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Terrorism in Africa: Economic Origins, Spillover, and Economic Resilience

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Dedication

This thesis is dedicated to my lovely parents, Engr. A.B. Ishola and Mrs. Grace Ishola, whose unwavering support and encouragement have been my greatest strength. Their love and guidance have shaped who I am today.

I also dedicate this work to my beautiful wife, Mrs. D.F. Ishola, whose care, understanding, and endless love have been a constant source of motivation and inspiration. Your belief in me has been my anchor throughout this journey.

Thank you for being my pillars of support.

Declaration

This work has not been accepted in substance or concurrently submitted in candidature for any degree.

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STATEMENT 1

This thesis is the result of my own investigations, except where otherwise stated. Where correction services have been used, the extent and nature of the correction is clearly marked in a footnote.

Other sources are acknowledged by footnotes giving explicit references. A bibliography is appended.

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degree holder. To my beloved sisters, Mercy Thompson, Faith, and Blessing Ishola, your unique contributions have been invaluable, and I am immensely thankful. May God bless you all richly.

Abstract

The thesis consists of three principal chapters that collectively analyse the complex interplay between terrorism and economics in Africa, highlighting the essential role of institutional quality and offering policy implications and recommendations for stakeholders, including government officials, policymakers, investors, and private individuals. The first chapter examines the drivers of terrorism in African regions, reviewing issues such as poverty, political instability, and institutional quality. This chapter's novelty lies in examining various ideologies of terrorism, including political, religious (both Muslim and Christian), and ethnic ideologies within Africa. Instead of treating terrorism as a homogeneous entity, it is analysed as a multifaceted phenomenon, offering a thorough and detailed examination of the factors influencing terrorism across the continent.

The chapter also incorporates other factors, like institutional quality, inequality, and health expenditure, which are not addressed in the current research on terrorism in Africa. This methodology expands the examination of factors that may affect terrorism, classifying them into macroeconomic, social, political, demographic, and institutional categories. To do this, the chapter employs Negative Binomial and Poisson models with fixed effects. The econometric technique was selected for its capacity to precisely address over-dispersed count variables, unobserved heterogeneity, and endogeneity.

The findings indicate that corruption is a major catalyst of terrorism in Africa. Conversely, economic progress, trade liberalisation, employment opportunities, robust healthcare systems, and comprehensive democracy have been shown to reduce terrorism. It emphasises how poor institutional quality amplifies the occurrence of terrorism, underscoring the need for more robust governance structures. Moreover, the findings indicate that the overall ideology and classifications of terrorism in Africa do not markedly vary in their drivers from those in other countries or globally.

The second chapter examines the spillover of terrorism across several areas in Africa, highlighting the interdependence of states and the transnational characteristics of terrorist threats. This study is

innovative in its thorough examination of how terrorism might spread from one region to other regions, especially those with common cultural, linguistic, and economic connections. The chapter utilises Vector Autoregression Analysis (VAR) with Generalized Impulse Response Function (GIRFs) to analyse the possible spillover effects of terrorism across different Africa regions. The study employs the Phillips and Sul (2007) club convergence method to categorise countries with similar terrorism characteristics. Given that our dataset comprises 32 countries, the club convergence estimation is essential, as executing the Generalised Impulse Response Function would necessitate numerous matrices, resulting in 400 impulse response functions.

The club convergence technique facilitates a more systematic examination by categorising nations according to common terrorist features or patterns. The chapter employs Principal Component Analysis (PCA) to reduce the dimensionality of these groupings, hence enhancing the usefulness of time series analysis for Vector Autoregression Analysis and Generalized Impulse Response Function estimation (VAR/GIRFs). The findings indicate substantial regional impacts on terrorism dynamics, specifically that terrorism shocks from highly terrorised regions can affect moderately terrorised regions, while shocks within low terrorised areas lead to increased terrorism in the short term, which eliminates over the long term. The chapter emphasises the significance of joint initiatives, like as the Accra Initiative, in curbing terrorism and promoting regional stability. This chapter enhances comprehension of terrorism's international effects and provides critical insights for policymakers in formulating focused counter-terrorism tactics.

The third chapter explores the notion of economic resilience, evaluating the recovery of African economies following terrorist attacks. This chapter has three novel contributions; firstly, it proposes the notion of economic resilience concerning terrorism, examining how African economies might recover from the disturbances induced by terrorist actions. Secondly, the chapter incorporates institutional quality into its econometric model, demonstrating how the efficacy and stability of institutions may substantially influence the effect of terrorism on economic resilience. This methodology tackles an important gap in the literature by emphasising the need of robust governance and legal frameworks. The chapter adopts a rigorous methodological framework, employing dynamic panel data estimation using First Difference GMM, System GMM, and

Corrected Least Square Dummy Variable (CLSDV) estimators. This approach ensures robust and reliable results, offering a clear understanding of the complex relationships among globalization, economic resilience, institutional quality, and terrorism in Africa.

