship that seeks to understand the simultaneous impact of poverty and well-being on food security has not been addressed. This chapter aims to fill this gap by analyzing the impact of poverty and well-being on food security.

1.3. Motivation of the Thesis

The persistent development challenges in SSA, particularly the high levels of poverty and food insecurity, and the need to improve well-being, despite efforts towards achieving the SDGs, serve as a primary motivation for this research. The study is further motivated by the understanding that institutional quality and financial stability are important in resolving the interconnected SDGs 1, 2, and 3, which are key in achieving sustainable development. The unique socio-political and financial landscape of SSA is characterized by colonial legacies, ethnic diversity, and fragmented financial systems, which present a complex context that warrants in-depth investigation. This thesis is motivated by the need to provide empirical evidence on how strengthening institutions and ensuring financial stability can contribute to breaking the vicious cycle of poverty, hunger, and poor well-being in the region.

The motivation for the individual studies stems from the need to understand the specific pathways through which institutional quality and financial stability affect each SDG (poverty in Chapter 3, food security in Chapter 4, and well-being in Chapter 5) and, most crucially, demonstrate how the interlinkages between these SDGs influence

these relationships. These separate analyses will provide intriguing insight targeted at influencing policy interventions.

1.4. Research Questions

This thesis seeks to answer the following overarching question: How do institutional quality and financial stability separately as well as collectively influence the achievement of Sustainable Development Goals 1, 2, and 3 in Sub-Saharan Africa, considering the interdependencies between these SDGs?

Arising from this, the specific research questions addressed in the three interconnected studies are:

- a) What is the influence of institutional quality and financial stability on well-being (SDG 3) in SSA, and
 - i. What roles do poverty and
 - ii. Food insecurity play in this nexus.
- b) To what extent do institutional quality and financial stability impact poverty reduction (SDG 1) in SSA? and
 - i. How do well-being and hunger influence this relationship?
 - ii. Does the colonial footprint play a role?
- c) How do institutional quality and financial stability affect food security (SDG 2) in SSA, taking into account the intricate relationship between?
 - i. Poverty and food insecurity
 - ii. Well-being and food insecurity

1.5. Research Objectives

The main objective of this thesis is to investigate the relationship of institutional quality and financial stability and their combined as well as distinct influence on achieving Sustainable Development Goals 1, 2, and 3 in Sub-Saharan Africa, with a specific focus on understanding the interdependencies among these three SDGs.

The specific objectives of the three interconnected studies are:

- a) To interrogate the influence of institutional quality and financial stability on well-being (SDG 3) in SSA while providing evidence for the role poverty and food insecurity play in the nexus.
- b) To assess the impact of institutional quality and financial stability on poverty reduction (SDG 1) in SSA while accounting for the extent to which well-being, hunger, and colonial footprint influence the impact on poverty.
- c) To investigate how institutional quality and financial stability are key in reducing food insecurity (SDG 2) in SSA and to provide an intricate relationship between poverty, hunger, and well-being.

The thesis aims to provide a comprehensive picture of how institutional and financial stability interact with the core human development outcomes of poverty, food insecurity, and well-being in SSA through a three-study approach. Thus, conducting three separate analyses is a way of finding a solution for three research problems.

1.6. General Theoretical Simultaneous Model

From the aforementioned gaps and objectives above, the general theoretical simultaneous equation model is expressed as

$$WEB = f(ISQ, FIS, FS, PVG, \partial) \quad (1.1)$$

$$PVG = f(ISQ, FIS, FS, WEB, \partial) \quad (1.2)$$

$$FS = f(ISQ, FIS, PVG, WEB, \partial) \quad (1.3)$$

Where *WEB* is well-being, *PVG* is poverty (SDG1), *FS* is food security (SDG2), *FIS*, and *ISQ* are financial stability, respectively. *al* quality, respectively. ∂ is the control variable.

1.7. Research Hypotheses

Based on the research questions and objectives, the following hypotheses are proposed, reflecting the expected interconnectedness:

- a) Higher institutional quality and greater financial stability significantly reduce poverty (SDG 1) in SSA.

- b) Poor well-being and increased food insecurity exacerbate poverty by influencing the overall poverty reduction outcomes.
- c) Improved institutional quality and financial stability significantly contribute to reducing food insecurity (SDG 2) in SSA.
- d) Poverty exacerbates food insecurity, while well-being indirectly improves food security.
- e) Higher institutional quality and financial stability improve well-being (SDG 3) in SSA.
- f) Poverty and food insecurity decrease well-being.

These hypotheses are interconnected and reflect the understanding that progress in one SDG is likely to influence the others and that institutional and financial stability play a pivotal role across all three SDGs.

1.8. Significance/Contribution of the Thesis

This thesis's significance is rooted in its holistic approach to examining the interconnectedness of SDGs 1, 2, and 3, rather than focusing on isolated relationships. This is crucial because these goals are deeply intertwined; thus, an increase in poverty reduction efforts can positively impact the food security situation and well-being directly (Chowdhury et al., 2013; Rojas, 2020). The thesis, through three interconnected studies, provides a more comprehensive understanding of development challenges in Sub-Saharan Africa (SSA). The thesis provides policymakers in SSA with some valuable evidence that can be utilized to design integrated strategies that address these interconnected issues simultaneously, which could lead to more effective and sustainable development solutions.

The thesis also emphasizes the roles of institutional quality and financial stability in achieving SDGs 1, 2, and 3. The thesis proves that high-quality institutions and a stable financial system create an enabling environment for the achievement of the three sustainable development goals. They facilitate effective policy implementation, resource allocation, and investment, which are essential for poverty reduction, food insecurity reduction, and improved well-being (Acemoglu et al., 2005, 2014; Alborz, 2017b; Chant et al., 2003; Goodhart & Tsomocos, 2011; Ozili & Iorember, 2023;

Schinasi, 2004). The thesis demonstrates how these factors enable or constrain capabilities and quality of life across the dimensions of poverty, food insecurity, and well-being, drawing on Sen's capability theory (Sen, 1999) and the quality-of-life hypothesis (Alborz, 2017). Therefore, policymakers should prioritize the strengthening of institutions and ensuring financial stability as key drivers of progress towards these SDGs.

Finally, the study contributes to both theory and practice. The thesis employs a simultaneous equation model broken down into three panel data analyses. This provides valuable insights into the complex interplay among the variables in the data and, hence, enhances the reliability and generalizability of its findings for sub-Saharan Africa. The time period of the data, 2002-2022, captures recent developments that are crucial for the relevance of the study and policy formulation. For policymakers and development practitioners, the thesis offers evidence-based guidance for designing more effective development interventions tailored towards the adoption of dynamic simultaneous approaches to achieving Sustainable Development Goals 1, 2, and 3. For researchers, it contributes to the theoretical understanding of development as well as providing empirical evidence related to relevant theories and pathways to sustainable development in Sub-Saharan Africa.

1.9. Limitations of the Study

Despite the thorough analysis done, there are some limitations to the thesis. One of the main issues is data availability. Most countries in SSA do not have a complete dataset in terms of time series, and that hinders holistic analysis and time-invariant policy implications. Another limitation is not considering the impact of COVID-19 due to data availability. This has taken away some important insights relative to the impact of institutional quality and financial stability in the pre- and post-pandemic periods. This has also taken away pandemic-relevant policy insights and recommendations. Furthermore, the thesis analysis could have benefited from a machine learning approach or predictive modeling, which could have informed future policy recommendations and research.

1.10. Summary of Thesis Chapters

The **second chapter** of this dissertation provides theoretical foundations of institutional quality and financial stability. The theories of institutions cover both formal and informal institutional theories, while financial stability theories look at asset price bubbles, central bank checks and balances, global shocks, and regulation of central banks, among others.

The **third chapter** interrogates the influence of institutional quality and financial stability on well-being in SSA while providing evidence for the role poverty gaps and food security play in the nexus. This chapter is the first to check the impact of institutional quality and financial stability on well-being while accounting for the role of poverty and food security. This chapter explored the quality-of-life (QoL) theory to explain the relationship between institutional quality, financial stability, poverty, food security, and well-being. Thus, in developing a well-being index, I used personal freedom, economic freedom, and life expectancy datasets, which capture all aspects of well-being. The chapter employs a panel dataset of 26 SSA countries from 2002 to 2020 and the FMOLS and DOLS estimation techniques for the analysis. The findings of this chapter show that institutional quality, financial stability, food security, and environmental quality positively increase people's well-being. However, poverty and inflation harm the well-being they bring and hence hinder improvement in the quality of life.

The **fourth chapter** of this dissertation assesses the impact of institutional quality and financial stability on achieving Sustainable Development Goal 1 in SSA. It also accounts for the extent to which well-being and hunger exacerbate poverty. A panel of 23 Sub-Saharan African countries (SSA) from 2002 to 2020 was used. An institutional quality index was created with all six world governance indicators, and a financial stability index with bank concentration, banking Z-score, liquidity liabilities of banks to GDP, and bank credit to bank depositors using the PCA techniques. The chapter also accounts for the influence of the English and French (colonial footprint) with a dummy (1=France and 0=English) to account for institutional differences inherited from the colonial masters. The findings of chapter three suggest that quality institutions and a stable financial system reduce poverty in SSA in general. However,

their impact in French-speaking countries is higher than in English-speaking countries. While in the French-speaking countries, the impact of institutions is higher, financial stability is lower in French countries compared to English-speaking countries. Additionally, whereas improved well-being may reduce poverty, hunger increases poverty. The impact of well-being in French-speaking countries is higher than in English-speaking countries. It was also observed that, although hunger increases poverty in general, the impact in French-speaking countries is less than in English-speaking countries in SSA.

Chapter five investigates how institutional quality and financial stability are key in reducing food insecurity in SSA and accounting for the intricate relationship between poverty, hunger, and well-being. In SSA, addressing the interlinkages between poverty, food insecurity, and well-being requires comprehensive strategies encompassing improvements in institutional quality, stable financial systems, agricultural productivity, income generation, social protection mechanisms, and access to basic services. This chapter uses a panel dataset covering 28 SSA countries from 2011 to 2021 to examine how variables such as institutional quality, financial stability, poverty, inflation, population growth, agricultural land use, and healthcare expenditures interact to influence food security across its four dimensions—availability, affordability, quality, and sustainability. The chapter's findings indicate that institutional quality is essential for food security. Financial stability improves food affordability and sustainability but does not play any role in ensuring a secure food environment. The findings also show that while poverty rates exacerbate food insecurity in SSA by reducing the purchasing power of poor people, well-being indirectly affects food security by improving overall population health and productivity.

CHAPTER II

THEORIES OF INSTITUTIONAL QUALITY AND FINANCIAL STABILITY

2.1. Introduction

This chapter presents the available theories on institutional quality and financial stability. The theories of institutions encapsulate both formal and informal institutional theories, while financial stability theories look at asset price bubbles, central bank checks and balances, global shocks, and regulation of central banks, among others.

2.2. Institutional Theory Review

From the Solow growth model, one of the key components of total factor productivity is institutions. Schumpeterian theorists view institutions as a significant tool that triggers positive, creative destruction to foster growth. (North, 11990) is one of the few development economists who gave the best possible meaning to the term institution. He argues that institutions are either formal or informal, such that while the formal institutions relate to rules that provide political and economic prosperity, the informal institutions are the traditional powers that set customs, traditions, and behavioral codes (Friel, 2017).

Economic institutions, such as the rights to property and the existence and effectiveness of markets, are of utmost significance to the consequences of economic activity. Economic institutions are significant because they have an impact on how society's economic incentives are structured. People will not be motivated to invest in human or physical capital or use more effective technologies if they lack property rights. Economic institutions are crucial for the efficient use of resources, for determining who receives profits and revenues, and for preserving residual rights of control. Gains from trade are not taken advantage of, and resources are allocated

incorrectly when markets are absent or disregarded. Societies with economic structures that promote factor accumulation, innovation, and the judicious use of resources will thrive (Acemoglu et al., 2005).

Acemoglu and Robinson (2012), in arguing why nations fail, posited that the main difference in growth across countries rests on the political and economic institutions that exist within those countries. They emphasized four key scenarios of intuition that are likely to exist: a) extractive political institutions and extractive economic institutions; b) extractive political institutions and inclusive economic institutions; c) inclusive political and extractive economic institutions; and d) inclusive political and inclusive economic institutions.

Levi (1988) posits, from a political economy perspective, that a government with a long tenure has the incentive to enhance economic institutions. Holcombe & Boudreaux (2013) substantiate this hypothesis through an empirical analysis, where they establish a positive relationship between the institutional quality and the average tenure of an autocrat, indicating that the interests of a long-tenured autocrat are in line with the encompassing interests. However, Olson's (1982) collective action theory contradicts the aforementioned argument by arguing that in particularly stable democracies, special interest groups may become more influential over time and engage in distributional lobbying activities to maintain the status quo, ultimately resulting in institutional ineffectiveness and inefficient resource allocation. The accumulation of such lobbies further exacerbates the problem. Similarly, Acemoglu and Robinson (2000) propose that the politically powerful resist institutional development due to the potential revenue losses via creative destruction. Acemoglu and Robinson (2012) used the same line of argument to explain the emergence and persistence of extractive institutions.

Institutions, whether formal or informal, serve as agents that reduce transaction costs and contribute to economic efficiency by aiding agents in revealing preferences, forming expectations, and internalizing externalities. Informal institutions, which include norms and traditions, represent the unwritten rules that guide the interactions of economic agents in social and production contexts (Neyapti and Arasil, 2016). As such, culture encompasses the various aspects of informal institutions that evolve

gradually, yet continuously, with the endogenous development of a society's elements. Conversely, formal institutions refer to written rules and enforcement characteristics, such as constitutions and legislation, which govern interactions between the government and individuals and contracts between private agents (Williamson, 2009).

The occurrence of economic inefficiencies has the potential to initiate pressure for reform, leading to a deviation from the path-dependent nature of formal institutions. This phenomenon is in line with the foundational principles of institutional economics, which posit that formal institutional reforms may be costly to certain members of society due to the creative destruction they may cause. Additionally, institutions' persistence or time dependence arising from the status quo bias can give rise to inconsistencies and conflicts in production processes, thereby impeding long-term growth (Neyapti & Arasil, 2016). Ultimately, a break in the path-dependent pattern indicates that the cost of maintaining the current institutions may eventually outweigh the cost of reform. Therefore, while economic growth may be characterized by continuous progress, formal institutions are expected to exhibit intermittent changes consistent with the observed phenomena (Roland, 2004).

There have been several definitions of the distinction between formal and informal institutions. One widely accepted distinction is the state-societal approach (Helmke and Levitsky, 2003). According to this perspective, the term 'formal institution' refers to governmental bodies such as courts, legislatures, and bureaucracies, as well as laws, regulations, and constitutions that the government enforces. On the other hand, 'informal institution' encompasses regulations and organizations associated with civic, religious, and kinship groups, as well as other societal norms. There exists a misconception of what an informal institution is. Helmke and Levitsky (2003) described four ways in which informal institutions can be distinguished from other institutional forms.

First, they proposed the distinction with regard to rule enforcement. Informal institutions or norms are self-enforcing institutions, as they represent the community's best response to one another. On the other hand, formal regulations are enforced by a third party, usually the state. However, this differentiation overlooks crucial informal institutions such as informal third-party enforcement, which may involve mafia bosses

as third-party enforcers, and state enforcement of informal institutions such as organized corruption (Helmke and Levitsky, 2003).

A further distinction can be drawn between informal institutions and other forms of informal patterns of behavior. It should be noted that not all patterned behavior is guided by rules or shared expectations regarding others' actions. These behavioral patterns may arise from a variety of other factors. To qualify as an informal institution, a pattern of behavior must adhere to an established rule or guideline, the violation of which results in some form of external punishment (Hart, 1994).

Thirdly, it is imperative to differentiate between informal institutions and informal organizations. Despite the fact that many scholars define organizations by their definition of institution, it is beneficial to segregate political actors from the regulations they adhere to (North, 1990). In the same way as formal organizations, like political parties or unions, are distinguishable from formal rules, informal organizations, such as clans or mafias, should be distinguished from informal institutions. However, it should be noted that informal regulations could be ingrained within these organizations. As formal political organizations are scrutinized under the umbrella of institutionalism, informal structures such as clans, mafias, and other informal organizations can be usefully incorporated into the analysis of informal institutions (Helmke, Gretchen, and Levitsky, 2003).

Ultimately, exploring the distinction between informal institutions and culture is a subject worthy of investigation. It is posited that culture could impact informal institutions, but it is vital to scrutinize the boundary separating the two (North, 1990; Helmke, Gretchen, and Levitsky, 2003). The most effective methodology to approach this issue is to narrow down the definition of informal institutions to shared expectations rather than shared values (Galvan, 2004; Van Cott, 2000). These expectations may or may not be based on wider societal values. By distinguishing between shared values and shared expectations, researchers can explore the conceivable causal connections between culture and informal institutions. For instance, they can determine whether societal values reinforce or weaken specific informal institutions.

2.3. Types of Institutions

The interaction between formal and informal institutions can assume various forms and is commonly categorized into two distinct types. Informal institutions are often seen as functional and capable of resolving challenges related to social interaction and coordination, thereby increasing formal institutions' overall efficiency and performance. However, another perspective views informal institutions as problematic or dysfunctional, with practices such as corruption, clientelism, and patrimonialism undermining the efficacy of formal democratic, market, and state institutions. Recent research suggests that the reality is more nuanced than either viewpoint suggests, as informal institutions can reinforce or replace formal institutions that appear to be undermined.

Boettke et al. (2015), as well as Williamson (2009), posit that informal institutions play a more significant role in elucidating the development process compared to formal institutions, which must adjust to the former for optimal efficacy. Boettke et al. (2015) contend that endogenous institutions that originate from within a society are more resistant to change and more prone to follow a particular path than institutions that are externally imposed or directed. Easterly (2006) similarly underscores the pivotal function of social cohesion in determining the degree of institutional quality that subsequently impacts economic growth.

A dual typology dimension has been suggested to capture institutional disparities. The primary dimension is centered around the degree to which formal and informal institutions' outcomes align. This differentiation arises from the fact that adhering to informal regulations can lead to either similar or dissimilar results compared to strictly following formal regulations (Atkinson, 1990; Axelrod, 1986; Collins, 2002). Formal and informal institutions diverge when following informal rules leads to a significantly different outcome. Conversely, formal and informal institutions converge when the two outcomes do not differ substantially (Helmke and Levitsky, 2003).

The second dimension pertains to the efficacy of the pertinent formal institutions, specifically, the degree to which documented regulations and protocols are executed and followed (North, 1990). Effective formal institutions have the ability to limit or

facilitate the choices of political agents. The agents believe that nonadherence will be met with official sanctions, given the high possibility of their implementation. Conversely, in cases where formal regulations and protocols are inefficient, political agents believe that the probability of enforcement (and thus, the anticipated cost of noncompliance) will be minimal (Helmke and Levitsky, 2003).

Table 2.1. Types of Informal Institutions

Outcomes	Effective formal institution	Ineffective formal institutions
Convergent	Complementary	Substitutive
Divergent	Accommodating	Competing

Reference: Helmke and Levitsky (2003)

Informal institutions that complement formal institutions, as illustrated in the upper left corner of the table (complementary), can contribute to efficiency by establishing norms, routines, and operating procedures that facilitate decision-making and coordination within bureaucracies. They can also serve as a foundation for formal institutions by creating or strengthening incentives to comply with formal rules, as seen in Singapore's postcolonial bureaucracy and rural Chinese village governments (Helmke and Levitsky, 2003; Lauth, 2000).

The presence of accommodating informal institutions corresponds to the combination of effective formal institutions and divergent outcomes in the lower left corner of Table 1. These informal institutions are created by actors who cannot change or openly violate formal rules. The institutions incentivize behavior that alters the effects of formal rules without directly violating them. Although these practices may contradict the spirit of the rules, they may help reconcile actors' interests with existing formal institutional arrangements. While accommodating informal institutions may not enhance efficiency, they may enhance the stability of formal institutions by reducing demands for change. For instance, Chile's power-sharing mechanisms between the executive and legislative branches can be considered a prime example of accommodating informal institutions (Helmke and Levitsky, 2003).

The lower-right corner of the table illustrates the combination of ineffective formal rules and divergent outcomes, which results in competing informal institutions. The existence of informal institutions in combination with ineffective formal institutions often creates an environment where actors are incentivized to violate formal rules and procedures (Helmke and Levitsky, 2003). This is observed in postwar Italy, where corruption was embedded in alternative norms, allowing actors to violate specific state laws with impunity, while those who complied with the law faced punishment (North et al., 2000). Additionally, particularistic informal institutions include patrimonialism, clientelism, clan politics, and corruption (Della Porta & Vannucci, 1999; Ledeneva, 1998). In Ghana, for example, civil servants were instructed to follow the rules of the public bureaucracy. However, most believed they would incur high social costs, such as a loss of status in their communities, if they ignored kinship group norms obliging them to provide jobs and other favors to their families and villages (North et al., 2000).

The upper right corner represents informal institutions that function as substitutes for formal institutions in environments where formal rules are not regularly enforced. These institutions are used by actors seeking outcomes in line with formal rules and procedures but operate in areas where state structures lack authority or are weak (Ledeneva, 1998). For instance, in Mexico, the formal institutions of electoral dispute resolution were widely considered to lack credibility during the country's prolonged democratic transition (Eisenstadt, 2003). As a result, officials from the national government and the opposition National Action Party frequently resolved post-election conflicts through informal unwritten agreements known as "*Concertaciones*" (Della Porta & Vannucci, 1999).

Helmke and Levitsky (2003) summed up the four typologies of informal institutions by suggesting that it is not sufficient to make a simple classification of informal institutions as functional or dysfunctional. The substitutive institutions, such as concertaciones and rondas campesinas (Della Porta & Vannucci, 1999; D. North et al., 2000), may subvert formal rules but can also achieve results that formal rules fail to attain, such as the resolution of post-electoral conflicts and public security.

Accommodating institutions, such as consociationalism, violate the formal rules but can generate outcomes that are broadly beneficial, such as democratic stability. It

remains uncertain whether these institutions can contribute to the development of more effective formal structures or whether they hinder such development by quelling demands for formal institutional change or creating new actors, skills, and interests linked to the preservation of the informal rules (Lauth et al., 1997).

Neyapti and Arasil (2016) posited that despite the malleability of formal societal regulations, their efficacy is contingent upon their alignment with the reigning informal institutions. Formal regulations that counter prevailing norms and cultural practices tend to be overlooked, and consequently, they cannot realize their intended objectives. Therefore, it is untenable to regard formal rules as institutions in the absence of robust enforcement mechanisms.

Bardhan (1989) posited two theoretical concepts to explain the endogenous role of institutions in economic development: the transaction cost and imperfect-information theories. The transaction cost theory assumes that institutions that provide lower transaction costs are critical to economic progress, and property right allocation becomes vital when transaction costs are substantial. The imperfect-information theory, he proposes, yields more specific predictions about contract design, with more attention to terms and conditions under varying circumstances.

Bardhan (1989) discusses the strengths and weaknesses of the two institutional economic theories that he proposed, referencing the problems relevant to economic development. First, whereas the transaction-cost proposition argues that institutions that evolve to lower transaction costs are key to the performance of economies, the imperfect-information theory of institutions is closely related to that of transaction costs since information costs constitute an important part of transaction costs. Second, the transaction-cost theory gives more attention to the details of terms and conditions of varying contractual arrangements under varying circumstances, while the imperfect-information theorists give more emphasis to ex-ante mechanism design in contracts and less to maladaptation costs incurred when transactions drift out of alignment ex-post in a world of bounded rationality where contracts are necessarily incomplete. However, both theories are relevant for analyzing cases where market failure and incomplete markets are predominant, which is common in the context of economic development.

Chang (2011) critiques the dominant discourse on institutions and economic development, arguing that it suffers from theoretical problems, flawed empirical evidence, and a poor understanding of institutional change. The discourse promotes the adoption of Global Standard Institutions (GSIs), which are typically found in Anglo-American countries and maximize market freedom and private property rights. Chang (2011) further asserts that this view neglects the causality from development to institutions, assumes the possibility of a free market, and does not consider institutional changes. This supposed evidence showing the superiority of liberalized institutions relies too much on cross-section econometric studies that suffer from defective concepts, flawed measurements, and heterogeneous samples. He concludes by emphasizing that market and private property are essential institutions for economic prosperity but argues for a more nuanced understanding of their relationship with economic development.

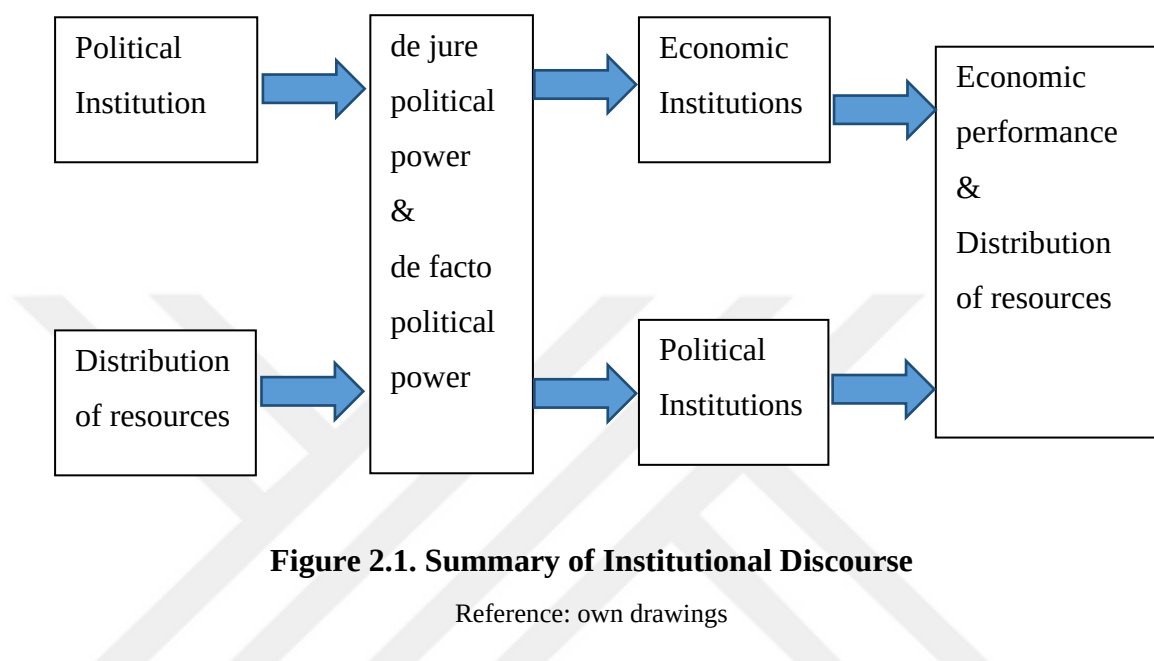
2.3.1. Economic and Political Institutional Discourse

- a) Economic institutions are fundamental to the progress of economic growth. The argument here is that institutions forge the incentives or motivations of significant actors within an economy, thus influencing technology, investment in human and physical capital, and the organization of the production process. Acemoglu et al. (2005) posit that cultural and geographical discourse for economic growth may have some credence. However, it is the institutional differences that mainly account for the vast difference in economic growth and prosperity across countries. In addition to contributing to the growth of an economy, the economic institution determines the optimal resource allocations in the future.
- b) Economic institution proponents also argue that economic institutions are endogenous to growth (Acemoglu et al., 2005; Solow, 1970). The argument is that economic institutions are collective choices of society, even though there is no certainty that individuals and groups in an economy will opt for the same collection of economic institutions. The risk of conflict of interest may arise due to the differences in institutional choices. Political institutions (power) that exist within the economy will bridge the conflict-of-interest gaps that may exist within the society (Acemoglu et al., 2005). In this regard, the group or

individuals with more political power determine the economic and institutional sets that should exist. The critique of this discourse is that political institutions have a problem of commitment, which affects the efficient allocation of resources (H. J. Chang, 2011). Thus, credible compensation transfers and side payments cannot offset any economic institution's allocational consequences (Acemoglu et al., 2005).

- c) Per the political institution discourse, Acemoglu et al. (2005) separated the political institutions into *de jure* (institutional) and *de facto* (political power). The *de jure* constitutes the political institutions in society (chieftaincy systems, political parties, local government systems, governance systems), whereas the *de facto* forms the political power wielded by groups or individuals. Political institutions (*de jure*) connote economic institutions in terms of determining resource allocations—functions and constraints of economic actors, politicians, and political elites. The *de facto* political power may likely arise due to inefficient resource distribution. Thus, although political institutions (*de jure*) did allocate power to some people, these people may nonetheless wield political power through revolts, arm use, coups d'état, and military and mercenary activities. Additionally, some individuals may prefer more peaceful and economically costly tools (such as protests, sit-down strikes, etc.) to gain some political power. Acemoglu et al. (2005) argue that the source for a *de facto* is in two forms. The first one arises from the ability of the groups seeking political power's ability to resolve their collective action problem, in that they all enjoin collective action despite the existence of an incentive for free rides. The second stems from the group's economic resource strength, which determines the capability or otherwise to exploit existing political institutions or employ the services of other agents to solve their collective action problems (Acemoglu & Robinson, 2006).
- d) The discourse on political and economic institutions relates to the former's evolution. This argument stems from the state variable argument within the dynamic macroeconomic model. This discourse posits two state variables (political institution and resource distribution). This is because they change rather relatively slowly and determine economic institutions and economic performance both directly and indirectly. Acemoglu et al. (2005) succinctly explain the effects (directly and indirectly). They stress that the direct effect

exists when political institutions place all political power within the remit of small groups and single individuals; economic institutions are difficult to sustain. The indirect effect is seen through the mechanism of political institutions that determine the distribution of de jure political power, which later affects the choice of economic institution (Acemoglu & Robinson, 2006).



2.3.2. Critiques of Mainstream Institutional Theory

Despite the growing body of literature in support of institutions as a key catalyst within the development process. There are a few arguments that question the causality direction between economic growth and institutions. Chang (2011) one of the main critics of conventional causality (from institutions to economic growth), posits that the conventional proposition is bedeviled with two theoretical problems. First, the conventional institutional theory presumes that causality runs exclusively from institutions to economic development, forgetting the significant probability that economic development does cause institutional changes. The second proposition is that the conventional causality relationship is being theorized in a simplistic, linear, and static way.

Ha-Joon (2005), in arguing for the reverse scenario of conventional institutional theory, posited three propositions to buttress the stance that economic development

brings about strong institutions. The first proposition is that growth increases wealth, which may increase demands for higher-quality institutions. Thus, when the wealth among the populace, especially the middle class, is increasing, it increases the pressure on political institutions to function within the remit of greater transparency and accountability. The second component of his argument is that an increase in wealth results in the affordability of better institutions. Third, he posits that economic development generates new agents of change and demands new institutions to be established.

Historically, there is an array of evidence that economic development leads to improved institutions.³ Most of the institutional structures of today, such as democracy, banking, the central bank, limited liability, and securities regulation, which are considered the model for all to emulate, were gained by developed economies after their economic development (Chang, 2002). The initial stages of growth of these developed economies did not have such institutional structures. Most institutional structures evolved as these economies developed (Chang, 2005).

The financial and human resources that poor economies invest in institutions may be better used for other policies that more directly stimulate economic development, such as educational spending, infrastructure investments, or industrial subsidies, especially when they indirectly promote institutional development, which cannot be prevented if the causality moves more strongly in the direction of development to institutions than the other way around.

In light of all of this, the discourse on institutions and development that is currently popular paints a skewed image by focusing almost solely on one direction of causality, from institutions to economic progress. To fully comprehend the relationship between institutions and economic development and offer sound policy recommendations, there is also a need to consider the causation in the opposite way.

³ For instance, in the 18th century, the rising industrial capitalists supported the development of banking against the opposition to it by landlords, while in the late 19th and the early 20th centuries, the growing power of the working class led to the rise of the welfare state and protective labour laws, against the capitalists who thought those institutions would bring about the end of civilization as they knew it.

2.4. Financial Stability Theory

Economic growth is not only limited to production but is also anchored firmly in the financial system. The achievement of the Sustainable Development Goals relies on a strong financial system. The financing of sustainable development is a complex and protracted undertaking that is influenced by various economic and non-economic determinants. Both public and private financial instruments are available to finance sustainable development. The selection of financial sources and instruments affects economic systems' stability and the efficiency of public expenditure in achieving sustainable development objectives. The choice of financial instruments for development financing impacts financial stability and leads to measurable outcomes (Ziolo et al., 2018). Sustainable development financing is a complicated and lengthy process that is influenced by a range of economic and non-economic factors, and the choice of financial sources and instruments has an impact on both economic stability and the ability of public spending to achieve sustainable development aims.

Schinasi (2004) defines financial stability as the ability of the financial system to facilitate effective resource allocation that results in the transfer of wealth and economic prosperity for both individuals and the state. A reliable financial system facilitated by intermediation enhances the commercial climate and promotes authentic economic progress. It ensures the secure placement of funds and effectively manages any disturbances without compromising economic growth. Conversely, financial instability exacerbates information asymmetry, which impedes the intermediation process within an economy. Babajide et al. (2020) explained further that a stable financial system entails the efficient management of financial risk through accurate assessment and pricing, thus, the ability of the financial system to continue performing its core functions despite external shocks and fluctuations. This points to the fact that for a financial system to be stable, it should develop or establish internal stabilizers that will enable it to quickly return to a state of equilibrium when faced with external shocks.

However, Chant et al. (2003) describe financial instability as a threat to economic growth and performance brought about by the malfunctioning of the financial system. The severity of the instability in the economy is contingent on the financial system's

development stage. Financial instability can be linked to notable modifications in the domestic or international credit market, leading to a credit squeeze. This predicament also arises when there is a significant deviation from the expected financial asset prices or when an economy's production level does not correspond to the purchasing power of its citizens (Ferguson, 2002). Mishkin (1999) posits that a conspicuous distinction can be drawn between financial instability and macroeconomic instability. While aggregate supply or demand shocks bring about the latter, the former is induced by financial market imperatives. The dynamic nature of prices and market conditions is a salient feature of the financial market. Hence, financial instability should be evaluated based on its potential impact on the real economy.

Financial stability theories, as posited by Allen and Carletti (2013), are centered on five propositions that allow for the design of efficient and effective financial systems. These prepositions are the asset price bubble theory, the central bank checks and balances theory, the global imbalance theory, the financial competition theory, and the banking regulation theory.

2.4.1. Asset Price Bubble Hypothesis

The asset price bubble proposition argues that price bubbles, when controlled, will ensure a stable financial system. The point here is that most financial meltdowns, financial crises, banking sector crises, or financial instability occur as a result of bubbles of asset prices within the real estate sector. Herring et al. (2018) and Reinhart & Rogoff (2009) have shown that there is a frequent correlation of evidence between the collapse of real estate bubbles and banking crises. The Asian crisis during the 1980s and 1990s was a result of the dissipating effect of the real estate bubbles, which affected economies like Japan, Indonesia, Thailand, South Korea, and China (Allen & Carletti, 2013).

Kaminsky and Reinhart (1999) demonstrate a pattern of three distinct phases that can be observed in asset-price bubbles. The initial phase commences with either financial liberalization or a deliberate decision taken by the central bank to escalate lending or any other comparable occurrence. A surge in the prices of assets, including real estate and stocks, accompanies this escalation in credit. As the bubble inflates, the prices

continue to rise over an extended period, possibly spanning several years. Subsequently, in the second phase, the bubble bursts, causing a rapid decline in asset prices, which may last for a short period of a few days or months or over a more extended period. The final phase is characterized by the default of many firms and agents who borrowed to purchase assets at inflated prices. This wave of defaults may be followed by banking and foreign exchange crises (Allen & Carletti, 2013).

The challenge of financial instability and default results in a crisis within the real sector that persists for numerous years. According to Cukierman (2011), the significant hindrances exacerbating the impact of the crisis are the inadequate and ineffective regulation of shadow financial systems, short-term thinking in executive compensation, conflicts of interest in rating agencies, and the too-big-to-fail factor. This was the fundamental foundation of the American real estate bubble. The bursting of this bubble led to significant issues in the securitized mortgage market and the real economy. Allen and Carletti (2013) contend that there were two primary causes. The first was the Federal Reserve's and other central banks' low-interest rate policies after the technology stock bubble's collapse. The second was the Asian central banks' appetite for dollar- and euro-denominated (debt) securities, which resulted in easy credit availability.

To a great extent, the significant modification required to avert forthcoming calamities is to formulate strategies that guarantee minimal asset price bubbles. The achievement of this objective requires workable bubble models that can serve as a foundation for policy scrutiny. Unfortunately, developing such theories has posed a challenging undertaking thus far.

The early theoretical literature on the subject of bubbles was preoccupied with demonstrating that such phenomena did not arise within standard models. Tirole (1982) contended that bubbles, where asset prices deviate from fundamentals, are incompatible with rational behavior in the presence of finite horizons or a finite number of agents. Santos and Woodford (1997) further argued that the circumstances under which bubbles emerge in standard general equilibrium frameworks were rather exceptional. Tirole (1985), testing the price bubble hypothesis in the overlapping generations (OLG) model, established that bubbles could exist in infinite horizon

models, provided all agents acted rationally. Subsequent research based on this model has been extensive, with Caballero and Krishnamurthy (2006) and Farhi and Tirole (2012) making significant contributions. However, a crucial concern with these models is their consistency with the type of bubbles observed in real estate and stock markets, as documented by Kaminsky & Reinhart (1999) and others, where bank credit plays a key role and bubbles develop extremely rapidly.

Additionally, a segment of the discourse surrounding bubbles is based on models of asymmetric information, in which all parties possess rational beliefs that they may be able to sell the asset at a higher price despite it surpassing its fundamental value. In Allen et al.'s (1993) discrete-time, finite-horizon model, the lack of common knowledge resulted in asset price bubbles. Nonetheless, the model's resilience is questionable.

A third strand of literature explored agency theories of bubbles, with several models suggesting that rational behavior can result in bubbles. Allen & Gorton (1993) present a model with a finite horizon and continuous time that highlights an agency problem between investors and portfolio managers as a possible source of bubbles. Similarly, Allen and Gale (2000) propose a model that shows how bubbles can arise as a result of an expansion in credit under an agency problem in discrete time. Barlevy (2008) extends this model to account for more general debt contracts and dynamic considerations. Allen and Gale (2007) focus on the relationship between lending and asset price bubbles. Nonetheless, asset pricing models based on irrational behavior, such as those developed by de Long et al. (1990), have emerged as a means of reconciling bubbles with rational behavior.

Recent advancements in this particular field of research that incorporate minor deviations from rationality and present intriguing bubble models include Abreu & Brunnermeier (2003) and Scheinkman & Xiong (2003). However, these models still pose challenges when applied to policy analysis. Consequently, novel and more manageable theories are required to assess whether the surges in real estate markets and stock markets across Asia and other nations indicate bubbles or legitimate future prospects. If such markets are indeed bubbles, then these theories must guide central banks and governments in devising preventive measures for the future.

2.4.2. Central Bank Checks and Balance Hypothesis

The central bank plays a critical role in maintaining a stable financial system. As a regulator of the banking sector, one of its core mandates is to institute frameworks that will allow the financial sector to mitigate risks, maintain stability, and support and protect investments (both public and private). The check and balance function of the central bank is key to sustaining a stable and balanced financial framework. However, the central bank cannot be left off the hook in most financial crises or instability. In fact, Allen & Carletti (2013) pointed out that in most real estate bubbles and financial crises, there is a footprint of the central bank in the creation of the problem. They further posit that while asset prices were on an upward trajectory, the central banks took the risk of setting low interest rates, which became a catalyst for the crisis.

The central bank checks and balances hypothesis focuses on the powers the central banks wield and whether those powers make them efficient in executing the function of maintaining a stable financial system. As in most SSA countries, the central banks are pseudo-autonomous in performing the checks and balance's function. Most often, partisanship and political affiliation often shroud the functioning of the central bank. Similarly, the recent financial crisis in the US was moderately managed by the Federal Reserve System, although they were poor at preventing the crisis from happening. Some proponents of this argument, such as Allen and Carletti (2013), blamed the central bank for lowering interest rates at periods when real estate prices were going up, which was the leading cause of the bubbles in the US. Thus, too much power is centered in the board of governance and the central bank's chair, which limits the check and balance function.

Following the high levels of inflation experienced in the 1970s, several nations decided to establish autonomous central banks. The rationale behind this choice was to prevent political influence on interest rate cuts, avoiding inflationary surges during election periods. The independence of central banks has been successful in controlling inflation. However, the ongoing crisis has exposed potential vulnerabilities in this system. With a limited number of decision-makers and a lack of checks and balances, there is a risk to financial stability (Allen & Carletti, 2013). For instance, Alan Greenspan of the Federal Reserve in 2003 was solely and chiefly responsible for the

verdict to decrease interest rates to 1% and retain them until 2004 to mitigate the impact of the economic downturn. Despite the dearth of opposition within the Board of Governors regarding his stance, the low-interest rate policy yielded favorable results in the short term (creating some stability) but at the cost of a housing bubble and an immense recession in subsequent years (Allen & Carletti, 2013).

Quantitative easing is one of the issues relating to the central bank's lack of checks and balances. Thus, the situation is where the central bank creates money to buy back long-term government bonds and other securities. Although it is rarely used, it provides an open space for discussion on its pros and cons. In the 1990s, for instance, Japan employed quantitative easing to curb the financial meltdown and its currency crisis. However, quantitative easing did not solve the economic crisis at that time, nor did it create inflation. Quantitative easing is an unconventional monetary policy likely to set conditions necessary for future financial crises and inflationary risk. Allen and Carletti (2013) pointed out that the lack of checks and balances on the central bank, particularly with the monetary policy, poses a great risk of financial instability as the boards of central banks and governors implement policies that are likely to create bubbles through centralization of powers. The Nigerian experience of 2016 and Ghana's financial instability of 2022 point to the central bank governors' role in fueling the crisis with some political polarization.

Finally, Klomp and de Haan (2009) indicate that political independence has a strong negative relationship with financial instability. Thus, when central banks are free from political shenanigans and political control and subjected to other arms of government policing and checks, the central bank is likely to make sound policies to maintain financial stability. Allen and Carletti (2013) posit that political influence on central banks is not favorable, as it would amount to a reversion to the previous central banking system. An alternative proposal would be to institute a Financial Stability Board with its personnel and resources distinct from the Federal Reserve, which would be independent of any reliance on the latter. The Board would have its representatives participate in Federal Open Market Committee meetings and be granted multiple votes. Since the board's focus would center on financial stability issues, it would necessarily concentrate on the hazards generated by the public sector. The Federal Reserve would

retain its autonomy from political authorities, but the Financial Stability Board would provide checks and balances.

2.4.3. The Global Imbalance Hypothesis

This hypothesis is based on the premise that most financial instability occurs due to imbalances at global financial institutions. Thus, there seem to be unequal measures for countries that seek assistance from these global financial institutions (the IMF and the World Bank) during times of crisis. While developing and emerging countries are always told to cut expenditures, raise interest rates, and implement certain harsh structural adjustment policies, Europe and the US are told to do the reverse (Duca et al., 2010). The easy availability of credit at the global level allows countries and private sectors to borrow excessively, hence accumulating unsustainable debt levels. The IMF and World Bank hardly put measures in place to control these countries or firms from violating the “*no-Ponzi scheme rule*.” This creates a fragile or unstable financial system that makes these economies resort to the IMF for support. For instance, the Asian crisis in 1997 affected many Asian countries. South Korea’s crisis was premised on firms and banks borrowing too much in foreign currency. Hence, there was a depletion of their exchange reserve, and they turned to the Bretton Woods Institution for support to sail through the crisis (Allen & Carletti, 2013).

After the Asian crisis, some countries, like Japan, China, and South Korea, observing the financial instability trends that occur in countries that have policies similar to IMF assistance, keep having a cycle of financial instability. This made them (China, Japan, and South Korea) resort to reserve accumulation to become economically independent and out of the shackles of IMF conditionalities. The process of reserve accumulation is twofold. First, countries increasing their reserve must curtail their consumption, and there ought to be other countries that engage in deficits to balance out these surpluses.

In actuality, the United States was the primary nation that incurred deficits. The resultant accumulation of debt and its contribution to instigating the crisis rendered this situation highly undesirable. The second method of amassing adequate reserves involves the government acquiring long-term loans and using the resulting funds for short-term investments (Allen & Carletti, 2013). However, this approach can prove to

be expensive, given the typical discrepancy between long-term and short-term interest rates, which creates a net cost. The issue of the expenses incurred in building up reserves thus prompts inquiry into alternative means of self-insurance. This process may give individual countries some levels of financial relief and self-insurance, but it is an inefficient framework from a global perspective.