The chapter concludes that good institutional quality is significantly correlated with enhanced economic resilience against terrorism in African nations. The Corrected Least Square Dummy Variable (CLSDV) estimator is recognised as the most dependable and effective technique for assessing the influence of terrorism on economic resilience, providing accurate and consistent results.

Collectively, these chapters provide a thorough examination of the intricate relationship among terrorism, economic, and institutional quality in Africa.

Contents

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List of Abbreviations

- ADF - Allied Democratic Forces

- ADF – Augmented Dickey-Fuller

- ANC - African National Congress

- AMISOM - African Union Mission in Somalia

- AQIM - Al-Qaeda in the Islamic Maghreb

- BW - Baxter-Wahhba Filter

- CF - Christiano-Fitzgerald Filter

- CLSDV - Corrected Least Square Dummy Variable

- CPI – Consumer Price Index (Inflation)

- DRC - Democratic Republic of the Congo

- DSDM - Dynamic Geographical Durbin Model

- ECR – Economic Resilience Index

- FDI – Foreign Direct Investment

- FDGMM - First Difference Generalized Moment of Method

- FENB – Fixed Effect Negative Binomial

- FEPM – Fixed Effect Poisson Model

- FGLS - Feasible Generalized Least Square

- FA – Factor Analysis

- GDPPC - Gross Domestic Product Per Capita

- GIRFs – Generalized Impulse Response Functions

- GIA - Armed Islamic Group

- GMM – Generalized Moment of Method

- GTD – Global Terrorism Database

- GTI – Global Terrorism Index

- GSPC - Salafist Group for Preaching and Combat

- HTR – High Terrorized Region

- HEPC – Health Expenditure Per Capita

- HP - Hodrick-Prescott Filter

- INSCR - The Integrated Network for Societal Conflict Research

- IEP – Institute for Economic and Peace

- IRFs- Impulse Response Functions

- ISIL - Islamic State of Iraq and the Levant

- ISIS - Islamic State of Iraq and Syria

- KKK- Ku Klux Klan

- LLC – Levin, Lin, Chu

- LRA – Lord's Resistance Army

- LTR – Low Terrorized Region

- MLTR – Moderate Terrorized Region

- MTR – Moderate Terrorized Region

- MUJAO - Movement for Unity and Jihad in West Africa

- NBCD – Negative Binomial Country Dummies

- OECD - Organization for Economic Cooperation and Development

- OAU – Organization of African Unity

- OIRFs- Orthogonalized Impulse Response Functions

- PCA – Principal Component Analysis

- PLO - Palestinian Liberation Organization

- RUF - Revolutionary United Front

- SAR - Spatial Autoregressive

- START - Study of Terrorism and Responses to Terrorism

- SWIID - The Standardized World Income Inequality Database

- SYSGMM - System Generalized Moment of Method

- UN - United Nations

- UNCTAD - United Nations Conference on Trade and Development

- UNITA - Union for the Total Independence of Angola

- VAR – Vector Autoregression Model

- VECM – Vector Error Correction Model

- WDI - World Development Indicators

- WGI – World Bank Governance Indicator

- WHO – World Health Organization

Academic Profile Arising from This Thesis

Conferences

- Ishola, V, (2023). Terrorism and Its Determinants: Evidence from Africa. Welsh Postgraduate Research Conference, Cardiff University Business School, 13th June 2023, Cardiff, UK

- Ishola, V, (2024). Investigating the Spill-over of Terrorism in Africa. Welsh Postgraduate Research Conference, Cardiff University Business School, 13th June 2024, Cardiff, UK

Chapter One

1.0 Introduction

Terrorism is widely understood as a non-uniform phenomenon, characterized by diverse manifestations, goals, and strategies that reflect its complex nature. This perspective aligns with the work of Kis-Katos *et al.* (2014), who highlight terrorism's heterogeneity, and "Four Waves of Modern Terrorism" framework, which underscores the distinct historical and ideological triggers shaping terrorism over time. Far from adhering to a singular pattern, terrorism evolves in response to specific socio-political, economic, and historical contexts. From the revolutionary anarchist movements of the late 19th century to contemporary religiously motivated attacks, terrorism has continuously adapted to reflect the shifting grievances and ambitions of its actors.

Rapoport's framework illustrates this evolution through four distinct waves, each emerging from unique historical and ideological conditions. The Anarchist Wave, beginning in 1897, marked the first wave of modern terrorism. It arose out of dissatisfaction with failed political reforms in 19th-century Europe and was fuelled by revolutionary ideologies. This wave leveraged technological innovations such as the telegraph, railroads, and dynamite to amplify its reach. Anarchist groups, inspired by the egalitarian ideals of the French Revolution, targeted monarchs, political elites, and heads of state. Notable examples include the assassinations of Tsar Alexander II of Russia and U.S. President William McKinley. The transnational nature of this wave, with groups like Russia's Narodnaya Volya and anarchist cells in Europe and the Americas sharing tactics, exemplified how technology and communication shaped terrorism's impact during this era.

The second wave, known as the Anti-Colonial Wave, emerged in the aftermath of World War I, driven by nationalist struggles against imperial powers and the principle of self-determination enshrined in the Versailles Treaty. Nationalist movements in regions such as Asia, Africa, and the Middle East used terrorism as a tool to challenge colonial rule. Groups like the Irish Republican Army (IRA), the Irgun in Palestine, and Algeria's National Liberation Front (FLN) targeted colonial administrations, military forces, and police. Unlike the anarchists, these groups sought to mobilize local populations and secure international legitimacy for their causes. The wave

highlighted how the geopolitical realignments of the early 20th century created fertile ground for anti-colonial struggles and violent resistance.

The New Left Wave, emerging in the 1960s, reflected the ideological tensions of the Cold War and the global rise of anti-imperialist movements. Influenced by the civil rights movement, anti-Vietnam War protests, and Marxist ideologies, this wave was characterized by groups such as Germany's Red Army Faction (RAF), the Weather Underground in the United States, and Japan's Red Army. These organizations targeted symbols of capitalism and state power, including corporations, embassies, and military installations. Hallmarks of this era included hijackings, kidnappings, and hostage-taking, with the overarching goal of inspiring global revolutionary movements. The New Left Wave demonstrated how ideological struggles and dissatisfaction with capitalist systems fuelled acts of terrorism.

The Religious Wave, which began in 1979, marked a shift toward religious ideologies as dominant motivators for terrorism. Events such as the Iranian Revolution, the Soviet invasion of Afghanistan, and the rise of transnational Islamist movements shaped this wave. Groups like Al-Qaeda, ISIS, and Boko Haram sought to establish theocratic states or global caliphates, employing tactics such as suicide bombings and mass casualty attacks. The use of social media for recruitment and propaganda became a defining feature of this wave. Unlike its predecessors, religious terrorism often carries an apocalyptic dimension, portraying violence as a divine mandate to achieve spiritual or eschatological goals. This wave underscores how historical triggers, including perceived failures of secular governance and the mobilization of religious identities, have shaped its narrative.

Each wave demonstrates the interplay between political grievances, ideological narratives, and technological innovations. The Anarchist Wave exploited dynamite and telegraph technology, the Anti-Colonial Wave drew on the moral authority of self-determination, the New Left Wave utilized mass media, and the Religious Wave leveraged the internet and globalization. Overlaps between waves highlight the complexity of terrorism's evolution, with transitions often marked by shifts in global politics, such as the decline of colonial empires or the end of the Cold War.

Rapoport's framework offers valuable insights into the historical patterns of terrorism but falls short in addressing overlapping motivations and the complexities of contemporary dynamics. For

instance, political terrorism remains a significant force today, particularly in Africa, as evidenced by the activities of groups such as the Allied Democratic Forces ADF (), the Renamo Military Junta, and the Movement for the Emancipation of the Niger Delta (MEND). These examples highlight the enduring relevance of politically motivated terrorism and challenge Rapoport's classification of distinct "waves" of terrorism.

The Allied Democratic Forces ADF (), affiliated with the Islamic State group, exemplifies the persistence of political violence. On January 15, 2025, ADF rebels attacked the village of Makoko in North Kivu province, eastern Democratic Republic of Congo, killing at least 10 people and burning several houses during the raid. This act underscores the group's ongoing campaign of terror, driven by both political and ideological motives.

Similarly, the Renamo Military Junta illustrates political terrorism within the context of internal conflict. On October 11, 2021, Mozambican police forces killed Mariano Nhongo, the leader of this armed splinter group from the main opposition party. The Renamo Military Junta had been accused of multiple attacks, including civilian killings and property destruction in central Mozambique. Nhongo's death significantly weakened the group, resulting in a marked decline in their activities. Since then, no major attacks have been attributed to this faction, highlighting how leadership dynamics can impact the trajectory of political terror groups.

The Movement for the Emancipation of the Niger Delta (MEND) offers another example of politically motivated terrorism. Emerging in the early 2000s, MEND sought to advocate for the rights of the Niger Delta's indigenous people, targeting the Nigerian government and multinational oil corporations over issues such as environmental degradation and resource exploitation. One notable attack was the 2006 car bombing of Shell Petroleum Development Company's headquarters in Port Harcourt. This politically driven act underscores the group's focus on economic and environmental grievances rather than purely ideological or religious motivations.