Core to this hypothesis is the unfair treatment and inequitable policies pursued by the IMF in Europe and the US, as against the rest of the world facing the same problem. There seems to be unfairness in the policies pursued, as most countries outside Europe and the US have almost cyclical financial stability, which keeps them returning to the IMF roughly every four years. Asian countries, notably Japan, South Korea, and China, have adopted the reserve accumulation option to self-insure themselves against financial instability. Additionally, Allen and Carletti (2013) also claim that part of the unfair regulations of the IMF is the composition of the governance structure of the IMF and the World Bank. The composition is skewed towards Europe and the US, and thus, unfair and inequitable treatment exists for countries facing the same problem.

Moreover, the policies pursued serve the interests of the Bretton Woods institution and hardly take the unique socio-political tendencies of the client countries into perspective, which is likely to guarantee financial stability.

2.4.4. Banking Regulation Hypothesis

Banking regulations are effective mechanisms used to prevent financial crises from happening. However, the cost of maintaining the regulation needed to prevent financial crises could prevent the financial system from doing its task of allocating resources. The Basel Accords produced a set of banking regulations that were primarily established as a reaction to the banking crises that transpired during the Great Depression. These regulations were not based on a consistent theoretical framework and were implemented in a historical context. Capital adequacy ratio regulations have recently emerged as the primary mechanism for regulating banks. The justification behind capital adequacy ratio regulation has traditionally been to mitigate the moral hazard resulting from deposit insurance (Hellmann et al., 2000). The government provides low-cost funds to banks, leading them to take substantial risks. Banks stand

to gain if these risks pay off, but the government bears the losses if they do not. Therefore, capital regulation, which mandates significant shareholder losses in the event of losses, is necessary to counteract this incentive for banks to take risks.

One of the problematic banking regulations is the issue of deposit insurance and its effectiveness in preventing bank runs. Deposit insurance is a system where the government guarantees a certain amount of money deposited in a bank, usually for small deposits. The usual reason for deposit insurance is to prevent bank runs, which occur when many people try to withdraw their money from a bank simultaneously, causing the bank to fail. Allen and Carletti (2013) posit that bank runs can occur due to multiple equilibria, which means that multiple outcomes could happen, and it is unclear which one will occur. If people believe that there will be a bank run, they will try to withdraw their money as quickly as possible, which can cause the bank to fail.

Deposit insurance is meant to prevent bank runs by guaranteeing that people will get their money back even if the bank fails. However, deposit insurance only covers small deposits and does not cover large deposits or wholesale funding. Thus, it does not solve the problem of multiple equilibria and bank runs (Allen & Carletti, 2013). There are two ways of solving the deposit insurance problem. First, banks should guarantee all forms of short-term debt, which would prevent bank runs but could also create a moral hazard problem. The second solution is to remove deposit insurance and instead rely on lender-of-last-resort policies. If people try to withdraw their money from a bank, the central bank will provide the necessary liquidity to prevent it from failing. This would prevent bank runs and would not create a moral hazard problem.

New theories of capital regulation are needed to prevent contagion and systemic risk, with a focus on macroprudential regulation. The micro approach based on bank-specific risk is inadequate due to interconnections among financial institutions and correlated risk (Rochet, 2004). Designing capital regulation is challenging due to uncertainty around the costs of equity finance for financial institutions. Removing debt interest deductibility could induce financial institutions to use more equity, enhancing financial stability (Gorton & Winton, 2003). The high cost of equity may be due to agency problems within firms, but there is little empirical evidence to support this. The tax deductibility of debt interest does not explain the difference in capital holdings

across industries, and a more plausible explanation is that debt is implicitly subsidized in the financial industry through government guarantees and bailouts (Allen & Carletti, 2013). Removing public guarantees and designing clear resolution schemes would enhance financial stability, improve banks' incentives to take risks, and induce higher capital holdings (Admati et al., 2013).

Designing a framework for liquidating financial institutions is difficult, especially for cross-border institutions, due to the problem of assigning losses to countries with international mismatches of assets and liabilities. One solution could be eliminating cross-border branching and having subsidiaries regulated by the host country. Developing theories to analyze optimal bankruptcy procedures for financial institutions in both domestic and international contexts is crucial for financial reform but has been little studied in current literature (Allen & Carletti, 2013).

2.4.5. Competition in Financial Service Hypothesis

Competition policy and financial stability have been in tension for a long time, and financial sector competition has been avoided for stability reasons. In recent years, many countries have implemented competition policies, but they have been avoided in the financial sector due to stability. This raises an interesting question about why financial services firms make large profits in normal times. The usual answer was that shareholders and employees were taking large risks, and the earnings were compensation for the risk (Allen & Carletti, 2013). However, it is now clear that governments are bearing the risk. Another possibility is that the competition policy is not enforced properly.

The financial markets are highly competitive, but deviations from perfect competition are different from those in markets for goods. Financial services firms make large profits due to improper enforcement of competition policy, such as front-running in the bond markets, which is not illegal in the US (Carletti & Vives, 2009), and this encourages large investment banks to set up trading platforms for bonds that give them an advantage in terms of knowledge of order flow. This has the potential to allow large profits from front-running. Front-running in the bond markets is based on knowledge of order flow by brokers and other participants in the market. If a large buy order is

executed, it will typically drive-up prices because market participants will deduce that the buyer has good information. If the processor of the order can trade before the large buy order is executed, then it is possible to make money. Over time, this front-running can be extremely profitable (Allen & Carletti, 2013). In sum, the lack of competition policy enforcement in the financial sector may contribute to the large profits made by financial services firms. The deviation from perfect competition, such as front running, can be highly profitable and may be allowed in some markets.



CHAPTER III

BEYOND ECONOMIC GROWTH: EXPLORING THE DETERMINANTS OF WELL-BEING IN SUB-SAHARAN AFRICA

3.1. Introduction

Sub-Saharan Africa is characterized by cultural diversity, endowed with natural resources and economic potential, but beset by challenges of poverty, food insecurity, lack of a developed financial system, and low-quality institutions. Despite these challenges, they offer opportunities for advancement, especially regarding improving institutional quality and financial stability (World Bank, 2023).

Well-being, institutional quality, and financial stability in SSA form a complicated nexus. It is not just complicated but also multi-dimensional with complex interlinkages. Good institutions are important for both economic growth and development, as they provide the framework that enables businesses to operate and people to have broad access to the requisite services that enable a better life (Hussen, 2023). Hence, financial stability is important, as it ensures that the financial system can provide support to any economic activities and make credit and savings available for individuals (Beck & Maimbo, 2012).

Well-being in Sub-Saharan African (SSA) countries covers various aspects of life, including health, education, and standards of living. Though some progress has been made in recent years, many SSA countries are still ravaged by poverty and inequality. The United Nations Development Programme (UNDP, 2024) posits that the human development index (HDI) for SSA is one of the lowest in the world. The health outcomes of SSA overall are pretty poor due to high rates of infant mortality and low life expectancy. The World Health Organization (WHO, 2023) emphasizes the

enormous burden of infectious diseases such as HIV/AIDS, malaria, and tuberculosis, which aggravate the health problems facing the region. Further, access to quality healthcare facilities proves to be a major killer of good health for populations, especially in rural areas, making it difficult for consumers to obtain healthcare. Despite some recorded improvements in education and healthcare, many of the countries in this region still face high levels of poverty and food insecurity (UNDP, 2024). This reflects the negative effect of existing challenges on efforts geared towards the achievement of a good quality of life and Sustainable Development Goal 3.

The quality of institutions connotes the effectiveness of a country's political, legal, and administrative systems in fostering economic development and welfare among its citizens. Some countries show considerable improvement in the quality of institutions, but many remain unmatched with unprecedented levels of corruption, weak governance, and low regulatory frameworks (Hussen, 2023). Corruption in most of the countries in SSA hampers the confidence of the citizens in institutions and hinders development. The Transparency International Corruption Perceptions Index posits that SSA hosts most of the corrupt countries in the world. According to Adeleye (2024), illegitimate behavior has permeated all segments of society, from the very top ranks of government to the very bottom levels of administration, exerting a wide impact on resource allocation and public services provision.

Weak governance also represents another threat to the functionality of institutions in almost all SSA countries. The effectiveness of institutions comes from inadequate capacity in regulatory frameworks, reduced accountability, and a lack of law and regulation enforcement capacity (Beck & Maimbo, 2012). The weak governance environment in SSA creates barriers to economic development and contributes to the persistence of poverty and inequality, which affects well-being (World Bank, 2020). The improvement in the quality of institutions in SSA has the potential to unleash significant impacts on well-being. Well-functioning institutions create an enabling environment for businesses and investments that can promote economic growth (Adeleye, 2024). They also efficiently allocate resources and effectively deliver public services (Transparency International, 2023). Additionally, strong institutions can lead to reduced corruption, thus increasing public trust, which partly forms the bedrock of social cohesion and stability (World Bank, 2019).

A developed financial system contributes much to promoting economic development and maintaining stability in the financial market. SSA has experienced rapid development in recent times, more so with mobile banking and microfinance (Beck & Maimbo, 2012). With these innovations and other developments, numerous people, most of whom have lived in rural areas and are deprived of either formal financial institutions or financial services, have been able to be covered (Adeleye, 2024). In particular, mobile banking has turned out to be a real game-changer in SSA, enabling millions literally at the touch of their cell phones to get access to financial services. For instance, Kenya and Tanzania lead this revolution in East Africa with such services as M-Pesa, and Ghana leads other countries in West Africa with respect to mobile money (MoMo), which has interoperability features that link MoMo accounts with bank accounts and other e-services. These developments within the banking sector have changed the way people save, transfer, and borrow money (World Bank, 2023).

Beck and Maimbo (2012) indicate that mobile banking promotes financial inclusion and offers individuals and small businesses opportunities to gain access to credit and investment for economic growth. Furthermore, Frimpong et al. (2023) added that financial inclusion strengthens financial stability, especially when business freedom is encouraged, administrative and bureaucratic burdens are reduced, and stringent regulations are imposed to recoup nonperforming loans. Financial stability further mitigates the chances of financial crises that could potentially wreak havoc on the economy and the well-being of the populace (UNDP, 2024). Despite these developments, the financial market in SSA still has major stability difficulties. People without bank accounts still reside in the region, and the number of people who have access to formal banking is minimal (Demirgüç-Kunt et al., 2020). Moreover, the financial industry is often highly decentralized and has little in terms of structural and regulatory safeguards to provide stability for consumers and investors (Aterido et al., 2013). This disunity of the financial sector, along with the inadequate regulatory system, remains a barrier to economic development, lowering poverty, and improving welfare.

Poverty is nebulous and multidimensional and encompasses not only lower levels of income but also a lack of access to basic necessities and services like education, healthcare, and sanitation (UNDP, 2019). Amartya Sen's capability approach stresses

that poverty is not just about low income but also about the lack of opportunities to achieve a good quality of life (Sen, 1981). Poverty and food security are critical issues in SSA that are closely linked and have a significant impact on well-being. Baah et al. (2023) posit that SSA is home to some of the highest levels of poverty in the world, with more than 40% of the population living on less than \$1.90 a day. Food insecurity exacerbates the well-being of many people in SSA. Thus, most people in SSA lack the resources and institutional structures needed to access sufficient, safe, and nutritious food (FAO et al., 2022). The Food and Agriculture Organization (FAO et al., 2022) stresses that the highest prevalence of undernourishment in the world is experienced in SSA countries; thus, one in four people experiences chronic hunger. Food insecurity not only affects individuals' ability to lead healthy, productive lives but also has significant implications for health and well-being (Sen, 1981). To curtail these conundrums, there is a need for a comprehensive approach that includes the improvement in the quality of institutions, ensuring a stable financial system, alleviation of poverty, and maintaining a secure food system (FAO et al., 2023).

Poverty is multidimensional and nebulous, encompassing not only lower levels of income but also a lack of access to basic necessities and services such as education, health care, and sanitation (Paul, 2016). The capability approach of Amartya Sen emphasizes that poverty is not just about low income but about the lack of opportunities to achieve a good quality of life (Sen, 1999a). The two very important issues intertwined in SSA are poverty and food security, which have enormous implications for the well-being of populations. According to the World Bank in 2021, the region houses some of the world's highest rates of poverty, as over 40% of its population lives on less than US\$1.90 daily. Insecurity in food availability has further degraded the well-being of so many other people in SSA. Hence, the majority of the people in SSA do not have the resources and institutional structures to get enough safe and healthy food. In countries of SSA, there is a high prevalence of undernourishment. The FAO et al. (2022) posits that one out of every four people suffers from chronic hunger. Food insecurity, aside from undermining people's capacity to lead healthy, productive lives, has severe implications for their health and well-being (Sen, 1981). In an attempt to curtail these conundrums, there is an imperative need to comprehensively move forward with improving institutional quality, including ensuring a stable financial system that leads to the alleviation of poverty and the

maintenance of secure food systems (FAO, 2006), which will improve well-being in general.

This chapter seeks to interrogate the influence of institutional quality and financial stability on well-being in SSA while accounting for the role poverty gaps and food security play in the influence. To reach the objective of this chapter, we employed the fully modified ordinary least squares (FMOLS) and dynamic ordinary least squares regressions (DOLS) to estimate the influence. We further used panel-estimated generalized least squares (Panel EGLS) regression with 3 options: cross-section weights, cross-section random effects, and two-way random effects as a robustness check for our models. The data for this chapter were sourced from the Fraser Institute, the World Governance Index, the Poverty and Inequality Platform of the World Bank, World Development Indicators, and the World Health Organization. This study is the first to check the impact of institutional quality and financial stability on well-being while accounting for the role of poverty and food security.

This chapter focuses on the questions below:

- a) How does institutional quality affect well-being in SSA?
- b) What impact does financial stability have on the well-being of SSA?
- c) Do poverty and food insecurity deteriorate well-being in SSA?

By finding answers to these questions, we provided more insight into the extent to which institutional quality and financial stability are crucial in improving well-being in SSA. We also shed some light on how poverty and food security thwart the effort to improve well-being in SSA. The remainder of this chapter is organized as follows: The literature review is followed by the methodology, results and discussions, and conclusions.

3.2. Literature Review

3.2.1. Theoretical Literature

3.2.1.1. Capability Approach

Amartya Sen's Capability Approach (CA) marks a departure from the most basic traditional economics, which viewed wealth or utility as an index of well-being. It measures the development of real freedoms and opportunities people enjoy in achieving the lives they value (Sen, 1999a, 2013, 2017). Sen states that well-being should be defined in terms of the capabilities that people have and not by the enumeration of the resources that they hold or even the utility that they enjoy from those resources. Capabilities qualify as the substantial freedoms for achieving various combinations of functionings—the becomings and doings that constitute the individual's life. Some functionings are being healthy, being educated, taking part in community activities, having economic and financial freedoms, and having access to the necessary resources (Sen, 1981, 2017).

Functionings that an individual achieves are actual states and activities with which one can function. In contrast, capabilities are opportunities or freedoms available from which one can select. Hence, the value of freedom and choice regarding assessing well-being becomes important. It is not sufficient to have resources or attain the desired result; it is the freedom to choose and achieve the result that matters (Sen, 2017). He criticizes traditional welfarism as being oblivious to the inequalities in the distribution of 'capabilities' and as being not very informative on the measures of well-being based on either utility or resources. This is because income does not say much about what an individual can do relative to personal circumstances, social context, and environmental conditions.

Sen's CA theory was expanded by Martha Nussbaum, who developed a list of core human capabilities. Nussbaum (2011) details the basic entitlements that every individual should possess if he or she is to live a dignified and flourishing life. As such, her approach is more prescriptive than Sen's since she advocates their incorporation into national constitutions and policies. Nussbaum's core human capabilities include

life, bodily health, bodily integrity, senses, imagination and thought, emotions, practical reason, affiliation, other species, play, and control over one's environment. She showed that these are the basis of human dignity and should be provided for everyone. Rather than, as Sen prefers, avoiding such a list, Nussbaum's list lays the foundation for deliberate policies that support improvement in human well-being (Nussbaum, 2011). This explains the consonance of her approach with theories of justice founded on the dignity of each individual and the need to guarantee that everyone has his or her chances of developing and exercising capabilities (Nussbaum, 2015).

Another critical dimension of Nussbaum's argument is that emotions and relationships are features of human development. This attention to social-emotional dimensions of human life makes her approach quite at variance with utilitarian frameworks, which will perhaps ride roughshod over such dimensions of well-being and health (Nussbaum, 2011). Other reviews have assessed the application of CA to domains such as health, education, and child well-being. For example, Mitchell et al. (2017) assessed the application of CA to health for assessing patient empowerment and multidimensional poverty. Domínguez-Serrano and del Moral-Espín (2022) conducted a systematic review of the relevance of CA to child well-being; the review underscored that this approach is of great significance as far as understanding the active roles of children in their well-being.

3.2.1.2. Subjective Well-Being

Subjective Wellbeing (SWB) theory considers individuals' self-reported happiness and life satisfaction levels. It emphasizes psychological and emotional aspects of life, capturing the overall sense of contentment and fulfillment (Diener et al., 2009). SWB is an essential dimension of development that reflects people's happiness levels, life satisfaction, and emotional experiences. Diener et al. (2009) emphasize that SWB hinges on the importance of personal perceptions and feelings, offering a holistic view of well-being beyond traditional economic indicators (income).

In SSA, SWB is influenced by various factors, including economic stability, social relationships, health, institutional structures, and environmental conditions. Unlike

objective measures such as income or health indicators, SWB focuses on personal perceptions and feelings about one's life. This approach is crucial in understanding the holistic well-being of individuals in SSA, especially when traditional economic indicators may not fully capture the lived experiences of people in the region. For example, financial security (in terms of access to financial services) and supportive social networks can significantly enhance life satisfaction and overall well-being (Helliwell et al., 2020). Kabote (2017) underscores the need for a culturally sensitive understanding of SWB that accounts for the diverse experiences within the SSA.

Despite the challenges in measuring SWB, Tiliouine et al. (2009) stress that incorporating it into development policies can lead to more effective interventions that address the multifaceted nature of well-being. For instance, policies engendering stable financial systems to provide financial services, good institutional structures that will ensure improved social relationships and effective government bureaucracy, efficient social safety nets or social protection (both economic and psychological), and good health through improved food security and environmental quality can alleviate stress and improve overall life satisfaction (Kabote, 2017; Wissing et al., 2022).

However, one of the challenges in studying SWB in SSA is the lack of comprehensive data and research interest in this area. Many studies focus on objective development measures, neglecting individuals' subjective experiences. However, there are opportunities to integrate SWB into development policies and programs, as understanding people's subjective experiences can lead to more effective and holistic interventions.

3.2.1.3. Income-Based Theory

Traditional economic indicators, such as GDP per capita, measure well-being by considering only income levels. Even though income constitutes an essential component, on its own, it cannot be taken to represent the whole gamut of human well-being (Easterlin, 1974). The measure has been one of the most used in development economics for understanding and comparing the economic conditions of people. However, this measure is partial and fails to capture the multidimensionality attached to well-being (Stiglitz et al., 2018). The theoretical basis for this income-based

measure is the classical economic theory, which views life standards as improved by higher income levels. In this approach, income is interpreted as purchasing power able to buy goods and services that will enhance one's quality of life (Fleurbaey & Blanchet, 2013).

Additionally, household income refers to the sum total of income gained by all household members. It reflects the purchasing power of the households, enhancing the potential of the household to access basic needs, better living conditions, and higher levels of subjective well-being (Clark, 2017). However, it does not measure non-monetary aspects of well-being, such as social connections and mental health (OECD, 2017).

The other side of income-based measures of well-being is the consumption pattern of the people. The consumption measure regards the spending patterns of people on goods and services. A higher level of consumption implies greater access to resources and improved living standards. This approach is especially useful in understanding poverty and inequality since it highlights disparities in consumption across different population groups (Deaton & Cartwright, 2018). Fleurbaey and Blanchet (2013) hold the view that temporary fluctuations in income can manipulate consumption-based measures and do not capture long-term financial security. While income-based measures have been useful for assessing economic conditions, they are criticized for their narrow scope. For example, critics of these measures say they leave out important aspects of well-being, such as health, education, and social relationships.

3.2.1.4. Quality of Life Theory

The quality-of-life theory offers multidimensional well-being assessments, such as the general well-being of individuals, by considering such aspects of their lives as health, education, environment, and personal safety and freedoms. These indicators give a holistic picture of well-being, depicting multiple factors that make up one's quality of life in addition to economic ones. QoL theory is deeply rooted in the recognition that well-being is multi-dimensional and cannot be adequately reflected through income. According to Diener et al. (2018), QoL integrates health, social, environmental, and economic dimensions, which require a full-fledged well-being assessment. The QoL

indicators are the human development index (HDI) and better life index (BLI), in that they reflect wider ranges of well-being factors (OECD, 2017).

The health constituents of QoL include life expectancy, infant mortality rates, and access to healthcare services, offering insights into the general health and well-being of a population. Improved health outcomes are associated with a higher degree of QoL, thus improving the abilities of individuals to participate fully in social and economic activities (Chote et al., 2024). The other important dimension of QoL is education, including aspects such as literacy rates, school enrollment, and educational attainment.

These components reflect not only the availability and quality of education but also access to education. Additionally, UNESCO (2023) stresses that a higher level of education is related to improved economic opportunities, health outcomes, and higher social involvement, which are crucial for a better QoL. QoL is significantly influenced by environmental factors such as air and water quality, availability of green spaces, and exposure to pollutants. A healthy and clean environment offers support to physical and mental health and, as such, contributes to general well-being. For this reason, environmental sustainability is considered essential for ensuring long-term QoL (UNDP, 2019). The social constituents of QoL contain indicators related to social support, personal safety, personal freedom, and community engagement. On the other hand, QoL is based on the belief that strong social networks, personal freedoms, and a sense of safety are vital for emotional and psychological well-being and improve people's quality of life. As stated by OECD (2017), though QoL conveys comprehensive information on well-being, it faces measurement and data problems and, hence, is always subject to criticism. Its relative importance may vary across cultures and contexts as well, so it can be challenging to make an indicator appropriate universally.

3.2.1.5. Psychological Well-Being Theories

PWB is related to the mental health and emotional functioning of an individual. The PWB measure includes self-acceptance, purpose in life, autonomy, and personal growth. PWB is an integral dimension of overall well-being because mental health contributes a lot toward physical health, social relationships, and quality of life. PWB

is a positive psychology approach that focuses on the study of positive emotions, strengths, and elements contributing to a meaningful life. Major ideologies or models in PWB include Carol Ryff's model of psychological well-being and the PERMA model developed by Martin Seligman (Ryff & Keyes, 1995; Seligman, 2018).

The Carol Ryff model provides six dimensions for PWB, including self-acceptance, positive relations with others, autonomy, environmental mastery, purpose in life, and personal growth. The dimensions provide one major framework through which one can conceptualize and investigate individuals' psychological health and well-being (Ryff & Keyes, 1995). Seligman's (2018) PERMA model identifies five essential elements of PWB: positive emotion, engagement, relationships, meaning, and accomplishment. Emphasis is given in this model to cultivating positive experiences and relationships, establishing a meaningful life, and lastly, accomplishing work for overall well-being (Seligman, 2018). Diener et al. (2018) further add that interventions on PWB include practices of mindfulness and exercises meant for positive psychology, which have gained considerable importance in advancing mental health and well-being.

3.2.2. Empirical Literature

In development economics, well-being is a comprehensive measure that goes beyond mere economic growth to include health, education, and overall quality of life. It is a multidimensional concept that reflects the fulfillment of basic needs, the capacity for a decent standard of living, and the opportunity to lead a meaningful and satisfying life (Sen, 1999b).

3.2.2.1. Institutional Quality and Well-Being

Institutional quality is one of the major determinants of well-being. Strong institutions facilitate an enabling environment where economic activities can thrive, and people can be assured of equal opportunities and resources. According to Acemoglu and Robinson (2012), good governance decreases uncertainty, boosts investment, and increases social trust, all of which contribute to the improvement in well-being. Kaufmann et al. (2010) also assert that good governance contributes to well-being.

Corruption is also considered an important eroding factor of institutional quality because it reduces resources from their proper use and undermines public trust. Most SSA countries have high corruption levels that are associated with poor governance and lower well-being levels. Mauro (1995) finds evidence that countries with effective corruption control mechanisms have higher rates of economic growth coupled with improvement in social variables.

Several empirical studies have consistently substantiated that institutional quality is positively correlated with well-being. Shiroka-Pula et al. (2023) studied how institutional quality is correlated with subjective well-being across Europe, using data from the Eurobarometer Survey in 2019. They employed multilevel econometric analysis, and their results revealed that effective governance, the rule of law, and control of corruption significantly improve subjective well-being. Similarly, Reginato et al. (2023) used the European Quality of Governance Survey (EQI) data to analyze the relationship between governance and well-being. They found a positive correlation between governance effectiveness and well-being. Their study highlighted the crucial function possessed by institutions that are both effective and transparent in enhancing the quality of life of Europeans. Ferrara and Nisticò (2019) gauged the regional inequalities in multidimensional well-being in Italy against institutional quality. They performed a regional panel analysis on the 2004 to 2012 period and showed that areas with better institutional quality recorded lower well-being inequality. They also insisted on the need for good governance and effective institutions in promoting equitable well-being.

The well-being-institutional quality nexus has also been addressed in the context of Sub-Saharan Africa. For instance, Hussen (2023), using a panel dataset of 31 SSA countries for the period 1991 to 2015, analyzed the impact of institutional quality on economic growth and well-being. The resultant estimates showed that investment and democratic, inclusive institutions significantly enhance economic growth, which, in turn, improves the quality of life. In the same vein, Ekeocha et al. (2023) analyzed the sectoral effects of institutional quality in SSA and found that although institutional quality generally made little impact on the sectoral performance of the economy, robust initial levels of real GDP and labor were strong drivers of well-being. Furthermore, Ologbenla (2023) examined the impact of institutions on well-being in

Nigeria and found that institutional quality had a positive influence on well-being. The study noticed that the quality of life in developing nations would be further improved with institutional reforms. Kaufmann et al. (2010) found that countries characterized by strong governance and low corruption exhibit higher life satisfaction and good health outcomes.

These studies underscore the critical role of strong institutions in improving well-being and quality of life. Effective governance, transparency, and the rule of law are essential components that contribute to the overall well-being of citizens, both in developed and developing regions.

3.2.2.2. Financial Stability and Well-Being

Financial instability has resulted in economic decline, job losses, and a reduction in spending on health, food, education, and other social activities, which are crucial for well-being. Financial instability has perpetuated poverty and increased inequality in SSA in the past and undermined progress toward attaining the Millennium Development Goals in the region through its negative consequences on standards of living (Reinhart & Rogoff, 2009). Highly volatile and inflationary conditions erode household purchasing power and generate economic uncertainty, further reducing living standards. In SSA, where so many households survive on very small incomes, high inflation can drastically cut the ability of households to purchase basic items like food, clothes, health, and shelter, hence negatively impacting well-being (Fischer, 1993). The assurance of an operational and stable banking system is vital in the reinforcement of financial stability and the attainment of economic growth. This will ensure easy access to financial services for individuals, enhancing the capability to save, invest, and manage risks efficiently and effectively. Improvement in the banking infrastructure in SSA can support economic development and create more opportunities for financial inclusion and, therefore, for well-being (Beck & Demirgüç-Kunt, 2009).

An empirical study by Taylor et al. (2011) examines the relationship existing between financial stability, life satisfaction, and psychological stress. The results of the study show that more financially stable respondents demonstrated greater life satisfaction,

coupled with lower psychological distress. The study underlines the fact that financial stability, besides mitigating immediate financial stressors, is also associated with a sense of security and mastery over life, which is important for mental health.

In addition, financial stability allows people to invest in areas such as education, healthcare, and retirement savings that are significant to their future and general well-being. Copur and Dogan (2023) posit that households that maintain financial stability have a higher potential to invest in good-quality healthcare, complete higher education, and adopt a healthy lifestyle. These factors together result in better physical and mental health results. The capacity to plan for the future, to escape high-interest debt obligations/financial disaster situations, is of paramount importance for a positive vision of life. In addition, financial stability tends to be associated with increased social involvement and participation in community activities, which in turn can improve social functioning and feelings of belonging (Scholten et al., 2023). Lakócai (2024) noted that nations with stronger financial stability have lower crime rates, increased civic engagement, and, collectively, higher standards of living. Ebirim et al. (2024) concluded that financially secure persons have a greater tendency to act favorably in their communities by volunteering, investing in local communities, or patronizing native businesses. This collective stability underpins a more robust social order in which people care for one another, and economic shocks can be more easily weathered.

3.2.2.3. Poverty Gap and Well-Being

It is obvious that, on one hand, poverty affects individuals' basic needs in terms of lack of food, health, and education. Very high levels of income poverty in SSA have become an issue that greatly hampers improvement in well-being. The poverty gap measures the degree of shortfall that individuals have below the poverty line. Therefore, the broader the poverty gap, the wider the inequalities in social and economic opportunities that contribute negatively to both individual and societal well-being. Carter & Barrett (2006) showed, in their findings, that areas with a wider gap in terms of poverty tend to have higher incidences of income inequality, have reduced access to basic facilities, and generally have more cases of social conflict. These disparities are what make lives less worth living for the people living in poverty, as the basic needs of food, shelter, and healthcare are hardly met.

Deaton and Grosh (2000) indicate that people living in poverty are more likely to suffer from most of the chronic diseases, such as malnutrition and mental issues. They further indicate that a lack of access to health care and social services increases health inequality. Furthermore, Gedro et al. (2021) studied the impact of poverty on well-being and educational quality in Haiti. They found that kids of lower income or even below the poverty level are not likely to get admission to school for quality education. This only circulates the poverty cycle without education, further depriving future economic opportunities and overall well-being. In developing countries, Ravallion (2016b) respectively estimated the effects of targeted social protection programs on families and found that the interventions led to a significant reduction in the poverty gap by improving overall living standards. The most relevant social protection initiatives include cash transfer programs, food support, and health care subsidies; these will lighten the immediate burdens on the families' finances as well as ensure that vulnerable families have a fallback in case disaster strikes (Fiszbein & Schady, 2009).

Addressing income poverty through targeted interventions is essential for enhancing the quality of life for vulnerable populations (Ravallion, 2016a). In SSA, policymakers should focus on eliminating the root causes of poverty and ensuring equitable access to essential services. This can improve well-being and foster inclusive economic growth.

3.2.2.4. Food Security and Well-Being

Food security is one of the major determinants of general well-being. Jones et al. (2022), in their study on the impact of food security on well-being, found that food security improves physical health substantially because persons with adequate access to food are likely to have lower incidences of chronic diseases such as diabetes, cardiovascular conditions, and obesity. Their research further indicates that consistent access to quality nutrition translates to better health and well-being for children and vulnerable groups. Furthermore, food security also translates into other meaningful socio-economic aspects of life. For example, Gundersen and Ziliak (2015) considered how food security correlated with economic productivity. Their results show that those able to access steady food supplies tended to be more labor-productive and active.

They also indicate that food security allows for a greater focus on education and career pursuits.

Beyene (2023) studied the relationship between food security and health outcomes. The findings of the study indicate that chronic hunger and food insecurity have severe physical and mental health consequences. The study also stresses that individuals who experience chronic hunger are at a higher risk of malnutrition and susceptibility to diseases. Similarly, Abdoli et al. (2021) also found that food insecurity is associated with higher levels of stress, anxiety, and depression in their study. They also stress that the psychological effects of hunger can generate behavioral issues and lead to poor academic performance and emotional instability.

Akinbode et al. (2022) explored the relationship between hunger and economic performance in several SSA countries. Their results reveal that high levels of food insecurity significantly affect economic growth and development. The results further indicate that regions with severe hunger issues experience lower productivity levels, higher healthcare costs, and an increase in child mortality. They suggest that effective policy interventions aimed at reducing hunger and improving food security are essential for enhancing the overall well-being of populations in SSA.

3.2.2.5. Inflation and Well-Being

Inflation and well-being always have a negative relationship, both in theory and practice. The rise in inflation increases the cost of living, hence decreasing the welfare of individuals by reducing their purchasing power. Von Hagen and Strauch (2001) examined the relationship between inflation and the value of money. According to their findings, households had a large decline in real income when inflation rose, increasing financial stress and lowering the quality of life. This has often led to increased levels of stress and anxiety, hence negative impacts on mental health and well-being. Prati (2024) adds that inflation equally widens income disparities, eroding the savings of lower-income households that are less likely to hold inflation-protected assets. Such increased gaps between the rich and the poor can be a reason behind social unrest and decreased social cohesion, undermining societal well-being.

Salifu et al. (2024) studied the impact of inflation on economic growth trends in Sub-Saharan Africa and found that high inflation rates significantly hinder economic growth and exacerbate poverty. Their results indicate that inflation disproportionately affects low-income households, who spend a larger share of their income on essential goods and services, and thus, creates a vicious cycle where inflation perpetuates economic instability and poor health outcomes. Managing inflation is crucial for maintaining economic stability, reducing inequality, and enhancing overall quality of life.

3.2.2.6. Air Quality and Well-Being

Nobile et al. (2023) examined long-term exposure to air pollution and the incidence of mental disorders using a longitudinal cohort of adults within an urban area. They revealed that chronic exposure to air pollution is linked to higher levels of stress, anxiety, and depression. The study found that individuals living in areas with poor air quality report lower levels of life satisfaction and overall well-being. Their study further suggests that ensuring clean air is essential for maintaining both physical and mental health and enhancing overall quality of life.

Zhao et al. (2024) studied how air pollution influences life satisfaction in China. The study revealed that high levels of air pollution significantly reduce the quality of life in China. The study demonstrated that efforts to improve air quality, such as implementing stricter emission standards and promoting clean energy, lead to substantial improvements in public health and well-being. They concluded by providing theoretical underpinnings to guide governments in managing the relationship between environmental governance and life satisfaction.

A number of studies have presented empirical evidence showing that poor air quality with pollutant components like PM_{2.5}, NO₂, and SO₂ has severe health consequences. Hoek et al. (2013) and Orellano et al. (2024) found that respiratory and cardiovascular diseases due to exposure to air pollution are higher, hence increasing the rate of mortality and morbidity. In this respect, poor air quality will worsen several health issues and hence reduce life expectancy and the quality of life of people.

3.3. Methodology

3.3.1. Data Sources

This chapter used balanced annual panel data from 26 sub-Saharan African countries from 2011 to 2021. A principal component analysis technique was used to construct institutional quality and well-being indices. In constructing the index for well-being, data on personal freedom and economic freedom from the Fraser Institute's Human Freedom Index and life expectancy from the World Development Index (WDI) were used. This is to capture all aspects of well-being. Thus, while life expectancy covers subjective and health aspects of well-being, economic freedom represents an income measure, and personal freedom encompasses capability theory, quality of life hypothesis, and social well-being.

All six World Governance Indexes (WGI) of the World Bank were used to create a single index for institutional quality. The financial institution development index from the IMF's financial development datasets was used as a proxy for financial stability. Poverty gap data were taken from the World Bank's Poverty and Inequality Platform, and hunger was proxied by cereal production. For policy control purposes, inflation and GDP per capita (a proxy for economic growth) were taken from the World Bank's World Development Index, and air quality data (a proxy for environmental quality) were taken from the air quality index from the World Health Organization database.

Table 3.1. Variable Description

Variable	Id	Description	Source
Well-being Index	WEB	The index was created with the life expectancy, economic freedom, and human freedom indexes dataset using principal component analysis.	Fraser Institute and WDI
Financial Stability	FS	Financial Institution Development Index	IMF

Table 3.1. (cont.)

Institutional Quality	ISQ	The index was created with all six World Governance Index datasets using principal component analysis.	WGI
Crop Production	CPR	Cereal production per year	WDI
Poverty Gap	PGP	Poverty gap	PIP
Inflation	INF	Inflation rate (annual percentage of consumer prices)	WDI
Economics Growth	GDPC	Gross Domestic Product per capita	WDI
Environmental Quality	AQT	Air quality is measured as the average annual mean concentrations of nitrogen dioxide (NO ₂), particulate matter (PM ₁₀), or equal to or smaller than 2.5 µm (PM _{2.5}) in a country.	WHO

3.3.2. Theoretical Method

In this chapter, the capability approach of Nussbaum (2011) and Sen (1999a) was extended to model the quality-of-life model. The CA theory expresses well-being as a set of functions that a person can potentially achieve. Mathematically, the CA is expressed as:

$$W = f(C) \quad (3.1)$$

Where, $f(C)$, represents all possible functions that an individual is capable of achieving. The quality of life (QoL) theory expands capability theory by expressing capability or functioning to represent several dimensions of well-being, including material, social, environmental, psychological, and economic (Alborz, 2017a), among others. Therefore, equation (3.1) is rewritten to account for the quality of life as:

$$Q = \sum_{i=1}^n w_i f_i \quad (3.2)$$

Where, Q refers to the quality of life, w_i denotes the weights or coefficients assigned to the i –th functional capabilities, and n is the total number of functioning.

Bucur (2017) applied the QoL and QoL management to the knowledge economy. Similarly, Anand et al. (2020) modified the capability theory to study disability and multidimensional quality of life. This study extended the QoL model to include capabilities such as institutional quality, financial stability, poverty, hunger, and some other exogenous variables that have the potential to determine or impact the quality of life. The extended model in this model is expressed as:

$$Q = \sum_{i=1}^n w_i * f_i + w_{ISQ} * ISQ + w_{FS} * FS - w_p * P - w_H * H + \theta_E * E \quad (3.3)$$

Where $w_{ISQ}, w_{FS}, w_p, w_H$ are weights assigned to institutional quality, financial stability, poverty, and hunger, respectively. Additionally, θ_E is the weight assigned to the exogenous element. Equation (3.3) stresses that quality institutions and a stable financial system are key to enhancing people's quality of life. However, these two factors alone are not enough, and thus, the poverty levels and hunger levels need to be accounted for while incorporating certain exogenous factors (E), such as inflation levels, economic growth, and environmental quality, among others, are also vital.

3.3.3. Econometric Model

This chapter conducted four cross-sectional dependency tests—Breusch-Pagan LM, Pesaran Scaled, Biased Correlated LM, and Pesaran CD tests. The null hypothesis of no cross-sectional dependency was rejected. This means that the residuals are correlated across units. The Pesaran CD test is given as:

$$CD = \frac{\sqrt{T}}{N(N-1)} \sum_{i \neq j} \widehat{P}_{ij} \quad (3.4)$$

Where CD is the cross-sectional dependency, N is the number of cross-section units, T is the time period and $\widehat{P}_{ij}$ is the correlation between the residuals of the cross-sectional units i and j . Similarly, the Breusch-Pagan LM test is mainly conducted to check for cross-sectional dependency in a random model as:

$$LM = \frac{T}{2} \sum_{i=1}^N \sum_{j=1, j \neq i}^N \widehat{P}_{ij}^2 \quad (3.5)$$

Where LM is the Breusch-Pagan LM test statistics, T is the time period, N is the number of cross-sectional units and P_{ij} is the correlation between the residuals of cross-sectional units i and j in a panel regression. The Breusch-Pagan LM statistics follow a chi-squared distribution with $N(N - 1)/2$ degree of freedom. The null hypothesis of no cross-sectional is rejected when the LM statistic is greater than the critical value of the chi-square distribution.

Additionally, two slope heterogeneity tests were conducted to check for homogeneity problems. The Pesaran and Yamagata (2008) and Blomquist and Westerlund (2013) with heteroscedasticity and autocorrelation (HAC) robust standard errors were conducted. The former compares individual coefficients from a regression model to a pooled average, whereas the latter checks for homogeneity across cross-sectional units in a panel and controls for heteroscedasticity and autocorrelation problems. The Pesaran and Yamagata (2008) slope homogeneity test is expressed as:

$$\widehat{\theta} = \frac{1}{N} \sum_{i=1}^N \widehat{\beta}_i \quad (3.6)$$

Where $\widehat{\beta}_i$ is the slope estimate for the i – th cross-sectional unit. The heterogeneity test is then calculated as:

$$T_{PY} = \frac{N}{\widehat{\sigma}_u} \sum_{i=1}^N (\widehat{\beta}_i - \widehat{\theta})^2 \quad (3.7)$$

Where $\widehat{\sigma}_u$ is the estimate of the error variance, which is calculated from the regression and $\widehat{\beta}_i$ are the individual estimates of the slope for each cross-sectional unit. The Blomquist and Westerlund (2013) HAC approach provides a robust estimation compared to the Pesaran and Yamagata (2008) test. The general HAC robust version is given by:

$$W_{WB} = \frac{1}{T} \sum_{i=1}^N (\widehat{\beta}_i - \widehat{\beta}_{pooled})^2 / \widehat{\sigma}_{HAC}^2 \quad (3.8)$$

Where $\widehat{\beta}_i$ is the estimated slope for unit i , $\widehat{\beta}_{pooled}$ is the pooled estimate of slopes, $\widehat{\sigma}_{HAC}^2$ is the heteroscedasticity and autocorrelation consistent estimate of the variance with adjustments for both heteroscedasticity and autocorrelation in the errors. The HAC estimator is expressed mathematically as:

$$\widehat{\sigma}_{HAC}^2 = \frac{1}{N} \sum_{i=1}^N \widehat{u}_{it}^2 (1 + 2 \sum_{k=1}^{\infty} \widehat{\rho}k) \quad (3.9)$$

Where $\widehat{u}_{it}$ is the residual for the cross-sectional unit and $\widehat{\rho}k$ is the estimated autocorrelation at lag k . This model uses the Newey-West option to correct any autocorrelation problem in the regression.

Furthermore, the Kao cointegration test was also conducted to check for cointegration and long-run relationships. This cointegration test is based on the pooled ADF statistics on all cross-sections, and the stationarity of average residuals from the pooled ADF is tested. The Kao cointegration is expressed as:

$$ADF_{Kao} = \frac{1}{N} \sum_{i=1}^N ADF_i \quad (3.10)$$

The stationarity of the residuals implies that a long-run equilibrium relationship (cointegration) exists between the variables.

The null hypothesis of the cross-sectional dependency and slope heterogeneity tests was rejected. This implies that there was cross-sectional dependency and that slope coefficients were heterogeneous. Therefore, the second-generation unit root test, the panel-enhanced Augmented Dickey-Fuller test (PESCADF), was conducted. Furthermore, the Kao cointegration test results suggested a long-term relationship among the variables.

This study uses panel Fully Modified Ordinary Least Squares (FMOLS) and Dynamic Ordinary Least Squares (DOLS) estimation techniques to ascertain how institutional quality and financial stability impact well-being while accounting for the intricate role of poverty and hunger. The error correction in FMOLS is adjusted for autocorrelation and heteroscedasticity of the residuals (Moon & Phillip, 1999). This is achieved by

modifying the Ordinary Least Squares (OLS) estimator using non-parametric adjustment based on the cointegration relationship. The FMOLS equation is expressed:

$$\hat{\beta}_{FMOLS} = (\sum_{t=1}^T X_t' X_t)^{-1} \sum_{t=1}^T X_t' Y_t \quad (3.11)$$

Where $\hat{\beta}_{FMOLS}$ is the FMOLS estimator for the coefficient of X_t , the sums run over the sample period $t = 1$ to T , X_t' is the transpose of the vector of the independent variable at a time t , and Y_t is the dependent variable at time t . The FMOLS also solves the problems of endogeneity and autocorrelation in panel data series, helping to produce better long-run estimates.

The DOLS estimator by Kao and Chiang (2001) also estimates long-run relationships between cointegrated variables. DOLS uses leads and lags of the independent variables to remove serial correlation in the residuals. The DOLS equation is expressed as;

$$Y_t = \alpha + \beta X_t + \sum_{j=-k}^k \gamma_j X_{t+j} + \varepsilon_t \quad (3.12)$$

Where Y_t is the dependent variable, X_t represents the independent variable(s), α is the intercept, β is the coefficient of the independent variable(s), k is the number of leads and lags included in the model, t is the time, γ_j is the coefficients for the leads and lags of the independent variable(s), and ε_t is the error term. To correct for potential autocorrelation, the DOLS estimator considers the leads and lags of X_t as expressed below:

$$\hat{\beta}_{DOLS} = (\sum_{t=1}^T X_t' X_t)^{-1} (\sum_{t=1}^T X_t' Y_t - \sum_{t=1}^T \sum_{j=-k}^k \gamma_j X_{t+j}' X_t) \quad (3.13)$$

The double summation term adjusts for the leads and lags in the regression to remove serial correlation from the error term.

While DOLS and FMOLS solve the problem of endogeneity and eliminate the small sample bias, the application of the FMOLS approach essentially requires that all variables have the same order of integration and that the regressors must not appear as

co-integrated. In line with Kao and Chiang (2001), DOLS outperforms FMOLS estimators in terms of mean biases. The general model for estimation is:

$$WEB_{it} = \alpha_{0t} + \beta_1 ISQ_{it} + \beta_2 FS_{it} + \beta_3 CPR_{it} + \beta_4 PGP_{it} + \beta_5 INF_{it} + \beta_6 GDPC_{it} + \beta_7 AQT_{it} + \varepsilon_{it} \quad (3.14)$$

Where *web*, *isq*, *fidi*, *cpr*, *pgp*, *inf*, *gdp*, and *aqt* represents wellbeing, institutional quality, financial institution index, cereal production (a proxy for food security), poverty gap (a proxy for poverty), inflation, GDP per capita, and air quality, respectively. $\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6, \beta_7$ are the slope coefficients of the explanatory variable and α_0 is the intercept of the model.

Quality institutions are crucial in strengthening frameworks and ensuring efficient systems that are needed to stimulate growth and distribution of resources, which ultimately positively impact well-being (Kaufmann et al., 2010). Institutional quality is expected to have a positive impact on well-being. Financial stability shows the development of the financial system, which guarantees households access to financial services or credit, which could be used for investment purposes. Developing the banking infrastructure in SSA can support economic development, provide more opportunities for financial inclusion, and impact well-being (Beck & Demirgüç-Kunt, 2009). In this chapter, financial stability is expected to impact well-being positively.

Food security is a very important component of maintaining physical, mental, and overall health. Food security ensures that households have access to affordable, quality, nutritious food, which is crucial to their overall well-being. Jones et al. (2022) posit that food security significantly enhances physical health outcomes, as individuals with adequate food access are less likely to suffer from chronic diseases such as diabetes, cardiovascular conditions, and obesity. Poverty has a devastating impact on individual well-being. A poor person is less likely to have the capacity to function properly within an economic system and benefit from it.

Ravallion (2022) posits in their studies that some SSA countries must implement policies that will drastically cut the poverty gap and enhance the general quality of life. Social protection programs in cash transfers, food assistance, and health care subsidies

are instrumental in addressing immediate economic burdens and providing a cushion for the most vulnerable. Conditional cash transfers have been successful in some regions, but there are difficulties in their effective implementation and sustainability (Fiszbein & Schady, 2009). In the same vein, inflation depletes the purchasing power of households, reduces their disposable income, and increases people's cost of living.

Consequently, it raises financial stress and uncertainty. Chote et al. (2024) and Lokshin et al. (2023) suggested that with increasing inflation, the real income of households decreases substantially, raising financial burdens and lowering the quality of life. While there is an improvement in air quality and an increase in GDP per capita, there is an improvement in well-being since air quality improves health and increases in GDP per capita suggest improvements in the economy, which will improve well-being. Additionally, to check the model's robustness, Panel EGLS (cross-section weights), Panel EGLS (cross-section random effects), and Panel EGLS (two-way random effects) were conducted.

3.4. Results and Discussion

3.4.1. Descriptive Statistics and Pairwise Correlation

The data description in Table 3.2 below indicates that inflation (INF) has a standard deviation, followed by GDP per capita (GDPC) and institutional quality (ISQ). This means these variables have more significant variability or dispersion than other variables like air quality (LAQT) and the financial institution development index (FIDI), which have smaller standard deviation values. Similarly, annual cereal production (LCPR) has the highest mean of 13.762, whereas institutional quality has the lowest mean value of -3.74e17.

Table 3.2. Descriptive Statistics

Variables	Mean	Min	Max	Std. Dev.	Obs
WEB	-1.27E-14	-3.309	3.7896	1.3466	492
ISQ	-3.74E-17	-4.311	5.423	2.260	492
FS	-2.132	-3.638	-0.442	0.689	492
CPR	13.762	4.719	17.238	2.333	492
PGP	-2.979	-12.740	-0.810	1.598	492
INF	5.781	-8.975	35.730	5.754	492
GDPC	1.564	36.777	27.831	4.121	492
AQT	3.503	2.196	4.674	0.509	492

Table 3.3. Pairwise Correlation Results

	WEB	LFIDI	ISQ	LAQT	LCPR	LGDP	INF	LPGP
WEB	1.000							
FS	0.684**	1.000						
ISQ	0.855**	0.751**	1.000					
AQT	-0.434**	-0.360**	-0.422**	1.000				
CPR	0.242**	0.153**	0.324**	0.457**	1.000			
GDPC	0.072	0.040	0.095**	0.0097	0.061	1.000		
INF	-0.026	-0.047	0.042	-0.233**	-0.189**	0.037	1.000	
PGP	-0.589**	-0.513**	-0.514**	0.340**	0.588	0.029	0.207**	1.000

Note: *** denotes a 5% level of significance.

The pairwise correlation results (see Table 3.3 above) indicate that institutional quality, financial stability, and food security (cereal production) are positive, significant, and highly correlated with well-being. Similarly, poverty is highly significant and negatively correlated with well-being.

3.4.2. Cross-Sectional Dependency and Slope Heterogeneity Results

The cross-sectional dependency test results showed that all four tests⁴ rejected the null hypothesis of no cross-sectional dependency in the variables. This indicates that there is cross-sectional dependency among the variables, which suggests that the second-generation unit root test is more appropriate for checking the data's stationarity and order of integration.

Table 3.4. Cross-Sectional Dependency Test

Tests	Statistics	d.f	Prob
Breusch-Pagan LM	1326.882	325	0.0000
Pesaran Scaled LM	39.29740		0.0000
Bias-corrected Scale LM	38.57482		0.0000
Pesaran CD test	-2.92192		0.0035

The slope heterogeneity results (in Table 3.5 below) indicate that the null hypothesis that slope coefficients are homogeneous is rejected. That means that the beta coefficient of the regressors is not the same across all cross-sections.

Table 3.5. Slope Heterogeneity Results

Test	Delta	P-value
Pesaran and Yamagata (2008)	8.960	0.000
Adjusted	12.351	0.000
Blomquist and Westerlund (2013)	9.435	0.000
Adjusted	13.005	0.000

⁴ Breusch-Pagan LM Test: Breusch, T. S., & Pagan, A. R. (1979). "A Simple Test for Heteroscedasticity and Random Coefficient Variation." *Econometrica*, 47(5), 1287-1294.

Pesaran Scaled LM Test: Pesaran, M. H. (2004). "General Diagnostic Tests for Cross-Section Dependence in Panels." *CESifo Working Paper Series*, No. 1229.

Bias-corrected Scale LM Test: Baltagi, B. H., Feng, Q., & Kao, C. (2012). "A Lagrange Multiplier Test for Cross-Sectional Dependence in a Fixed Effects Panel Data Model." *Center for Policy Research Working Paper*, No. 137.

Pesaran CD Test: Pesaran, M. H. (2004). "General Diagnostic Tests for Cross-Section Dependence in Panels." *CESifo Working Paper Series*, No. 1229.

3.4.3. Unit Root and Kao Cointegration Results

The second-generation unit root test result in Table 3.6 indicates that well-being (WEB), air quality (LAQT), and poverty (LPGP) are stationary at first difference. Financial stability (LFIDI), institutional quality (ISQ), food security (LCPR), and GDP per capita (LGDPC) are all stationary at level.

Table 3.6. PESCADF Unit Root Results

Variable	Level		1 st Difference		Integration Order
	Constant	Trends	Constant	trends	
WEB	-1.801	-2.115	-3.687**	-3.001***	I (1)
FS	-2.551***	-2.750***	-4.190***	-4.326***	I (0)
ISQ	-1.814	-2.753***	-4.142***	-4.219***	I (1)
AQT	-1.577	1.838	-4.235***	-4.324***	I (1)
CPR	-2.997***	-3.291***	-4.783***	-4.766***	I (0)
GDPC	-3.456***	-3.653***	-5.233***	-5.233***	I (0)
INF	-3.661***	-3.846***	-5.198***	-5.237***	I (0)
PGP	-2.009*	-1.787	-2.655***	-2.712***	I (1)

Note: ***, **, * denote 1%, 5%, and 1% level of significance

Further, the panel Kao cointegration test was conducted, and the result in Table 3.7 shows that the null hypothesis of no cointegration was rejected. This means there is at least one cointegration equation in the series. This suggests that there is a long-run relation between the variables.

Table 3.7. Kao Cointegration Results

Tests	T-statistics	Probability
ADF	-4.404404	0.0000
Residual variance	0.032297	
HAC variance	0.036389	

3.4.4. Estimation Results

The results of FMOLS and DOLS in Table 3.8 indicate that institutional quality (ISQ) has a strong positive relationship with well-being. The findings show that improving the quality of institutions significantly improves well-being and quality of life. This result is consistent with the findings of Arshed et al., 2021; Olivos & Jin, 2023). The results suggest that improving institutions comes with the efficient distribution of economic and social opportunities, health facilities, and personal development, which are fundamental elements for a quality lifestyle. Therefore, in the long run, improving the quality of institutions would lead to a better quality of life and well-being in SSA.

Table 3.8. FMOLS and DOLS Results

Variable Dep. Var WEB	Panel Pooled		Panel weighted	
	FMOLS	DOLS	FMOLS	DOLS
ISQ	0.046 *** (0.015)	0.076* (0.045)	0.098*** (0.027)	0.107*** (0.032)
FS	0.792 *** (0.046)	0.856*** (0.14)	0.894*** (0.032)	0.810*** (0.114)
CPR	0.366*** (0.029)	0.390*** (0.089)	0.342*** (0.0224)	0.404*** (0.072)
PGP	-0.194*** (0.017)	-0.188*** (0.054)	-0.183*** (0.019)	-0.208*** (0.036)
INF	-0.014*** (0.002)	-0.013** (0.0060)	-0.086* (0.0457)	-0.0154*** (0.0045)
GDPG	0.007*** (0.002)	0.005 (0.0062)	-0.0306 (0.029)	0.0061 (0.0046)
AQT	0.719*** (0.096)	0.625** (0.306)	0.685*** (0.0310)	0.460** (0.1623)
R ²	0.939	0.934	0.884	0.933
Adj. R ²	0.935	0.930	0.875	0.930
Long-run Var	0.025	0.264	0.064	0.264
S.E or regression	0.342	0.357	0.472	0.360
Mean dep. Var	0.043	-1.27e-14	0.0433	-1.27e-14

Note: ***, **, * denote 1%, 5%, and 1% level of significance

The results in Table 3.8 indicate that financial institution development (LFIDI) has a strong positive impact on well-being. This means that a well-functioning financial institution enhances access to credit, savings, and investment, which are part of economic freedom and prosperity. The QoL theory's emphasis on setting up economic resources and opportunities as a core life satisfaction determinant is confirmed by the findings of this chapter. The result is in tandem with the findings of Zafar et al. (2024) and Anandhi and Velmurugan (2024). The result suggests that the stability of the financial system in SSA will foster economic stability, job creation, and income growth, which significantly improve objective well-being and a higher quality of life in the long run.

Food security is a central theme in discussions of well-being and quality of life. The result indicates that yearly cereal production (LCPR) improves overall well-being. Thus, an increase in cereal food production improves access to quality, nutritious meals that boost people's health status, improve their well-being, and positively impact their quality of life. Asaki et al. (2024) and Ejiohuo et al. (2024) had similar findings confirming our results. The QoL theory posits that health and safety are basic rights to quality of life. Therefore, improved cereal production leads to better health. This impacts well-being, as improved cereal production is crucial for meeting the basic nutrition needs for a quality of life.

Furthermore, the result indicates a negative relationship between the poverty gap (LPGP) and well-being. As the poverty gap increases, well-being decreases, which leads to a reduction in the quality of life. QoL theory views poverty as a limitation to well-being, life satisfaction, and social participation. When poverty increases, access to basic services, such as health care, education, and shelter, decreases, automatically reducing total life satisfaction. The larger the poverty gap, the more inequality and, hence, the lower well-being. Inglis et al. (2023) found similar results and emphasized that the stigma of being poor exacerbates the impact of poverty on well-being. Similarly, Mowat (2020) indicates that poverty significantly impacts well-being and is more severe on children's mental health. This reinforces the notion that poverty reduction is crucial to improving quality of life. Policymakers in SSA require a holistic public policy approach to eradicate poverty and improve well-being.

Inflation (INF) has a negative relationship with well-being. Thus, an increase in inflation reduces people's purchasing power and, as a result, directly affects living conditions and well-being. Akinci and Demiröz (2024) had similar results for Türkiye and indicated that price changes reduce the rate of welfare growth in the long run. Below (2024) also found a negative correlation between inflation and well-being in Eastern and Western Europe. High inflation lowers incomes, leading to an inability to afford basic necessities, and thus reduces the overall well-being of those affected. Such an observation aligns with QoL theory, which places economic stability as the most significant determinant of life satisfaction and general well-being.

GDP per capita (GDPC) indicates a slight positive correlation with well-being. However, it is not statistically significant in the other three models, indicating insufficient reason to bring well-being. This supports QoL theory, which states that welfare has genesis from factors that extend beyond economic growth, such as integration into the community, healthy living, and personal development; therefore, much importance should be given to them when fighting for a high-quality life. Economic growth is thus limited to ameliorating well-being. It does not guarantee its condition over time but must be linked with equal distribution and improvements in other dimensions, like health and social relationships.

Air quality (LAQT) has a high positive impact on well-being. This shows that environmental factors directly impact the quality of life. Clean air means physical health, so better air quality boosts health, reduces diseases of the respiratory system, and generally improves satisfaction with life. The result confirms the results of Darçın (2017) and Dolan and Laffan (2016). The strong relationship between air quality and well-being reinforces the importance of environmental quality as a key component of QoL theory, which highlights the impact of the natural environment on health and personal development. Deliberate policies to solve environmental problems and improve air quality in SSA will boost life expectancy and overall well-being.

The robustness check results in Table 3.9 below are similar to those presented in Table 26 above. This indicates that the model we employed was good and provided concrete evidence of the relationship between institutional quality, financial stability, and well-being. Additionally, the mediating roles of environmental quality, poverty, food

security, economic growth, and inflation play in improving well-being and quality of life.

Table 3.9. Robustness Check Results

Variable Dep. WEB	Var (Cross-Section Weights)	Panel EGLS (Cross-Section RE)	Panel EGLS (Two-Way RE)
ISQ	0.1086*** (0.0228)	0.148*** (0.026)	0.1369*** (0.0281)
LFIDI	0.823*** (0.082)	0.866*** (0.085)	0.843*** (0.090)
LCPR	0.409*** (0.052)	0.167*** (0.0347)	0.173*** (0.0408)
LPGP	-0.201*** (0.028)	-0.269*** (0.0312)	-0.245*** (0.0335)
INF	-0.015*** (0.0032)	-0.0126** (0.0039)	-0.0125** (0.0041)
GDPC	0.0059* (0.0034)	0.0044 (0.00417)	-0.0044 (0.0043)
LAQT	0.465*** (0.128)	0.014 (0.149)	0.1163 (0.1711)
Constant	-6.026*** (0.8371)	-1.236* (0.659)	-1.659** (0.766)
R ²	0.949	0.0479	0.4358
Adj. R ²	0.946	0.472	0.4277
F-Statistics	272.890***	63.843***	53.6299***
S.E of reg	0.355	0.379	0.3633
Durbin Watson	0.615	0.331	0.343

Note: ***, **, * denote 1%, 5%, and 1% level of significance

3.5. Conclusion and Recommendation

3.5.1. Conclusion

SSA has one of the lowest well-being levels across the globe. The region not only suffers from poor institutional structure but also has a long way to go in ensuring a stable and developed financial system. The two deficiencies have resulted in inefficient resource allocation and distribution of well-being-enhancing amenities such as education, health, and socio-economic opportunities. The widening poverty gap and food insecurity situation further worsen the well-being situation, which affects the quality of life.

This chapter ascertains the relationship between institutional quality, financial stability, and well-being while accounting for the moderating role of poverty and food security. We employed a panel dataset of 26 SSA countries from 2002 to 2020 and the FMOLS and DOLS estimation techniques for the analysis. The results from both models show that institutional quality, financial stability, food security, and environmental quality positively increase people's well-being—they all contribute to improving people's lives. Poverty and inflation harm the well-being they bring and hence hinder improvement in the quality of life. Therefore, these factors affect living conditions, health, socioeconomic inclusion, and personal development, which are fundamental components of well-being based on life quality theory.

While the institutional quality and poverty gap show the social structures within which the individuals operate, they also echo the sense of belonging, economic opportunities, and social system among a group of people. Institutional quality and financial stability ensure opportunities for education, career, and personal growth that are crucial in enhancing personal development and freedom of choice, which are central to the quality-of-life theory. Air quality and food security (cereal production) are significant for physical and mental health, contributing to an individual's ability to pursue personal goals. The results of this chapter suggest that improving institutional frameworks, financial systems, food security, and environmental quality while reducing poverty and inflation can enhance well-being and life satisfaction. These findings highlight that well-being is not just about economic wealth (GDP) but also

about how individuals experience and navigate their environment through social, economic, and environmental dimensions, aligning with the broader views of quality-of-life theory.

3.5.2. Recommendation

The findings of this chapter highlight the important role of institutional quality and financial stability in shaping prosperity in Sub-Saharan Africa (SSA). While the analysis underscores the need for strong institutions and more robust financial systems, it opens a broad discussion on how these reforms can be achieved and what challenges they may face.

One potential starting point for SSA countries is to focus on strengthening institutional quality to enhance the stability and resilience of financial systems. For example, measures to increase transparency, reduce financial fraud and corrupt practices, and ensure accountability can create a more favorable environment in which both domestic and foreign investment can flourish. However, it is important to recognize that such reforms may face resistance or require significant capacity-building efforts.

Another area worth considering is the implementation of anti-poverty policies to reduce inequality and increase household income. Social safety net programs such as conditional cash transfers, means-tested subsidies, or targeted education vouchers have shown promise in other regions and could be adapted to SSA. For example, conditional cash transfers linked to school attendance or health service utilization can reduce poverty, improve health outcomes, increase well-being, and strengthen human capital at the same time. However, the scalability and long-term sustainability of such programs are important questions.

Supporting small-scale enterprises and the informal sector is an important strategy for improving household welfare in SSA. Sustainable financing schemes, such as microcredit or low-interest loans, can empower entrepreneurs and stimulate local economies. However, key weaknesses of the informal sector, such as a lack of collateral and limited access to formal financial services, pose significant obstacles.

Moreover, ensuring macroeconomic stability, particularly inflation control, can have far-reaching effects on household disposable income and welfare. By maintaining stable prices and promoting economic growth, governments can create an environment in which households can invest in health, education, and other welfare-enhancing activities. However, achieving this balance requires careful policy coordination and a long-term perspective.

Finally, this chapter highlights the need for more research to better understand the impact of institutional reforms, financial development, and poverty reduction programs on both subjective and objective well-being. For example, how do different population segments, such as women, rural communities, or youth, experience these changes? What roles do cultural and contextual factors play in shaping the effectiveness of policies? By addressing these questions, future research can provide valuable insights for policymakers and contribute to a more nuanced understanding of well-being in SSA.

CHAPTER IV

INSTITUTIONAL QUALITY, FINANCIAL STABILITY, AND SUSTAINABLE DEVELOPMENT GOAL 1 IN SUB- SAHARAN AFRICA

4.1. Introduction

Global development in recent years comes with the pursuit of Sustainable Development Goals (SDGs) that serve as a testament to the collective dedication of humanity to addressing pressing issues and cultivating a more just and enduring world. Among these objectives, SDG 1 holds a paramount position, as it strives to eliminate poverty in all its manifestations and dimensions. For the region of Sub-Saharan Africa, which grapples with multifaceted predicaments, attaining SDG 1 signifies an essential imperative in nurturing comprehensive advancement and sustainable progress.

The Sustainable Development Report 2022 stipulates that the COVID-19 pandemic has thwarted the steady progress achieved in poverty reduction over the past 25 years, reversing the trend and increasing the number of people in extreme poverty for the first time in a generation. Moreover, rising inflation and the impacts of the war in Ukraine have the potential to derail the progress attained further. These crises combined could potentially push an additional 75 million to 95 million people below the poverty line in 2022, compared with pre-pandemic projections. Consequently, the world is not on track to end poverty by 2030, with poorer countries now needing unprecedented levels of pro-poor growth to achieve this goal (United Nations, 2019).

In 2018, the poverty lines were pegged at US\$3.20 a day and US\$5.50 a day to reflect national poverty lines in lower-middle-income and upper-middle-income countries, respectively, which underscores that poverty eradication is far from being attained once the extreme poverty threshold of US\$1.90 a day has been reached (World Bank, 2020). In South Asia and Sub-Saharan Africa, the progress in reducing poverty has

been comparatively sluggish compared to the extreme poverty line. This implies that a significant number of individuals have only narrowly escaped extreme poverty. The societal poverty line (SPL), which scales up with a nation's income level, leads to analogous findings: approximately 2 billion individuals are still classified as poor according to this criterion. Sub-Saharan Africa faces high levels of multidimensional poverty with high overlaps across the different dimensions, suggesting that nonmonetary deprivations are compounding monetary poverty. Extreme poverty is predicted to become increasingly concentrated in the region (World Bank, 2020). The global poverty headcount ratio, at \$2.15, was revised slightly up by 0.1 percentage points to 8.5 percent, resulting in an adjustment in the number of poor people from 648 to 659 million in September 2022 by the World Bank.

Table 4.1. Poverty Changes by Region and Poverty

Regional			East Asia & Pacific	Europe & Central Asia	Latin America & Caribbean	MENA	Other High Income	South Asia	Sub-Saharan Africa	Eastern & Southern Africa	Western & Central Africa	World
Survey Coverage (%)	Mar 2023		97.4	87.4	86.7	48.3	82.3	96.4	54.3	29.6	90.5	84.6
\$2.15 (2017, PPP)	Headcount ratio (%)	Sep 2022	1.1	2.4	4.3	n/a	0.6	8.5	35.1	n/a	27.2	8.4
		Mar 2023	1.2	2.3	4.3	n/a	0.6	8.6	34.9	n/a	27.3	8.5
	No. of poor (mil)	Sep 2022	24	12	28	n/a	7	156	389	n/a	122	648
		Mar 2023	25	11	28	n/a	7	161	391	n/a	124	659
\$3.65 (2017, PPP)	Headcount ratio (%)	Sep 2022	7.6	6.2	10.6	n/a	0.8	42	62.4	n/a	57.1	23.5
		Mar 2023	7.6	6.1	10.6	n/a	0.8	42.3	62.3	n/a	57.2	23.6
	No. of poor (mil)	Sep 2022	160	31	68	n/a	9	772	691	n/a	255	1803
		Mar 2023	161	30	68	n/a	9	788	689	n/a	260	1831

Table 4.1. (cont.)

\$6.85 (2017, PPP)	Headcount ratio (%)	Sep 2022	32.1	15	28	n/a	1.4	82.2	86.5	n/a	85.1	46.7
		Mar 2023	32.1	15	28	n/a	1.3	82.3	86.4	n/a	85.1	46.9
	No. of poor (mil)	Sep 2022	675	74	180	n/a	15	1508	958	n/a	380	3590
		Mar 2023	676	74	179	n/a	15	1532	969	n/a	387	3634

Reference: Baah et al. (2023)⁵

The impact of the COVID-19 pandemic, as well as conflict (Russia-Ukraine), climate change, and the scant success in extreme poverty reduction in Sub-Saharan Africa, underscores the need for a continued focus on extreme poverty. Similarly, it is significant to emphasize that poverty does not end when a person crosses the monetary threshold of US\$1.90 a day. Whereas extreme poverty is steadily predominant in Sub-Saharan Africa, this geographical distribution is less evident when using the higher poverty lines of US\$3.20 and US\$5.50, which are characteristic of lower-middle- and upper-middle-income countries. The success in reducing poverty in East Asia goes well beyond extreme poverty because 7.2% of the population in the region was living below the US\$3.20 line, and 25% was living below the US\$5.50 poverty line in 2018 (see Figure 3.1). Almost 70% of Sub-Saharan Africa's population lives on less than US\$3.20 per day; however, about half of the region's population lives in economies that are lower-middle income or richer, making the US\$3.20 line a poverty measure that is also pertinent to Africa (World Bank, 2020).

⁵ Baah, S. K. T., Aguilar, R. A. C., Diaz-Bonilla, C., Fujs, T., Lankner, C., Nguyen, M. C., & Viveros, M. (2023). *March 2023 global poverty update from the World Bank: the challenge of estimating poverty in the pandemic*. <https://blogs.worldbank.org/opendata/march-2023-global-poverty-update-world-bank-challenge-estimating-poverty-pandemic> Accessed on 26.12.2023.

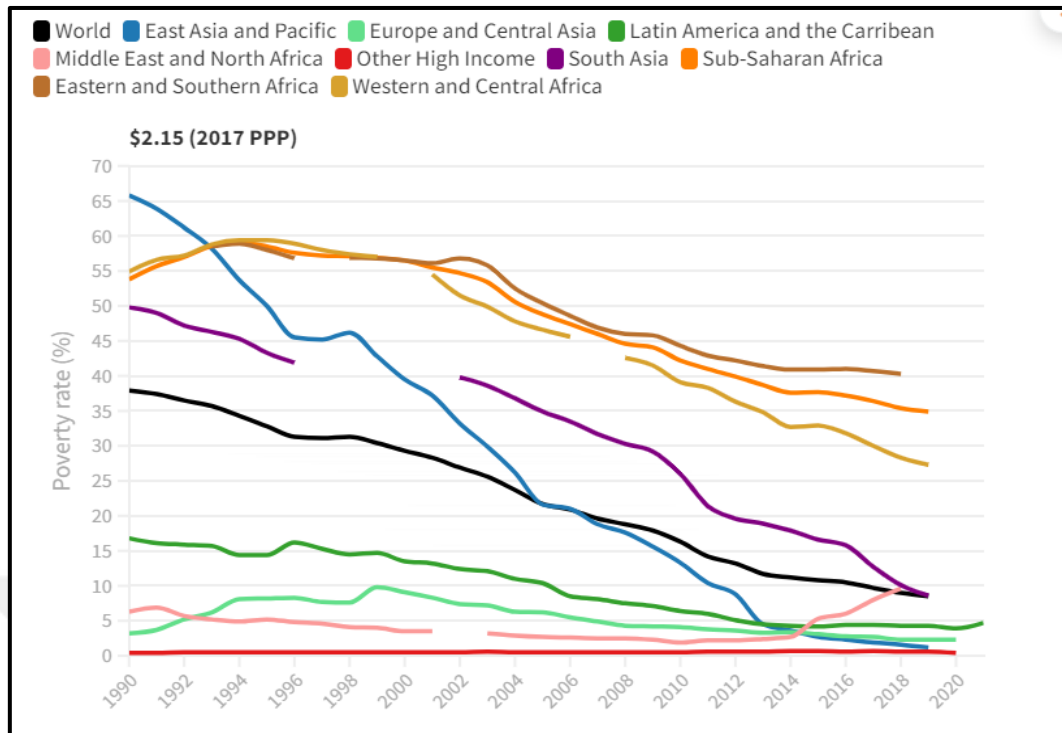


Figure 4.1. Global and Regional Poverty

Reference: Poverty and Inequality Platform⁶

Understanding the socio-economic landscape of Sub-Saharan Africa necessitates a comprehensive examination of the distinct obstacles and prospects that define the region. The varied assortment of nations within Sub-Saharan Africa presents a multifaceted tapestry of cultures, economies, and systems of governance (Karaoğuz, 2020). Numerous countries in the area continue to contend with persistent impoverishment, hindered economic advancement, and precarious structures of governance. As the global community strives to confront these challenges, it becomes crucial to scrutinize the influence of institutions and financial stability on the journey toward attaining Sustainable Development Goal 1 (Ansell et al., 2022).

Institutional quality, which encompasses the efficiency, transparency, and effectiveness of governance structures, plays a crucial role in influencing the trajectory of economic development and the reduction of poverty (Fedderke, 2001). Strong and well-functioning institutions serve as the bedrock for sound economic policies,

⁶ <https://pip.worldbank.org/home>

inclusive governance, and social unity. Conversely, institutions that are weak or plagued by corruption can impede progress, perpetuate inequality, and hinder the sustainability of development efforts. To discern the region's ability to implement poverty-alleviating policies at its core, it is imperative to undertake a comprehensive examination of institutional quality in Sub-Saharan Africa (DFID, 2010; Hammar et al., 2013; Menocal et al., 2015). Several studies emphasize the importance of the quality of institutions in the process of development. Acemoglu & Robinson (2012) argue that inclusive political and economic institutions play a central role in achieving sustained development, highlighting the influence of institutions on the incentives that drive economic and social progress. Asongu (2016) indicates that targeted interventions aimed at strengthening institutions can lead to positive outcomes in reducing poverty.

On the other hand, financial stability plays a significant role in the processes of achieving sustainable development, functioning as a catalyst for the advancement of the economy, the creation of employment opportunities, and the alleviation of poverty. Financing the sustainable development goals has been a long-term bane that thwarts progress in achieving the SDGs (Islamic Development Bank, 2020). The availability of financial services, robust banking systems, and effective regulatory frameworks is an essential component in fostering an environment conducive to the prosperity of individuals and enterprises (Lannquist, 2023). The incorporation of financial stability considerations into the development agenda is particularly vital in Sub-Saharan Africa, where the accessibility to formal financial services remains disparate, thus impeding the potential for inclusive growth.

Numerous factors contributing to instability and vulnerability within the financial sector have been identified in the finance literature. These factors encompass inflation, unemployment, nonperforming loans, and deteriorating terms of trade, among others (Beck et al., 2015; Klein, 2013). Government domestic arrears also emerge as a significant source of vulnerability in the financial sector. The report from the International Monetary Fund (IMF, 2019) elucidates that when governments, private companies, and state-owned enterprises are unable to meet their bank loan obligations, the banking sector experiences a decline in asset quality and an escalation in nonperforming loans (NPLs), thereby posing a threat to financial stability. Given the

vital role of the financial sector in facilitating the flow of financial resources into the economy, research pertaining to its stability holds great significance (Kulu et al., 2022). Additionally, the report indicates that in 24 out of 30 countries in SSA, their governments had domestic arrears with an average stock of 3.3% of GDP and a maximum of 18 percent of GDP by the close of the year 2018 (IMF, 2019).

Beck et al. (2004) underscore the positive correlation between financial development and poverty reduction. The authors argue that well-functioning financial systems contribute to the efficient allocation of resources, enabling individuals to escape poverty by accessing credit, savings, and investment opportunities. In the context of Sub-Saharan Africa, where informal financial systems often predominate, understanding the dynamics of financial stability and fostering the growth of formal financial institutions becomes imperative for achieving sustained and inclusive development. Anyanwu et al. (2018) also explain that when the government generates large amounts of money domestically, it potentially impacts the real interest rate by stifling the lending capacity of the private sector and dissuading other businesses from indulging in capital investments. Financial institutions facilitating these activities have their share of the impact when there are significant delays in servicing government debt. In a situation where the government debt cannot be serviced due to a lack of fiscal space and over-borrowing in the capital market, a debt restructuring option may be taken, which could liquidate commercial banks if the majority of bondholders are local banks. This has huge consequences for the stability of the financial sector. A much clearer example is the situation in Ghana, where the government has defaulted on both domestic and foreign debt and has not paid interest on the loan for the 2022 fiscal year. This led to the Central Bank of Ghana to run an expansionary policy (printing GHS35 billion and GHS42 billion Ghana cedis in 2021 and 2022, respectively)⁷. This led to galloping inflation and an unstable financial system. Additionally, the rise in inflation alone has pushed over 850,000 Ghanaians below the poverty line⁸.

⁷ <https://www.modernghana.com/news/1251571/bogs-illegal-money-printing-for-govt-has-sent.html>

⁸ <https://thebftonline.com/2023/07/26/the-impact-of-bogs-excessive-money-printing/#:~:text=A%20recent%20World%20Bank%20report,lives%20of%20the%20average%20Ghanaian.>

Till now, there is no study that has addressed the role of institutional quality and financial stability in reducing poverty in Sub-Saharan Africa, considering the trilinear relationship of poverty, hunger/food insecurity, and well-being. Therefore, this chapter aims to explore the relationship between institutional quality, financial stability, and poverty. It also explores the impact of well-being and hunger while accounting for the role of colonial footprint as a mediating factor. The chapter fills this gap. Additionally, this chapter checks the feasibility of Sen's capability theory, which has not been done by previous studies.

The main research question for this chapter is, "To what extent do institutional quality and financial stability impact poverty reduction (SDG 1) in Sub-Saharan Africa? How do well-being and hunger influence this relationship? And does colonial footprint play a role? The objective of solving this question in this chapter is to assess the impact of institutional quality and financial stability on poverty reduction (SDG 1) in Sub-Saharan Africa while accounting for the extent to which well-being, hunger, and colonial footprint influence the impact on poverty. The hypotheses for this chapter, therefore, are:

H1: Institutional quality and financial stability reduce poverty.

H2: While an improved well-being reduces poverty, food insecurity/hunger could dwindle its effect.

H3: Colonial footprint accounts for varying poverty levels, institutional quality, and financial stability impact across Sub-Saharan Africa.

The rest of the chapter is organized as follows: the next section looks at the empirical literature; after the theoretical modeling of poverty is presented, then the empirical model follows; the results and discussion are presented next; and the conclusion and recommendations will end this chapter.

4.2. Literature Review

4.2.1. Institutional Quality and Poverty

In sub-Saharan African countries, the impact of institutional quality on poverty has been examined in several studies. Institutional quality has a significant impact on poverty rates. High-quality institutions, such as inclusive political and economic systems, intensify the positive effects of financial inclusion on poverty reduction (Aracil et al., 2022). This effect is more pronounced in poorer economies compared to wealthier ones. Additionally, improvements in institutional quality, including democratic institutions, bureaucratic quality, judicial and regulatory systems, and control of corruption, contribute significantly to reducing poverty and income inequality in the long term (Kouadio & Gakpa, 2022). Factors such as voice and accountability, government effectiveness, regulatory quality, and the rule of law are used as measures of institutional quality. The level of institutional quality also influences the relationship between financial development and poverty. As the quality of institutions rises, the pro-poor impact of financial development decreases (Cepparulo et al., 2017). Furthermore, the function of institutional quality can explain the relationship between fiscal decentralization and poverty, with revenue and expenditure decentralization being negatively and significantly associated with poverty.

Arogundade et al. (2022) also highlight the importance of improving investment in human capital and undertaking public sector reforms to create an environment conducive to poverty reduction. Kar (2022) suggested that when governance reaches a certain threshold level, extreme poverty decreases with economic growth and governance quality. Additionally, foreign assistance and good-quality institutions have a positive impact on economic growth, which can indirectly contribute to poverty reduction (Sibanda et al., 2023).

Holmberg and Rothstein (2010) investigated whether quality governance is needed to reduce poverty and inequality in Jamaica and Singapore. They found that institutions are important in alleviating poverty and economic inequality. They also stressed that representative democracy thwarts the effectiveness of institutions in addressing

poverty or economic inequalities. They finally concluded that the quality of governance (as an institution) plays a crucial role in reducing poverty and economic inequality in Jamaica and Singapore. Similarly, Akanbi (2015) worked on the structural and institutional determinants of poverty in SSA. He found that governance and infrastructure are significant determinants of poverty in sub-Saharan Africa. He concludes that countries with better governance and infrastructure ratings will achieve lower poverty levels, and poverty tends to converge as physical infrastructure improvement and better governance are pursued. Acemoglu and Robinson (2012b) provided good evidence on why other countries have better economic prosperity and a growing income of middle class in some countries. Their argument was mainly based on the type and quality of institutions that existed in different countries, hence accounting for the variation in the level of development and poverty levels. Similarly, Wandeda et al. (2021) investigated the relationship between institutional quality and economic growth with a focus on Sub-Saharan African countries. The findings of their study show that an improvement in institutional quality positively and significantly improves Sub-Saharan African countries' economic output. They further posit that the effect of institutional quality on economic output varies with the regional location of SSA countries, which confirms the arguments of (Acemoglu & Robinson, 2012).

For instance, the result of their study indicates that the income disparity between West Africa and the remaining three regions is due to the quality of institutions. While the institutions in West Africa are more robust in driving income growth up, the institutions in the other three regions of Eastern Africa and Central Africa rather drive a decline in income growth. They concluded that an improvement in institutional quality is more likely to improve the economic performance of low-income SSA economies than middle-income SSA countries. Moreover, SSA countries should strengthen independent institutional bodies that prosecute economic crimes.

Evidently, institutions are robust systems that control corruption, establish an effective government, and build stable political systems that are crucial for promoting economic growth and reducing poverty. Corruption and ineffective governments potentially hinder growth in income levels and escalate poverty incidence. The quality of the regulatory system, rule of law, voice and accountability, and expropriation risk is inversely related to poverty, affecting average income rather than income distribution

(Chong & Calderón, 2000; Tebaldi & Mohan, 2010). Investment that promotes democratic and regulatory institutions has a significant positive effect on economic growth. Therefore, SSA countries should continue reforming their institutions to enhance the region's economic growth and alleviate poverty through income growth. Specifically, institutions that support investment, democracy, and regulatory quality (Hussen, 2023).

Further, informal institutions such as ethnicity play a key role in development and poverty alleviation, especially when they converge (complement) or diverge (accommodate) good formal institutions (Helmke & Levitsky, 2003). Consequently, Talla Fokam & Fomba Kamga (2023) examined the role formal institutions play in the relationship between ethnic diversity and poverty. The result of their study found that ethnic diversity has a positive effect on poverty, but the extent of this effect depends on the quality of formal institutions. Further, they posit that ethnic diversity contributes significantly to the increase in poverty in countries with poor institutional quality, whereas in countries with good institutional quality, its effect is inconsequential. In circumstances where institutions are deficient, ethnically diverse countries generally experience major problems of inequality arising from discrimination, social exclusion, and social polarization. One of the main consequences of these problems is the increase in poverty. Consequently, policymakers in ethnically diverse nations should accord top priority to enhancing the quality of their institutions as a crucial measure to address the issue of poverty (Chong & Calderón, 2000).

4.2.2. Financial Stability and Poverty

Financial stability is the ability of the financial system to facilitate effective resource allocation that results in the transfer of wealth and economic prosperity for both individuals and the state (Schinasi, 2004). A reliable financial system facilitated by intermediation enhances the commercial climate and promotes authentic economic progress. It ensures the secure placement of funds and effectively manages any disturbances without compromising economic growth (Schinasi, 2006). Conversely, financial instability exacerbates information asymmetry, which impedes the intermediation process within an economy. Further, Babajide et al. (2020) explain that a stable financial system must be able to efficiently manage financial risk through

accurate assessment and pricing. Thus, the ability of the financial system to continue performing its primary functions in spite of the existence of external shocks and fluctuations. This points to the fact that for a financial system to be stable, it should develop or establish internal stabilizers that will enable it to quickly return to a state of equilibrium when faced with external shocks.

However, Chant et al. (2003) explain financial instability as a threat to economic growth and performance that is brought about by the malfunctioning of the financial system. The severity of the instability of the economy is contingent on the stage of development of the financial system. Financial instability can be linked to notable modifications in the domestic or international credit market, leading to a credit squeeze. Other challenges, such as advances in technology, financial innovations, climate change, legislative or regulatory barriers, and money laundering, organized crime, corruption, and the financing of terrorism, are potential catalysts for financial instability. Governments in developing economies are faced with these challenges and must find a synergy to ensure financial stability while at the same time pursuing the development of the financial system for sustainable economic growth, poverty reduction, and greater equality (Abbaszadeh, 2021). Low-income sub-Saharan Africa has some of the least developed financial sectors globally. The absence of robust, effective financial markets creates major obstacles to economic growth, poverty reduction, and policymaking. Africa's economic prospects will not improve unless SSA nations develop strong and efficient finance sectors (Amaeshi et al., 2017).

Financial stability plays a key role in the income growth of developing countries. Beck et al. (2004) argue that well-functioning financial systems contribute to the efficient allocation of resources, enabling individuals to escape poverty by accessing credit, savings, and investment opportunities. Financial stability could boost sustainable macroeconomic growth, which could be a key policy goal for governments worldwide because it affects employment, population, inequality, and poverty (Chavriya et al., 2023). Magwedere and Marozva (2022) investigate the relationship between income inequality and financial stability in 35 developing countries. The result of the investigation suggests that four dimensions of the financial sector, namely financial stability, depth, access, and efficiency, have a mixed relationship with income inequality. The result stipulates that inequality increases with an increase in the

stability of the financial sector. However, the depth of the financial sector reduces inequality. Furthermore, not only does the dimension of the financial sector matter in addressing income inequality issues, but the quality of institutions is important.

Further, Singh and Jha (2023) studied the relationship between financial development, financial stability, and poverty for a sample of 109 developed and developing countries from 1995 to 2018. The study's results show that financial development has greater effects on poverty eradication in a more fragile financial system and vice versa. Additionally, the results indicate that financial stability is associated with lower levels of poverty.

Moreover, Singh and Huang (2015) worked on financial deepening, property rights, and poverty in sub-Saharan Africa. They found that financial deepening could narrow income inequality and reduce poverty. Additionally, they indicated that stronger property rights reinforce the positive effects of financial deepening on poverty reduction. They concluded that the link between financial deepening and poverty is most significant at the early stages of financial development.

Financial stability has a significant impact on poverty reduction in Sub-Saharan African (SSA) countries. The interaction between financial regulation and financial stability positively affects financial inclusion, which in turn contributes to poverty reduction (Olayiwola & Akinbobola, 2022). However, the effect of financial sector development on poverty reduction varies across sub-regions in SSA. In West and Central African countries, the mediating role of the financial sector complements the effects of inclusive growth on poverty reduction (Adelowokan et al., 2020). On the other hand, fiscal policy does not have a direct relationship with poverty reduction in the region (Anarfo et al., 2020). Access to finance also has a heterogeneous impact on household wealth, with formal financial services benefiting wealthier households more than the very poor categories (Ndlovu & Toerien, 2020). Therefore, to effectively reduce poverty in SSA, it is crucial to promote financial stability, improve financial sector development, and ensure that financial inclusion policies target the most vulnerable populations.

4.3. Methodology

4.3.1. Data and PCA Results

The study uses a balanced panel dataset of 23 countries (see Table 4.2), with an annual dataset from 2002 to 2020. The choice of the countries and period was based on data availability. Following Ozili & Iorember (2023) and Musah et al. (2023). Principal Component Analysis (PCA) method was used to create an index for institutional quality (using all 6 World Governance Index (WGI)) from the World Bank WGI and Financial Stability Index) by using banking z-score, bank concentration, liquidity liability of banks to GDP, and bank credits to bank depositors from the World Bank's Global Financial Development (GFD).

Table 4.2. List of Countries

Benin	Botswana	Burkina Faso	Gambia
Cameroon	Cote d'Ivoire	Eswatini	Lesotho
Ghana	Gabon	Kenya	Mauritania
Madagascar	Malawi	Mali	Rwanda
Mauritius	Namibia	Nigeria	Togo
Senegal	South Africa	Tanzania	

To this effect, using these variables to form a financial stability index is consistent with existing literature and trends (Musah et al., 2023; Ozturk & Ullah, 2022). We employ the poverty gap index as a measure of poverty from the World Bank's Poverty and Inequality Platform (PIP). This is in line with the work of De Janvry & Sadoulet (2015), who considered the poverty gap index as a better measure of poverty than the poverty headcount. The poverty gap index satisfies the monotonicity and transfer assumptions in measuring poverty. However, it doesn't postulate the inequality among the poor nor identify the poor of the poor. Pursuant to the work of Ozili and Iorember (2023), this study used current health expenditure (PPP 2010 constant) as a percentage of GDP as a proxy for good health and well-being. Additionally, the prevalence of undernourishment was used as a proxy for hunger, and inflation was employed as a

control variable. These data were extracted from the World Bank's World Development Indicators (WDI). The detailed description of the data is provided in Table 4.3.

Table 4.3. Data Description

Variables	Id	Explanation	Source
Poverty Gap Index	PGP	The square of the poverty gap index	PIP
Financial Stability Index	FSI	The financial inclusion index was calculated using the PCA technique. It involves using bank concentration, banking z-score, liquidity liabilities of banks to GDP, and bank credits to bank depositors.	Author's calculation
Bank Concentration	BC	It measures the degree of market control held by the largest banks in a country. It is typically calculated as the share of assets held by the three largest commercial banks relative to the total assets of all commercial banks.	GDF
Banking Z-score	BZS	Measures the financial stability of banks by estimating the probability of default. It is the sum of a bank's return on assets (ROA) and its equity-to-asset ratio, divided by the standard deviation of ROA over a period. A higher Z-score indicates greater stability, reflecting a larger buffer against losses.	GDF
Liquidity Liabilities of Bank to GDP	LLGDP	This indicator, also known as broad money or M2 to GDP, measures the size of the banking system's liquid liabilities relative to the economy's GDP	GDF
Bank Credits to Bank Depositors	BACD	This ratio measures the extent to which banks allocate deposits to credit activities, reflecting the efficiency of financial intermediation. A higher ratio suggests banks are lending a larger proportion of their deposits.	GDF

Table 4.3. (cont.)

Institutional Quality Index	ISQ	The 6 WGI indicators (control of corruption, rule of law, political stability, voice and accountability, government effectiveness, and regulatory quality) were used to generate the index through a PCA technique.	Author calculation
Control of Corruption	COC	Measures the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as the capture of the state by elites and private interests.	WGI
Rule of Law	ROL	Measures perceptions of the likelihood of political instability and/or politically motivated violence, including terrorism.	WGI
Political Stability	POL	This indicator captures perceptions of the extent to which agents have confidence in and abide by the rules of society, particularly the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence.	WGI
Voice and Accountability	VAC	Measures perceptions of the extent to which a country's citizens can participate in selecting their government, as well as freedom of expression, freedom of association, and a free media.	WGI
Government Effectiveness	GEF	Measures perceptions of the quality of public services, the competence of civil servants, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies.	WGI
Regulatory Quality	REQ	This captures perceptions of the government's ability to formulate and implement sound policies and regulations that promote private sector development.	WGI

Table 4.3. (cont.)

Good Health and Well-being	HEXP	Proxied by the current health expenditure as a percentage of GDP.	WDI
Hunger	HUN	Proxied by the prevalence of undernourishment in children 5 years and above per 1000 population	WDI
Inflation	INF	Consumer price inflation	WDI
Region	REG	Dummy variable	
Hunger * Well-being	HHR	The interactive term of hunger and well-being	Author calculation
Institutional quality* region	IREG	The interactive term of institutional quality and region	Author calculation
Financial Stability* Region	FREG	The interactive term of financial stability and region	Author calculation
Well-being*Region	HXREG	The interactive term of well-being and region	Author calculation
Hunger * region	HUREG	The interactive term of hunger and region	Author calculation

4.3.2. Principal Component Analysis Results

Principal Component Analysis, or PCA, is a dimensionality reduction technique that is frequently used to decrease the dimensionality of huge data sets by transforming a large set of variables into a smaller one that still retains most of the significant information in the large set. Reducing the number of variables of a data set naturally comes at the expense of accuracy; nevertheless, the trick in dimensionality reduction is to trade a little accuracy for simplicity. Additionally, this process is used to generate the index. For the institutional quality index, we used variables obtained from the World Governance Indicators to generate a unique index for institutional quality (ISQ). The components of the index are the rule of law (ROL), political stability (POL), regulatory quality (REQ), control of corruption (COR), governance effectiveness

(GEF), and voice and accountability (VAC). These are the six governance indicators, which in most literature are referred to as institutional indicators (Acemoglu et al., 2014; Acemoglu & Robinson, 2012b). Similarly, the financial stability index was calculated using the PCA technique, and the components are bank concentration (BC), banking Z-score (BZS), liquidity liabilities of banks to GDP (LLGDP), and bank credit to bank depositors (BACD).

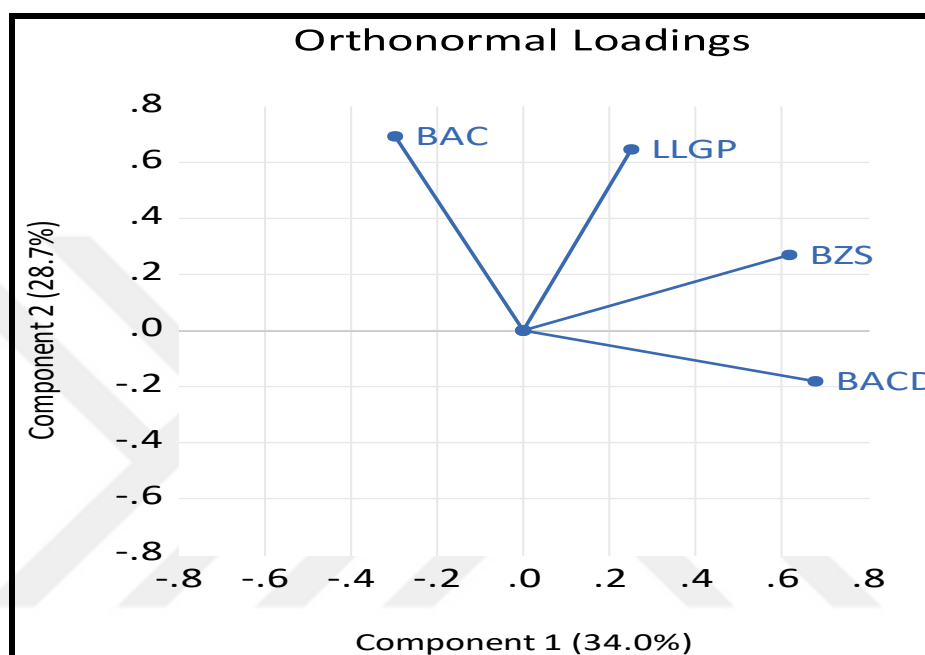


Figure 4.2. Orthonormal Loading for Financial Stability Index

Reference: Author's own calculation using EViews

The results of the PCA are in Tables 4.4 and 4.5. The orthonormal loadings in Figures 4 above and 5 below provide some correlation information about the components of the index. From Figure 4.2 above, BZS and LLGDP are positively correlated. Similarly, BZS and BAC are moderately positively correlated. However, BACD and BAC are nearly uncorrelated, as the angle they form is way beyond 90 degrees.

Table 4.4. PCA Results for Institutional Quality

Components		Eigenvalue	Difference		Proportion	Cumulative
Components 1		4.21	3.43		0.70	0.70
Components 2		0.78	0.32		0.13	0.83
Components 3		0.46	0.16		0.08	0.91
Components 4		0.30	0.14		0.05	0.96
Components 5		0.16	0.08		0.03	0.99
Components 6		0.08	---		0.01	1.00
Eigenvectors (loadings):						
Variable	PC 1	PC 2	PC 3	PC 4	PC 5	PC 6
COR	0.429	-0.175	-0.511	-0.113	-0.645	0.310
GEF	0.421	-0.395	-0.282	-0.092	0.730	0.213
VAC	0.370	-0.410	0.774	0.143	-0.180	0.210
ROL	0.470	-0.065	-0.057	0.106	-0.061	-0.870
REQ	0.375	0.542	0.238	-0.708	0.064	0.056
POL	0.374	0.588	-0.029	0.668	0.107	0.234

Table 4.5. PCA Results for Financial Stability

Number	Value	Difference	Proportion	Cumulative
Component 1	1.3607	0.2115	0.3402	0.3402
Component 2	1.1492	0.3138	0.2873	0.6275
Component 3	0.8354	0.1806	0.2088	0.8363
Component 4	0.6548	-----	0.1637	1.0000
<i>Eigenvectors (loadings):</i>				
Variable	PC 1	PC 2	PC 3	PC 4
BAC	-0.296913	0.690872	0.510211	0.417402
BACD	0.681487	-0.183050	0.067403	0.705355
BZS	0.619011	0.268452	0.465382	-0.572869
LLGP	0.253464	0.645850	-0.720112	-0.008467

From Figure 4.3, orthonormal loadings for the institutional quality index indicate that GEF and VAC are more closely correlated, as are POL and REQ, and ROL and COR. GEF and COR are moderately correlated. However, POL and VAC are nearly

uncorrelated since their angle is nearly 90 degrees. Further, VAC, GEF, COR, and ROL are more positively correlated. Also, POL and REQ are significantly more dominant in the component composition.

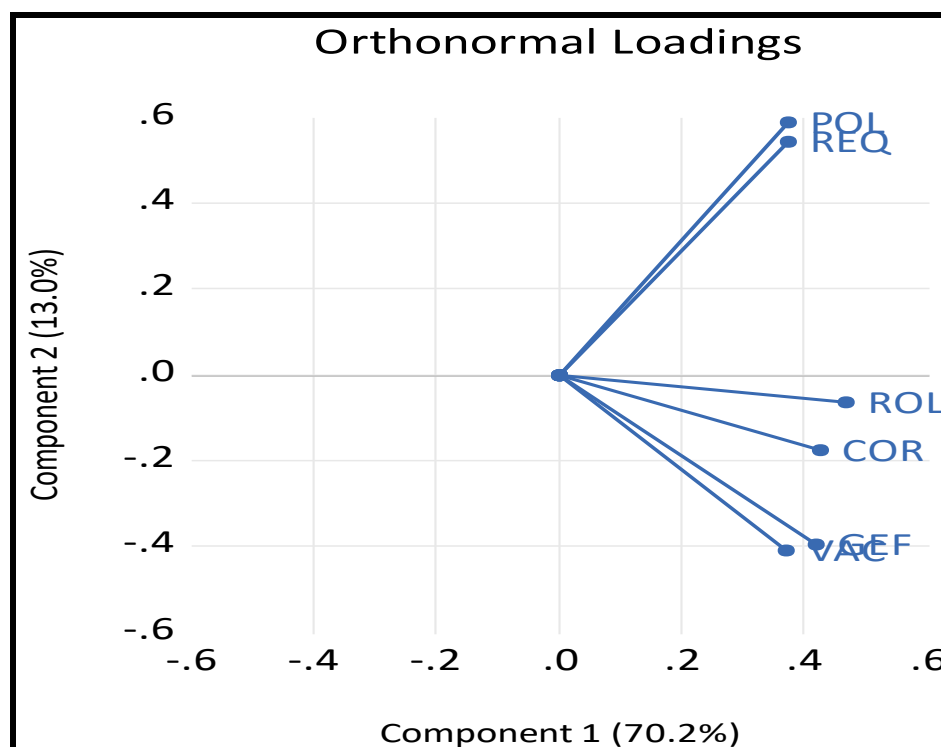


Figure 4.3. Orthonormal Loadings for Institutional Quality Index

Reference: Author's own calculation using EViews

4.3.3. Theoretical Model of Poverty

There are several parameters and models used in measuring poverty. The most commonly used one is the poverty line measure. However, the selection of welfare measurement thresholds is influenced by experts, social security regulations, consumption information, and subjective evaluation (Strengmann-Kuhn, 2005). Instructively, the welfare function determination and the poverty line definition may be subjected to influences from different sources. Due to a variety of poverty measurements, this study follows the modeling of (de Janvry & Sadoulet, 2015; Foster et al., 1984). To them, poverty indicators are seen in the two most commonly used indicators: First is the FGT (P_α) category and the second is the average time for a population to exit poverty.

4.3.4. FGT Category of Poverty Index

Certain axioms need to be enumerated, and the properties of the poverty index function must be laid out. All poverty thresholds are based on the income distribution or consumption y which is truncated at the poverty line (z). Generally, these properties of a poverty index must hold (Sen, 1999b):

- a) Monotonicity – a decrease in y of a poor person should increase the poverty index.
- b) Transfer – a transfer of y from poor to less poor should increase the index.
- c) Transfer sensitivity – the rise in the index declines as the y transfer from poor to less poor is taken from richer poor.

Additionally, de Janvry and Sadoulet (2015) provided specific desirable properties the poverty index should meet:

- a) Population symmetry – when two identical populations are pooled, the index should not change.
- b) Proportion of poor – if the share of poor increases, the index should increase.
- c) Focus – the index is independent of the y level of people above z (Sen, 1999b).
- d) Decomposability – when the poverty of a subgroup increases, the index increases.

With these axioms and properties in mind, the general poverty indicator (P_α) (Foster et al., 1984) is defined as:

$$P_\alpha = \frac{1}{n} \sum_{i=1}^q \left(\frac{z-y_i}{z} \right)^\alpha \quad (4.1)$$

Where P_α is the poverty index at the parameter or scalar α , n is the total population, q is the number of people below the poverty line, z is the poverty line and y_i is the income or consumption of an individual i) (Foster et al., 1984).

Equation (4.1) is known as the poverty gap, which is measured in local currency units. Dividing the poverty gap by the poverty line, also in local currency, makes it a unit-free number. The poverty index is divided into three indicators based on the value of the scaler α :

$$\text{If } \alpha = 0, \text{ then } P_0 = \frac{q}{n} \quad (4.2)$$

This is an indicator for the poverty headcount ratio, incidence of poverty, or poverty rate. It measures the share of the population who are poor. It is the most commonly used poverty indicator. However, the property of monotonicity and transfer is not met by P_0 . This indicator doesn't provide information on how poor the poor are (de Janvry and Sadoulet, 2015).

Secondly, if $\alpha = 1$, then equation (4.1) becomes:

$$P_1 = \frac{\sum_{i=1}^q (z - y_i)}{nz} \quad (4.3)$$

P_1 is the poverty gap index or the depth of poverty index, where: $\sum_{i=1}^q (z - y_i)$ is the total expenditure deficit of the poor or the total poverty gap. Thus, poverty gap measures the cost of eliminating poverty with perfect targeting, especially when the expenditure levels of y_i of every poor person is known and nz is the cost of eliminating poverty without targeting (Foster et al., 1984). Thus, if we had no information on the expenditure level of anyone in the population and consequently had to give z to each person to make sure that no one is left in poverty. Therefore, P_1 is the ratio of the targeted to the untargeted budget needed to eradicate poverty. Due to the ability to target the poor, presumably, $100(1 - P_1)$ becomes the percentage savings in the poverty budget (de Janvry and Sadoulet, 2015). Although this indicator satisfies monotonicity and transfer assumptions, it does not, however, measure inequality among the poor. This indicator is mostly referred to as the FGT (1) index. Finally, if $\alpha = 2$, then equation one becomes:

$$P_2 = \frac{1}{n} \sum_1^q \left(\frac{z-y_i}{z} \right)^2 \quad (4.4)$$

In this case, P_2 is the poverty severity index. It measures the poverty gap by assigning a greater significance to the shortfall in expenditures that surpasses the poverty threshold by squaring it. This means that P_2 is sensitive to the distribution of expenditure among the poor. Therefore, a population with a greater share of extremely poor among the poor will have a higher P_2 , even if it has the same P_0 and P_1 as another population (de Janvry & Sadoulet, 2015). The poverty severity index satisfies the monotonicity and transfer assumptions, measures the inequality among the poor, and identifies the poorest of the poor.

The parameter α can be interpreted as the quantification of a policymaker's degree of aversion towards poverty. A higher value of α indicates a greater level of concern for individuals who are farther away from the poverty line. When α approaches infinity, the policymaker adopts a Rawlsian perspective, where the sole focus lies on the well-being of the most impoverished individual within the society. Therefore, utilizing α as a metric for measuring the policymaker's aversion to poverty, it signifies the degree to which the welfare of the most destitute is prioritized in the evaluation of overall poverty.

4.3.5. Average Exit Time from Poverty

The second strand of measuring poverty is considering the average time used to pull more people above the poverty threshold while considering the consumption expenditure growth rate within the same period. de Janvry and Sadoulet (2015) explain the average exit time from poverty indicator as the number of years t that it would take to eliminate poverty at a given rate in per capita expenditure. To understand the average exit time from poverty, let us assume that a person i with current expenditure y_i to reach the poverty line z and the growth rate of expenditure is g , how many years t_i is needed to escape poverty? With this in mind, the discrete time solution will be:

$$\mathbf{y}_i(\mathbf{1} + \mathbf{g})' = \mathbf{z} \quad (4.5)$$

Taking the natural logarithms and approximating $\ln(1 + g)$ by g , the exit time out of poverty from equation (4.5) will be:

$$t_i = \frac{\ln z - \ln y_i}{g} \quad (4.6)$$

Extending equation (4.6) from the hypothetical person to the whole population of the poor, the average exit time will be:

$$T_g = \frac{1}{N} \sum_{i=1}^N t_i \quad (4.7)$$

The T_g indicator is divided into population-weighted subsets of the poor population. Similar to P_2 , it is sensitive to the distribution of income among the poor. Contrary to P_2 , it is measured in meaningful units, such as years. Nonetheless, it requires a statement about a growth rate g that we may want to avoid (de Janvry and Sadoulet, 2015).

4.4. Empirical Methodology and Econometric Method

4.4.1. Model Specification

The general model is a modification of the models employed by Musah et al., (2023), and Ozturk and Ullah, (2022). Moreover, because we are considering the tripartite relationship between poverty, well-being, and hunger, we expanded the general model to include both well-being and hunger.

Moreover, colonization and new colonization traces still exist within the countries under study. This has some impact on the structure of institutions in these countries and how the institutions function. To this effect, we accounted for this phenomenon by introducing a regional dummy (where 1= francophone, and 0=anglophone). Additionally, we introduced interactive terms for the dummy and the regressors to

account for the indirect or moderating influence of colonial francophone and anglophone traces on poverty within SSA.

Employing the two-step system GMM modelling techniques, the true basic model is expressed as;

$$\ln PGP_{it} = \alpha_0 + \beta_1 \ln PGP_{it-1} + \beta_2 \ln ISQ_{it} + \beta_3 \ln FS_{it} + \beta_4 \ln INF_{it} + \beta_5 \ln HEXP_{it} + \beta_6 \ln HUN_{it} + \varepsilon_{it} \quad (4.8)$$

Where PGP represent poverty, $ISQ, FS, INF, HEXP, and HUN$ represent institutional quality, financial stability, inflation, wellbeing (proxied by health expenditure), and hunger (proxied by undernutrition), respectively. $\beta_1, \beta_2, \beta_3, \beta_4, \beta_5$ and β_6 are the coefficients of the independent variables, respectively. α_0 is the intercept of the model.

The error term is $\varepsilon_{it} = v_i + u_{it}$ where v_i is the unobserved time-invariant country-specific fixed effect and u_{it} is an i.i.d random term with $E(u_{it}) = 0$ and $Var(u_{it}) = \sigma^2$. i represents the cross-section (countries) used for the study and t is the time for which data was collected (2002-2021). A dynamic panel model was assumed, hence, the proposition that past poverty situations influence future poverty levels. Therefore, we included the lag dependent variable among the regressors.

The link between institutional quality and poverty has been well documented in several literatures (Acemoglu & Robinson, 2012b; Akanbi, 2015; Chong & Calderón, 2000; Holmberg & Rothstein, 2010; Talla Fokam & Fomba Kamga, 2023; Tebaldi & Mohan, 2010). Financial stability provides individuals, households, and firms with a guarantee of a financial system that is robust enough to support and protect their investments. A stable financial system also provides a signal of better economic progress. The relationship between poverty and financial stability is espoused in several studies, such as (Beck et al., 2004; Magwedere & Marozva, 2022; Olayiwola & Akinbobola, 2022; Ozili & Iorember, 2023; Singh & Huang, 2015; Singh & Jha, 2023a). Inflation is normally expected to have a positive relationship with poverty. This is because when inflation increases, the disposable income of an individual reduces. Additionally, the

dependency levels will also increase, which means that a few working people within a family will have more mouths to feed, hence a drop in their disposable income and a shift toward the poverty line (Olayiwola & Akinbobola, 2022; Ozili & Iorember, 2023; Talla Fokam & Fomba Kamga, 2023; Singh & Jha, 2023a). However, assuming there is a robust welfare system and effective social protection policies, the impact of inflation will be minimal. Evidently, the countries under study do not have robust social protection programs or effective welfare systems.

To check for the impact of the influence of the trace of colonial structures, we include a regional dummy in equation 3.8. Hence, the first model (model 1) equation results as;

$$\ln PGP_{it} = \alpha_0 + \beta_1 \ln PGP_{it-1} + \beta_2 \ln ISQ_{it} + \beta_3 \ln FIS_{it} + \beta_4 \ln INF_{it} + \beta_5 \ln HEXP_{it} + \beta_6 \ln HUN_{it} + \delta_1 REG_{it} + \varepsilon_{it} \quad (4.9)$$

The dummy REG has values of 1=Francophone countries and 0 = Anglophone countries. It is important to state that though colonialism has ended, the countries under study are yet to entirely detach the umbilical cord from their colonial masters. For example, most of the French colonized countries still don't have autonomous central banks, and their currencies are being managed by France. This has been feasible because the French government created a common currency, the Franc, for its former colonies, which the central bank of France still controls. Therefore, it becomes imperative to capture these nuances when accounting for the institutional quality in SSA.

Further, to interrogate the impact that well-being and hunger have on poverty, we included them in the model. Moreover, Chowdhury et al., (2013) posit that hunger impacts poverty through well-being. That is, when one is hungry, he or she is incapable (capability theory of poverty) of using his or her full potential to engage in economic activities and to benefit from the economic outcomes. This is because the person's well-being is being affected due to hunger, and it causes the person to be incapable of engaging in and benefiting from economic activities. Consequently, we include the interactive term of hunger and well-being as well as the proxy for hunger in the model under the propositions of Chowdhury et al. (2013) as the basis of their argument is

drawn from (Sen, 1999b). The second model (Model 2) estimated model is expressed as;

$$\ln PGP_{it} = \alpha_0 + \beta_1 \ln PGP_{it-1} + \beta_2 \ln ISQ_{it} + \beta_3 \ln FIS_{it} + \beta_4 \ln INF_{it} + \beta_5 \ln HEXP_{it} + \beta_6 \ln HUN_{it} + \delta_1 REG_{it} + \gamma_1 (\ln HHR_{it}) + \varepsilon_{it} \quad (4.10)$$

Where, $\ln HHR_{it} = \ln HUN_{it} * \ln HEXP_{it}$

From equation 4.10, the derivative of the model with respect to $\ln HUN_{it}$ gives the following result.

$$\frac{d \ln PGP_{it}}{d \ln HUN_{it}} = \beta_6 + \gamma_1 \ln HEXP_{it} \quad (4.11)$$

The sign of β_6 and γ_1 are much interest in the discussion. If both β_6 , and γ_1 are greater than zero, then hunger increases poverty through well-being. This was the argument put forward by Chowdhury et al. (2013) as they posit that hunger increases poverty incidence through the reduction of an individual's physical and psychological well-being, which adversely affects their capability to function properly and to benefit fully from the outcomes of economic activities. The inability to function in economic activities means that the individual is incapable of acquiring wealth, which pushes him/her into poverty. Further, we estimated the model with regional dummies to understand the dynamics in East Africa, West Africa, Central Africa, and South Africa. In the final model, we include the interactive terms of the regressors with regional dummies to understand the dynamic of their impact in the Francophone and Anglophone countries. The third model (model 3) estimation equation becomes.

$$\ln PGP_{it} = \alpha_0 + \beta_1 \ln PGP_{it-1} + \beta_2 \ln ISQ_{it} + \beta_3 \ln FIS_{it} + \beta_4 \ln INF_{it} + \beta_5 \ln HEXP_{it} + \beta_6 \ln UNO_{it} + \varphi_1 IREG_{it} + \varphi_2 FREG_{it} + \varphi_3 HXREG_{it} + \varphi_4 HUREG_{it} + \delta_1 REG_{it} + \varepsilon_{it} \quad (4.12)$$

Where $IREG$, $FREG$, $HXREG$, and $HUREG$ are the interactive terms for institutional quality and regional dummy, financial stability and regional dummy, wellbeing and

regional dummy, and hunger and regional dummy, respectively. Their coefficients are $\varphi_1, \varphi_2, \varphi_3$, and φ_4 respectively.

4.4.2. Cross-Sectional Dependency (CSD) Test

In panel data analysis, one of the maiden steps is checking if the panel series are cross-sectionally dependent. Due to similar characteristics of these economies in terms of geography, economic structure, and cultural and ethical norms, there is a likelihood that a shock or crisis in one country may have a cascading impact on the others. Chudik and Pesaran (2015, 2013) and Song and Dhariwal (2023) explain that employing the panel data estimation technique requires a cross-sectional dependency (CSD) test to avoid biased spurious results, weak econometric model selection, and inappropriate economic inference analysis. The Pesaran (2015) CSD test is an improvement of the Pesaran (2004) CSD test. The test equation is postulated below.

$$CD_{Adjusted\ one} = \sqrt{\frac{2T}{N(N-1)}} \left(\sum_{i=1}^{N-1} \sum_{k=i+1}^N \hat{\tau}_{ik} \right) \frac{(T-j)\hat{\tau}_{ik}^2 - E(T-j)\hat{\tau}_{ik}^2}{V(T-j)\hat{\tau}_{ik}^2} \quad (4.13)$$

$$CD = 1, 2, 3, \dots \dots \dots 20 \dots N \quad (4.14)$$

$$CD_{Pesaran\ (2004),\ i} = \sqrt{\frac{2T}{N(N-1)}} \left(\sum_{i=1}^{N-1} \sum_{k=i+1}^N \hat{\tau}_{ik} \right) \quad (4.15)$$

Where, $\hat{\tau}_{ik}$ shows the pairwise correlation coefficient of the residuals. T and N denote the time and cross-sectional dimensions, respectively. The null hypothesis of this test is that residuals or error terms are cross-sectionally not correlated. The rejection of this null hypothesis suggests that the residuals are cross-sectionally dependent. To control for the robustness of the model, three tests were conducted. The Breusch-Pagan LM, Pesaran scaled LM, and the Bias-adjusted LM tests were conducted.

Additionally, the slope homogeneity test was conducted because the countries under study are heterogeneous in character. Performing this test helps to prevent spurious estimation and avoid the wrong conclusion (Musah et al., 2023). Therefore, following Musah et al., (2023) and Chen et al., (2022), the Pesaran and Yamagata, (2008) and

the Blomquist and Westerlund, (2013) slope homogeneity tests were conducted. The Pesaran and Yamagata (2008) test is expressed as:

$$\hat{\Delta}_{adj} = \sqrt{N} \left(\frac{N^{-1} S - E(\tilde{z}_{iT})}{\sqrt{Var(\tilde{z}_{iT})}} \right) \quad (4.16)$$

$$\text{Where, } E(\tilde{z}_{iT}) = k, Var(\tilde{z}_{iT}) = \frac{2k(T-k-1)}{T+1} \quad (4.17)$$

The null hypothesis is that the slope parameters are homogeneous. When the null hypothesis is rejected, it suggests that the slope parameters are heterogeneous. Blomquist and Westerlund, (2013) proposed a more robust and consistent HAC extension of the Pesaran and Yamagata (2008) test. The robust HAC test is expressed as:

$$\hat{\Delta}_{HAC} = \sqrt{N} \left(\frac{N^{-1} S_{HAC} - k_g}{\sqrt{2k_2}} \right) \quad (4.18)$$

$$\text{Where, } S_{HAC} = \sum_{i=1}^N T_i (\hat{\beta}_{2i} - \hat{\beta}_{zHAC})' (\hat{Q}_{iT_i} \hat{V}_{iT_i}^{-1} \hat{Q}_{iT_i}) (\hat{\beta}_{2i} - \hat{\beta}_{zHAC}) \quad (4.19)$$

$$\hat{\beta}_{zHAC} = (\sum_{i=1}^N T_i \hat{Q}_{iT_i} \hat{V}_{iT_i}^{-1} \hat{Q}_{iT_i})^{-1} \sum_{i=1}^N \hat{Q}_{iT_i} \hat{V}_{iT_i}^{-1} X'_{2i} M_{1iy_i} \quad (4.20)$$

Where $\hat{\beta}_{2i}$ again is the OLS estimator for each i , M_{1i} as described above and $\hat{Q}_{iT_i} = T_i^{-1} (X'_{2i} M_{1i} X_{2i})$. The HAC correction is done with the following estimator;

$$\hat{V}_{iT_i} = \hat{\Omega}_i(0) + \sum_{j=1}^{T_i-1} k\left(\frac{j}{B_{iT_i}}\right) [\hat{\Omega}_i(j) + \hat{\Omega}_i(j)'] \quad (4.21)$$

Where $\hat{\Omega}_i(j) = T_i^{-1} \sum_{t=j+1}^{T_i} \hat{u}_{i,t} \hat{u}'_{i,t-j}$, and $\hat{u}_{i,t} = (\check{x}_{2i,t} - \bar{\bar{x}}_{2',t}) \hat{\varepsilon}_{i,t}$ with $\bar{\bar{x}}_{2',t} = T_i^{-1} \sum_{t=1}^{T_i} \hat{x}_{2i,t}$ where $\hat{x}_{2i,t}$ is the t -th element of $X_{2i} M_{1i}$. The $\hat{\varepsilon}_{i,t}$ is an estimated residual from a standard fixed-effect regression that uses M_{1i} as the projection matrix. In equation (20) k is the kernel function and B_{iT_i} is its bandwidth parameters (Bersvendsen & Ditzen, 2021). The improved HAC's null hypothesis is that the slope

parameters are homogeneous. Rejection of the null hypothesis suggests that the slope parameters are heterogeneous.

4.4.3. Unit Root Test

Following the rejection of the null hypothesis CD test and HAC tests, the second-generation unit root tests (CIPS and CADF) are conducted because they account for cross-sectional dependency. The CADF unit root estimation technique is expressed as;

$$\Delta y_{it} = \alpha_i + b_i y_{i,t-1} + c_i \bar{y}_{t-1} + \sum_{j=0}^p d_{ij} \Delta \bar{y}_{i,t-j} + \sum_{j=1}^p \varphi_{ij} \Delta y_{i,t-j} + \mu_{it} \quad (4.22)$$

Where the cross-sectional averages are given by $\Delta \bar{y}_{i,t-j}$ and $\bar{y}_{t-j}$.

4.5. Results and Discussion

4.5.1. Descriptive Statistics

The data used is spread around the mean. The standard deviation of the variables is between 0.397 and 5.062, with health expenditure (HEXP), a proxy for well-being, and inflation (INF) having the lowest and highest standard deviation values, respectively. The maximum value is 12.67, and the minimum value is -4.352. The summary statistics and the pairwise correlation matrix results are in Table 4.6 and Table 4.7 below.

Table 4.6. Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
PGP	460	-1.101	0.644	-4.418	-.37
ISQ	460	0	1	-1.945	3.202
FSI	460	0	1	-3.095	3.464
HEXP	460	2.236	.397	1.378	3.159
INFL	460	5.723	5.062	-3.233	33.813
HUN	460	0	1	-3.149	1.806
HHR	460	-.229	2.43	-9.756	3.163

Table 4.7. Pairwise Correlations

Variables	PGP	ISQ	FSI	HEXP	INFL	HUN	HHR
(1) PGP	1.000						
(2) ISQ	-0.481**	1.000					
(3) FSI	-0.072	-0.053	1.000				
(4) HEXP	-0.530**	0.654**	0.188**	1.000			
(5) INFL	0.230**	-0.011	0.070	-0.061	1.000		
(6) HUN	0.827**	-0.497**	-0.031	-0.578**	0.272**	1.000	
(7) HHR	0.869**	-0.545**	-0.032	-0.589**	0.254**	0.983**	1.000

*** p<0.01, ** p<0.05, * p<0.1

Additionally, institutional quality (ISQ), financial stability (FSI), and health expenditure (HEXP) have negative correlations with poverty, but financial stability is insignificant. Inflation (INFL), hunger (HUN), and the interactive term between hunger and well-being (HHR) are all significant and have a positive correlation with poverty.

4.5.2. CSD and Unit Root Results

The cross-sectional dependency (CSD) test (see Table 4.8) was conducted, and the results indicate that there is cross-sectional dependency in all the models. The unit root results in Table 4.9 show that poverty gap (PGP), institutional quality (ISQ), and health expenditure (HEXP) were stationary at first difference with constant and constant with trends in both CIP and PESCADF. Financial stability (FSI), inflation (INF), hunger (HUN), and the interactive term of hunger and health expenditure (HHR) were stationary at levels with constant and constant with trends.

Table 4.8. Cross-Sectional Dependency Test

Test	Model 1	Model 2	Model 3
Breusch-Pagan LM	1700.891***	1580.586***	1706.030***
Pesaran Scale LM	64.366***	59.018***	64.59505***
Biased-Corrected Scaled LM	63.761***	58.413***	63.98979***
Pesaran CD	13.508	-0.636	-1.173

*** p<0.01, ** p<0.05, * p<0.

Table 4.9. CIPS and CADF Results

variables	CIPS				Pesaran CADF				Integration order
	Level		1 st difference		Level		1 st difference		
	<i>Constant</i>	<i>Const. & trend</i>	<i>Constant</i>	<i>Const. & trend</i>	<i>Constant</i>	<i>Const. & trend</i>	<i>Constant</i>	<i>Const. & trend</i>	
PGP	-0.940	-1.680	-2.570***	-2.862***	-0.940	-1.680	-2.570***	-2.862***	I (1)
ISQ	-1.966	-2.984***			-1.966	-2.984***			I (0)
FSI	-2.221**	-2.596*			-2.221**	-2.596*			I (0)
INF	-3.416***	-3.634***			-3.416***	-3.634***			I (0)
HEX P	-2.141	-2.296	-3.640***	-4.291***	-2.141	-2.296	-3.640***	-4.291***	I (1)
HUN	-2.252***	-2.844***			-2.252***	-2.844***			I (0)
HHR	-2.163**	-2.363			-2.163**	-2.363			I (0)

*** p<0.01, ** p<0.05, * p<0.1

4.5.3. Results Discussion

From Table 4.10 below, the models' results indicate that all the variables, including the lag of the dependent variable, are statistically significant except inflation (in the first model) and financial stability (in the second model). The Hansen J tests indicate that the models are strong and not weakened by instruments. Similarly, the Sargan tests reject the null hypothesis of a weak model.

Table 4.10. Two-Step System GMM

Variables (dept. var pgp)	Model 1	Model 2	Model 3
PGP (-1)	0.904 *** (0.039)	0.944 *** (0.029)	0.976*** (0.026)
ISQ	-0.14*** (0.020)	-0.121 *** (0.018)	-0.037** (0.018)
FSI	-0.33 * (0.022)	0.021 (0.017)	0.038* (0.022)
HEXP	-.152 *** (0.048)	-0.081 ** (0.034)	0.059* (0.036)
INFL	0.02 (0.002)	0.01 *** (0.002)	0.035 (0.04)
HUN	0.08 *** (0.016)	0.230 *** (0.050)	0.001 (0.014)
REG (dummy)	-0.423 *** (0.056)	-0.120 *** (0.0274)	-0.373* (0.191)
HHR	-----	0.086 *** (0.024)	0.075*** (0.035)
IREG	-----	-----	-0.06** (0.03)
FREG	-----	-----	-0.075*** (0.025)
HXREG	-----	-----	0.156* (0.089)
HUREG	-----	-----	0.16*** (0.024)
Constant	-0.305**** (0.115)	-0.267*** (0.086)	-0.188** (0.084)
Coefficient test	Chi ² =70.27***	Chi ² = 62.57***	Chi ² = 64.75***
AR1	-4.30 ***	-4.76 ***	-4.068 ***

*** p<0.01, ** p<0.05, * p<0.1

Table 4.10. (cont.)

AR2	0.26	0.27	-0.40
Sargan test	244.03 ***	311.71 ***	255.83***
Hansen Test	9.23	6.61	18.88
Mean dep. Var	-1.088	-1.113	-1.113
Chi-square	61409.239 ***	83012.29 ***	105462.804***
SD dep. Var	0.647	0.646	0.646
No. of obs	418	437	437

*** p<0.01, ** p<0.05, * p<0.1

The Arellano and Bond tests (AR1 and AR2) for heteroscedasticity suggest that the models do not have a heteroscedasticity problem. The lag-dependent variable PGP (-1) suggests that previous poverty gap levels influence current or future poverty gap by 0.9 and 0.94 in models 1 and 2, respectively. Thus, previous poverty gap levels push the poor to be 90.4% and 94.4% below the poverty line. This is particularly so as most of the countries within Sub-Saharan Africa continuously experience events that make poverty alleviation a herculean task. Breaking the results into a regional perspective, thus, anglophone and francophone, the francophone impact is reduced by 42.3% and 12% (value of the dummy REG) in models 1 and 2, respectively. The anglophone countries experience worse poverty issues based on their past poverty levels. This suggests that the anglophone countries have done little to change the poverty levels despite enjoying a relatively better political atmosphere. Per the available data as of 2019 from the World Bank's Poverty and Inequality platform (Figure 4.4 below), where at the top half of figure 4, there more anglophone countries (Malawi, Tanzania, Kenya, and Eswatini) with just one francophone country (Rwanda) depicting extremely poor people within the poverty gap relative to the countries used for this study.

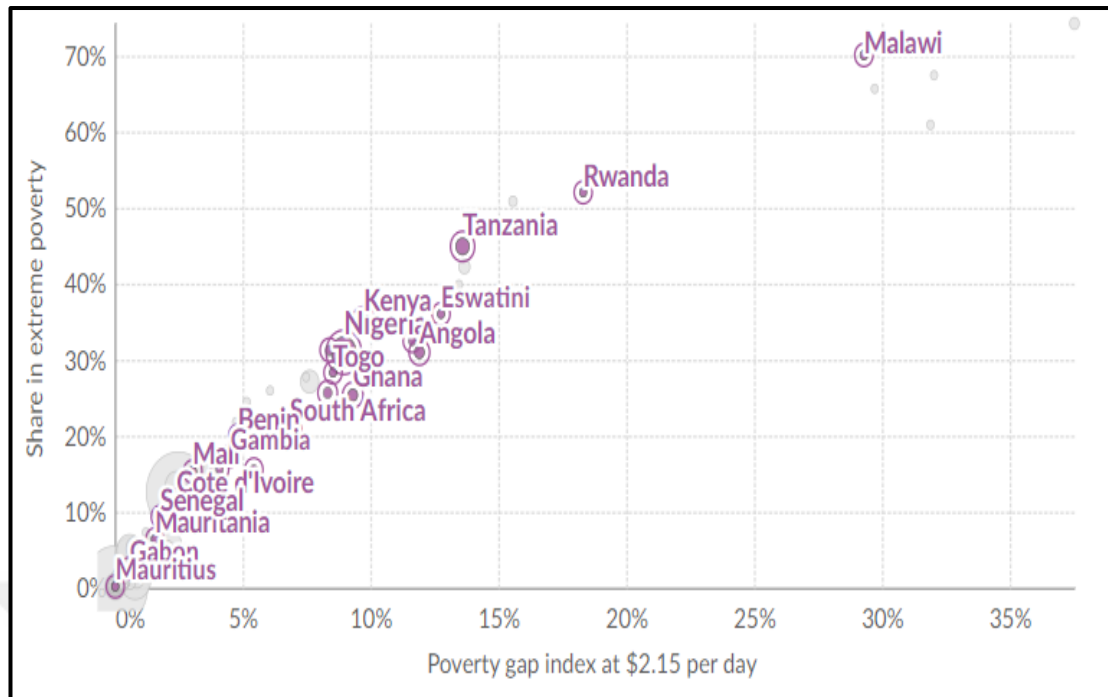


Figure 4.4. Share of Extreme Poverty vs Poverty Gap Index, 2019

Reference: World Bank Poverty and Inequality Platform (2023b)

For Sub-Saharan Africa in general, the pattern of poverty growth is not surprising as there is so much political instability and weak leadership crises that affect the region. Years of civil war in Sudan, Rwanda, and Ethiopia, serious human rights violations, and poor natural resource policy of the two Congo countries, and periodic terrorism in the north of Nigeria, Burkina Faso, and Niger play a vital role in exacerbating the circumstances of poverty issues within the region. More worrying is the centrifugal effect of COVID-19, which has worsened the livelihood of many poor people within these regions⁹. Despite the stable political environment enjoyed by the Anglophone divide, the double impact of government overthrows, economic mismanagement, and COVID-19 has further pushed more people below the poverty line.

⁹ <https://blogs.worldbank.org/en/africacan/how-livelihoods-deteriorated-sub-saharan-africa-due-covid-19>

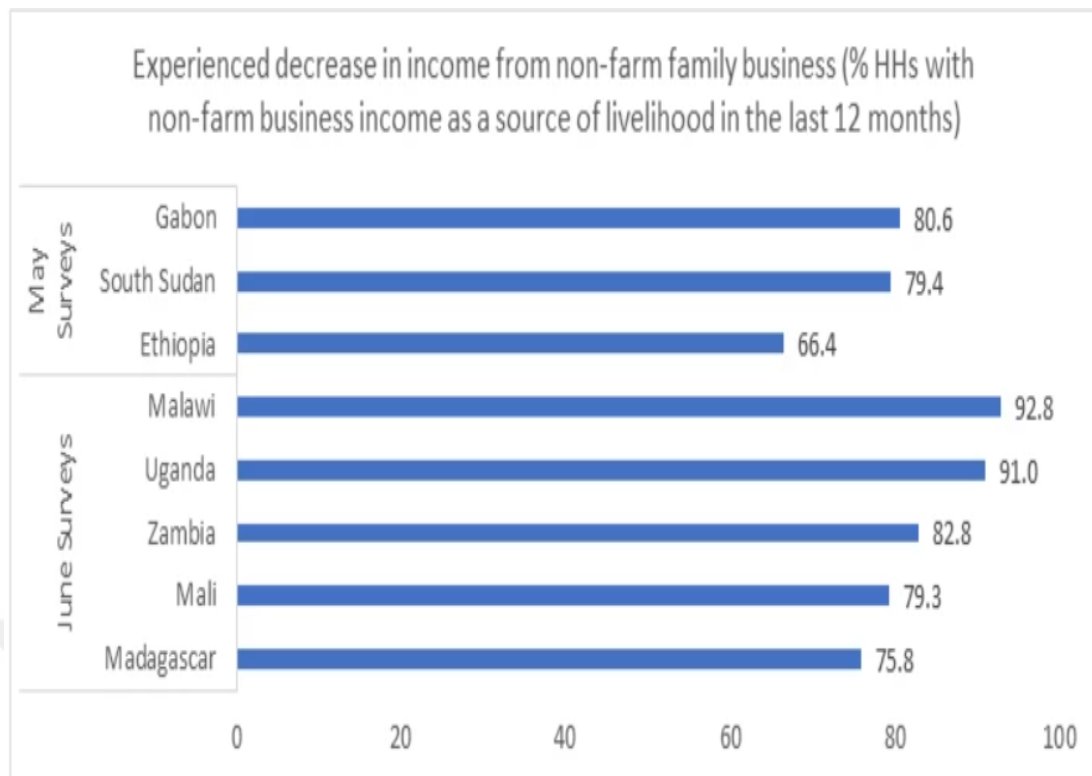


Figure 4.5. Income Losses During COVID-19

Reference: World Bank (2023)

Instructively, Malawi, Tanzania, and Eswatini from Figure 4.5 above provide a better understanding of what is happening in the Southern zone of Sub-Saharan Africa. Tanzania, for instance, has close to 50% of its poverty gap population being extremely poor despite the good government practices that it has enjoyed in the last 5 years.

Institutional quality, without doubt, plays an instrumental role in development. The disparity among countries in terms of development is largely based on how institutions are structured. The results suggest that institutional quality has a negative relation with poverty and is statistically significant. The result points to the fact that an improvement in institutional structures (thus, political stability, control of corruption, rule of law, voice and accountability, governance effectiveness, and regulatory quality) leads to a 14% decrease in the poverty gap in model 1 and 12.1% in model 2 in Sub-Saharan Africa. The result of this study is consistent with the findings of (Arogundade et al., 2022a; Cepparulo et al., 2017; Digdowiseiso, 2022; Loi et al., 2022) who found similar results.

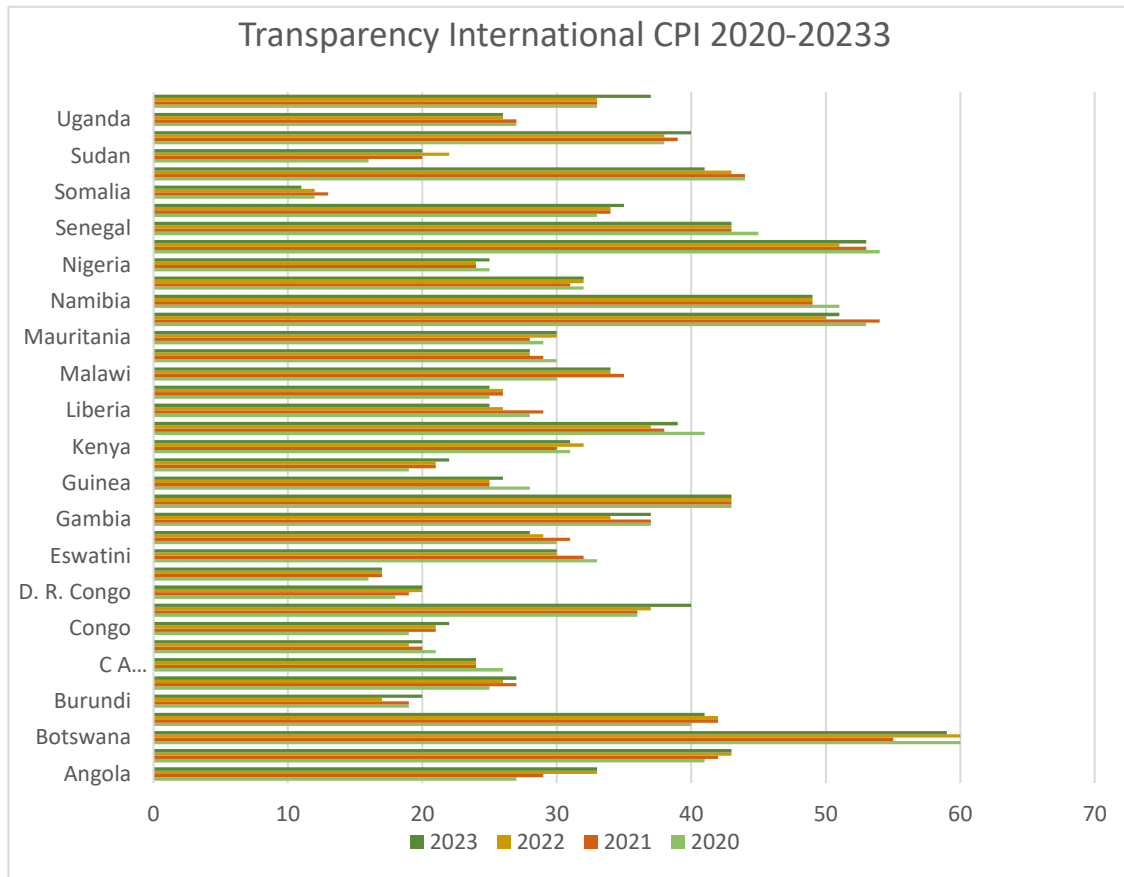


Figure 4.6. Transparency International CPI 2020-2023

Reference: Author's calculation using Transparency International data¹⁰

With regards to regional effect, the francophone countries improved institutional quality, reducing the poverty gap by 56.3% (joint impact of regional dummy and main variable). This is telling as it provides some inference that suggests that the institutional structures within the francophone countries are yielding much better results compared to anglophone countries.

According to Transparency International (2023), one of the key problems of institutional development is the existence of a weak judicial system. This is the main contributor to the proliferation of political corruption, conflict, weak regulations, abuse of human rights, and terrible economic performance (see Figure 4.6). The 2023 corruption perception index report of Transparency International (2023) posits that

¹⁰ The data is sourced from here https://images.transparencycdn.org/images/CPI2023_Global_Results___Trends.xlsx

despite some countries in SSA chalking some success, the region as a whole has performed poorly with an average score of 33, which signifies an absolutely flawed democratic regime. Figure 4.6 above shows the CPI performance of some SSA countries over 4 years. As the years increase, the performance gets worse, and this justifies the results found by this study.

Financial stability is central to the structure and strength of financial systems. It gives insight into how developed and inclusive a financial system is. Khan and Khan, (2024) stipulate that financial stability is associated with lower levels of poverty. Singh and Jha, (2023) also, posit that financial stability is associated with lower levels of poverty. From the results of the study, financial stability has a negative relationship in the first model and a positive relationship in the second model. However, it was significant at 10% in the first model and insignificant in the second model. This result is interesting as it provides an avenue for further studies. More importantly, this result implies that financial stability has little to no impact on the poverty levels in SSA. This could be attributed to the fact that improvement in financial systems in SSA has no bearing on the poverty levels of the people. By implication, it is possible that financial services are either too expensive for the poor, crowd out local businesses in accessing loans for commercial purposes, or the available financial services are not targeted at the informal sector, where the majority of the people in SSA actively participate in economic activities. Thus, although the financial systems are improving with time, petty traders, market women, tabletop, and small-scale businesses are not benefiting fully from the strong financial system. Consequently, ensuring financial stability through measures like enhancing financial inclusion can contribute significantly to poverty alleviation efforts in both developed and developing economies.

Alloush (2023) and Oaker (2019) posit that well-being and poverty have a complex bidirectional relationship. Thus, the improvements in well-being (subjective, objective, financial, or psychological) may lead to increased income, while higher income levels can enhance mental health outcomes, reducing depression and stress. Following Ozili and Iorember, (2023), the study used health expenditure per capita (at PPP) as a proxy for well-being. The results suggest that improved well-being results in a reduction in the poverty levels in SSA by 15.2% and 8% in models 1 and 2, respectively. This result is consistent with the works of Ozili and Iorember (2023) and

Sawyer et al. (2022). From a categorization perspective, an improvement of well-being in francophone countries reduces poverty by 67.5% in model 1 and 20% in model 2. Poverty can have adverse impacts on physical and mental health, which affects overall well-being, perpetuating mental disorders and affecting help-seeking behaviors (Alloush, 2023; Oaker, 2019; Ozili & Iorember, 2023; Sawyer et al., 2022) as well as affecting the capability of the individual to function in economic activities.

Furthermore, individuals in poverty may experience lower levels of psychological well-being, creating a potential feedback loop that traps them in poverty. Improving the well-being of individuals is a much better way of addressing poverty, especially through interventions that improve mental health and well-being. This intervention can lead to positive outcomes such as increased household expenditure on healthcare, overall life satisfaction, and poverty reduction in SSA. Therefore, policies aimed at poverty alleviation should consider the significant impact of well-being on poverty dynamics to create more effective and holistic interventions.

Hunger and the interactive terms (HHR) between well-being and hunger showed a positive and statistically significant impact. While hunger increases poverty by 8% and 23% in models 1 and 2, respectively, the interactive term shows that hunger actually impacts poverty through wellbeing by 8.6% in the second model. The impact of both hunger and the interactive term (HHR) in francophone countries is less compared to anglophone countries. This is indicative in the result of the second model, as hunger increases poverty by 11%. This finding is consistent with the works of Chowdhury et al. (2013). Hunger significantly impacts poverty by being both a cause and a consequence of poverty. Upasana (2023) posits that hunger can be driven by factors like poverty, conflict, and climate change, which are prevalent in SSA, and are an albatross affecting billions and permeate almost the entire landscape of SSA. Hitchman (2023) in her examination points out that poverty and hunger are mutually inclusive and intertwined with each other, hence, requiring systemic changes like community empowerment and a shift to a social and solidarity economy from the trickle-down hypothesis. Most physical impairment, cognitive development conundrums, imperfect and inefficient economies, and conflict-prone environments in SSA are, in most cases, spin-offs from hunger and food insecurity (Behera et al., 2019). To achieve SDG 1 in SSA, there is a need to implement policies that promote inclusive economic growth,

sustainable agriculture, and functional social protection programs to break the cycle of poverty and hunger. For instance, Kenya's Hunger Safety Net Programme has shown that addressing hunger can significantly reduce multidimensional poverty, particularly among the poor of poor households (Song & Imai, 2019).

Inflation, as expected, has a positive impact on poverty. An increase in the inflation rate increases poverty by 2% in Model 1, although statistically insignificant. However, inflation was significant in Model 2 and increased poverty by 1%. The third model results are in Table 4.10. The chi-square test is significant, and the results showed that all the variables are statistically significant except for inflation and hunger.

4.6. Conclusion and Recommendation

4.6.1. Conclusion

The tale of this study is to assess the impact of institutional quality and financial stability on achieving Sustainable Development Goal one (eradicating extreme poverty), while accounting for the extent to which wellbeing and hunger exacerbate poverty. A panel of 23 Sub-Saharan African countries (SSA) from 2002 to 2020 was used. We created an institutional quality index with all six world governance indicators, and a financial stability index with bank concentration, banking Z-score, liquidity liabilities of banks to GDP, and bank credit to bank depositors using the PCA techniques. Additionally, following existing literature, we employed current health expenditure (PPP 2010 constant) as a percentage of GDP as a proxy for good health and well-being. Prevalence of undernourishment of 5 and above as a proxy for hunger. Moreover, to account for the English and French influence, we created a dummy (1=France, and 0=English) to account for the existence of institutional differences inherited from their colonial masters.

The results suggest that quality institutions and a stable financial system reduce poverty in SSA in general. However, the impact of French-speaking is higher compared to English-speaking countries. While in the French-speaking countries, the impact of institutions is higher, financial stability is lower in French-speaking countries compared to English-speaking countries. Additionally, whereas improved

well-being may reduce poverty levels, hunger rather increases the poverty levels. The impact of well-being in French-speaking countries is higher than in English-speaking countries. It was also observed that, although hunger increases poverty in general, the impact in French-speaking countries is less than in English-speaking countries in SSA.

Checking Sen's theory through the works of (Chowdhury et al., 2013), this chapter found similar results as the interactive term between well-being and hunger suggests that hunger impacts poverty through well-being, and the impact in English-speaking countries is more compared to French-speaking countries. Further, inflation was found to exacerbate poverty in Sub-Saharan. The primary limitation of the study was the inability to include all SSA countries due to data constraints. Further, future research can be conducted to include all SSA countries. Moreover, more control variables such as the informal sector output and the recently developed African transformation index, as well as other macro indices, could be included to provide a much deeper insight and information about the linkages that exist among the key variables.

Consequently, meeting Agenda 2030 will be a herculean task for the English-speaking countries until there is a deliberate effort and policy direction to improve the current situation of institutional weakness, maintain financial stability for a longer period, improve economic fundamentals, which will account for an improved well-being, and combat hunger. Despite recent pockets of coup d'état in French-speaking SSA countries, the French-speaking countries have chalked up much better success in achieving SDG 1. Per the results of the study, French-speaking countries need to do more to eliminate hunger and ensure food security. This can be done if the political environment experiences some stability, which will boost confidence in the economy as well as support a productive environment. More collaborative efforts between governments and multilateral agencies are crucial in helping SSA countries achieve SDG 1 fully.

4.6.2. Recommendations

From the results and discussion above, we made the following recommendations to governments, researchers, and related agencies.

- a) Governments should make efforts to strengthen their institutions as they form the bedrock on which other macroeconomic indicators can thrive in support of the achievement of the SDGs.
- b) Efforts should be made to eradicate food insecurity by implementing policies that support agricultural productivity and agribusiness expansion.
- c) Financial institutions should be innovative in providing access to financial services to the informal sector, as this will help transform petty trading businesses into SMEs, thereby increasing productivity, income, and reducing poverty.
- d) Further research can be conducted to provide more comprehension relative to intersectoral linkages between SDG Goal 1, institutional quality, and financial stability.

CHAPTER V

REDUCING FOOD INSECURITY IN SUB-SAHARAN AFRICA: THE ROLE OF INSTITUTIONS AND FINANCIAL STABILITY

5.1. Introduction

Sub-Saharan Africa (SSA) is at an important point in its development path but is currently experiencing different levels of poverty, hunger, and institutional inefficiencies. The Sustainable Development Goal (SDG) 1 is concerned with the eradication of all forms of poverty, whereas SDG 2 is directed at alleviating hunger, improving food security and nutrition, as well as sustainable agricultural practices by the year 2030 (Barbier & Burgess, 2021). These two goals may be somewhat independent, yet they are interlinked, and understanding the impact of institutional quality and stable financial systems in their interlinkages in SSA will be a requisite for their achievement by 2030 (Kablan, 2009). The attainment of SDGs by 2030 will hinge primarily on SDGs 1 & 2, which address the eradication of poverty and hunger in all its forms everywhere through food and nutrition security and sustainable agriculture development (Barbier & Burgess, 2019). These targets are even more pertinent in the case of Sub-Saharan Africa (SSA) where poverty and food insecurity are consistently moving upwards (Bjornlund et al., 2022).

According to Gerlach, (2015) the notion of “food security” was first introduced in 1974 during a discussion about the famine that had struck the Sahel and Dafur regions of Africa, which implies the ability to produce or obtain sufficient food to feed the residents. Considering the issue of global food insecurity, which is a threat, especially with the increase in the world population, encourages food and agricultural stakeholders to prioritize quality nutrition consumption, mechanized agriculture, food innovation, and circular economy within the present unfavorable climatic conditions (Boon et al., 2020; Brenya et al., 2024; De Froidmont-Goertz et al., 2020).

Poverty and food insecurity are pervasive issues in SSA as yet there has not been enough political commitment to address them. It has been estimated that the region's poverty rate decreased by only 1.6 percentage points between 2015 and 2018. In 2022, at least 123 million people (12 percent of SSA's population) were projected to be acutely food insecure (Barbier & Burgess, 2021). This indicates that food insecurity is a significant concern and needs more attention across the region. From the perspective of Development as a Freedom by Sen (1999), Mechlem (2004) posited that the right to food and nutrition are fundamental rights and form part of the development process. Globally, it has been estimated that demand for food and nutrition will increase by 50% in 2030 and will range between 80% and 100% by 2050 (Brenya et al., 2024; Gouvea et al., 2022) if prudent measures are not taken to ensure sustainable consumption amid a growing population.

The financial system in SSA has evolved from pre-colonial indigenous barter trade-like structures to a more complex system involving various financial institutions. However, the financial infrastructure in most countries remains light, and the contribution of the sector to growth and poverty reduction is still minimal (Gakunu, 2007). The financial sector's role in achieving SDGs 1 and 2 cannot be overstated, as it is crucial for mobilizing resources and directing them towards sectors that can help reduce poverty and improve food security (Kablan, 2009).

Understanding the relationship between SDG 2 through the lens of institutional quality and financial stability mechanisms in SSA is critical. Institutional quality refers to the effectiveness of social structures, including law, individual rights, and government regulation and services (Barbier & Burgess, 2019). A large empirical literature in economics has established a persuasive link between institutions and long-run economic development. Good governance and institutional effectiveness are associated with long-run development and sustainability success.

However, there is still insufficient evidence in the literature that addresses the impact of institutional quality and financial stability on food security and its dimensions. Additionally, the trilateral relationship that seeks to understand the simultaneous impact of poverty and well-being on food security has not been addressed. This chapter aims to fill this gap by analyzing the impact of institutional quality, financial stability,

poverty, and well-being on food security. It further elaborates on how the dimensions of food security are impacted.

This chapter seeks to find answers to the research question “How do institutional quality and financial stability affect food insecurity (SDG 2) in SSA, taking into account the intricate relationship between poverty and food insecurity, and well-being and food insecurity?”. In solving the question, the chapter seeks to investigate the synergistic effect of quality institutions and stable financial systems on food insecurity and its dimensions. It also seeks to understand the relationship between well-being, poverty, and food insecurity.

To reach these objectives and to answer the research question, this chapter relies on the following hypothesis:

H1: Institutional quality and financial stability reduce food insecurity.

H2: Well-being reduces food insecurity.

H3: Poverty worsens food insecurity situations.

Through these hypotheses, this chapter reinforces the need to address the escalating challenges of poverty, food insecurity, and well-being in Sub-Saharan Africa. The chapter also sheds more light on how institutional quality and financial stability affect the various dimensions of food security, thus elaborating on which one should be prioritized. Additionally, this chapter emphasizes the need to improve well-being and reduce poverty, as they are critical in ensuring a secure food system.

The rest of the chapter is structured in a way that the Food Security situation and financial systems in Sub-Saharan Africa are presented in sections 4.1.1 and 4.1.2, respectively. The theoretical and empirical literature reviews are presented in section 4.2, while section 4.3 contains the methodology (theoretical and empirical), the results and discussions are in section 4.4, and the conclusions and recommendations are in section 4.5.

5.1.1. Food Security in Sub-Saharan Africa

The COVID-19 pandemic resulted in a sharp rise in food insecurity issues. Global hunger has remained relatively unchanged from 2021 to 2022. Considering the midrange (about 735 million), 122 million more people faced hunger in 2022 than in 2019, before the global pandemic, when the prevalence of undernourishment (PoU) was 7.9 percent. However, undernourishment in Africa continued to rise in 2022, reaching 19.7 percent, well above the global average, and equivalent to more than 280 million people (see Figure 1 below). Among the subregions of Africa, hunger in 2022 was the lowest in Northern Africa, where the PoU was 7.5 percent (below the global average), followed by Southern Africa, where an estimated 11.1 percent of the population was undernourished. The PoU was highest in Central and Eastern Africa (about 29 percent in both cases), twice the prevalence in Western Africa (14.6 percent) (FAO et al., 2024). Sub-Saharan Africa is home to a significant proportion of the world's population experiencing food insecurity and poverty. According to recent estimates, the region accounts for the highest prevalence of undernourishment globally, with over 22% of its population undernourished (FAO et al., 2020). Factors contributing to food insecurity include inadequate agricultural productivity, climate change impacts, conflicts, and limited access to markets and technology (FAO et al., 2020; Zeufack et al., 2020).

The 2024 Global Report on Food Crisis (GRFC) underscores that conflict, extreme weather conditions, economic shocks, and forced displacement continuously escalate the rate of food insecurity and malnutrition throughout the region, with the outlook for 2024 equally grim. Gustafson, (2020) posits that the outlook for the region for 2024 is not clear relative to food security. She adds that some countries in the region are expected to experience a reduction in the number of people facing acute food insecurity owing to better food supply systems and declining inflation. In general, levels of acute food insecurity are anticipated to remain high across the region, and conflict and population displacement are expected to persist in several countries.

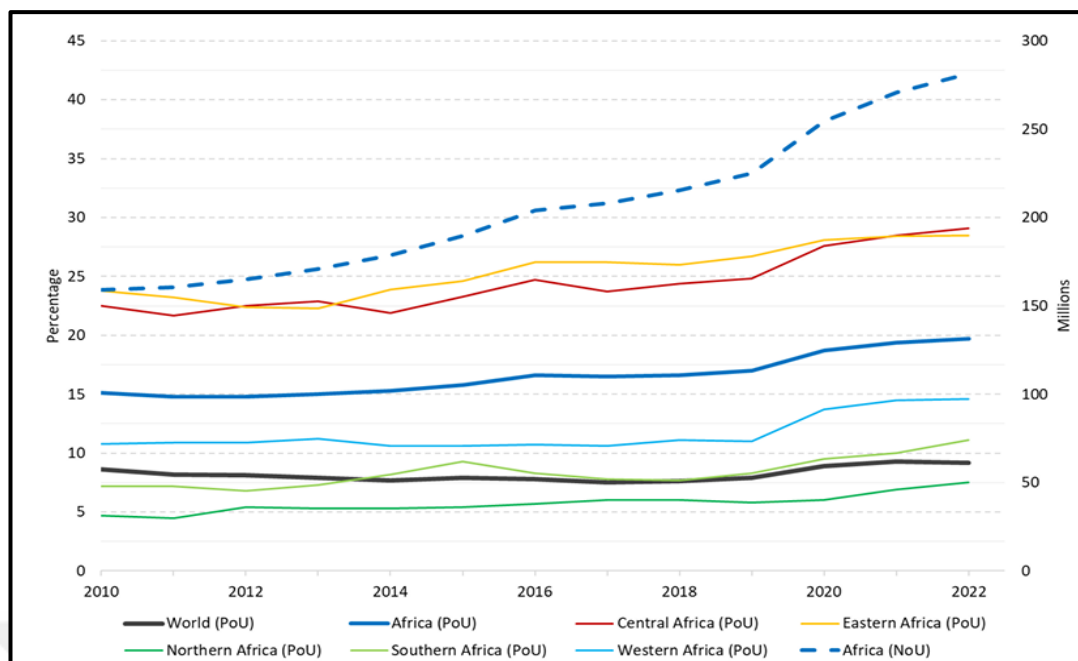


Figure 5.1. Prevalence of Undernourishment in the World, Africa, and Subregions, and the Number of Undernourished in Africa

Reference: FAO et al., (2024)

The GRFC shows that about 49.6 million people (forming 21%) in 13 countries in Central and Southern Africa are experiencing acute food insecurity in 2023 (see Figure 5.1). Out of these, 3.9 million are acutely malnourished children in five food crisis countries¹¹ with 1.2 million suffering the most severe form of wasting. One of the key drivers of this acute food crisis is the continuous conflict in the Democratic Republic of Congo (D.R. Congo), the Central African Republic, and Mozambique (FSIN & Global Network Against Food Crisis, 2024). Gustafson, (2020) explains that the conflict situation led to the displacement of households, a fall in agricultural production, high unemployment, and a distortion of free trade market access. Further, climate change and extreme weather conditions also played a significant role in pushing hunger and malnutrition levels in the sub-region.

The situation in East Africa is far worse. The GRFC shows that 64.2 million people (24% of the population) are exposed to high levels of food insecurity in 8 countries in 2023. This is due to the lingering impact of the extraordinary drought that persisted between 2020–2023, the El Niño-driven floods, unending heightened conflicts (in

¹¹ These countries are the Central African Republic, D.R. Congo, Zimbabwe, Mozambique, and Zambia

Sudan, Somalia, and Ethiopia), and the cyclical macroeconomic instability exacerbated already high levels of acute food insecurity in eight countries across East Africa (FSIN & Global Network Against Food Crisis, 2024). This has caused a decline in agricultural output and restricted financial access to food, which culminated in limited access to food by households. The overwhelming influx of refugees from the Sudanese conflict increased the burden on a few resources in the countries along its borders. Countries such as Burundi, Djibouti, Somalia, and areas of Kenya experienced significant deterioration in their food security situations in 2023, and particularly in South Sudan, 63 percent of the population witnessed high levels of acute food insecurity. Uganda, however, was an outlier in the region as it saw a slight reduction in the proportion of people who are in urgent need of food assistance (Gustafson, 2020).

The GRFC also indicated that West Africa and the Sahelian sub-region have their fair share of food insecurity, restricted access to basic services, and poor nutritional practices that affect child and maternal nutrition. Further, the GRFC revealed that 44.3 million people (that is 11% of the total population of 14 countries) were food insecure in 2023, 14 million children are acutely malnourished, with a staggering 3.9 million of them experiencing severe wasting. Gustafson (2020) specifically points out that Nigeria, Burkina Faso, Niger, Cameroon, Chad, Senegal, Mali, Sierra Leone, and Côte d'Ivoire are the 14 countries with major food crises in the sub-region. Moreover, the deteriorating insecurity and weather conditions exacerbated Chad's and Nigeria's acute food crisis issues.

5.1.2. Financial Systems in Sub-Saharan Africa

Sub-Saharan Africa (SSA) has made significant strides in financial inclusion over the past decade, driven largely by mobile money adoption (Demirgüç-Kunt & Klapper, 2012). Although a great deal of the countries in SSA are characterized by relatively stagnant financial sectors with little or no active participation in banking, lending, and the stock exchange, the financial systems in SSA, particularly financial inclusion efforts like the mobile money system, have been a game changer as far as the economic activities of the region and the fight against poverty and hunger are concerned. This was made possible due to the upsurge in the demand for reforms such as technological change and “the fintech burst” that has expanded the scope of financial inclusion (Demirgüç-Kunt et al., 2022b). Nevertheless, such systems are also often plagued by

a number of factors, including but not limited to a lack of penetration of financial services (access to credit, mutual funds, and bank loans), weak capital market structures and regulations, and ineffectual capital management policies. Additionally, the region is still beset with several factors that limit the optimum functioning of its financial systems (Gulde et al., 2006).

There has not been a one-size-fits-all approach to financial inclusion in SSA. Between 2017 and 2022, most countries saw a big increase in people having bank accounts, mainly due to mobile money (Demirgüç-Kunt et al., 2020). For instance, while Senegal and South Africa saw a huge jump of around 15% in the number of mobile money accounts, Kenya had a decrease in account ownership (see Figure 2 below). This could be due to institutional frameworks like political stability and financial regulations, as well as market structures such as competition between banks, and the overall economic situation.

The banking sector in SSA is dominated by a small number of large banks that control a significant portion of financial assets. Many of these banks are foreign owned, particularly in countries like Kenya, Nigeria, Ghana, and South Africa (see Figure 10 below). The banking sector is often highly concentrated, with the top five banks in most countries controlling more than 70% of banking assets. This concentration limits competition, which can stifle innovation and reduce the quality of services offered to consumers (Beck et al., 2015). One of the major challenges in the banking sector is the low level of credit provision to the private sector for agricultural investment. The International Monetary Fund (IMF, 2024) posited that the average credit-to-GDP ratio in SSA is around 20%, which is significantly lower than in other developing regions. Many banks prefer to invest in government securities, which are seen as less risky than lending to businesses and individuals, especially in an environment with weak credit information systems and poor contract enforcement mechanisms. These weak systems jeopardize the stability of the financial sector, especially when foreign banks decide to fold up or the government defaults on its debt. For instance, Ghana's financial sector clean-up exercise, coupled with government debt default in 2022, has caused an unstable financial environment, which **resulted in a “haircut” of investors' dividends**¹².

¹² <https://www.reuters.com/article/markets/commodities/ghana-asks-bondholders-for-30-40-haircut-idUSL1N3BM1RY/>

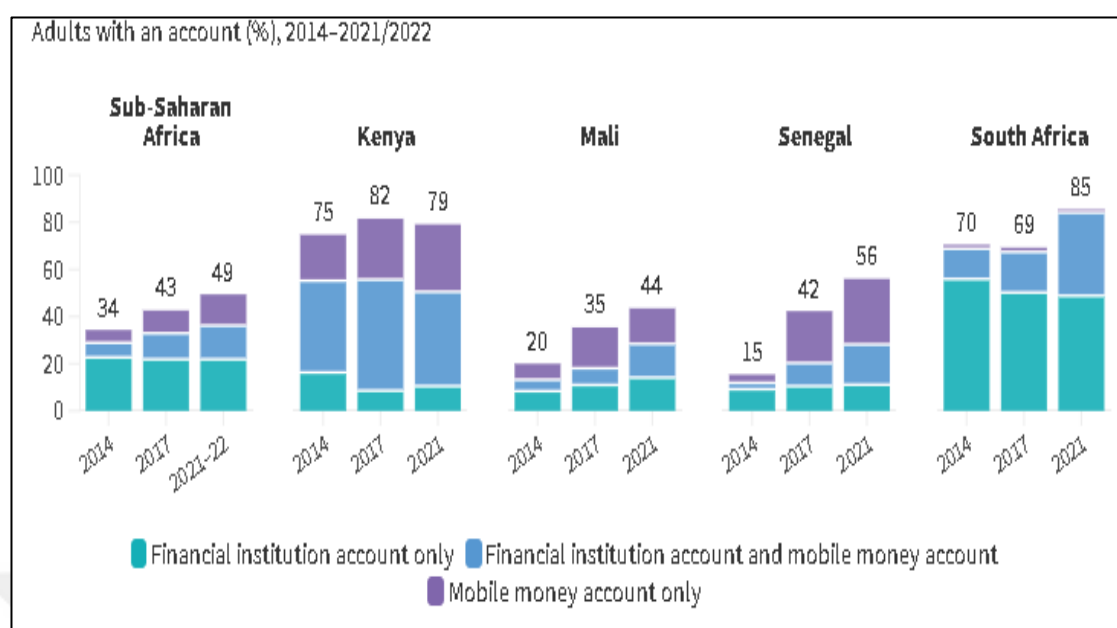


Figure 5.2. Growth of Bank Accounts in SSA

Reference: Global Findex 2021¹³

Moreover, the financial systems in SSA are characterized by vulnerabilities, including inadequate risk management practices, weak supervision and regulation, and susceptibility to external shocks. Financial instability can exacerbate poverty and food insecurity by disrupting economic activities, reducing investment flows, and undermining social safety nets (IMF, 2024). Additionally, weak regulatory frameworks are another major obstacle to the development of financial systems in SSA. IMF (2024) economic output report of SSA indicates that SSA countries have outdated financial regulations that do not adequately address modern financial risks such as cybercrime and money laundering. Furthermore, regulatory bodies often lack the capacity and resources to effectively supervise financial institutions. This can lead to systemic risks, as was evident during the banking crises in Nigeria and Ghana in the late 2010s. Cross-border banking also presents challenges for regulators. Many of the largest banks in SSA operate across multiple countries, which requires coordination between national regulators. However, differences in regulatory standards and supervision across countries can create loopholes that financial institutions may exploit, leading to instability (Beck et al., 2015).

¹³ Data

Further, financial system development in SSA is constrained by inadequate infrastructure. The 2024 Global Systems for Mobile Communications Association (GSMA) report on the state of the mobile banking and finance industry indicates that physical banking infrastructure, such as branches and ATMs, in Africa is sparse, especially in rural areas. The report further indicated that there is a lack of digital infrastructure, as many countries experience low internet penetration rates and poor mobile network coverage. These deficiencies and bottlenecks limit the reach of digital financial services and mobile banking, which could otherwise play a key role in expanding financial inclusion (GSMA, 2024).

The introduction of the African Continental Free Trade Area (AfCFTA) in 2021 creates a conducive climate for both financial integration and the alignment of different regulatory standards across the continent. If the provisions of AfCFTA were to be enforced without any barriers to cross-border financial flows and investments, there would be the development of financial markets in the region. Beck and Maimbo (2012) argue that governments in the SSA should not only focus on efforts to improve the best practices of the existing financial systems but also alter the existing systems and build new ones, including investment in digital infrastructure. Moreover, all the stakeholders, including the regulatory bodies, have to enhance their supervisory and enforcement functions to safeguard the consumers and risks associated with the sector.

5.2. Literature Review

5.2.1. Food Security Theories

Theories of food security span several academic disciplines, including economics, political science, sociology, and environmental science. The complexity of food security concepts has attracted several theories that discuss these complexities in ensuring adequate access to quality food for all.

The oldest of all the theories on food security is the Malthusian theory, proposed by Malthus in 1798 (one of the foundational theories of food security) suggested that while food production increases arithmetically, the population grows exponentially, inevitably leading to a mismatch between food supply and demand (Malthus, 2023).

Thus, food insecurity is a result of overpopulation, which stresses natural resources and food systems beyond their capacity. Empirical studies by Wang et al. (2020) confirm that growing populations and increasing food demand contribute to food shortages. For example, rising populations require more water and land for housing, which impacts agricultural productivity. However, although critics have highlighted the failure of Malthus's predictions in light of technological advances in agriculture, such as the Green Revolution, his theory continues to influence contemporary debates on the carrying capacity of ecosystems, environmental degradation, and sustainability (Hussen, 2023).

These concepts were taken up again by the Neo-Malthusians, who emphasized the population-environment interactions, especially land use and food production. They contend that population growth and the need for food increase faster than the productivity of the land. Subramaniam et al., (2022) also, stress the importance of arable land to food security. They noted that as the arable land size expands, so does the capacity for food supply, which is critical for alleviating threats to food security.

Additionally, the Food Availability Decline (FAD) theory argues that food insecurity arises from a reduction in food availability, whether due to environmental disasters, poor agricultural output, or trade restrictions. FAD was central to understanding famines and food shortages, particularly in the Global South (Devereux, 2007) in the early 20th century. FAD suggests that food insecurity is closely linked to natural or human-induced disruptions that reduce the total supply of food, such as droughts, floods, or conflicts. Further, the theory posits that agricultural credit (CA) plays a key role in food production by providing farmers with resources to enhance productivity. Hussain and Thapa (2012) note that credit availability improves farm output, while Adams and Fitchett (2020) show that credit enables the shift from traditional farming to commercial practices like producing fruits, cotton, and livestock using modern inputs. A strong credit system can, therefore, boost food production and security. FAD also identifies environmental degradation as a significant barrier to food supply. Rasul and Sharma, (2016) and Dawson et al., (2016) emphasize that degradation disrupts rainfall, reduces water, and affects biodiversity, lowering crop yields and threatening food security, especially in developing countries.

Furthermore, the Food Entitlement Decline (FED) theory proposed by Sen, (1981) revolutionized the understanding of food security. Sen's argument shifted the focus from food availability to the ability of individuals to access food. FED theory is geared towards the alternative commodity bundles that a person can command in society. It focuses primarily on accessibility to food and constitutes the demand side of food security. Sen, (1981) argues that food insecurity often results not from a lack of food but from inequalities in the distribution of resources and entitlements that allow people to acquire food. FED theory stresses that individuals possess entitlements based on their ownership of goods and resources, which they can trade or exchange for food. When these entitlements are disrupted, such as through loss of income, employment, or land, people can face food insecurity even in the presence of a sufficient food supply.

Furthermore, FED has been influential in positioning food security as a socio-political issue, as the distribution of power, resources, and economic opportunities determines the accessibility of food. It also underscores the importance of social safety nets, public policy, and governance in addressing food insecurity. Tefera et al., (2022) also, explain that income affects consumers' ability to afford and access food. Thus, households or individuals with higher incomes are more likely to afford and access quality and safe food. To be food secure, income plays a central role as it minimizes the poverty levels of people and increases their purchasing (Subramaniam et al., 2022). However, the FED theory faces the challenge of inflation, especially food price inflation, which could erode the purchasing power of people, push more people into poverty, and create food insecurity. Chen et al., (2022) concluded that higher food prices lower the purchasing power of households, which negatively impacts their capacity to be food secure.

Additionally, the Sustainable Livelihoods Approach (SLA) emerged as a response to the need for more holistic frameworks to address food security. SLA is centered on the capacity of households to sustain their livelihoods despite the environmental, economic, and social challenges. SLA posits that food security is closely connected to the ability of individuals to access and manage various forms of capital: natural, human, financial, social, and physical (Scoones, 1998). Additionally, SLA emphasizes the resilience of households to adapt and transform their livelihoods in response to

shocks like climate change, market fluctuations, or conflict. Ellis (2000) points out that livelihoods are dynamic and multidimensional; hence, supporting households to build and sustain diverse livelihood strategies is essential to ensure food security. The SLA has been widely adopted by development agencies and governments as a tool for designing food security programs, particularly in rural and agrarian settings.

The Human Rights-Based approach (HRB) to food security also argues that access to adequate food is a fundamental human right and it is enshrined in international agreements such as the Universal Declaration of Human Rights and the International Covenant on Economic, Social, and Cultural Rights (ICESCR). This approach posits that governments are obligated to respect, protect, and fulfill the right to food for all citizens, and to ensure that food security is not just a policy goal but a legal entitlement. The fundamental underpinning of HRB is that food insecurity is caused by systemic inequalities and failures in governance, where marginalized populations, such as the poor, landless, and indigenous communities, are denied access to the resources they need to produce, distribute, or purchase food (FAO, 2006). Schutter, UN (2011) concludes that addressing food insecurity requires legal reforms, land rights, social protections, and the political will to hold governments accountable for upholding their citizens' right to food.

Another Food security theory is the Market Failure (MF) hypothesis, in which González de la Rocha (2007) argues that food security problems occur when food, as a public good, is often considered as a private good. Thus, González de la Rocha (2007) explains that food insecurity becomes clear when there is a common social good, such as food that is accessible to all; however, no individual owner is allowed to possess it. Subramaniam et al. (2022) point out that growing prices of food may suggest that the public nature of food does not exist, but is rather the people's private possession. Hence, the significance of public goods production by good governance comes into play in the pursuit of social efficiency and equity.

The Food Sovereignty Theory (FST) emphasizes the control of food systems instead of seeking food security through market interventions. FST calls for communities' rights to produce food that is appropriate to their culture and environment, and free from transnational corporations. Food sovereignty theory proposes an alternative to

the conventional understanding of food security that stresses the importance of arable land access, endogenous knowledge, agroecological practices, and social relations, rather than merely the production of food in fighting food insecurity. Patel, (2009) points out that hunger and food insecurity are structured by the global economy, which is more concerned with economic gains and disregards the right of people to food. This exemplifies the need for a food system that is inclusive, where there are provisions for the farmers and the consumers to enhance their power over the production, distribution, and utilization of food. Food sovereignty also incorporates issues of gender equality, indigenous rights, and social justice (Patel, 2009; Wittman, 2011) in ensuring food security. FST serves as a framework used to address the root causes of food insecurity and the environmental impacts of industrial farming through the encouragement of local autonomy and sustainable agriculture.

Lastly, the Nutrition Transition Theory (NTT) posits that changes in dietary patterns occur as societies develop economically and urbanize, and this has significant implications for food security and health. Popkin, (2006) explains that the diet of humans has evolved from hunter-gatherer societies with low-fat diets to modern societies characterized by processed foods, high-fat and sugar intake, and sedentary lifestyles. NTT assumes that urbanization results in a shift from traditional to more Western diets, which culminates in a reduction in undernutrition but contributes to a "double burden" of malnutrition, where both undernutrition and overnutrition coexist within a population. This transition is linked to rising income levels, globalization, and changes in food systems that include the proliferation of fast food and globalized food chains (Drewnowski & Popkin, 2009; Popkin, 2006). As a food security theory, NTT highlights the importance of not just food availability or accessibility but also the nutritional quality and safety of food and the social factors that influence dietary choices.

5.2.2. Empirical Review

Institutional quality and financial stability have been demonstrated in several studies to have a significant impact on food security across different regions. High-quality institutions can mitigate the adverse effects of food insecurity and environmental degradation, thereby enhancing health outcomes and achieving sustainable

development goals. Similarly, a stable financial system can enhance food security through the granting of financial solutions to support agricultural production and increase household income to enable them to access and afford food. Institutional quality and governance are critical determinants of development outcomes in SSA. Weak governance structures, corruption, lack of transparency, and inefficiencies in public institutions undermine efforts to address poverty and food insecurity effectively (Kaufmann et al., 2010). The World Bank (2017) stressed that strengthening institutional quality entails reforms aimed at enhancing transparency, accountability, and the rule of law, as well as building administrative capacity at both national and local levels.

There are some works of literature on institutional quality and food security. Azimi and Rahman, (2024) investigated food insecurity, environment, institutional quality, and health outcomes in South Asia using data from 2000 to 2021 and two-step system GMM estimation techniques. They found that institutional quality significantly moderates the relationship between food security and health outcomes. Nawaz et al., (2014) also indicate that institutions are crucial in stimulating long-term economic growth in selected Asian economies, but with lower effectiveness in developing Asia countries as compared to developed Asian countries.

Azam et al., (2021) examined how institutional quality impacted sustainable development in some developing countries. They concluded that institutional quality does not affect the achievement of sustainable development (proxied by savings rate per capita) for the selected countries. Their findings also indicate that this phenomenon is prevalent in low-income countries due to the existence of lower institutional quality as compared to lower-middle-income countries. Ashraf and Javed (2023) worked on the nexus between food security, human capital, environmental degradation, and institutional quality with the data of BRI countries from 1987 to 2019 using both the one-step and two-step system GMM estimator. They found that institutional quality decreases the negative environmental implications of food security. They studied the impact of corruption on food security and found that an increase in corruption affects food security through the postponement and enforcement of stringent food security laws. Similarly, Anik et al. (2013) study on Bangladesh has found a negative relationship between household calorie consumption and the cost of corruption. They further

indicated that the impact of corruption on low-income households was higher due to their inability to adjust their fixed budget to accommodate higher budget allocation to food.

Oyelami et al., (2023) investigated the relationship between climate change, institutional quality, and food security in Sub-Saharan Africa using the Ordinary Least Squares and Cross-Sectional Autoregressive Distributed Lag (CS-ARDL) estimation with data from 1996-2020. They found that institutional quality has a negligible impact on food security. Yiadom et al., (2023) studied the potential of institutional quality in addressing food security, urbanization, and climate change by employing two-stage least squares and data for 28 African countries between 2012 and 2021. Their findings indicate that institutional quality has a significant positive impact on food security and can mitigate the negative effects of extreme weather. Soko et al., (2023) studied the role of institutional quality in public agricultural spending on food security in SSA and Asia using data from 2003 to 2014 and a panel-fixed estimation with a robust standard error. They found that institutional quality plays a significant mediating role in the impact that public agricultural spending has on food security. They emphasized that public investment in agriculture enhances food security, yet its effectiveness is dependent on improvements in the quality of public institutions.

The literature on financial stability and food security is very scanty as most of the studies focus on financial literacy, financial inclusion, digital finance, or financial development. Ankrah Twumasi et al., (2023) assessed the relationship between food and nutrition security and financial literacy in Ghana using endogenous treatment regression techniques, using 2018 survey data on farmers. They found that financial literacy enhances food and nutrition security and concluded that there is a heterogeneous relationship between food security and financial literacy. Financial literacy aids individuals with skills to understand financial services and can identify which financial product increases their ability to secure food resources. Carman and Zamarro (2015) investigated the relationship between financial literacy and food security. They found that low-income households that have acquired financial literacy are less likely to experience food insecurity.

Financial Inclusion plays a crucial role in ensuring food security. Astuti and Hartono, (2023) use the 2020 National Socio-Economic Survey of Indonesia and ordinary least squares estimation techniques to investigate whether financial inclusion improves food security. Their results indicate that financial inclusion boosts food security. They stressed that financial inclusion increases household access to credit and savings for agricultural risk management and food purchases in Indonesia. (Annim & Frempong, 2018) also found a positive relationship between financial inclusion and food security in Ghana. They emphasized that access to finance increases households' capability to expand the diversity of food consumed. (Jia et al., 2021) study the relationship between SDGs, financial inclusion, and food security. They found that financial inclusion promotes grain efficiency through production and distribution, thus ensuring food security. Arshad, (2022) assesses the impact of financial inclusion on food security in developing countries and finds that financial inclusion significantly impacts food security in developing countries. The findings further indicate that while financial development, per capita income, and education positively influence food security, militarization and urbanization negatively affect it.

Renata et al., (2020) find a positive impact of financial inclusion on food security. However, they indicate that the impact may vary between countries. Das (2012) explains that financial inclusion (providing access to banking services for impoverished communities) is essential for sustainable development and can indirectly enhance food security. Shobe et al., (2018) looked at household financial capital and food security in the USA. They found that homeowners are more likely to be food secure than individuals who have mortgages or rent to pay. Their findings suggest that individual with financial assets is more food secure than those without financial assets. Tan et al., (2024) assessed the impact of digital financial inclusion on multidimensional food security in China and found that digital financial inclusion significantly enhances multidimensional food security in China through urbanization. This, in effect, improves agricultural productivity and income for low-income households in China.

Khan et al., (2022) investigated the impact of external financial inflows on food insecurity in the least developed countries. They found that financial development positively impacts food security by reducing undernourishment in least-developed

countries through FDI and official development assistance. Dzhorobaeva, (2022) studied the relationship between food security and financial development in the Kyrgyz Republic and found that financial development is key to reaching food security. (Pawlak & Kołodziejczak, 2020) emphasized that financial development impacts food security by influencing agricultural productivity, access to resources, and the ability to import food in developing countries. McMichael, (2017) indicates in his studies indicate that financial development often prioritizes large-scale agricultural investments, which can undermine food security by neglecting small-scale producers and fostering dependency on imported food rather than supporting local agriculture.

Jaud and Kukenova (2011) add that financial development is critical in the long-term survival of agri-food exports, especially for products that need external financial funding. Thus, financial development extends financial services and credits for expansion in production for both exports and local consumption, hence ensuring long-run food security. Claessens and Feyen, (2007) showed in their studies that financial sector development reduces hunger by increasing agricultural productivity through greater access to mechanically efficient and productivity-enhancing equipment. Vuță et al., (2019) concludes that government support for agricultural research and development is crucial for maintaining food security. However, there seems to be a gap in the literature on financial stability, which this study seeks to fill. Additionally, the study combined both institutional quality and financial stability in one model and introduced poverty and well-being into the model to provide more insights into the functioning and capability of poor people in food security literature.

5.3. Methodology

5.3.1. Data Sources

This study used an unbalanced data set of 28 Sub-Saharan African Countries with an annual dataset from 2011 to 2021. Due to a lack of data availability, all 38 Sub-Saharan African countries were not used for the study. In constructing the index for institutional quality and financial stability, Principal Component Analysis (PCA) was employed. The data on the food security index and its four dimensions (accessibility, availability, utilization, and sustainability) were taken from the Global Food Security Index (GFSI).

Five of the six World Governance Indicators (rule of law, control of corruption, political stability, regulatory quality, governance effectiveness) were used to create an index for institutional quality, whereas banking Z-score and Bank liquidity coverage ratio data were used to create an index for financial stability.

The data for the two indices were taken from the World Bank's World Governance Indicators (WDI) and Global Financial Development (GFD), respectively. Additionally, the study sought to understand how the well-being and poverty levels of the countries' understudy affect the food security issues. Therefore, the study incorporated domestic health expenditure (at international PPP) as a proxy for well-being, following the work of Ozili and Iorember, (2023) and the poverty gap as a proxy for poverty. The poverty gap index as a measure of poverty was taken from the World Bank Poverty and Inequality Platform, and it satisfies the monotonicity and transfer assumptions in measuring poverty. de Janvry and Sadoulet, (2015) posit that the poverty gap index is more robust in measuring poverty than the headcount index. For policy control purposes, the study employed population growth, inflation, and agricultural land (% of land area) from the World Development Index dataset (WDI).

Table 5.1. Variable Description

Variable	Id	Description	Source
Food Security	FS	Food security is the state of having reliable access to sufficient, safe, and nutritious food to meet dietary needs and preferences for an active and healthy life	GFSI
Food Affordability	AFF	Food affordability refers to the ability of individuals and households to acquire sufficient quantities of affordable and nutritious food to meet their dietary needs and preferences.	GFSI
Food Availability	AVA	Food availability refers to the physical presence of food in sufficient quantities, variety, and quality to meet the needs of a population.	GFSI

Table 5.1. (cont.)

Food Quality & Safety	UTI	Food quality and safety refer to the characteristics of food that make it acceptable for human consumption, including its nutritional value, microbiological safety, chemical safety, and physical safety.	GFSI
Food Sustainability and Adaptation	SUS	Food sustainability ensures the ability of food systems to meet present needs without compromising future generations, while food adaptation allows these systems to adjust to changing environmental conditions for continued food security and sustainability.	GFSI
Financial Stability	FSI	The index was calculated using the banking z-score and bank liquidity coverage ratio.	GFD
Banking Z-score	BZS	Measures the financial stability of banks by estimating the probability of default. It is the sum of a bank's return on assets (ROA) and its equity-to-asset ratio, divided by the standard deviation of ROA over a period. A higher Z-score indicates greater stability, reflecting a larger buffer against losses.	GFD
Bank Liquidity Coverage Ratio	LCRS	This measure is related to bank liquid reserves, such as "Bank liquid reserves to bank assets ratio (%)," to assess the stability and resilience of financial institutions. The LCRS is a key prudential measure for bank liquidity and directly contributes to the overall financial stability.	GFD
Institutional quality	ISQ	Computed using 5 of the six world governance indicators (Control of corruption, regulatory quality, political stability, governance effectiveness, and rule of law)	WGI
Control of Corruption	COC	Measures the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as the capture of the state by elites and private interests.	WGI

Table 5.1. (cont.)

Regulatory Quality	REQ	This captures perceptions of the government's ability to formulate and implement sound policies and regulations that promote private sector development.	WGI
Well-being	DHE	Domestic private health expenditure per capita, PPP (current international \$)	WDI
Poverty gap	PGP	The mean shortfall in income or consumption from the poverty line at \$2.15 a day (2017 PPP).	PIP
Inflation	INF	The consumer price index	WDI
Population growth	POP	Annual population growth rate.	WDI
Agricultural Land	AGRL	Agricultural land refers to the share of land area that is arable, under permanent crops, and under permanent pastures (% of land area).	WDI

Additionally, the PCA is a dimension-reduction technique that decreases the dimension of huge data sets. This technique transforms large data sets of variables into a smaller one, retaining the significant information of the larger one.

5.3.2. Theoretical Model of Food Security

In this study, the Becker (1965) model of utility is modified to ascertain the impact of food security. Becker, (1965) was the pioneer in constructing a household production function and allocating time within the household. The utility is a function of a vector of attributes. In the utility function, (U_t), Currie, (2000) and (Arshad, 2022) included food in the function:

$$U_t = U(F_t C_t) \quad (5.1)$$

Where F_t is food security and C_t is consumption. The output of the activities is created by different inputs Pollak and Wachter (1975) and the products are linked with consumption in different phases of time, or the production of diverse activities (Becker, 1965; Michael & Becker, 1973).

$$F_t = F(N_t, T_F, X_t) \quad (5.2)$$

$$C_t = C(O_t, T_O, K_t) \quad (5.3)$$

The material inputs in equation 5.2 is N_t , T_F is the time used for food and X_t is the set of other determinants that affect food. O_t is the inputs that impact the consumption of other goods, T_O is the time spent on the consumption of other goods and K_t is a set of other variables that affect consumption. It is also important to state that equation 5.2 can be interpreted as a production function for food that explains the transformation of inputs into food.

$$I_t = E_t + w_t T_w \quad (5.4)$$

Where I_t is the total income, E_t is unearned income, w_t is the wage rate and T_w is the time spent working. Additionally, the total time is given as:

$$T_F + T_O + T_w = T \quad (5.5)$$

Where T is the total time, T_F denotes time spent on food, T_O denotes time spent on the consumption of other goods, and T_w is the time spent on earning a wage.

Further, the household faces time and budget constraints (Heckman, 1988). The demand for different activities shifts based on changes in the cost of goods and time. These shifts are influenced by how much time and resources are needed to produce each commodity (Arshad, 2022). Becker expanded on this idea by analyzing how the cost of time can vary between different activities. The household faces a maximization problem to achieve overall satisfaction with the available budget constraint. Therefore, the households aim to get the most out of their resources, considering both their budget and available time. The budget limitation, as shown in Equation (5.4), can be expressed as follows:

$$I_t = E_t + w_t T_w = P_{Nt} N_t + P_{ct} C_t \quad (5.6)$$

Where P_{Nt} is the price of material inputs and P_{Ct} is the price of consumption of other goods, the budget constraint is equivalent to the non-wage (E_t) and earnings ($w_t T_w$) to food expenditure ($P_{Nt} N_t$) and other commodity consumption ($P_{Ct} C_t$). Equation (5.5) provides the constraints of time, which indicates that the total available time (T) to a household is shared on food (T_F), consumption of other goods (T_o), and gaining wages (T_w). By putting equations (5.2) and (5.3) into equation (5.1), the utility function is transformed as:

$$U_t = U(F(N_t, T_F, X_t), C(O_t, T_o, K_t)) \quad (5.7)$$

Additionally, a combined time and budget constraint is formed by combining equations (5.5) and (5.6) as:

$$E_t + w_t(T - T_F - T_o) = P_{Nt} N_t + P_{Ct} C_t \quad (5.8)$$

Alternatively, the budget could be written as:

$$E_t + w_t T = (P_{Nt} N_t + w_t T_F) + (P_{Ct} C_t + w_t T_o) \quad (5.9)$$

The representative individual seeks to maximize their utility, as shown in Equation (5.7), while staying within the budget constraints outlined in Equation (5.8). Based on the Marshallian function framework, the utility maximization problem can be resolved by solving the first-order conditions following the demand functions. The utility maximization problem can be stated as follows:

Maximize:

$$U_t = U(F(N_t, T_F, X_t), C(O_t, T_o, K_t)) \quad (5.9)$$

Subject to:

$$E_t + w_t T = (P_{Nt} N_t + w_t T_F) + (P_{Ct} C_t + w_t T_o)$$

Employing the Lagrangian, the maximization problems can be expressed as:

$$\mathcal{L} = U(F(N_t, T_F, X_t), C(O_t, T_O, K_t)) + \lambda(E_t + w_t T = (P_{Nt}N_t + w_t T_F) + (P_{ct}C_t + w_t T_O)) \quad (5.10)$$

The first-order condition of the equation follows:

$$\frac{\partial \mathcal{L}}{\partial N_t} = U_F \left(\frac{\partial F}{\partial N_t} \right) - \lambda P_{Nt} = 0 \quad (5.11)$$

$$\frac{\partial \mathcal{L}}{\partial T_F} = U_F \left(\frac{\partial F}{\partial T_F} \right) - \lambda w_t = 0 \quad (5.12)$$

$$\frac{\partial \mathcal{L}}{\partial O_t} = U_C \left(\frac{\partial C}{\partial O_t} \right) - \lambda P_{ct} \left(\frac{\partial C}{\partial O_t} \right) = 0 \quad (5.13)$$

$$\frac{\partial \mathcal{L}}{\partial T_O} = U_C \left(\frac{\partial C}{\partial T_O} \right) - \lambda w_t = 0 \quad (5.14)$$

$$\frac{\partial \mathcal{L}}{\partial \lambda} = E_t + w_t T - (P_{Nt}N_t + w_t T_F) - (P_{ct}C_t + w_t T_O) = 0 \quad (5.15)$$

Simplifying all the equations:

$$U_F \left(\frac{\partial F}{\partial N_t} \right) = \lambda P_{Nt} \quad (5.16)$$

$$U_F \left(\frac{\partial F}{\partial T_F} \right) = \lambda w_t \quad (5.17)$$

$$U_C \left(\frac{\partial C}{\partial O_t} \right) = \lambda P_{ct} \left(\frac{\partial C}{\partial O_t} \right) \quad (5.18)$$

$$U_C \left(\frac{\partial C}{\partial T_O} \right) = \lambda w_t \quad (5.19)$$

$$E_t + w_t T - (P_{Nt}N_t + w_t T_F) - (P_{ct}C_t + w_t T_O) = 0 \quad (5.20)$$

To get the demand function for material inputs N_t , equations 5.16 to 5.20 are solved to get the function:

$$N_t^* = N^*(P_{Nt}, P_{ct}, w_t, E_t, X_t, K_t) \quad (5.21)$$

Substituting equation 4.21 into the food equation, the following model was generated:

$$F_t = F(N_t^*, T_F, X_t) \quad (5.22)$$

Alternatively, the model could be rewritten as:

$$F_t = F(N^*(P_{Nt}, P_{ct}, w_t, E_t, X_t, K_t)) \quad (5.23)$$

Equation 5.23 posits that food is affected by material input (P_{Nt}), price of other commodities (P_{ct}), wage rate (w_t), and non-wage income (E_t). However, other factors that affect food security include stable financial systems to support agricultural investment to boost productivity, strong institutions and systems, population growth, agricultural arable land size which affects yields and productivity relative to efficiency of use; poverty levels and well-being of the population, and inflation which affects prices of agricultural inputs and purchasing power of consumers.

5.3.3. Empirical Model

This study looks at the role of institutional quality and financial stability in reducing food insecurity and how poverty and well-being impact the effort to ensure food security. The module of this study follows the work of (Arshad, 2022). Thus, the study evaluates the impacts by considering the model:

$$FS_t = F(FIS, ISQ, DHE, PGP, INF, POP, AGRL) \quad (5.24)$$

Model 1 is an econometric expression of equation (5.24) as:

$$FS_{it} = \alpha_0 + \alpha_1 FS_{it-1} + \alpha_2 FIS_{it} + \alpha_3 ISQ_{it} + \alpha_4 DHE_{it} + \alpha_5 PGP_{it} + \alpha_6 INF_{it} + \alpha_7 POP_{it} + \alpha_8 AGRL_{it} + \mu_{it} \quad (5.25)$$

Where *FS* is food security, *FIS* is financial stability, *ISQ* is institutional quality, *DHE* is the domestic health expenditure (a proxy for wellbeing), *PGP* is poverty gap (a proxy for poverty), *INF* is inflation, *POP* is the annual population growth rate, *AGRL* is the agricultural land area, *i* is the country and *t* is the time.

Food security, according to the Food and Agriculture Organization (FAO), has four components, namely, Availability, Accessibility, Utilization, and Stability. The World Bank's Global Food Security Index (GFSI) categorizes the components as Affordability (AFF), Availability (AVA), Quality and Safety (QAS), and Sustainability and Adaptation (SUS). Understanding the impact of the regressors on these components is key to the analysis of this study. Therefore, the Model 1 is decomposed to account for impacts on the four components (Model 2, 3, 4, and 5) as follows, using the GFSI categorization respectively:

$$AFF_{it} = \alpha_0 + \alpha_1 AFF_{it-1} + \alpha_2 FIS_{it} + \alpha_3 ISQ_{it} + \alpha_4 DHE_{it} + \alpha_5 PGP_{it} + \alpha_6 INF_{it} + \alpha_7 POP_{it} + \alpha_8 AGRL_{it} + \mu_{it} \quad (5.26)$$

$$AVA_{it} = \alpha_0 + \alpha_1 AVA_{it-1} + \alpha_2 FIS_{it} + \alpha_3 ISQ_{it} + \alpha_4 DHE_{it} + \alpha_5 PGP_{it} + \alpha_6 INF_{it} + \alpha_7 POP_{it} + \alpha_8 AGRL_{it} + \mu_{it} \quad (5.27)$$

$$QAS_{it} = \alpha_0 + \alpha_1 QAS_{it-1} + \alpha_2 FIS_{it} + \alpha_3 ISQ_{it} + \alpha_4 DHE_{it} + \alpha_5 PGP_{it} + \alpha_6 INF_{it} + \alpha_7 POP_{it} + \alpha_8 AGRL_{it} + \mu_{it} \quad (5.28)$$

$$SUS_{it} = \alpha_0 + \alpha_1 SUS_{it-1} + \alpha_2 FIS_{it} + \alpha_3 ISQ_{it} + \alpha_4 DHE_{it} + \alpha_5 PGP_{it} + \alpha_6 INF_{it} + \alpha_7 POP_{it} + \alpha_8 AGRL_{it} + \mu_{it} \quad (5.29)$$

Where *AFF*, *AVA*, *QAS*, and *SUS* represents food affordability, availability, quality, safety, sustainability, and adaptation, respectively.

This study employs the two-step system Generalized Methods of Moments (GMM) estimator developed by Arellano and Bond, (1991) and Arellano and Bover, (1995) for dynamic panel data. This method is preferable, especially when the cross sections are larger than the time series ($N > T$). The problem of serial correlation and

endogeneity is resolved by the use of international instruments (the lags of the explanatory variables) (Arellano & Bond, 1991). According to Blundell and Bond, (1998) the lagged levels of explanatory variables are weak instruments of regression when these variables are persistent over time. They are likely to adversely affect small samples and the asymptotic properties of the difference estimator.

To resolve this weak instrument problem, Arellano and Bover, (1995) recommend the first difference GMM regression combined with an estimator in levels to produce a system. Additionally, Blundell and Bond, (1998) proposed two different post-estimation tests (Hansen or Sargan tests, and serial correlation) to check the validity of the instruments used in these regressions. The Hansen / Sargan tests check for overidentifying restriction, which tests the overall validity of the instruments. The second is the serial correlation test (AR1 and AR2), which examines the hypothesis that the residuals from the estimated regressions are first-order correlated but not second-order correlated (Subramaniam et al., 2022).

Financial stability affects food security through household income, access to credit, and economic growth. A stable financial system provides households access to financial resources that could be used for food production, distribution, and consumption (Gundersen & Ziliak, 2015). This helps in reducing food insecurity. Institutional quality, such as effective governance, transparency, and the rule of law, can improve food security by strengthening property rights (securing land rights), fair distribution of food, good land tenure systems, and an increase in agricultural productivity. Burchi et al. (2011) posit that strong institutions reduce corruption and inefficiencies that hitherto stifle food supply and agricultural production. Soko et al. (2023) add that quality institutions positively impact food security through effective management of public agricultural spending, leading to improved cereal production.

Poverty also limits households' purchasing power, affecting their access to adequate amounts of required nutritious food. Additionally, poorer households spend larger proportions of their income on food and are more vulnerable to price shocks, exposing them to food insecurity issues (FAO et al., 2020). Wellbeing represented by domestic health expenditure generally reflects better healthcare access, indirectly improving food security. Thus, better well-being reduces the burden of health-related costs on

households to channel resources on food rather than medical and health costs. Inflation, especially in food prices, erodes the purchasing power of households relative to adequate food consumption and access, and this exposes households to food insecurity issues. Further, food inflation contributes more to the overall consumer price index in Sub-Saharan Africa¹⁴. Headey and Ruel, (2020) stressed that inflation during crises, such as COVID-19, exacerbates food insecurity, particularly among vulnerable groups and low-income earners.

Population growth without a proportional increase in food availability and access increases food insecurity through scarcity and rising food prices (Shang et al., 2024). The size and productivity of agricultural land determine the ability of a country to meet its food demand. Countries with arable agricultural land can be self-sufficient and achieve food security. Herrero et al. (2017) argue that larger agricultural land size leads to higher agricultural productivity, which helps reduce food insecurity and increases food availability. However, sustainable land management practices are essential to maintain long-term productivity.

5.4. Results and Discussion

5.4.1. Descriptive Statistics

The descriptive statistics of the data used are shown in Table 5.2 below. Inflation (INF) has the highest standard deviation, meaning that inflation data are spread far away from the mean as compared to other variables. Food security (FS) has clustered data closer to the means, as demonstrated by its standard deviation compared to other variables. Inflation has the highest mean, whereas institutional quality (ISQ) has the lowest mean.

¹⁴ <https://www.imf.org/en/Blogs/Articles/2021/12/06/food-inflation-in-sub-saharan-africa>

Table 5.2. Descriptive Statistics

Variables	Obs	Mean	Std Dev	Min	Max
FS	308	1.660	0.051	1.516	1.822
AFF	308	1.653	0.11	1.34	1.893
ACC	308	1.638	0.079	1.423	1.831
QAS	308	1.649	0.06	1.446	1.87
SUS	308	1.639	0.07	1.442	1.765
FIS	308	5.76e-09	1	-1.679	1.682
ISQ	308	-1.23e-09	1	-3.058	1.764
DHE	308	2.101	0.325	1.327	3.083
PGP	308	-0.963	0.08	-1.102	-0.847
INF	308	9.199	4.156	5.803	20.875
POP	308	2.753	0.543	0.387	3.867
AGRL	308	1.682	0.176	1.116	1.913

5.4.2. Pairwise Correlation

The pairwise correlation matrix results indicate that financial stability (FIS), poverty (PGP), and population growth rate (POP) have a negative correlation with food security (FS). The rest of the variables have a positive correlation with FS. All the variables except population have a negative correlation with food affordability (AFF) (see Table 5.3 below). Similarly, except for financial stability, poverty, and population growth, all other variables have a positive correlation with food accessibility (ACC). All the variables have a negative correlation with food quality (QAS) except institutional quality and domestic health expenditure (DHE). Regarding food sustainability (SUS), institutional quality and inflation have a positive correlation with SUS, whereas all other variables have a negative correlation.

Table 5.3. Pairwise Correlation

Variables	FS	AFF	ACC	UTI	SUS	FIS	ISQ	DHE	PGP	INF	POP	AGRL
FS	1.000											
AFF	-0.045	1.000										
ACC	0.691* *	-0.155**	1.000									
QAS	0.644* *	-0.090	0.306**	1.000								
SUS	0.264* *	-0.233**	0.220**	0.131**	1.000							
FIS	- 0.183* *	-0.061	-0.166**	-0.135**	-0.164**	1.000						
ISQ	0.613* *	-0.017	0.451**	0.234**	0.138**	0.058	1.000					
DHE	0.599* *	-0.146**	0.370**	0.512**	-0.010	-0.076	0.450**	1.000				
PGP	- 0.271* *	-0.064	-0.264**	-0.150**	-0.299**	0.388**	0.085	-0.112**	1.000			
INF	0.026	-0.102	0.112**	-0.001	0.146**	-0.058	-0.032	0.057	-0.579**	1.000		
POP	- 0.474* *	0.263**	-0.346**	-0.348**	-0.093	0.032	-0.392**	-0.664**	0.106	-0.098	1.00	
AGRL	0.151* *	-0.401**	0.235**	-0.0001	0.233**	-0.019	0.333**	0.345**	-0.030	0.013	-0.478**	1.00

*** p<0.01, ** p<0.05, * p<0.1

5.4.3. Unit Root and Cross-Sectional Dependency Results

Two cross-sectional dependency tests were conducted to ensure the validity of statistical inferences. Thus, in order not to have inconsistent estimates, incorrect standard errors, inefficient estimates, and misleading inferences, it is prudent to check for cross-sectional dependency. Therefore, Pesaran, (2015, 2021) and Fan et al., (2015) cross-sectional dependency tests were conducted. The results of the tests, as shown in Table 5.4 below, show that there is cross-sectional dependency among the variables.

Table 5.4. Cross-Sectional Dependency Test

Var	Model 1		Model 2		Model 3		Model 4		Model 5	
	CD	CDw+	CD	CDw+	CD	CDw+	CD	CDw+	CD	CDw+
FS	24.35** *	498.4***	---	---	---	---	---	---	---	---
FISI	64.48** *	1251.6***	64.48** *	1259.8* **	64.48** *	1254.4* **	64.48** *	1252.7* **	64.48* **	1256.8 ***
ISQ	12.19** *	495.4***	12.19** *	492.9** *	12.19** *	493.9** *	12.19** *	491.4** *	12.19* **	494.3* **
CHE	20.62** *	592.2***	20.62** *	592.7** *	20.62** *	592.5** *	20.62** *	591.6** *	20.62* **	549.3* **
PGP	64.48** *	1251.6***	64.48** *	1259.8* **	64.48** *	1254.4* **	64.48** *	1252.7* **	64.48* **	1256.8 ***
CPI S	64.48** *	1251.6***	64.48** *	1259.8* **	64.48** *	1254.4* **	64.48** *	1252.7* **	64.48* **	1256.8 ***
POP	18.40** *	596.9***	18.40** *	597.5** *	18.40** *	598.5** *	18.40** *	596.4** *	18.40* **	599.2* **
AG RL	23.78** *	713.64***	23.78** *	714.7** *	23.78** *	712.48 *	23.78** *	712.04* **	23.78* **	719.8* **
AFF	-----	-----	13.14** *	329.3** *	-----	-----	-----	-----	-----	-----
ACC	-----	-----	-----	-----	8.39***	399.0** *	-----	-----	-----	-----
UTI	-----	-----	-----	-----	-----	-----	6.95***	417.6** *	-----	-----
SUS	-----	-----	-----	-----	-----	-----	-----	-----	28.45* **	708.3* **

Note: *** p<0.01, ** p<0.05, * p<0.1, CD: Pesaran (2015, 2021), CDw+: CDw with power enhancement from Fan et al. (2015)

The PESCADF, a second-generation unit root test, was conducted due to a strong cross-sectional dependency among the series. The results of the unit root test in Table

5.5 indicate that all the variables are significant at the first difference at 1% except for the financial stability index, poverty, inflation, and population growth rate, which are significant at 10%.

Table 5.5. PESCADF Unit Root Test

Variables	Level		1 st Difference		Order of Integration
	<i>Constant</i>	<i>Trends</i>	<i>Constant</i>	<i>Trends</i>	
FS	-2.150**	-2.173			I (0)
AFF	-2.627***	-2.938***			I (0)
ACC	-1.959	-1.957	-2.505***	-2.513	I (1)
QAS	-1.778	-2.259	-2.741***	-2.559	I (1)
SUS	-2.039	-2.383	-2.862***	-2.639*	I (1)
FIS	2.610	1.700	-2.673**	-2.669	I (1)
ISQ	-2.297**	-2.542*			I (0)
DHE	-1.810	-2.852**			I (0)
PGP	2.572	2.613	-2.701**	-2.644	I (1)
INF	-1.635	-1.634	-2.733**	-2.667	I (1)
POP	1.559	1.548	-2.818***	-2.570	I (1)
AGRL	-2.223**	-2.294			I (0)

*** p<0.01, ** p<0.05, * p<0.1

5.4.4. GMM Results and Discussion

Institutional quality and financial stability are key in shaping how the effort to achieve food security becomes efficient. The results of the five estimations are presented in Table 5.6 below. While the Sargan test rejects the null of a weak model, the Hansen J test shows that the models are strong and not weakened by instruments. The AR1 and AR2 tests of heteroscedasticity suggest that the model has no heteroscedasticity problems.

The lags of dependent variables were significant in all the models. This indicates that for every unit increase in food security, food affordability, food accessibility, food

quality and safety, and food sustainability and adaptation in previous years, the current food security, food affordability, food accessibility, food quality and safety, and food sustainability and adaptation is expected to increase by 0.685, 0.801, 0.687, 0.514, and 0.807 units respectively, *ceteris paribus*. This suggests that food security, food affordability, food accessibility, food quality and safety, and food sustainability and adaptation are highly path-dependent. A higher level of food security and its dimensions in one period tends to be followed by a proportionally higher level in the subsequent period. This captures the inertia or dynamic adjustment process of food security over time in Sub-Saharan Africa.

Table 5.6. Two-Step System GMM Results I

Variables	Model 1 Dep.var (fs)	Model 2 Dep.var (aff)	Model 3 Dep.var (acc)	Model 4 Dep.var (qas)	Model 5 Dep.var (sus)
FIS	-0.001 (0.001)	0.017*** (0.002)	-0.006** (0.002)	0.001 (0.001)	0.006** (0.003)
ISQ	0.009*** (0.001)	0.005** (0.003)	0.008*** (0.001)	0.003* (0.001)	0.003*** (0.001)
DHE	0.008* (0.005)	0.002 (0.016)	-0.003 (0.007)	0.051*** (0.017)	0.005 (0.005)
PGP	-0.026** (0.13)	0.044* (0.026)	-0.091*** (0.017)	-0.001 (0.021)	-0.063* (0.0101)
INF	-0.111*** (0.00121)	-0.092** (0.00019)	-0.023** (0.00022)	-0.001*** (0.00051)	-0.003* (0.0014)
POP	-0.006*** (0.002)	0.009 (0.007)	-0.007* (0.004)	-0.006* (0.003)	-0.001*** (0.001)
AGRL	-0.023*** (0.006)	-0.036* (0.019)	-0.016 (0.014)	-0.062*** (0.14)	0.019 (0.008)
Lag	0.685*** (0.047)	0.801*** (0.035)	0.687*** (0.035)	0.514*** (0.084)	0.807*** (0.051)
constant	0.554*** (0.075)	0.428*** (0.127)	0.485 (0.084)	0.846*** (0.129)	0.207** (0.84)
AR 1	-2.82**	-3.25***	-3.45***	-2.29**	-3.39***
AR 2	-1.54	-1.04	-0.12	-1.42	-0.25

Note: ***, **, * denote 1%, 5%, and 1% level of significance

Table 5.6. (cont.)

Sargan Test	258.37***	2.19.57***	257.60***	267.7***	262.44***
Hansen Test	23.69	19.98	24.49	22.39	17.80
Mean dep. Var	1.633	1.661	1.645	1.697	1.646
No. obs	252	252	252	252	252

*** p<0.01, ** p<0.05, * p<0.1

Financial stability is a strong foundation for economic growth. A stable financial system demonstrates the resilience of a financial system to withstand economic shocks and disruptions. It connotes a condition where financial markets function smoothly, and credit flows are available to support economic activities and food security initiatives. Financial stability also indicates how inclusive and structured financial systems are.

The results in the first model indicate that financial stability has a negative impact on food security, although it is statistically insignificant. This indicates that the financial systems in Sub-Saharan Africa (SSA) are not structured to support agricultural production. This could be due to the volatile financial systems and lack of investment in agriculture in most of the SSA countries. Mapanje et al. (2023) stressed that financial services such as credit, savings, insurance, and remittances are still underdeveloped. Additionally, smallholder farmers produce about 80% of food in SSA (Jellason et al., 2021) yet they are considered unbankable by financial institutions (Mapanje et al., 2023). SSA countries are experiencing some form of financial instability post-COVID-19 pandemic, worsening the food insecurity situation. For instance, Ghana is facing the worst form of financial crisis despite the financial sector clean-up in 2020, which saw the collapse of 9 indigenous banks. Ghana has defaulted on its debt, which has seen investors having a “haircut” of their investments (Appiah & Otoo, 2024), which has dumped the spirit of saving and investment in Ghana.

Furthermore, it was evident that these challenges have resulted in the prevalence of Insufficient Food Consumption (IFC). The Food Security Monitor July 2024 edition¹⁵ indicates the prevalence of IFC in July across 17 countries from Eastern, Southern,

¹⁵ https://agra.org/wp-content/uploads/2024/08/Food-Security-Monitor_July-Issue-Editon-49.pdf

and Western Africa, and has become a food insecurity hotspot,¹⁶ including Burkina Faso (56.6%), Mali (69.1%), Niger (82.6%), and Nigeria (51.5%). The number of people with IFC remained unchanged in most countries except Ghana, Nigeria, and Uganda, where it rose by 5.77%, 3.98%, and 7.5% respectively, and in Zimbabwe, where it decreased by 5.45%. Compared to a year ago, however, most countries have experienced surges in the number of people with IFC, except in Mozambique, Rwanda, South Sudan, Uganda, and Zambia, where the current number is lower. These challenges make the sustainable financing of agricultural productivity difficult and thwart the effort towards food security. Considering the relationship between financial stability and the components of food security, the results indicate that financial stability increases food affordability, sustainability, and adaptation in models 2 and 3, respectively. However, it reduces food accessibility and is statistically insignificant relative to the quality and safety of food. This provides mixed evidence of the relationship between stable financial systems and food security.

Institutional quality connotes norms, values, customs, regulations, and societal structures (formal or informal) to promote social uniformity, growth, and sustainable development. Oyelami et al., (2023) posit that institutional quality leads to the efficacy of a food security system. The results show that institutional quality increases food security, food affordability, food accessibility, food quality and safety, and food sustainability and adaptation by 9%, 5%, 8%, 3%, and 3%, respectively. This implies that when effective institutions for food security exist, food production (increasing food supply) and distribution will be efficient. The increase in food supply will translate to a drop in food prices, which will expand food access. The effective institutions will include effective mechanisms to check the quality of food and its safety for utilization.

Additionally, the increase in the quality of institutions will influence policy geared toward sustainable agriculture and adaptation to engender population dynamics and globalization. For example, (Subramaniam et al., 2022) explain that the regulatory system can support food security objectives by preparing policies to maintain the flow of goods and services ecosystem to agriculture. Policies on sustainable land use, land

¹⁶ Food Security Hotspot is defined as countries where over 50% of the total population has IFC.

tenure systems, sustainable agriculture, agricultural input subsidies, and resource management will support forest restoration, food production, and agroforestry to enhance water storage, soil retention, and soil fertility, which are among the needed policies for productive agriculture. Soko et al. (2023) had similar results and concluded that institutional quality plays a significant mediating role in the impact of public agricultural spending on food security. Ashraf & Javed (2023) posit that institutional quality decreases the negative environmental implications of food security.

The results also indicate that well-being, proxied by domestic health expenditure, increases food security, food affordability, food quality and safety, and food sustainability and adaptation by 0.8%, 0.2%, 5.1%, and 0.5% respectively, although it is statistically insignificant in the case of food affordability and food sustainability and adaptation. However, well-being reduces food accessibility by 3%. This indicates that increased health spending can improve nutritional outcomes and food utilization by reducing disease burdens, enhancing productivity, and increasing life expectancy. This, in turn, supports food security by improving the population's ability to access, utilize, and maintain a stable food supply. Affoh et al., (2022) and Gassara and Chen, (2021) posit that health expenditures have a direct positive impact on critical health outcomes, such as reduced child mortality and improved life expectancy, which are essential for food security at the household level. Moreover, Nketiah-Amponsah, (2019) stressed that improved health infrastructure and increased domestic health expenditure mitigate the impacts of poor nutrition. Therefore, it is prudent for SSA countries to invest in domestic health expenditure to improve health outcomes that influence food production, dietary diversity, and the ability to withstand economic and environmental shocks.

The results further show that an increase in poverty reduces food security by 2.6%, food affordability by 4.4%, food accessibility by 9.1%, quality and safety by 0.1% (although insignificant), and sustainability and adaptation by 6.3%. This suggests that poverty experiences in SSA make households prone to higher food insecurity due to limited economic access to sufficient and nutritious food. Affoh et al. (2022) express that poverty exacerbates the inability to purchase or produce food, leading to inadequate dietary diversity and nutritional deficiencies. Zuberi and Thomas (2012) indicate that reducing the poverty gap improves food access and utilization, positively

affecting overall food security in SSA. Upasana (2023) and Gomina et al. (2024) stressed that poverty limits access to a variety of nutritious diets and essential agricultural resources. This will exacerbate food insecurity and perpetuate a cycle of chronic hunger and malnutrition among affected households.

Additionally, the results of the study indicate that poverty in SSA affects food security as it restricts access to resources, reduces purchasing power, and increases vulnerability to food shortages. This will affect most of the rural populations in SSA who rely heavily on agriculture for income (Post et al., 2021). A sustainable agricultural investment policy is central to ensuring food security and poverty alleviation in SSA and providing well-structured social safety nets and welfare systems to aid vulnerable people to move them out of poverty (Gomina et al., 2024).

Inflation significantly impacts food security, particularly among vulnerable populations. Rising food prices, driven by various factors including agricultural price inflation and global crises, exacerbate food insecurity and alter consumer behavior. The following sections explore these dynamics in detail. The results show that an increase in inflation (proxied by the consumer price index) negatively affects food security, affordability, accessibility, quality and safety, and sustainability and adaptation by 11.1%, 9.2%, 2.3%, 0.1%, and 0.3%, respectively. This indicates that high inflation (particularly food inflation) leads to changes in consumer purchasing patterns, especially among food-insecure individuals in SSA. Haydaroglu and Bilgiç, (2024) indicate that most vulnerable households with moderate to severe food insecurity prioritize price over health in their food choices, reflecting a shift in consumption behavior due to inflationary pressures.

Furthermore, inflation bedevils food accessibility efforts, particularly in poorer countries in SSA; hence, regulating food prices and ensuring income growth matches the inflation rate are key to maintaining food affordability and accessibility (Lawrence et al., 2009). Though inflation is one of the key threats to food security in SSA, targeted policy interventions and social safety nets that will cushion poorer households and vulnerable people from its adverse effects will ensure households' capability to access and afford quality, safe foods (OECD, 2023).

The results also indicate that an increase in population growth rate leads to a 0.6% decrease in food security, reduces food access by 0.7%, food quality and safety by 0.6%, and food sustainability and adaptation by 0.1%. Although insignificant, it increases affordability by 0.9%. This implies that as populations in SSA increase, the demand for food escalates, often outpacing agricultural output, leading to heightened food insecurity. Subramaniam et al., (2022) indicated that the interaction between population growth and biofuel production negatively affects food security across availability, accessibility, utilization, and stability. For instance, Nigeria has a significant gap between (2.6%) and agricultural output growth (3.5%), contributing to food insecurity (Aiyedogbon et al., 2022). Policies targeting family planning and agricultural investment are imperative to redress the negative effects of population growth on food security (Ahmed & Elasaag, 2023).

Agricultural land size negatively impacts food security, food affordability, food accessibility (although insignificant), and food quality and safety by 2.3%, 3.6%, 1.6%, and 6.2%, respectively. This could be due to the inefficient use of agricultural land and land degradation. The double impacts of agricultural activities and climate change have accelerated the degradation of agricultural land, which is used both for arable land Jacquemot, (2020) and pastures (Právělie, 2016). Despite the large agricultural land availability, a significant proportion is subject to serious ecological vulnerabilities such as losses by erosion, salinization of soils, leaching of nutrients, accelerated mineralization, export of plant biomass, risk of invasion by predators, heavy metal leaching from mining, and recurring plant diseases Chen et al. (2022) as well as low organic matter rates. The watered regions in SSA, which account for approximately 58% of the area cultivated in Africa, do not fare much better, even if the issue of soil degradation is not quite the same (Jacquemot, 2020). Significant rainfall in these areas causes floods, especially when the soil has a low plant cover.

The resulting water erosion mainly concerns central Africa, where the index of annual Tillage erosivity is very high (Panagos et al., 2017). There is a need for proper policy and planning to combat these conundrums to ensure sustainable agriculture and food security.

5.5. Robustness Check and Pathways Impact

The study, through a robustness check, explores the institutional mechanisms that really influence food security and the various components. We seek to identify the pathways through which institutional quality and financial stability affect food security. In the analysis, we focused on control of corruption and quality regulations as the key institutional variables that have a direct impact on overall development and improvement in the food security situation. The assumption is that once corruption is controlled to the barest minimum and regulatory frameworks are of top quality, the other institutional indicators – governance effectiveness, political stability, rule of law, and voice and accountability will all fall in place.

Similarly, for institutional quality, we used the banking Z-Score (which signals how far banks are from liquidation) and bank liquidity coverage ratio (which shows the strength of banks to finance credit in the short term with liquid assets) as proxies for financial stability. The assumption is that the farther banks are from liquidity, the stronger the financial system is, and the more liquid assets a bank has to finance short-term credit, the more farmers can get short-term loans and credit to finance their agricultural activities. These proxies have been used in several studies to represent institutional quality (Lantz, 2021; Olabiyi, 2022) and financial stability (Bawuah, 2024; Bekoe et al., 2025).

Table 5.7. Two-Step System GMM Results II

	(1)	(2)	(3)	(4)	(5)
	Food Security	Affordability	Accessibility	Quality and Safety	Sustainability
Lags of Dep. Var	0.654*** (0.082)	0.792*** (0.046)	0.671*** (0.045)	0.830*** (0.055)	0.993*** (0.015)
BAZS	0.132** (0.053)	0.776*** (0.110)	-0.032** (0.009)	0.000 (0.058)	0.087* (0.052)
LCRS	0.055 (0.041)	0.214** (0.087)	-0.036*** (0.007)	0.054 (0.098)	0.015*** (0.003)
COC	0.014*** (0.004)	0.013** (0.009)	0.051*** (0.013)	0.016*** (0.005)	0.013*** (0.003)
REQ	0.029*** (0.008)	0.023** (0.005)	0.040** (0.016)	0.015* (0.008)	0.017** (0.007)
INF	-0.001*** (0.000)	-0.001* (0.001)	0.000 (0.001)	-0.000 (0.000)	-0.000 (0.000)
DHE	0.012** (0.005)	-0.030* (0.018)	0.034*** (0.005)	0.011 (0.007)	0.034*** (0.005)
PGP	-0.027 (0.023)	0.087*** (0.028)	-0.019 (0.038)	0.048 (0.038)	-0.019 (0.017)
POP	-0.004 (0.003)	-0.018 (0.014)	0.027*** (0.008)	-0.009 (0.007)	0.033*** (0.004)
AGRL	-0.024** (0.010)	-0.050* (0.028)	0.041*** (0.012)	-0.020 (0.012)	0.029*** (0.009)
Constant	0.332** (0.168)	-0.486*** (0.172)	0.380*** (0.129)	0.312 (0.190)	-0.280*** (0.074)
Observations	252	252	266	240	240
AR (1)	-2.94***	-3.31***	-3.57**	-3.01***	-3.30***
AR (2)	0.240	-1.13	-0.15	-1.42	-0.71
Hansen J	24.52	20.36	24.75	22.26	-1.36
Sergan Test	242.80***	206.62***	271.58***	232.60***	195.94***

Standard errors in parentheses. * p < 0.10, ** p < 0.05, *** p < 0.01

The robustness in Table 5.7 indicates that control of corruption (COC) has a positive effect on food security, affordability, accessibility, and sustainability by 1.4%, 1.3%, 5.1%, and 1.3%, respectively. However, it has a negative (1.6%) relationship with the quality and safety of food. This suggests that reducing corruption primarily benefits access, affordability, and sustainability aspects of food security, potentially by lowering transaction costs and market distortions. This indicates that corruption, if not

controlled properly, leads to a diversion of public funds and international aid, which are intended for agricultural development, infrastructure (such as irrigation and storage), social safety nets, and food assistance programs (UNDP, 2019)¹⁷. Transparency International in 2022 posits that investigations in countries like Somalia, Nigeria, and Ethiopia have revealed that food aids were misappropriated by officials for personal profit (Camacho, 2022; Lantz, 2021). Furthermore, Olabiyi, (2022) indicated in his work that bureaucratic corruption, especially between public institutions, negatively impacts household food security status. Similarly, issues of land grabbing, which are mainly fueled by corruption, displace smallholder farmers who play a vital role in local food production but are food insecure themselves (Lewis & Lenton, 2008).

The robustness result in Table 5.7 further indicates a consistent positive effect of quality regulations (REQ) on food security, affordability, accessibility, quality, safety, and utilization, and sustainability by 2.9%, 2.3%, 4.0%, 1.5%, and 1.7%, respectively. This indicates that better regulatory frameworks improve all aspects of food security and thus create a more effective food governance system. This means that improved regulatory systems ensure good enforcement of regulations against food fraud, such as mislabeling, counterfeiting, and food contamination (Chukwugozie et al., 2024). This prevents health risks and improves nutritional values derived from the consumed food (Mphaga et al., 2024). Moreover, poor regulations on agricultural inputs such as seeds, fertilizer application, and pesticides can lead to substandard food circulation, a fall in crop yield, and farmer income. Abdi et al. (2024) add that weak environmental regulations and the enforcement of good farming practices can cause land degradation, water and soil pollution, which are critical for agricultural production. This has the potential to affect food production and food quality. Safety and utilization in the long run.

Controlling corruption and ensuring that an effective and efficient regulatory framework is central to ensuring a strong food security environment, as indicated by the results in Table 5.7. However, these two indicators are in their worst state in most SSA countries. Nigeria, for instance, is faced with significant corruption challenges

¹⁷ <https://undp.medium.com/the-cost-of-corruption-a827306696fb>

and structural institutional weakness. These two factors, in concomitant with security unrest in northern Nigeria, have exacerbated the food security situation in northern Nigeria, resulting in a 180% increase in undernourished people over a decade (Cassimon et al., 2022; Hoffmann, 2025).

Furthermore, the robustness result in Table 5.7 shows that while banking Z-score had a positive and significant effect on food security, affordability, and sustainability by 13.2%, 77.6%, and 8.7%, respectively. However, it had a negative effect of 3.2% on accessibility and had no significant effect on quality, safety, and utilization. Additionally, the results reveal that the bank liquidity coverage ratio has a positive effect on affordability and sustainability by 21.4% and 1.5% respectively, but it has a negative effect on accessibility by 3.6% and no significant impact on food security, food quality, safety, and utilization.

The results suggest that there is a potential trade-off between financial stability proxies and food security. Banking Z-Score, which measures the distance of a bank from insolvency, and the liquidity coverage ratio of banks, which explains the ability of banks to meet their short-term obligation with short-term liquid assets, has a general positive impact on food security, affordability, and sustainability (Bawuah, 2024; Bekoe et al., 2025). However, they both create some challenges for accessibility. This could be due to stricter lending regimes, higher rates of interest, and the underdevelopment of financial systems in most SSA countries. Zimbabwe, for instance, had a prolonged economic crisis, hyperinflation, and currency instability, which shook the financial sector and contributed to chronic food security. The Global Report on Food Crises (2024) pointed to the food security situation in Zimbabwe as a weak currency and a financial system. Similarly, Sudan's prolonged civil war has crippled the financial sector, hence, worsening the already fragile food security situation (FSIN & Global Network Against Food Crisis, 2024). Similarly, the Democratic Republic of Congo, the Central African Republic, and Sudan are all experiencing a protracted inefficient financial system and poor institutional quality, leading to crippling banking crises and extreme food security situations (FSIN & Global Network Against Food Crisis, 2024).

Additionally, the results suggest that the differential effect across food security dimensions (especially strong impact on food affordability and less on quality, safety, and utilization) demands financial sector policies that primarily impact the economic aspects of food security (Tsongo et al., 2025). To address the issues of food quality, safety, and nutritional utilization, there is a need for a more nuanced combination of policies that encompasses both food safety regulation, nutrition education, and social transfer policies that grant people easy access to safe, quality, nutritious food (Burchi et al., 2018; Nigo & Gibogwe, 2023).

5.6. Conclusion and Recommendation

5.6.1. Conclusion

Food insecurity in Sub-Saharan Africa (SSA) requires an integrated approach considering all its dimensions. Institutional quality and financial stability are crucial in addressing food insecurity in Sub-Saharan Africa (SSA). However, high poverty rates, poor institutions (in terms of weak policies, bad governance, and political instability), inflation, and underdeveloped financial systems have thwarted the effort to sustain the food security situation in SSA. Using a panel dataset covering 28 SSA countries from 2011 to 2021, the study examines how variables such as institutional quality, financial stability, poverty, inflation, population growth, agricultural land use, and healthcare expenditures interact to influence food security across its four dimensions – availability, affordability, quality, and sustainability.

The study found that institutional quality is essential for fostering transparent governance, ensuring equitable resource distribution, and implementing cogent agricultural policies to achieve food security. However, the region's financial systems remain underdeveloped and often fail to meet the credit needs of the agricultural sector, limiting their potential to support food production and availability. High poverty rates exacerbate food insecurity in SSA by reducing the purchasing power of poor people, particularly in rural areas and the urban poor. Additionally, inflation impacts affordability by pushing food prices beyond the reach of many low-income households. Additionally, rapid population growth strains the food supply, and despite SSA's considerable arable land, poor land management reduces productivity and limits

food availability. Further, health expenditure (a proxy for well-being) indirectly affects food security by improving overall population health and productivity. However, it is an underutilized factor in SSA's food security landscape.

5.6.2. Recommendation

The study suggests that institutional frameworks should be strengthened to enhance transparency, accountability, and anti-corruption efforts within the agricultural sector, which would support more equitable food distribution and resource access. Additionally, governments should improve financial infrastructure (structures, regulations, and laws) in their countries to ensure financial stability. This could improve financial inclusion and expand agricultural credit to smallholder farmers with the necessary resources to increase production, manage risks, and build resilience against market fluctuations. Further, adopting sustainable land management practices, such as agroforestry and soil conservation, would mitigate the effects of environmental degradation and improve long-term agricultural productivity. For future research, a multifaceted approach to investigating and driving measurable improvements in food security, poverty alleviation, and economic stability at the micro level in SSA countries will be a huge contribution to the literature.

CHAPTER VI

CONCLUSION

Sub-Saharan Africa has been struggling with institutional inefficiencies and weak financial systems, which have ensured the persistence of cyclical poverty, food insecurity, and poor quality of life. It is imperative to establish strong institutional quality and financial stability in treating the more complex issues related to poverty, hunger, and well-being in Sub-Saharan Africa. There are several studies that investigate the relationship between institutional quality and poverty, well-being, and food security. Similarly, there is a plethora of literature on financial development, financial literacy, financial inclusion, poverty, well-being, and food security. However, there are few studies in the literature that address the trilinear relationship that exists between Poverty, food security, and well-being while accounting for the role of institutional quality and financial stability.

Chapter Two presents the theoretical foundation for the understanding of institutional quality and financial stability. This chapter reviews theories of formal and informal institutions, showing their importance in both economic growth and sustainable development. It connects financial stability with economic performance and explains how an effective financial system supports allocation, investments, and economic growth. Some theoretical frameworks, such as asset price bubbles, central bank regulation, and bank competition, are discussed, highlighting the multidimensional character of financial stability and how it supports sustainability.

The third chapter seeks to ascertain the impact of institutional quality and financial instability on well-being in SSA, while the impact of poverty gaps and food insecurity is considered. The analysis shows that there are positive relations between well-being institutions with institutional quality and financial stability, making significant appearances in health and social outcomes. Although its negative effect on well-being is realized as poverty and inflation. This shows the need to consider these factors for

improving the quality of life. Findings of the chapter suggest a need for a holistic policy that integrates institutional reform, financial stability, and health improvements for better living standards and sustainable development.

Chapter four examines how the quality of institutions and the stability of the financial system affect the realization of SDG 1 (no poverty) in Sub-Saharan Africa. The empirical analysis uses a panel dataset of 23 Sub-Saharan African countries from 2002 to 2020, indicating that improved institutional quality reduces poverty in the region, especially in Francophone countries. The chapter also discloses that well-being may reduce poverty, but hunger increases it; and that differences in regions, especially Anglophone and Francophone countries, alter the effectiveness of institutional and financial interventions, which speaks to the fact that the colonial legacy continues to shape development outcomes today.

In chapter five, the dissertation's focus is laid on the interplay between institutional quality and financial stability in ameliorating food insecurity in SSA. The study establishes that institutional quality is a major contributor to food security. Financial stability, on the other hand, remains underdeveloped and does not necessarily play any significant role in ensuring a secure food environment. Well-being improves the food security situation, while population, inflation, and agricultural land area negatively impact food security and its components. Therefore, SSA countries need integrated approaches that target the strengthening of institutions and the improvement of the financial system.

REFERENCES

- Abbaszadeh, B. (2021). Financial Stability and Bank Supervision in the Twenty-First Century. In *50 Years of Central Banking in Kenya* (pp. 86–91). Oxford University Press. <https://doi.org/10.1093/oso/9780198851820.003.0006>
- Abdi, A. H., Mohamed, A. A., & Mohamed, F. H. (2024). Enhancing food security in sub-Saharan Africa: Investigating the role of environmental degradation, food prices, and institutional quality. *Journal of Agriculture and Food Research*, 17, 101241. <https://doi.org/10.1016/j.jafr.2024.101241>
- Abdoli, S., Silveira, M. S. V. M., Doosti-Irani, M., Fanti, P., Miller-Bains, K., Pavin, E. J., Cardoso, E. B., Vardanjani, L. R., Noorian, K., & Hessler, D. (2021). Cross-national comparison of psychosocial well-being and diabetes outcomes in adults with type 1 diabetes during the COVID-19 pandemic in US, Brazil, and Iran. *Diabetology & Metabolic Syndrome*, 13(1), 63. <https://doi.org/10.1186/s13098-021-00681-0>
- Abreu, D., & Brunnermeier, M. K. (2003). Bubbles and Crashes. *Econometrica*, 71(1), 173–204. <https://doi.org/10.1111/1468-0262.00393>
- Acemoglu, D., Gallego, F. A., & Robinson, J. A. (2014). Institutions, Human Capital and Development. *SSRN Electronic Journal*, 1(1), 875–912. <https://doi.org/10.2139/ssrn.2392106>
- Acemoglu, D., Johnson, S., & Robinson, J. A. (2005). Chapter 6 Institutions as a Fundamental Cause of Long-Run Growth. *Handbook of Economic Growth*, 1(SUPPL. PART A), 385–472. [https://doi.org/10.1016/S1574-0684\(05\)01006-3](https://doi.org/10.1016/S1574-0684(05)01006-3)
- Acemoglu, D., & Robinson, J. (2012a). *Why Nations Fail: The Origins of Power, In Prosperity, and Poverty*, Crown Business, New York.
- Acemoglu, D., & Robinson, J. (2013). Economics versus politics: Pitfalls of policy advice. *Voprosy Ekonomiki*, 2013(12), 4–28. <https://doi.org/10.32609/0042-8736-2013-12-4-28>
- Acemoglu, D., & Robinson, J. A. (2000). Political Losers as a Barrier to Economic Development. *American Economic Review*, 90(2), 126–130. <https://doi.org/10.1257/aer.90.2.126>
- Acemoglu, D., & Robinson, J. A. (2006). De facto political power and institutional persistence. *American Economic Review*, 96(2), 325–330. <https://doi.org/10.1257/000282806777212549>

- Acemoglu, D., & Robinson, J. A. (2012b). Why nations fail: the origins of power, prosperity, and poverty. In TA - TT - (First edit). Crown Publishers. <https://doi.org/LK> - <https://worldcat.org/title/729065001>
- Adams, D. W., & Fitchett, D. A. (2020). Informal Finance in Low-Income Countries (D. W. Adams & D. A. Fitchett, Eds.). Taylor & Francis Group.
- Adeleye, B. N. (2024). Income Inequality, Human Capital and Institutional Quality in Sub-Saharan Africa. *Social Indicators Research*, 171(1), 133–157. <https://doi.org/10.1007/s11205-023-03244-0>
- Adelowokan, O. A., Mosunmola Osoba, O., & Ajibowo, S. A. (2020). Fiscal Policy and Poverty Reduction in Some Selected Sub-Saharan Africa Countries. *International Journal of Social Sciences (IJSS)*, 10(1), 1–10.
- Admati, A. R., DeMarzo, P. M., Hellwig, M. F., & Pfleiderer, P. C. (2013). Fallacies, Irrelevant Facts, and Myths in the Discussion of Capital Regulation: Why Bank Equity is Not Socially Expensive. *SSRN Electronic Journal*, 86. <https://doi.org/10.2139/ssrn.2349739>
- Affoh, R., Zheng, H., Dangui, K., & Dissani, B. M. (2022). The Impact of Climate Variability and Change on Food Security in Sub-Saharan Africa: Perspective from Panel Data Analysis. *Sustainability*, 14(2), 759. <https://doi.org/10.3390/su14020759>
- Ahmed, Y. N., & Elasaag, Y. H. (2023). The impact of population growth on food security in Egypt. 1231–1218, (3)33, *المجلة المصرية للاقتصاد الزراعي*. <https://doi.org/10.21608/meae.2023.230697.1221>
- Aiyedogbon, J. O., Anyanwu, S. O., Isa, G. H., Petrushenko, Y., & Olena, Z. (2022). Population growth and food security: Evidence from Nigeria. *Problems and Perspectives in Management*, 20(2), 402–410. [https://doi.org/10.21511/ppm.20\(2\).2022.33](https://doi.org/10.21511/ppm.20(2).2022.33)
- Akanbi, O. A. (2015). Structural and Institutional Determinants of Poverty in Sub-Saharan African Countries. *Journal of Human Development and Capabilities*, 16(1), 122–141. <https://doi.org/10.1080/19452829.2014.985197>
- Akinbode, S. O., Okuneye, P. A., & Onyeukwu, C. O. (2022). Inequality, population growth, and hunger in Sub-Saharan Africa. *SN Social Sciences*, 2(11), 250. <https://doi.org/10.1007/s43545-022-00554-x>
- Akinci, V. Y., & Demiröz, M. D. (2024). The Relationship Between Inflation and Welfare. *Recep Tayyip Erdoğan Üniversitesi Sosyal Bilimler Dergisi*, 11(1), 86–104. <https://doi.org/10.34086/rteusbe.1490040>
- Alborz, A. (2017a). The Nature of Quality of Life: A Conceptual Model to Inform Assessment. *Journal of Policy and Practice in Intellectual Disabilities*, 14(1), 15–30. <https://doi.org/10.1111/jppi.12225>

- Alborz, A. (2017b). The Nature of Quality of Life: A Conceptual Model to Inform Assessment. *Journal of Policy and Practice in Intellectual Disabilities*, 14(1), 15–30. <https://doi.org/10.1111/JPPI.12225/FULL>
- Allen, F., & Carletti, E. (2013). New theories to underpin financial reform. *Journal of Financial Stability*, 9(2), 242–249. <https://doi.org/10.1016/j.jfs.2011.07.001>
- Allen, F., & Gale, D. (1999). Bubbles, crises, and policy. *Oxford Review of Economic Policy*, 15(3), 9–18. <https://doi.org/10.1093/oxrep/15.3.9>
- Allen, F., & Gale, D. (2000). Bubbles and Crises. *The Economic Journal*, 110(460), 236–255. <http://www.jstor.org/stable/2565656>
- Allen, F., & Gale, Douglas. (2007). LIDO Understanding financial crises. 303.
- Allen, F., & Gorton, G. (1993). Allen93.Pdf. In *The Review of Economic Studies* (Vol. 60, Issue 4, pp. 813–836).
- Allen, F., Morris, S., & Postlewaite, A. (1993). Finite Bubbles with Short Sale Constraints and Asymmetric Information. *Journal of Economic Theory*, 61(2), 206–229. <https://doi.org/https://doi.org/10.1006/jeth.1993.1067>
- Alloush, M. (2023). Income, Psychological Well-Being, and the Dynamics of Poverty. *Economic Development and Cultural Change*, 72, 1709–1745. <https://api.semanticscholar.org/CorpusID:53053553>
- Amaeshi, K., Okupe, A., & Ismail, T. (2017). Sub-Saharan Africa: Financial Sector Challenges. In *The World Guide to Sustainable Enterprise: Volume 1: Africa and the Middle East* (Vol. 1). <https://doi.org/10.4324/9781351284448-2>
- Anand, P., Roope, L. S. J., Culyer, A. J., & Smith, R. (2020). Disability and multidimensional quality of life: A capability approach to health status assessment. *Health Economics*, 29(7), 748–765. <https://doi.org/10.1002/hec.4017>
- Anandhi, E. D., & Velmurugan, G. (2024). Understanding individual financial stability: A systematic review and bibliometric analysis (1994 – 2023). *Multidisciplinary Reviews*, 7(9), 2024208. <https://doi.org/10.31893/multirev.2024208>
- Anarfo, E. B., Abor, J. Y., & osei, K. A. (2020). Financial regulation and financial inclusion in Sub-Saharan Africa: Does financial stability play a moderating role? *Research in International Business and Finance*, 51(February 2019), 101070. <https://doi.org/10.1016/j.ribaf.2019.101070>
- Anik, L., Aknin, L. B., Norton, M. I., Dunn, E. W., & Quoidbach, J. (2013). Prosocial Bonuses Increase Employee Satisfaction and Team Performance. *PLoS ONE*, 8(9), e75509. <https://doi.org/10.1371/journal.pone.0075509>

- Ankrah Twumasi, M., Essilfie, G., Ntiamoah, E. B., Xu, H., & Jiang, Y. (2023). Assessing financial literacy and food and nutritional security relationship in an African country. *Heliyon*, 9(9). <https://doi.org/10.1016/j.heliyon.2023.e19573>
- Annim, S. K., & Frempong, R. B. (2018). Effects of access to credit and income on dietary diversity in Ghana. *Food Security*, 10(6), 1649–1663. <https://doi.org/10.1007/s12571-018-0862-8>
- Ansell, C., Sørensen, E., & Torfing, J. (2022). The Key Role of Local Governance in Achieving the SDGs. *Co-Creation for Sustainability*, 9–22. <https://doi.org/10.1108/978-1-80043-798-220220002>
- Anyanwu, A., Gan, C., & Hu, B. (2018). Government Domestic Debt, Private Sector Credit, and Crowding Out Effect in Oil-Dependent Countries. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.3214288>
- Appiah, P. O., & Otoo, N. A. (2024). Impact of Debt Accumulation and Debt Restructuring on the Pension Space: A Case of Ghana. *International Journal of Social Science Humanity & Management Research*, 3(09). <https://doi.org/10.58806/ijsshmr.2024.v3i9n02>
- Aracil, E., Gómez-Bengoechea, G., & Moreno-de-Tejada, O. (2022). Institutional quality and the financial inclusion-poverty alleviation link: Empirical evidence across countries. *Borsa Istanbul Review*, 22(1), 179–188. <https://doi.org/10.1016/j.bir.2021.03.006>
- Arellano, M., & Bond, S. (1991). Some Tests of Specification for Panel Data: Monte Carlo Evidence and an Application to Employment Equations. *The Review of Economic Studies*, 58(2), 277. <https://doi.org/10.2307/2297968>
- Arellano, M., & Bover, O. (1995). Another look at the instrumental variable estimation of error-components models. *Journal of Econometrics*, 68(1), 29–51. [https://doi.org/10.1016/0304-4076\(94\)01642-D](https://doi.org/10.1016/0304-4076(94)01642-D)
- Arogundade, S., Mduduzi, B., & Eita, H. (2022a). Determinants of Foreign Direct Investment in Sub-Saharan African Countries: Role of Third Country Effects. *African Journal of Business and Economic Research*, 17(2), 35–62. <https://doi.org/10.31920/1750-4562/2022/v17n2a2>
- Arogundade, S., Mduduzi, B., & Eita, H. (2022b). Foreign direct investment and poverty in sub-Saharan African countries: The role of host absorptive capacity. *Cogent Economics and Finance*, 10(1). <https://doi.org/10.1080/23322039.2022.2078459>
- Arshad, A. (2022). Impact of financial inclusion on food security: evidence from developing countries. *International Journal of Social Economics*, 49(3), 336–355. <https://doi.org/10.1108/IJSE-08-2021-0462>

- Arshed, N., Arif, A., Abbas, D. R. Z., & Hameed, K. (2021). Comparing Quality of Institutions with Happiness of Asian People. *Studies of Applied Economics*, 39(3). <https://doi.org/10.25115/eea.v39i2.3431>
- Asaki, F. A., Oteng-Abayie, E. F., & Baajike, F. B. (2024). Effects of water, energy, and food security on household well-being. *PLOS ONE*, 19(7), e0307017. <https://doi.org/10.1371/journal.pone.0307017>
- Ashraf, J., & Javed, A. (2023). Food security and environmental degradation: Do institutional quality and human capital make a difference? *Journal of Environmental Management*, 331. <https://doi.org/10.1016/j.jenvman.2023.117330>
- Asongu, S. (2016). Reinventing Foreign Aid for Inclusive and Sustainable Development: Kuznets, Piketty and the Great Policy Reversal. *Journal of Economic Surveys*, 30(4), 736–755. <https://doi.org/10.1111/joes.12109>
- Astuti, R., & Hartono, D. (2023). Improving Food Security through Financial Inclusion. *ETIKONOMI*, 22(1), 15–30. <https://doi.org/10.15408/etk.v22i1.26632>
- Aterido, R., Beck, T., & Iacovone, L. (2013). Access to Finance in Sub-Saharan Africa: Is There a Gender Gap? *World Development*, 47, 102–120. <https://doi.org/10.1016/j.worlddev.2013.02.013>
- Atkinson, M. M. (1990). Rediscovering Institutions: The Organizational Basis of Politics James G. March and Johan P. Olsen New York: Free Press, 1989, pp. vii, 227. *Canadian Journal of Political Science/Revue Canadienne de Science Politique*, 23(4), 843–844. <https://doi.org/DOI: 10.1017/S0008423900021296>
- Axelrod, R. (1986). An Evolutionary Approach to Norms. *American Political Science Review*, 80(4), 1095–1111. <https://doi.org/DOI: 10.2307/1960858>
- Azam, M., Hunjra, A. I., Bouri, E., Tan, Y., & Al-Faryan, M. A. S. (2021). Impact of institutional quality on sustainable development: Evidence from developing countries. *Journal of Environmental Management*, 298, 113465. <https://doi.org/10.1016/j.jenvman.2021.113465>
- Azimi, M. N., & Rahman, M. M. (2024). Food insecurity, environment, institutional quality, and health outcomes: evidence from South Asia. *Globalization and Health*, 20(1). <https://doi.org/10.1186/s12992-024-01022-2>
- Baah, S. K. T., Aguilar, R. A. C., Diaz-Bonilla, C., Fujs, T., Lankner, C., Nguyen, M. C., & Viveros, M. (2023). March 2023 global poverty update from the World Bank: the challenge of estimating poverty in the pandemic. <https://blogs.worldbank.org/opendata/march-2023-global-poverty-update-world-bank-challenge-estimating-poverty-pandemic>
- Babajide, A., Lawal, A., Asaleye, A., Okafor, T., & Osuma, G. (2020). Financial stability and entrepreneurship development in sub-Sahara Africa: Implications

for sustainable development goals. *Cogent Social Sciences*, 6(1).
<https://doi.org/10.1080/23311886.2020.1798330>

Baborska, R., Morales-Opazo, C., Hernandez, E., & Magrini, E. (2020). The impact of financial inclusion on rural food security experience: a perspective from low-and middle-income countries. *Review of Development Finance*, 10(2).

Barbier, E. B., & Burgess, J. C. (2019). Sustainable development goal indicators: Analyzing trade-offs and complementarities. *World Development*, 122, 295–305. <https://doi.org/10.1016/j.worlddev.2019.05.026>

Barbier, E. B., & Burgess, J. C. (2021). Institutional quality, governance and progress towards the SDGs. *Sustainability (Switzerland)*, 13(21).
<https://doi.org/10.3390/su132111798>

Bardhan, P. (1989). The new institutional economics and development theory: A brief critical assessment. *World Development*, 17(9), 1389–1395.
[https://doi.org/10.1016/0305-750X\(89\)90080-6](https://doi.org/10.1016/0305-750X(89)90080-6)

Barlevy, G. (2008). Federal Reserve Bank of Chicago Speculative Bubbles.

Bawuah, I. (2024). Bank stability and economic growth in Sub-Saharan Africa: trade-offs or opportunities? And how do institutions and bank capital affect this trade-off? *Cogent Economics & Finance*, 12(1).
<https://doi.org/10.1080/23322039.2024.2381695>

Beck, R., Jakubik, P., & PiloIU, A. (2015). Key Determinants of Non-performing Loans: New Evidence from a Global Sample. *Open Economies Review*, 26(3), 525–550. <https://doi.org/10.1007/s11079-015-9358-8>

Beck, T., & Demirgüç-Kunt, A. (2009). Financial Institutions and Markets across Countries and over Time -- Data and Analysis. Mimeo, May.

Beck, T., Demirguc-Kunt, A., & Levine, R. (2004). Finance, Inequality, and Poverty: Cross-Country Evidence. <https://doi.org/10.3386/w10979>

Beck, T., & Maimbo, S. M. (2012). Financial Sector Development in Africa: Opportunities and Challenges. World Bank Publications.
<https://books.google.com.tr/books?id=AKUeFOTXTFIC>

Becker, G. S. (1965). A Theory of the Allocation of Time. *The Economic Journal*, 75(299), 493. <https://doi.org/10.2307/2228949>

Behera, B. K., Rout, P. K., & Behera, S. (2019). World Hunger and Poverty. In *Move Towards Zero Hunger* (pp. 183–201). Springer Singapore.
https://doi.org/10.1007/978-981-32-9800-2_8

Bekoe, I. K., Abor, J., & Sekyi, S. (2025). How do financial inclusion and bank stability explain agricultural productivity in Sub-Saharan Africa? *Journal of Economic Studies*, 52(2), 225–238. <https://doi.org/10.1108/JES-09-2023-0526>

- Below, Ł. (2024). Does Inflation Matter? The Influence of Perceived Price Changes on Well-being. *Central European Journal of Economic Modelling and Econometrics*, 1, 61–93. <https://doi.org/10.24425/cejeme.2024.151365>
- Bersvendsen, T., & Ditzen, J. (2021). Testing for slope heterogeneity in Stata. *The Stata Journal: Promoting Communications on Statistics and Stata*, 21(1), 51–80. <https://doi.org/10.1177/1536867X211000004>
- Beyene, S. D. (2023). The impact of food insecurity on health outcomes: empirical evidence from sub-Saharan African countries. *BMC Public Health*, 23(1), 338. <https://doi.org/10.1186/s12889-023-15244-3>
- Bjornlund, V., Bjornlund, H., & van Rooyen, A. (2022). Why food insecurity persists in sub-Saharan Africa: A review of existing evidence. In *Food Security* (Vol. 14, Issue 4, pp. 845–864). Springer Science and Business Media B.V. <https://doi.org/10.1007/s12571-022-01256-1>
- Blomquist, J., & Westerlund, J. (2013). Testing slope homogeneity in large panels with serial correlation. *Economics Letters*, 121(3), 374–378. <https://doi.org/10.1016/j.econlet.2013.09.012>
- Blundell, R., & Bond, S. (1998). Initial conditions and moment restrictions in dynamic panel data models. *Journal of Econometrics*, 87(1), 115–143. [https://doi.org/10.1016/S0304-4076\(98\)00009-8](https://doi.org/10.1016/S0304-4076(98)00009-8)
- Boettke, P. J., Coyne, C. J., & Leeson, P. T. (2015). Institutional stickiness and the new development economics. *Culture and Economic Action*, 67(2), 123–146. <https://doi.org/10.4337/9780857931733.00011>
- Boon, E. K., Boateng, R. O., Acheampong, A. A., & Gyekye, N. B. (2020). Irrigated agriculture: a tool for green revolution in Ghana. *International Journal of Global Environmental Issues*, 19(1/2/3), 1. <https://doi.org/10.1504/IJGENVI.2020.114862>
- Brenya, R., Jiang, Y., Sampene, A. K., & Zhu, J. (2024). Food security in sub-Sahara Africa: Exploring the nexus between nutrition, innovation, circular economy, and climate change. *Journal of Cleaner Production*, 438. <https://doi.org/10.1016/j.jclepro.2024.140805>
- Bucur, A. (2017). How can we apply the models of the quality of life and the quality-of-life management in an economy based on knowledge? *Economic Research-Ekonomska Istraživanja*, 30(1), 629–646. <https://doi.org/10.1080/1331677X.2017.1314821>
- Burchi, F., Fanzo, J., & Frison, E. (2011). The Role of Food and Nutrition System Approaches in Tackling Hidden Hunger. *International Journal of Environmental Research and Public Health*, 8(2), 358–373. <https://doi.org/10.3390/ijerph8020358>

- Burchi, F., Scarlato, M., & d'Agostino, G. (2018). Addressing Food Insecurity in Sub-Saharan Africa: The Role of Cash Transfers. *Poverty & Public Policy*, 10(4), 564–589. <https://doi.org/10.1002/pop4.233>
- Caballero, R. J., & Krishnamurthy, A. (2006). Bubbles and capital flow volatility: Causes and risk management. *Journal of Monetary Economics*, 53(1), 35–53. <https://doi.org/10.1016/j.jmoneco.2005.10.005>
- Calvin, K., Dasgupta, D., Krinner, G., Mukherji, A., Thorne, P. W., Trisos, C., Romero, J., Aldunce, P., Barret, K., Blanco, G., Cheung, W. W. L., Connors, S. L., Denton, F., Diongue-Niang, A., Dodman, D., Garschagen, M., Geden, O., Hayward, B., Jones, C., ... Ha, M. (2023). IPCC, 2023: Climate Change 2023: Synthesis Report, Summary for Policymakers. Contribution of Working Groups I, II and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change. (P. Arias, M. Bustamante, I. Elgizouli, G. Flato, M. Howden, C. Méndez-Vallejo, J. J. Pereira, R. Pichs-Madruga, S. K. Rose, Y. Saheb, R. Sánchez Rodríguez, D. Ürgel-Vorsatz, C. Xiao, N. Yassaa, J. Romero, J. Kim, E. F. Haïtes, Y. Jung, R. Stavins, ... Y. Park, Eds.). <https://doi.org/10.59327/IPCC/AR6-9789291691647.001>
- Camacho, G. (2022). Food security and corruption. In Transparency International Anti-Corruption Helpdesk Answer. https://knowledgehub.transparency.org/assets/uploads/kproducts/Food-security-and-corruption_PR_14.09.2022.pdf
- Carletti, E., & Vives, X. (2009). Regulation and Competition Policy in the Banking Sector. *Competition Policy in the EU: Fifty Years on from the Treaty of Rome*, 1–35. <https://doi.org/10.1093/acprof:oso/9780199566358.003.0010>
- Carman, K. G., & Zamarro, G. (2015). Does Financial Literacy Contribute to Food Security? <http://alpdata.rand.org>
- Carter, M. R., & Barrett, C. B. (2006). The economics of poverty traps and persistent poverty: An asset-based approach. *Journal of Development Studies*, 42(2). <https://doi.org/10.1080/00220380500405261>
- Cassimon, D., Fadare, O., & Mavrotas, G. (2022). The combined effect of institutional quality and capital flows on food and nutrition security and undernourishment in Sub-Saharan Africa. *PLoS ONE*, 17(10 October), 1–19. <https://doi.org/10.1371/journal.pone.0275345>
- Cepparulo, A., Cuestas, J. C., & Intartaglia, M. (2017). Financial development, institutions, and poverty alleviation: an empirical analysis. *Applied Economics*, 49(36), 3611–3622. <https://doi.org/10.1080/00036846.2016.1265074>
- Chang, H. J. (2011). Institutions and economic development: Theory, policy and history. *Journal of Institutional Economics*, 7(4), 473–498. <https://doi.org/10.1017/S1744137410000378>

- Chang, H.-J. (2002). Kicking Away the Ladder: An Unofficial History of Capitalism, especially in Britain and the United States. *Challenge*, 45(5), 63–97. <http://www.jstor.org/stable/40722165>
- Chant, J., Lai, A., Illing, M., & Daniel, F. (2003). *Essays on Financial Stability*. Technical Report Bank of Canada, 95, 111.
- Chavriya, S., Sharma, G. D., & Mahendru, M. (2023). Financial inclusion as a tool for sustainable macroeconomic growth: An integrative analysis. *Annals of Public and Cooperative Economics*. <https://doi.org/10.1111/apce.12427>
- Chen, C., Restuccia, D., & Santaaulàlia-Llopis, R. (2022). The effects of land markets on resource allocation and agricultural productivity. *Review of Economic Dynamics*, 45, 41–54. <https://doi.org/10.1016/j.red.2021.04.006>
- Chen, Z., Hao, X., & Zhou, M. (2022). Does institutional quality affect air pollution? *Environmental Science and Pollution Research*, 29(19), 28317–28338. <https://doi.org/10.1007/s11356-021-17934-0>
- Chong, A., & Calderón, C. (2000). Institutional quality and poverty measures in a cross-section of countries. *Economics of Governance*, 1(2), 123–135. <https://doi.org/10.1007/s101010050002>
- Chote, P., Deléchat, C., Kongphalee, T., Manopimoke, P., Nahata, V., Sy, M., & Yungvichit, T. (2024). Who Pays the Bill? Distributional and Fiscal Consequences of Elevated Inflation in Thailand. *Social Science Research Network*. <https://doi.org/10.5089/9798400267024.001>
- Chowdhury, A., Islam, I., & Lee, D. (2013). The Great Recession, jobs and social crises: Policies matter. *International Journal of Social Economics*, 40(3), 220–245. <https://doi.org/10.1108/03068291311291518>
- Chudik, A., & Pesaran, H. (2015). Large Panel Data Models with Cross-Sectional Dependence. In *The Oxford Handbook of Panel Data* (pp. 3–45). Oxford University Press. <https://doi.org/10.1093/oxfordhpb/9780199940042.013.0001>
- Chudik, A., & Pesaran, M. H. (2013). Large Panel Data Models with Cross-Sectional Dependence: A Survey. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.2316333>
- Chukwugozie, D. C., Njoagwuani, E. I., David, K., Okonji, B. A., Milovanova, N., Akinsemolu, A. A., Mazi, I. M., Onyeaka, H., Winnall, L., & Ghosh, S. (2024). Combatting food fraud in Sub-Saharan Africa: Strategies for Strengthened safety and security. *Trends in Food Science & Technology*, 150, 104575. <https://doi.org/10.1016/j.tifs.2024.104575>
- Claessens, S., & Feyen, E. H. B. (2007). Financial Sector Development and the Millennium Development Goals. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.950269>

- Clark, A. E. (2017). Happiness, income and poverty. *International Review of Economics*, 64(2), 145–158. <https://doi.org/10.1007/s12232-017-0274-7>
- Collins, K. (2002). Clans, pacts, and politics in Central Asia. *Journal of Democracy*, 13(3), 137–152. <https://doi.org/10.1353/jod.2002.0041>
- Copur, Z., & Dogan, N. (2023). Financial well-being and life satisfaction of individuals during the Covid-19 outbreak. *Pressacademia*, 2. <https://doi.org/10.17261/Pressacademia.2023.1739>
- Cukierman, A. (2011). Reflections on the crisis and on its lessons for regulatory reform and for central bank policies. *Journal of Financial Stability*, 7(1), 26–37. <https://doi.org/https://doi.org/10.1016/j.jfs.2010.03.002>
- Currie, J. (2000). Chapter 19 Child health in developed countries (pp. 1053–1090). [https://doi.org/10.1016/S1574-0064\(00\)80032-3](https://doi.org/10.1016/S1574-0064(00)80032-3)
- Darçın, M. (2017). How Air Pollution Affects Subjective Well-Being. In *Well-being and Quality of Life - Medical Perspective*. IntechOpen. <https://www.intechopen.com/chapters/54593>
- Dawson, T. P., Perryman, A. H., & Osborne, T. M. (2016). Modelling impacts of climate change on global food security. *Climatic Change*, 134(3), 429–440. <https://doi.org/10.1007/s10584-014-1277-y>
- De Froidmont-Goertz, I., Faure, U., Gajdzinska, M., Haetjeans, W., Krommer, J., Lizaso, M., Lutzeyer, H., Mangan, C., Schoumacher, C., Tallarico, T., & Zampoukas, N. (2020). Food 2030 Pathways for Action: Research and Innovation Policy as a Driver for Sustainable, Healthy and Inclusive Food Systems. (K. Fabbri & I. Ndongosi, Eds.). European Commission. https://research-and-innovation.ec.europa.eu/knowledge-publications-tools-and-data/publications/all-publications/food-2030-pathways-action-research-and-innovation-policy-driver-sustainable-healthy-and-inclusive_en
- de Janvry, A., & Sadoulet, E. (2015). *Development Economics*. Routledge. <https://doi.org/10.4324/9781315715520>
- de Long, J. B., Shleifer, A., Summers, L. H., & Waldmann, R. J. (1990). Positive Feedback Investment Strategies and Destabilizing Rational Speculation. *The Journal of Finance*, 45(2), 379–395. <https://doi.org/10.2307/2328662>
- Deaton, A., & Cartwright, N. (2018). Understanding and misunderstanding randomized controlled trials. *Social Science & Medicine*, 210, 2–21. <https://doi.org/10.1016/j.socscimed.2017.12.005>
- Deaton, A., & Grosh, M. (2000). “Consumption.” in *Designing Household Survey Questionnaires for Developing Countries: Lessons from 15 Years of the Living Standards Measurement Study* (M. Grosh & P. Glewwe, Eds.). World Bank.

- Della Porta, D., & Vannucci, A. (1999). Corrupt exchanges: actors, resources, and mechanisms of political corruption. In *Social problems and social issues* TA - TT -. Aldine de Gruyter. <https://doi.org/LK> - <https://worldcat.org/title/39640095>
- Demirgüç-Kunt, A., & Klapper, L. F. (2012). Financial inclusion in Africa: An Overview (6088; World Bank Policy Research Working Paper Series). <https://ssrn.com/abstract=2084599>
- Demirgüç-Kunt, A., Klapper, L., Singer, D., & Ansar, S. (2022a). Financial Inclusion, Digital Payments, and Resilience in the Age of COVID-19. <http://documents.worldbank.org/curated/en/099900507072221470>
- Demirgüç-Kunt, A., Klapper, L., Singer, D., & Ansar, S. (2022b). The Global Findex Database 2021. The World Bank. <https://doi.org/10.1596/978-1-4648-1897-4>
- Demirgüç-Kunt, A., Klapper, L., Singer, D., Ansar, S., & Hess, J. (2020). The Global Findex Database 2017: Measuring Financial Inclusion and Opportunities to Expand Access to and Use of Financial Services*. The World Bank Economic Review, 34(Supplement_1), S2–S8. <https://doi.org/10.1093/wber/lhz013>
- Devereux, S. (2007). The impact of droughts and floods on food security and policy options to alleviate negative effects. *Agricultural Economics*, 37(s1), 47–58. <https://doi.org/10.1111/j.1574-0862.2007.00234.x>
- DFID. (2010). The Politics of Poverty: Elites, Citizens and States - Findings from ten years of DFID-funded research on Governance and Fragile States 2001–2010. DFID Synthesis Paper, 104.
- Diener, E., Lucas, R., Schimmack, U., & Helliwell, J. (2009). *Well-Being for Public Policy*. Oxford University Press. <https://doi.org/10.1093/acprof:oso/9780195334074.001.0001>
- Diener, E., Oishi, S., & Tay, L. (2018). Advances in subjective well-being research. *Nature Human Behaviour*, 2(4), 253–260. <https://doi.org/10.1038/s41562-018-0307-6>
- Digdownseiso, K. (2022). Are fiscal decentralization and institutional quality poverty abating? Empirical evidence from developing countries. *Cogent Economics and Finance*, 10(1). <https://doi.org/10.1080/23322039.2022.2095769>
- Dolan, P., & Laffan, K. (2016). Bad Air Days: The Effects of Air Quality on Different Measures of Subjective Well-Being. *Journal of Benefit-Cost Analysis*, 7(1), 147–195. <https://doi.org/10.1017/bca.2016.7>
- Domínguez-Serrano, M., & del Moral-Espín, L. (2022). The Capability Approach and Child Well-Being: A Systematic Literature Review. *Child Indicators Research*, 15(6), 2043–2063. <https://doi.org/10.1007/s12187-022-09953-1>

- Douglas C. North. (1990). A Transaction Cost Theory of Politics. In *Journal of Theoretical Politics* (Vol. 2, Issue 4, pp. 355–367).
- Drewnowski, A., & Popkin, B. M. (2009). The Nutrition Transition: New Trends in the Global Diet. *Nutrition Reviews*, 55(2), 31–43. <https://doi.org/10.1111/j.1753-4887.1997.tb01593.x>
- Duca, J. V, Muellbauer, J. N. J., & Murphy, A. (2010). Housing markets and the financial crisis of 2007-2009: lessons for the future. *Journal of Financial Stability*, 6, 203–217.
- Dzhorobaeva, M. A. (2022). Financial and Credit Mechanisms for the Entrepreneurial Potential Development of the Agricultural Sector of the Economy in the Interests of Ensuring Food Security: The Experience of Developing Countries and the Prospects of the Kyrgyz Republic. In *Environmental Footprints and Eco-design of Products and Processes (Sustainable Agriculture)* (pp. 39–45). https://doi.org/10.1007/978-981-19-1125-5_6
- Easterlin, R. A. (1974). Does Economic Growth Improve the Human Lot? Some Empirical Evidence. In *Nations and Households in Economic Growth* (pp. 89–125). Elsevier. <https://doi.org/10.1016/B978-0-12-205050-3.50008-7>
- Easterly, W. (2006). Working Paper Number 94 August 2006 Social Cohesion, Institutions, and Growth and ethnic fractionalization, endogenously determine institutional quality, which in Social Cohesion, Institutions, and Growth. World, 94.
- Ebirim, G., Ndubuisi, N., Unigwe, I., Asuzu, O. F., Adelekan, O., & Awonuga, K. (2024). Financial literacy and community empowerment: A review of volunteer accounting initiatives in low-income areas. *International Journal of Science and Research Archive*, 11, 975–985. <https://doi.org/10.30574/ijrsra.2024.11.1.0135>
- Eisenstadt, T. A. (2003). Thinking outside the (Ballot) Box: Informal Electoral Institutions and Mexico's Political Opening. *Latin American Politics and Society*, 45(1), 25–54. <https://doi.org/DOI: 10.1111/j.1548-2456.2003.tb00231.x>
- Ejiohuo, O., Onyeaka, H., Unegbu, K. C., Chikezie, O. G., Odeyemi, O. A., Lawal, A., & Odeyemi, O. A. (2024). Nourishing the Mind: How Food Security Influences Mental Wellbeing. *Nutrients*, 16(4), 501. <https://doi.org/10.3390/nu16040501>
- Ekeocha, D. O., Ogbuabor, J. E., Ekeocha, P. C., & Orji, A. (2023). Analysis of Sectoral Outcomes and Institutional Quality Nexus in Sub-Saharan Africa. *Sage Open*, 13(4). <https://doi.org/10.1177/21582440231202577>
- Ellis, F. (2000). The Determinants of Rural Livelihood Diversification in Developing Countries. *Journal of Agricultural Economics*, 51(2), 289–302. <https://doi.org/10.1111/j.1477-9552.2000.tb01229.x>

- Fan, J., Liao, Y., & Yao, J. (2015). Power Enhancement in High-Dimensional Cross-Sectional Tests. *Econometrica*, 83(4), 1497–1541. <https://doi.org/10.3982/ECTA12749>
- FAO. (2006). The Right to Food in Practice: Implementation at the National Level. www.fao.org/righttofood
- FAO, IFAD, UNICEF, P, W. F., & O, W. H. (2022). The State of Food Security and Nutrition in the World 2022. Repurposing food and agricultural policies to make healthy diets more affordable. In 2022. FAO; IFAD; UNICEF; WFP; WHO; <https://openknowledge.fao.org/handle/20.500.14283/cc0639en>
- FAO, IFAD, UNICEF, WFP, & WHO. (2020). The State of Food Security and Nutrition in the World 2020. FAO, IFAD, UNICEF, WFP and WHO. <http://www.fao.org/3/ca9692en/CA9692EN.pdf>
- FAO, IFAD, UNICEF, WFP, & WHO. (2023). The State of Food Security and Nutrition in the World 2023. FAO; IFAD; UNICEF; WFP; WHO; <https://doi.org/10.4060/cc3017en>
- FAO, IFAD, UNICEF, WFP, & WHO. (2024). The State of Food Security and Nutrition in the World 2024. FAO; IFAD; UNICEF; WFP; WHO; <https://doi.org/10.4060/cd1254en>
- Farhi, E., & Tirole, J. (2012). Bubbly Liquidity. *The Review of Economic Studies*, 79(2), 678–706. <http://www.jstor.org/stable/23261347>
- Fearon, J. D., & Laitin, D. D. (2003). Ethnicity, Insurgency, and Civil War. *The American Political Science Review*, 97(1), 75–90.
- Fedderke, J. (2001). Growth and institutions. *Journal of International Development*, 13(6), 645–670. <https://doi.org/10.1002/jid.805>
- Ferguson, R. W. (2002). Challenges to Central Banking from Globalized Financial Systems - Should Financial Stability Be an Explicit Central Bank Objective? Conference at the IMF in Washington, D.C., 1–13.
- Ferrara, A. R., & Nisticò, R. (2019). Does Institutional Quality Matter for Multidimensional Well-Being Inequalities? Insights from Italy. *Social Indicators Research*, 145(3), 1063–1105. <https://doi.org/10.1007/S11205-019-02123-X>
- Fischer, S. (1993). The role of macroeconomic factors in growth. *Journal of Monetary Economics*, 32(3), 485–512. [https://doi.org/10.1016/0304-3932\(93\)90027-D](https://doi.org/10.1016/0304-3932(93)90027-D)
- Fiszbein, A., & Schady, N. R. (2009). Conditional Cash Transfers: Reducing Present and Future Poverty. World Bank Publications. https://books.google.com.tr/books?id=aunlBU_2FsYC

- Fleurbaey, M., & Blanchet, D. (2013). *Beyond GDP: Measuring Welfare and Assessing Sustainability*. Oxford University Press. <https://books.google.com.tr/books?id=3YVoAgAAQBAJ>
- Folayan, M. O., Ibigbami, O., El Tantawi, M., Brown, B., Aly, N. M., Ezechi, O., Abeldaño, G. F., Ara, E., Ayanore, M. A., Ellakany, P., Gaffar, B., Al-Khanati, N. M., Idigbe, I., Ishabiyi, A. O., Jafer, M., Khan, A. T.-A., Khalid, Z., Lawal, F. B., Lusher, J., ... Nguyen, A. L. (2021). Factors Associated with Financial Security, Food Security and Quality of Daily Lives of Residents in Nigeria during the First Wave of the COVID-19 Pandemic. *International Journal of Environmental Research and Public Health*, 18(15), 7925. <https://doi.org/10.3390/ijerph18157925>
- Foster, J., Greer, J., & Thorbecke, E. (1984). A Class of Decomposable Poverty Measures Author(s): James Foster, Joel Greer and Erik Thorbecke Source: *The Econometric Society*, 52(3), 761–766.
- Friel, D. (2017). Understanding institutions: different paradigms, different conclusions. *Revista de Administração*, 52(2), 212–214. <https://doi.org/10.1016/j.rausp.2016.12.001>
- Frimpong, S., Yusuf, M. A., Boateng, E., Ankomah, K., & Abeka, M. J. (2023). Financial inclusion, economic freedom and financial stability in sub-Saharan Africa. *Thunderbird International Business Review*, 65(4), 429–441. <https://doi.org/10.1002/tie.22341>
- FSIN, & Global Network Against Food Crisis. (2024). *Global Report on Food Crises*. <https://www.fsinplatform.org/report/global-report-food-crises-2024/>
- Gakunu, P. (2007). Reforming the Financial System in Sub-Saharan Africa: the (long) Way Ahead. *Finance & Bien Commun*, N° 28-29(3), 139–146. <https://doi.org/10.3917/fbc.028.0139>
- GALVAN, D. C. (2004). *The State Must Be Our Master of Fire* (1st ed.). University of California Press. <http://www.jstor.org/stable/10.1525/j.ctt1pnqwp>
- Gassara, G., & Chen, J. (2021). Household Food Insecurity, Dietary Diversity, and Stunting in Sub-Saharan Africa: A Systematic Review. *Nutrients*, 13(12), 4401. <https://doi.org/10.3390/nu13124401>
- Gedro, D. M., Hartman, D. B., & Lindor, S. (2021). Impact of Poverty on Quality of Education in Haiti. *Journal of Education*, 4(7), 1–9. <https://doi.org/10.53819/810181025019>
- Gerlach, C. (2015). Famine responses in the world food crisis 1972–5 and the World Food Conference of 1974. *European Review of History: Revue Européenne d’histoire*, 22(6), 929–939. <https://doi.org/10.1080/13507486.2015.1048191>
- Gomina, K. S., Gomina, O. E., Egbubine, L., Anyanaso, C., Ilesanmi, A. S., & Obunukwu, G. M. (2024). Analyzing the intersection between food security

- and poverty status among households. *World Journal of Advanced Engineering Technology and Sciences*, 12(2), 307–317. <https://doi.org/10.30574/wjaets.2024.12.2.0296>
- González de la Rocha, M. (2007). The Construction of the Myth of Survival. *Development and Change*, 38(1), 45–66. <https://doi.org/10.1111/j.1467-7660.2007.00402.x>
- Goodhart, C. A. E., & Tsomocos, D. P. (2011). Analysis of Financial Stability. Challenges in Central Banking, 121–145. <https://doi.org/10.1017/cbo9780511762802.006>
- Gorton, G., & Winton, A. (2003). Nber Working Paper Series Financial Intermediation. *Handbook of the Economics of Finance*, 1(May), 431–552. <https://www-nber-org.ezproxy1.hw.ac.uk/papers/w8928>
- Gouvea, R., Kapelianis, D., Li, S., & Terra, B. (2022). Innovation, ICT & food security. *Global Food Security*, 35, 100653. <https://doi.org/10.1016/j.gfs.2022.100653>
- GSMA. (2024). State of the Industry Report on Mobile Money 2024. https://www.gsma.com/sotir/wp-content/uploads/2024/03/GSMA-SOTIR-2024_Report_v7-2.pdf
- Gulde, A.-Marie., Christensen, Jakob., & Pattillo, C. A. (2006). Sub-Saharan Africa: financial sector challenges. *International Monetary Fund*. <https://doi.org/https://doi.org/10.5089/9781589065659.071>
- Gundersen, C., & Ziliak, J. P. (2015). Food Insecurity and Health Outcomes. *Health Affairs*, 34(11), 1830–1839. <https://doi.org/10.1377/hlthaff.2015.0645>
- Gustafson, D. (2020). Hunger to Violence: Explaining the Violent Escalation of Nonviolent Demonstrations. *Journal of Conflict Resolution*, 64(6), 1121–1145. <https://doi.org/10.1177/0022002719890669>
- Ha-Joon, C. (2005). Globalization, global standards, and the future of East Asia. *Global Economic Review*, 34(4), 363–378. <https://doi.org/10.1080/12265080500441354>
- Hammar, H., Sterner, T., & Åkerfeldt, S. (2013). Reducing inequalities: A Sustainable Development Challenge. In *Reducing inequalities: A Sustainable Development Challenge*.
- Hart, H. L. a. (1994). The concept of law: With a postscript edited by Penelope A. Bulloch and Joseph Raz. XII, 315 s.
- Haydaroglu, M., & Bilgiç, P. (2024). Validation of the food inflation impact on consumer behavior scale: a comparative measurement instrument with focus on food security. *International Journal of Food Sciences and Nutrition*, 75(6), 597–608. <https://doi.org/10.1080/09637486.2024.2379819>

- Headey, D. D., & Ruel, M. T. (2020). The COVID-19 nutrition crisis: What to expect and how to protect. https://doi.org/10.2499/p15738coll2.133762_08
- Heckman, J. J. (1988). Time Constraints and Household Demand Functions. *Research in Population Economics*, 6, 3–14.
- Helliwell, J. F., Layard, R., Sachs, J., & Neve, J. E. De. (2020). World Happiness Report 2020. <files/46/Helliwell et al. - World Happiness Report 2020.pdf>
- Hellmann, T. F., Murdock, K. C., & Stiglitz, J. E. (2000). Liberalization, Moral Hazard in Banking, and Prudential Regulation: Are Capital Requirements Enough? *American Economic Review*, 90(1), 147–165. <https://doi.org/10.1257/aer.90.1.147>
- Helmke, G., & Levitsky, S. (2003). INFORMAL INSTITUTIONS AND COMPARATIVE POLITICS: A RESEARCH AGENDA Gretchen Helmke and Steven Levitsky Working Paper #307 – September 2003. *Political Science*, September.
- Herrero, M., Thornton, P. K., Power, B., Bogard, J. R., Remans, R., Fritz, S., Gerber, J. S., Nelson, G., See, L., Waha, K., Watson, R. A., West, P. C., Samberg, L. H., van de Steeg, J., Stephenson, E., van Wijk, M., & Havlik, P. (2017). Farming and the geography of nutrient production for human use: a transdisciplinary analysis. *The Lancet Planetary Health*, 1(1), e33–e42. [https://doi.org/10.1016/S2542-5196\(17\)30007-4](https://doi.org/10.1016/S2542-5196(17)30007-4)
- Herring, R. J., Herring, R., & Wachter, S. (2018). Bubbles in Real Estate Markets. *Asset Price Bubbles*, January 2002. <https://doi.org/10.7551/mitpress/1459.003.0020>
- Hitchman, J. (2023). Reduction of hunger and poverty. In *Encyclopedia of the Social and Solidarity Economy* (pp. 281–286). Edward Elgar Publishing. <https://doi.org/10.4337/9781803920924.00050>
- Hoek, G., Krishnan, R. M., Beelen, R., Peters, A., Ostro, B., Brunekreef, B., & Kaufman, J. D. (2013). Long-term air pollution exposure and cardio-respiratory mortality: a review. *Environmental Health*, 12(1), 43. <https://doi.org/10.1186/1476-069X-12-43>
- Hoffmann, L. K. (2025). Taking action against corruption in Nigeria: Empowering anti-corruption role models and coalitions to change social norms. <https://doi.org/10.55317/9781784136390>
- Holcombe, R. G., & Boudreaux, C. J. (2013). Institutional quality and the tenure of autocrats. *Public Choice*, 156(3–4), 409–421. <https://doi.org/10.1007/s11127-013-0089-3>
- Holmberg, S., & Rothstein, B. (2010). Quality of Government is Needed to Reduce Poverty and Economic Inequality. *QoG Working Paper Series*, 3, 1–63.

https://qog.pol.gu.se/digitalAssets/1350/1350124_2010_3_holmberg_rothstein.pdf

- Hussain, A., & Thapa, G. B. (2012). Smallholders' access to agricultural credit in Pakistan. *Food Security*, 4(1), 73–85. <https://doi.org/10.1007/s12571-012-0167-2>
- Hussen, M. S. (2023). Institutional quality and economic growth in Sub-Saharan Africa: a panel data approach. *Journal of Economics and Development*, 25(4), 332–348. <https://doi.org/10.1108/jed-11-2022-0231>
- IMF. (2019). Republic of Congo: Staff Report-Press Release; Staff Report; Debt Sustainability Analysis, and Statement by the Executive Director for the Republic of Congo (Issue 19).
- IMF. (2024). Regional Economic Outlook, Sub-Saharan Africa, October 2024. International Monetary Fund. <https://doi.org/10.5089/9798400287060.086>
- Inglis, G., Jenkins, P., McHardy, F., Sosu, E., & Wilson, C. (2023). Poverty stigma, mental health, and well-being: A rapid review and synthesis of quantitative and qualitative research. *Journal of Community & Applied Social Psychology*, 33(4), 783–806. <https://doi.org/10.1002/casp.2677>
- Islamic Development Bank. (2020). Financing the Sustainable Development Goals: The contributions of the multilateral development banks. IsDB. <https://www.un.org/ohrrls/sites/www.un.org.ohrrls/files/mdb.pdf>
- J. Kabote, S. (2017). Revisiting Subjective Wellbeing to Stimulate Empirical Research in Sub-Saharan Africa. *Social Sciences*, 6(1), 28. <https://doi.org/10.11648/j.ss.20170601.15>
- Jacquemot, P. (2020). Are lands available in sub-Saharan Africa? <https://www.willagri.com/wp-content/uploads/2020/01/Dossier-Willagri-01-20-EN-2.pdf>
- Jaud, M., & Kukenova, M. (2011). Financial Development and Survival of African Agri-food Exports the World Bank Poverty Reduction and Economic Management Network International Trade Department. <http://econ.worldbank>.
- Jellason, N. P., Robinson, E. J. Z., & Ogbaga, C. C. (2021). Agriculture 4.0: Is Sub-Saharan Africa Ready? *Applied Sciences*, 11(12), 5750. <https://doi.org/10.3390/app11125750>
- Jia, S., Qiu, Y., & Yang, C. (2021). Sustainable development goals, financial inclusion, and grain security efficiency. *Agronomy*, 11(12). <https://doi.org/10.3390/agronomy11122542>
- Jones, E. C., Ong, C., & Haynes, J. (2022). Disaster-Related Food Security and Past General Governance Strategies in a Worldwide Sample. *Weather, Climate, and Society*, 14(1), 3–18. <https://doi.org/10.1175/WCAS-D-20-0138.1>

- Kablan, S. (2009). Banking efficiency and financial development in sub-Saharan Africa (SSA). *African Finance Journal*, 11(2), 28–50. <https://www.imf.org/external/pubs/ft/wp/2010/wp10136.pdf>
- Kaminsky, G. L., & Reinhart, C. M. (1999). The Twin Crises: The Causes of Banking and Balance-of-Payments Problems. *American Economic Review*, 89(3), 473–500. <https://doi.org/10.1257/aer.89.3.473>
- Kao, C., & Chiang, M.-H. (2001). On the estimation and inference of a cointegrated regression in panel data. In *Nonstationary Panels, Panel Cointegration, and Dynamic Panels* (Vol. 15, pp. 179–222). Emerald Group Publishing Limited. [https://www.emerald.com/insight/content/doi/10.1016/s0731-9053\(00\)15007-8/full/html](https://www.emerald.com/insight/content/doi/10.1016/s0731-9053(00)15007-8/full/html)
- Kar, B. B. (2022). Poverty and the Role of Institutions in Sub-Saharan African Countries (pp. 151–167). <https://doi.org/10.4018/978-1-7998-8771-3.ch009>
- Karaoğuz, H. E. (2020). Developmental States in Sub-Saharan Africa: Reflections on State, Development, and Foreign Policy. *İstanbul Üniversitesi Sosyoloji Dergisi*, 40(2), 847–862. <https://doi.org/10.26650/sj.2020.40.2.0061>
- Kaufmann, D., Kraay, A., & Mastruzzi, M. (2010). The Worldwide Governance Indicators. [files/36/Kaufmann et al. - The Worldwide Governance Indicators.pdf](files/36/Kaufmann%20et%20al.%20-%20The%20Worldwide%20Governance%20Indicators.pdf)
- Khan, H., Weili, L., & Khan, I. (2022). Institutional quality, financial development and the influence of environmental factors on carbon emissions: evidence from a global perspective. *Environmental Science and Pollution Research*, 29(9), 13356–13368. <https://doi.org/10.1007/s11356-021-16626-z>
- Khan, I., & Khan, I. (2024). Financial inclusion matter for poverty, income inequality and financial stability in developing countries: new evidence from public good theory. *International Journal of Emerging Markets*, 19(11), 3561–3580. <https://doi.org/10.1108/IJOEM-10-2021-1627>
- Klein, N. (2013). Non-Performing Loans in CESEE: Determinants and Impact on Macroeconomic Performance. *IMF Working Papers*, 13(72), 1. <https://doi.org/10.5089/9781484318522.001>
- Klomp, J., & de Haan, J. (2009). Central bank independence and financial instability. *Journal of Financial Stability*, 5(4), 321–338. <https://doi.org/10.1016/j.jfs.2008.10.001>
- Kouadio, H. K., & Gakpa, L. L. (2022). Do economic growth and institutional quality reduce poverty and inequality in West Africa? *Journal of Policy Modeling*, 44(1), 41–63. <https://doi.org/10.1016/j.jpolmod.2021.09.010>
- Kulu, E., Brafu-Insaidoo, W. G., Amoo Bondzie, E., & Atta Peprah, J. (2022). Inefficiency and Gaps in Financial Stability in sub-Saharan Africa. *Cogent*

- Lakócai, C. (2024). Wellbeing and sustainability in Europe in the 2010s—An empirical analysis. *Wellbeing, Space and Society*, 7, 100225.
<https://doi.org/10.1016/j.wss.2024.100225>
- Lannquist, A. (2023). Central Bank Digital Currency's Role in Promoting Financial Inclusion. *Fintech Notes*, 2023(011), 1.
<https://doi.org/10.5089/9798400253331.063>
- Lantz, M. U. (2021). Bureaucratic corruption and market access: the case of smallholder farmers in Nigeria [Master's Thesis]. University of Giessen.
- Lauth, H. (2000). Informal Institutions and Democracy. *Democratization*, 7(4), 21–50.
<https://doi.org/10.1080/13510340008403683>
- Lauth, H., Pickel, G., Pickel, S., & Jacobs, J. (1997). *Demokratie — Entwicklungsformen und Erscheinungsbilder im interkulturellen Vergleich: Vol. null* (null, Ed.).
- Lawrence, G., Lyons, K., & Wallington, T. (2010). *Food Security, Nutrition and Sustainability*. Earthscan.
- Ledeneva, A. V. (1998). *Russia's economy of favours: blat, networking, and informal exchange*. Cambridge, UK.
- Levi, M. (1988). The Transformation of Agrarian Institutions: An Introduction and Perspective. *Politics & Society*, 16(2–3), 159–169.
<https://doi.org/10.1177/003232928801600201>
- Lewis, K., & Lenton, R. (2008). Corruption and water resources management: threats to quality, equitable access and environmental sustainability.
https://www.undp.org/sites/g/files/zskgke326/files/publications/GCR2008_complete_text.pdf
- Loi, N. T., Huong, V. T., Duc, D. A., Dung, N. Q., & Van, V. Q. (2022). the Impact of Institutions on Multidimensional Poverty Reduction in Vietnam. *Journal of Social Economics Research*, 9(2), 111–120.
<https://doi.org/10.18488/35.v9i2.3133>
- Lokshin, M., Sajaia, Z., & Torre, I. (2023). *Who Suffers the Most from the Cost-of-Living Crisis?* World Bank, Washington, DC.
<https://openknowledge.worldbank.org/handle/10986/39654>
- Magwedere, M. R., & Marozva, G. (2022). Financial Stability and Income Inequality in Developing Countries. *Prague Economic Papers*, 31(6), 464–481.
<https://doi.org/10.18267/j.pep.815>

- Malthus, T. (2023). An essay on the principle of population. In *British Politics and the Environment in the Long Nineteenth Century* (1st ed., pp. 77–84). Routledge.
- Mapanje, O., Karuaihe, S., Machethe, C., & Amis, M. (2023). Financing Sustainable Agriculture in Sub-Saharan Africa: A Review of the Role of Financial Technologies. *Sustainability*, 15(5), 4587. <https://doi.org/10.3390/su15054587>
- Mauro, P. (1995). Corruption and Growth. *The Quarterly Journal of Economics*, 110(3), 681–712. <https://doi.org/10.2307/2946696>
- McMichael, P. (2017). *Development and social change: a global perspective* (6th ed.). Sage.
- Mechlem, K. (2004). Food Security and the Right to Food in the Discourse of the United Nations. *European Law Journal*, 10(5), 631–648. <https://doi.org/10.1111/j.1468-0386.2004.00235.x>
- Menocal, A. R., Taxell, N., Johnson, J. S., Schmaljohann, M., Montero, A. G., Simone, F. de, Tobias, J., & Kendra, D. (2015). Why corruption matters: understanding causes, effects and how to address them. *Antimicrobial Agents and Chemotherapy*, 58(12), 1–111.
- Michael, R. T., & Becker, G. S. (1973). On the New Theory of Consumer Behavior. *The Swedish Journal of Economics*, 75(4), 378. <https://doi.org/10.2307/3439147>
- Millennium Ecosystem Assessment. (2005). *Ecosystems and human well-being: synthesis*. Island Press. <https://www.millenniumassessment.org/documents/document.356.aspx.pdf>
- Mishkin, F. S. (1999). Global Financial Instability: Framework, Events, Issues. *Journal of Economic Perspectives*, 13(4), 3–20. <https://doi.org/10.1257/jep.13.4.3>
- Mitchell, P. M., Roberts, T. E., Barton, P. M., & Coast, J. (2017). Applications of the Capability Approach in the Health Field: A Literature Review. *Social Indicators Research*, 133(1), 345–371. <https://doi.org/10.1007/s11205-016-1356-8>
- Moon, H. R., & Phillip, P. C. B. (1999). Maximum Likelihood Estimation in Panels with Incidental Trends. *Oxford Bulletin of Economics and Statistics*, 61(S1), 711–747. <https://doi.org/10.1111/1468-0084.0610s1711>
- Mowat, J. G. (2020). Interrogating the relationship between poverty, attainment and mental health and wellbeing: the importance of social networks and support – a Scottish case study. *Cambridge Journal of Education*, 50(3), 345–370. <https://doi.org/10.1080/0305764X.2019.1702624>
- Mphaga, K. V., Moyo, D., & Rathebe, P. C. (2024). Unlocking food safety: a comprehensive review of South Africa's food control and safety landscape

from an environmental health perspective. *BMC Public Health*, 24(1), 2040. <https://doi.org/10.1186/s12889-024-19589-1>

Musah, M., Gyamfi, B. A., Kwakwa, P. A., & Agozie, D. Q. (2023). Realizing the 2050 Paris climate agreement in West Africa: the role of financial inclusion and green investments. *Journal of Environmental Management*, 340, 117911. <https://doi.org/10.1016/j.jenvman.2023.117911>

Nation, U. (2019). *The Sustainable Development Goals Report 2019*. United Nations Publication Issued by the Department of Economic and Social Affairs, 64. <https://unstats.un.org/sdgs/report/2022/%0Ahttps://www.un-ilibrary.org/content/books/9789210018098%0Ahttps://www.un-ilibrary.org/content/books/9789210478878>

Nawaz, S., Iqbal, N., & Khan, M. A. (2014). The Impact of Institutional Quality on Economic Growth: Panel Evidence. *The Pakistan Development Review*, 53(1), 15–31. <https://www.jstor.org/stable/24397923>

Ndlovu, G., & Toerien, F. (2020). The distributional impact of access to finance on poverty: evidence from selected countries in Sub-Saharan Africa. *Research in International Business and Finance*, 52(January), 101190. <https://doi.org/10.1016/j.ribaf.2020.101190>

Neyapti, B., & Arasil, Y. (2016). The nexus of economic and institutional evolution. *Economic Modelling*, 52, 574–582. <https://doi.org/10.1016/j.econmod.2015.10.002>

Nigo, A., & Gibogwe, V. (2023). Impact of Financial Resources on Agricultural Growth in Sub-Saharan Africa. *MPRA*, 116397. <https://mpra.ub.uni-muenchen.de/116397/>

Nketiah-Amponsah, E. (2019). The Impact of Health Expenditures on Health Outcomes in Sub-Saharan Africa. *Journal of Developing Societies*, 35(1), 134–152. <https://doi.org/10.1177/0169796X19826759>

Nobile, F., Forastiere, A., Michelozzi, P., Forastiere, F., & Stafoggia, M. (2023). Long-term exposure to air pollution and incidence of mental disorders. A large longitudinal cohort study of adults within an urban area. *Environment International*, 181, 108302. <https://doi.org/10.1016/j.envint.2023.108302>

North, D. C. (1990). *Institutions, Institutional Change and Economic Performance*: Vol. null (null, Ed.).

North, D., Summerhill, W., & Weingast, B. (2000). Order, Disorder and Economic Change: Latin America vs. North America. *Governing for Prosperity*, 54.

Nussbaum, M. C. (2011). *Creating Capabilities: The Human Development Approach*. Harvard University Press. <https://www.jstor.org/stable/j.ctt2jbt31>

- Oaker, B. (2019). The relationship between multidimensional psychological well-being and poverty [Masters Thesis, University Of Cape Town]. <http://hdl.handle.net/11427/31428>
- OECD. (2017). How's Life? 2017 Measuring Well-being: Measuring Well-being. OECD Publishing. <https://www.google.com.tr/books?id=erk-DwAAQBAJ>
- OECD. (2023). Economic Outlook for Southeast Asia, China and India 2023. OECD. <https://doi.org/10.1787/f677c529-en>
- Olabiya, O. M. (2022). The effect of bureaucratic corruption on household food insecurity: evidence from Sub-Saharan Africa. *Food Security*, 14(2), 437–450. <https://doi.org/10.1007/s12571-021-01231-2>
- Olayiwola, A. S., & Akinbobola, T. O. (2022). Role of Financial Sector Development in the Nexus Between Inclusive Growth and Poverty: A Regional Comparative Analysis from Sub-Saharan Africa. *Research in Applied Economics*, 14(1), 18. <https://doi.org/10.5296/rae.v14i1.19855>
- Olivos, F., & Jin, L. (2023). Institutional context and life satisfaction: does the rule of law moderate well-being inequalities? *European Societies*, 25(5), 721–752. <https://doi.org/10.1080/14616696.2023.2185651>
- Ologbenla, P. (2023). Institutional Quality and Output Performance in Nigeria. *European Journal of Science, Innovation and Technology*, 3(6), 356–374. <https://www.ejsit-journal.com/index.php/ejsit/article/view/344>
- Olson, M. (1982). The rise and decline of nations: economic growth, stagflation, and social rigidities. In *TA - TT -*. Yale Univ. Press. <https://doi.org/LK> - <https://worldcat.org/title/230337475>
- Orellano, P., Kasdagli, M.-I., Pérez Velasco, R., & Samoli, E. (2024). Long-Term Exposure to Particulate Matter and Mortality: An Update of the WHO Global Air Quality Guidelines Systematic Review and Meta-Analysis. *International Journal of Public Health*, 69. <https://doi.org/10.3389/ijph.2024.1607683>
- Oyelami, L. O., Edewor, S. E., Folorunso, J. O., & Abasilim, U. D. (2023). Climate change, institutional quality and food security: Sub-Saharan African experiences. *Scientific African*, 20. <https://doi.org/10.1016/j.sciaf.2023.e01727>
- Ozili, P. K., & Iorember, P. T. (2023). Financial stability and sustainable development. *International Journal of Finance & Economics*. <https://doi.org/10.1002/ijfe.2803>
- Ozturk, I., & Ullah, S. (2022). Does digital financial inclusion matter for economic growth and environmental sustainability in OBRI economies? An empirical analysis. *Resources, Conservation and Recycling*, 185, 106489. <https://doi.org/10.1016/j.resconrec.2022.106489>

- Panagos, P., Borrelli, P., Meusburger, K., Yu, B., Klik, A., Jae Lim, K., Yang, J. E., Ni, J., Miao, C., Chattopadhyay, N., Sadeghi, S. H., Hazbavi, Z., Zabihi, M., Larionov, G. A., Krasnov, S. F., Gorobets, A. V., Levi, Y., Erpul, G., Birkel, C., ... Ballabio, C. (2017). Global rainfall erosivity assessment based on high-temporal resolution rainfall records. *Scientific Reports*, 7(1), 4175. <https://doi.org/10.1038/s41598-017-04282-8>
- Patel, R. (2009). Food sovereignty. *The Journal of Peasant Studies*, 36(3), 663–706. <https://doi.org/10.1080/03066150903143079>
- Paul, A. (2016). Happiness, well-being and human development: The case for subjective measures. *UNDP Human Development Report*.
- Pawlak, K., & Kołodziejczak, M. (2020). The Role of Agriculture in Ensuring Food Security in Developing Countries: Considerations in the Context of the Problem of Sustainable Food Production. *Sustainability*, 12(13), 5488. <https://doi.org/10.3390/su12135488>
- Pesaran, M. H. (2004). ‘General Diagnostic Tests for Cross Section Dependence in Panels.’ *Cambridge Working Papers in Economics*. <https://ideas.repec.org/p/cam/camdae/0435.html>
- Pesaran, M. H. (2015). Testing Weak Cross-Sectional Dependence in Large Panels. *Econometric Reviews*, 34(6–10), 1089–1117. <https://ideas.repec.org/a/taf/emetr/v34y2015i6-10p1089-1117.html>
- Pesaran, M. H. (2021). General diagnostic tests for cross-sectional dependence in panels. *Empirical Economics*, 60(1), 13–50. <https://doi.org/10.1007/S00181-020-01875-7/TABLES/11>
- Pesaran, M., & Yamagata, T. (2008). Testing slope homogeneity in large panels. *Journal of Econometrics*, 142(1), 50–93. https://econpapers.repec.org/article/eeeeconom/v_3a142_3ay_3a2008_3ai_3a1_3ap_3a50-93.htm
- Pollak, R. A., & Wachter, M. L. (1975). The Relevance of the Household Production Function and Its Implications for the Allocation of Time. *Journal of Political Economy*, 83(2), 255–278.
- Popkin, B. M. (2006). Global nutrition dynamics: the world is shifting rapidly toward a diet linked with noncommunicable diseases1–3. *The American Journal of Clinical Nutrition*, 84(2), 289–298. <https://doi.org/10.1093/ajcn/84.1.289>
- Post, L., Schmitz, A., Issa, T., & Oehmke, J. (2021). Enabling the Environment for Private Sector Investment: Impact on Food Security and Poverty. *Journal of Agricultural & Food Industrial Organization*, 19(1), 25–37. <https://doi.org/10.1515/jafio-2021-0013>
- Prati, A. (2024). The Well-Being Cost of Inflation Inequalities. *Review of Income and Wealth*, 70(1), 213–238. <https://doi.org/10.1111/roiw.12631>

- Právělie, R. (2016). Drylands extent and environmental issues. A global approach. *Earth-Science Reviews*, 161, 259–278. <https://doi.org/10.1016/j.earscirev.2016.08.003>
- Rasul, G., & Sharma, B. (2016). The nexus approach to water–energy–food security: an option for adaptation to climate change. *Climate Policy*, 16(6), 682–702. <https://doi.org/10.1080/14693062.2015.1029865>
- Ravallion, M. (2016a). Poverty and Inequality Measures. In M. Ravallion (Ed.), *The Economics of Poverty: History, Measurement, and Policy* (p. 0). Oxford University Press. <https://doi.org/10.1093/acprof:oso/9780190212766.003.0006>
- Ravallion, M. (2016b). Targeted Interventions. In M. Ravallion (Ed.), *The Economics of Poverty: History, Measurement, and Policy* (p. 0). Oxford University Press. <https://doi.org/10.1093/acprof:oso/9780190212766.003.0011>
- Ravallion, M. (2022). Growth Elasticities of Poverty Reduction. <https://doi.org/10.3386/w30401>
- Reginato, E., Massa, L., Fadda, I., & Pavan, A. (2023). Quality of Government and Well-being: An Empirical Analysis of 158 European Regions. *International Journal of Business and Management*, 18(4), p210. <https://doi.org/10.5539/ijbm.v18n4p210>
- Reinhart, C., & Rogoff, K. (2009). *This Time Is Different: Eight Centuries of Financial Folly* (1st ed.). Princeton University Press. <https://econpapers.repec.org/RePEc:pup:pbooks:8973>
- Renata, B., Emilio, H., Emiliano, M., & Cristian, M.-O. (2020). The impact of financial inclusion on rural food security experience: a perspective from low- and middle-income countries. *Review of Development Finance*, 1(2). <https://hdl.handle.net/10520/ejc-rdfin-v10-n2-a1>
- Rochet, J.-C. (2004). Macroeconomic shocks and banking supervision. *Journal of Financial Stability*, 1(1), 93–110. <https://doi.org/https://doi.org/10.1016/j.jfs.2004.06.004>
- Rodney, Walter. (2018). *How Europe underdeveloped Africa*. Verso Books. https://scholar.google.com/scholar_url?url=https://books.google.com/books%3Fhl%3Den%26lr%3D%26id%3DFrN1DwAAQBAJ%26oi%3Dfnd%26pg%3DPR9%26dq%3DHow%2BEurope%2Bunderdeveloped%2BAfrica%26ots%3Dh5Mgfidgfi%26sig%3DEHiEeXWx1V_nXKZoaPiR5OIm2fg&hl=en&sa=T&oi=gsb&ct=res&cd=0&d=15126709336243894688&ei=jQcnaITdOKmrieoP_fOcuAU&scisig=AAZF9b_4_iqX6lxf12Q8ibOjZgTZ
- Rojas, M. (2020). Income Poverty and Well-Being (pp. 83–101). https://doi.org/10.1007/978-3-030-33498-7_7

- Roland, G. (2004). Understanding institutional change: Fast-moving and slow-moving institutions. *Studies in Comparative International Development*, 38(4), 109–131. <https://doi.org/10.1007/BF02686330>
- Roy, K. C., & Tisdell, C. A. (1998). Good governance in sustainable development: The impact of institutions. *International Journal of Social Economics*, 25(6/7/8), 1310–1325. <https://doi.org/10.1108/03068299810212775/FULL/PDF>
- Ryff, C. D., & Keyes, C. L. M. (1995). The structure of psychological well-being revisited. *Journal of Personality and Social Psychology*, 69(4), 719–727. <https://doi.org/10.1037/0022-3514.69.4.719>
- Salifu, M., Peprah, J. A., & Cantah, W. G. (2024). Growth, Unemployment and Inflation in Sub-Saharan Africa: The role of Financial Development and legal systems and Property Rights. <https://doi.org/10.21203/rs.3.rs-4409121/v1>
- Santos, M. S., & Woodford, M. (1997). Rational Asset Pricing Bubbles. *Econometrica*, 65(1), 19–57. <https://doi.org/10.2307/2171812>
- Sawyer, A., Sherriff, N., Bishop, D., Darking, M., & Huber, J. W. (2022). “It’s changed my life not to have the continual worry of being warm” – health and wellbeing impacts of a local fuel poverty programme: a mixed-methods evaluation. *BMC Public Health*, 22(1), 786. <https://doi.org/10.1186/s12889-022-12994-4>
- Scheinkman, J. A., & Xiong, W. (2003). Overconfidence and Speculative Bubbles. *Journal of Political Economy*, 111(6), 1183–1220. <https://doi.org/10.1086/378531>
- Schinasi, G. J. (2004). Defining Financial Stability. *IMF Working Papers*, 04(187), 1. <https://doi.org/10.5089/9781451859546.001>
- Schinasi, G. J. (2006). Understanding Financial Stability: Towards a Practical Framework. *Seminar on Current Developments in Monetary and Financial Law*, 36.
- Scholten, W., Seldenrijk, A., Hoogendoorn, A., Bosman, R., Muntingh, A., Karyotaki, E., Andersson, G., Berger, T., Carlbring, P., Furmark, T., Bouchard, S., Goldin, P., Kampmann, I., Morina, N., Kocovski, N., Leibing, E., Leichsenring, F., Stolz, T., van Balkom, A., & Batelaan, N. (2023). Baseline Severity as a Moderator of the Waiting List–Controlled Association of Cognitive Behavioral Therapy with Symptom Change in Social Anxiety Disorder. *JAMA Psychiatry*, 80(8), 822. <https://doi.org/10.1001/jamapsychiatry.2023.1291>
- Schutter, O. de, & UN. Human Rights Council. Special Rapporteur on the Right to Food. (2011). Report submitted by the Special Rapporteur on the Right to Food, Olivier de Schutter: addendum. <https://digitallibrary.un.org/record/704716?ln=en&v=pdf>

- Scoones, I. (1998). Sustainable Rural Livelihoods: A Framework for Analysis (72; IDS Working Paper).
- Seligman, M. (2018). PERMA and the building blocks of well-being. *The Journal of Positive Psychology*, 13(4), 333–335. <https://doi.org/10.1080/17439760.2018.1437466>
- Sen, A. (1981). *Poverty and Famines: An Essay on Entitlement and Deprivation*. Oxford University Press. <https://books.google.com.tr/books?id=FVC9eqGkMr8C>
- Sen, A. (1999a). *Commodities and Capabilities*. OUP Catalogue. <https://ideas.repec.org/b/oxp/obooks/9780195650389.html>
- Sen, A. (1999b). *Development as Freedom*. In Alfred A. Knopf Inc, New York. Oxford University Press.
- Sen, A. (2013). The Concept of Development. *The Concept of Development*, L. <https://doi.org/10.4324/9780203781050>
- Sen, A. (2017). *Development as Freedom*. In *The Top 50 Sustainability Books*. <https://doi.org/10.4324/9781351279086-33>
- Shang, Y., Lv, Y., Chen, Z., Bassey, R., Aderemi, T. A., & Enilolobo, O. (2024). Globalization and food security in Sub-Saharan Africa. *Frontiers in Sustainable Food Systems*, 8. <https://doi.org/10.3389/fsufs.2024.1325172>
- Shiroka-Pula, J., Bartlett, W., & Krasniqi, B. A. (2023). Can the Government Make Us Happier? Institutional Quality and Subjective Well-Being Across Europe. *Applied Research in Quality of Life*, 18(2), 677–696. <https://doi.org/10.1007/s11482-022-10099-z>
- Shobe, M. A., Narcisse, M. R., & Christy, K. (2018). Household Financial Capital and Food Security. *Journal of Poverty*, 22(1), 1–22. <https://doi.org/10.1080/10875549.2017.1348426>
- Sibanda, K., Garidzirai, R., Mushonga, F., & Gonese, D. (2023). Natural Resource Rents, Institutional Quality, and Environmental Degradation in Resource-Rich Sub-Saharan African Countries. *Sustainability (Switzerland)*, 15(2). <https://doi.org/10.3390/su15021141>
- Singh, R. J., & Huang, Y. (2015). Financial Deepening, Property Rights, and Poverty: Evidence from Sub-Saharan Africa. *Journal of Banking and Financial Economics*, 1(3), 130–151. <https://doi.org/10.7172/2353-6845.jbfe.2015.1.6>
- Singh, S. K., & Jha, C. K. (2023a). Are financial development and financial stability complements or substitutes in poverty reduction? *The European Journal of Finance*, 29(17), 2001–2031. <https://doi.org/10.1080/1351847X.2023.2166864>

- Singh, S. K., & Jha, C. K. (2023b). Are financial development and financial stability complements or substitutes in poverty reduction? *The European Journal of Finance*, 29(17), 2001–2031. <https://doi.org/10.1080/1351847X.2023.2166864>
- Soko, N. N., Kaitibie, S., & Ratna, N. N. (2023). Does institutional quality affect the impact of public agricultural spending on food security in Sub-Saharan Africa and Asia? *Global Food Security*, 36. <https://doi.org/10.1016/j.gfs.2022.100668>
- Solow, R. M. (1970). *Growth Theory: An Exposition - The Radcliffe Lectures Delivered in the University of Warwick*.
- Song, S., & Imai, K. S. (2019). Does the Hunger Safety Net Programme reduce multidimensional poverty? Evidence from Kenya. *Development Studies Research*, 6(1), 47–61. <https://doi.org/10.1080/21665095.2019.1582347>
- Song, Y., & Dhariwal, P. (2023). Improved Techniques for Training Consistency Models. *arXiv*. <https://doi.org/10.48550/arXiv.2310.14189>
- Stiglitz, J., Fitoussi, J., & Durand, M. (2018). Beyond GDP: Measuring What Counts for Economic and Social Performance. https://www.oecd.org/en/publications/beyond-gdp_9789264307292-en.html
- Strengmann-Kuhn, W. (2005). Theoretical Definition and Empirical Measurement of Welfare and Poverty: A Microeconomic Approach. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.345022>
- Subramaniam, Y., Masron, T. A., & Subramaniam, T. (2022). INSTITUTIONAL QUALITY AND FOOD SECURITY. *Singapore Economic Review*, 67(6), 2099–2127. <https://doi.org/10.1142/S0217590820500046>
- Talla Fokam, D. N. D., & Fomba Kamga, B. (2023). Ethnic diversity and poverty: the role of institutional quality. In *International Review of Economics* (Vol. 70, Issue 1). Springer Berlin Heidelberg. <https://doi.org/10.1007/s12232-022-00408-1>
- Tan, C., McCoy, D. T., & Elsaesser, G. S. (2024). Constraints on Southern Ocean Shortwave Cloud Feedback from the Hydrological Cycle. *Journal of Geophysical Research: Atmospheres*, 129(6). <https://doi.org/10.1029/2023JD040489>
- Taylor, M. P., Jenkins, S. P., & Sacker, A. (2011). Financial capability and psychological health. *Journal of Economic Psychology*, 32(5), 710–723. <https://doi.org/10.1016/j.joep.2011.05.006>
- Tebaldi, E., & Mohan, R. (2010). Institutions and poverty. *Journal of Development Studies*, 46(6), 1047–1066. <https://doi.org/10.1080/00220380903012730>
- Tefera, S. A., Tadesse, T. B., & Asmare, G. W. (2022). Prevalence of household food insecurity in Ethiopia during the COVID-19 pandemic: Evidence from panel

data. Scientific African, 16, e01141.
<https://doi.org/10.1016/j.sciaf.2022.e01141>

Tiliouine, H., Cummins, R. A., & Davern, M. (2009). Islamic religiosity, subjective well-being, and health. *Mental Health, Religion & Culture*, 12(1), 55–74. <https://doi.org/10.1080/13674670802118099>

Tirole, J. (1982). On the Possibility of Speculation under Rational Expectations. *Econometrica*, 50(5), 1163–1181. <https://doi.org/10.2307/1911868>

Tirole, J. (1985). Asset Bubbles and Overlapping Generations. *Econometrica*, 53(6), 1499–1528. <https://doi.org/10.2307/1913232>

Transparency International. (2023). Corruption perceptions. 16.

Tsongo, G. M., Kindzeka Wirajing, M. A., Ningaye, P., & Nchofoung, T. N. (2025). Food security and financial inclusion in Africa: exploring the role of educational development. *International Review of Applied Economics*, 39(1), 100–125. <https://doi.org/10.1080/02692171.2024.2404877>

UNDP. (2019). Human Development Report 2019: Beyond income, beyond averages, beyond today: Inequalities in human development in the 21st century. United Nations Development Program. <https://hdr.undp.org/content/human-development-report-2019>

UNDP. (2024). Human Development Report 2023-24: Breaking the gridlock: Reimagining cooperation in a polarized world. In UNDP (United Nations Development Programme).

UNESCO. (2023). Global Education Monitoring Report 2023: Technology in education: A tool on whose terms? GEM Report UNESCO. <https://doi.org/10.54676/UZQV8501>

Upasana, S. (2023). The impacts of poverty on hunger: An examination of the relationship between socioeconomic status and food insecurity. *International Journal of Agricultural Science and Food Technology*, 9(2), 041–043. <https://doi.org/10.17352/2455-815X.000190>

Van Cott, D. L. (2000). A Political Analysis of Legal Pluralism in Bolivia and Colombia. *Journal of Latin American Studies*, 32(1), 207–234. <http://www.jstor.org/stable/157785>

von Hagen, J., & Strauch, R. R. (2001). German public finances: Recent experiences and future challenges (Issue B 13-2001). Rheinische Friedrich-Wilhelms-Universität Bonn, Zentrum für Europäische Integrationsforschung (ZEI). <https://hdl.handle.net/10419/39608>

Vuță, M., Cioacă, S. I., Vuță, M., & Sgardea, F. M. (2019). A financial-economic assessment of the food security in the European union. *Economic Computation*

and Economic Cybernetics Studies and Research, 53(2), 185–202.
<https://doi.org/10.24818/18423264/53.2.19.11>

Wandeda, D. O., Masai, W., & Nyandemo, S. M. (2021). Institutional quality and economic growth: evidence from Sub-Saharan Africa countries. *African Journal of Economic Review*, 9(4), 106–125.

Wang, H., Fidrmuc, J., & Tian, Y. (2020). Growing against the background of colonization? Chinese labor market and FDI in a historical perspective. *International Review of Economics and Finance*, 69, 1018–1031.
<https://doi.org/10.1016/j.iref.2018.12.010>

WHO, (World Health Organization). (2023). World health statistics 2023: monitoring health for the SDGs, sustainable development goals. World Health Organization.

Williamson, C. R. (2009). Informal Institutions Rule: Institutional Arrangements and Economic Performance. *Public Choice*, 139(3/4), 371–387.
<http://www.jstor.org/stable/40270896>

Wissing, M. P., Schutte, L., & Liversage, C. (2022). Embracing Well-Being in Diverse Contexts: The Third Wave of Positive Psychology and African Imprint. 3–30.
https://doi.org/10.1007/978-3-030-85924-4_1

Wittman, H. (2011). Food Sovereignty: A New Rights Framework for Food and Nature? *Environment and Society*, 2(1).
<https://doi.org/10.3167/ares.2011.020106>

World Bank. (2019). World development report 2020: trading for development in the age of global value chains. World Bank Group. files/34/World Bank (Washington, District of Columbia) - 2019 - World development report 2020 trading for development in the age of global value chains.pdf

World Bank. (2020). Reversals of Fortune (Poverty and Shared Prosperity 2020). The World Bank-Washington DC-USA, March, 201.

World Bank. (2023). Poverty and Shared Prosperity 2022: Course Correcting.
<https://hdl.handle.net/10986/37739>

Yiadom, E. B., Dziwornu, R. K., Mawutor, J. K. M., & Amankwah, R. F. (2023). Exploring the relationship between extreme weather events, urbanization, and food insecurity: Institutional quality perspective. *Environmental Challenges*, 13. <https://doi.org/10.1016/j.envc.2023.100775>

Zafar, Q., Khan, M. A., Warsi, A. Z., & Iqbal, L. (2024). Economic Strain and Recovery Trajectories in Mental Health: The Role of Financial Stability in Mental Health Outcomes. *Review of Applied Management and Social Sciences*, 7(4), 345–358. <https://doi.org/10.47067/ramss.v7i4.385>

- Zeufack, A. G., Calderon, C., Kambou, G., Djiofack, C. Z., Kubota, M., Korman, V., & Cantu Canales, M. Catalina. (2020). An Analysis of Issues Shaping Africa's Economic Future (147542; Africa's Pulse (Vol. 1 of 2) :). <http://documents.worldbank.org/curated/en/799911586462355556>
- Zhao, X., Cao, Y., & Cheng, Z. (2024). Perception matters: How air pollution influences life satisfaction in China. *Heliyon*, 10(11). <https://doi.org/10.1016/j.heliyon.2024.e31927>
- Ziolo, M., Ghoul, M. B. G. Ben, & Aydin, H. I. (2018). Financial stability vs. sustainable development and its financing. *Regaining Global Stability After the Financial Crisis*, April 2020, 88–107. <https://doi.org/10.4018/978-1-5225-4026-7.ch005>
- Zuberi, T., & Thomas, K. J. (2012). Demographic Change, the IMPACT Model, and Food Security in Sub-Saharan Africa (2012–003; UNDP Regional Bureau for Africa Working Paper). <https://www.undp.org/africa/publications/demographic-change-impact-model-and-food-security-sub-saharan-africa>

CURRICULUM VITAE

Full Name:

Mohammed Muntaka Abdul Rahman

Education:

2011 – 2015	BA in Development Education, University for Development Studies, Ghana
2017 – 2019	MSc in Economics, Ege University, Türkiye
2020 – 2025	PhD in Economics, Ibn Haldun University, Türkiye

Work Experience:

2024 – 2025	Academic Support Staff, Ibn Haldun University, Türkiye
2020 – 2024	Teaching / Research Assistant, Ibn Haldun University, Türkiye
2021 – 2025	Research Associate, Zam Development Solutions, Ghana
2018 – 2020	ESL Teacher, Uğur Okulları Aliğa, Türkiye
2015 – 2016	Teaching Assistant, University for Development Studies, Ghana

Publications:

1. Rahman, M.M. A, (2024). Artificial Intelligence Tools for Academic Work, In Atilla et al. *Artificial Intelligence in Higher Education: Applications and Suggestions*, Ibn Haldun University Press, <https://doi.org/10.31219/osf.io/2gz4n>
2. Kaplan, M., Rahman, M. M. A., & Vergil, H. (2024). The triple impact of innovation, financial inclusion and renewable energy consumption on environmental quality in some emerging economies. *International Journal of Energy Economics and Policy*, 14(4), 140-149. <https://doi.org/10.32479/ijeep.16008>

3. Pufaa, F. E., Rahman, M. M. A., & Saayir, P. T. (2023). Social Studies Pedagogy in Ghana, Ghana Journal of Education and Teaching, University of Education Winneba, 2(1). <https://journals.uew.edu.gh/index.php/ghajet/article/view/220>
4. Abdul-Rahman, M., Seidu, A., Abdul Rahman, M. M., & Turgut, M. (2023). Oil prices and economic growth nexus in Ghana: new empirical evidence. *Journal of Economics and Management*. <https://hdl.handle.net/20.500.12154/2202>
5. Rahman, M. M. A., Adeniyi, A., & Hamidu, Y. A. (2022). Does Human Capital Have an Impact on Employment in Turkey? An ARDL Analytical Perspective. *International Journal of Business and Management Invention (IJBMI)*, 11(4), 18-27. <http://dx.doi.org/10.6084/m9.figshare.19825243>
6. Abdul Rahman, M. M. *ECOWAS bölgesinde doğrudan yabancı yatırımların belirleyicileri: Ampirik bir analiz* (Master's thesis, Sosyal Bilimler Enstitüsü). Ege University. <https://gcris.ege.edu.tr/handle/11454/60856>