These examples highlight the enduring relevance of political terrorism in modern times, showcasing its complexity and overlap with other motivations. They also complicate Rapoport's framework by demonstrating that political terrorism continues to thrive alongside, and often intertwined with, other forms of terrorism, challenging the clear distinctions between the so-called "waves."

Africa's position as a region with porous borders, shared identities, and weak governance structures makes it particularly vulnerable to the spillover of terrorism from other parts of the world. Modern interconnectedness allows terrorist ideologies and tactics to spread rapidly, with conflicts in one country often inspiring or emboldening groups in another. For example, Boko Haram, based in Nigeria, pledged allegiance to ISIS in 2015, rebranding as the Islamic State West Africa Province (ISWAP). This alliance strengthened Boko Haram's operational capabilities by providing access to ISIS resources such as funding, training, and propaganda strategies. The relationship also reinforced ideological ties, with Boko Haram adopting more brutal tactics modelled after ISIS.

Another example is Al-Shabaab, a terrorist group based in Somalia, demonstrates another example of Middle Eastern terrorism influencing Africa. Since 2012, Al-Shabaab has been formally affiliated with Al-Qaeda, a Middle Eastern terrorist network. This alliance has allowed Al-Shabaab to benefit from Al-Qaeda's global jihadist ideology, training, and funding. Al-Shabaab has not only adopted Al-Qaeda's tactics, such as suicide bombings and coordinated attacks but has also extended its operations beyond Somalia to neighbouring countries like Kenya and Uganda. The 2013 Westgate Mall attack in Nairobi, Kenya, which killed over 60 people, highlights Al-Shabaab's capacity to conduct cross-border terrorism—strengthened by its ties to Al-Qaeda. This connection exemplifies how Middle Eastern terrorism spills over into Africa, reinforcing local insurgencies and destabilizing broader regions. This example underscores how the transnational nature of terrorism intertwines local grievances with global networks, amplifying its complexity and posing significant challenges to counter-terrorism efforts.

These events, though tragic, have shaped security policies, counter-terrorism strategies, and international cooperation. The fight against terrorism remains a complex and ongoing challenge, with the global community continuing to work together to prevent terror acts from occurring in the future, researchers from various fields, including economics and political science, extensively examined the effects of terrorism on economies and societies. Some studies have also explored the opposite relationship of how economic conditions and social discontent can influence the emergence of terrorism (Abadie, 2006; Blomberg *et al.*, 2007). There has been a surge in academic work utilizing empirical and theoretical approaches to study terrorism. The growth of empirical research has been supported by the increased availability of data on terrorist activities, such as the

International Terrorism: Attributes of Terrorism Events (ITERATE) and the Global Terrorism Database (GTD).

Additionally, advancements in econometric techniques, particularly in time series and panel data analysis, have led to new empirical insights into terrorism. Earlier empirical research has explored numerous facets of counter-terrorism, such as the effectiveness of specific policies (Enders & Sandler, 1993; Landes, 1978; Zussman & Zussman, 2006), the broader economic impacts of terrorism (Blomberg *et al.*, 2004; Keefer & Loayza, 2008), its effects on particular sectors (Drakos & Kutan, 2003; Enders *et al.*, 1992), the underlying causes of terrorism (Krueger & Maleckova, 2003), the role of failed states (Piazza, 2008), and the patterns of terrorist attacks (Brandt & Sandler, 2010). These studies have provided valuable policy insights, such as the finding that airport metal detectors led terrorists to shift towards other forms of hostage-taking.

Recently, scholars have also focused on analysing suicide terrorism (Pape, 2005; Wintrobe, 2006), the strategic behaviour of terrorist organisations (Feinstein & Kaplan, 2010), the optimal distribution of defensive resources (Powell, 2007), and the effectiveness of foreign aid in counter-terrorism efforts (Azam & Thelen, 2008; Bandyopadhyay *et al.*, 2011). Numerous other terrorism-related topics continue to be actively explored in academic research.

Terrorism is a serious and multifaceted challenge, not only because of its direct and destructive effects on society and the economy but also because of its ability to surpass national boundaries and propagate across many countries (Pham & Doucouliagos, 2017). The fact that terrorism is global makes it necessary to investigate the elements that lead to its origin and spread. Nevertheless, it is inadequate to perceive terrorism as a homogeneous entity, as stated by (Kis-Katos *et al.*, 2014). Instead, it is essential to acknowledge that many ideologies underlie different manifestations of terrorism, each characterised by distinct motivations, objectives, and operational strategies. Hence, a thorough examination necessitates an investigation into the precise causes contributing to these diverse ideological manifestations of terrorism.

Understanding the ideological diversity of terrorism is essential because different terrorist groups often operate under different ideologies, ranging from religious extremism to separatist movements, and from political radicalism, specifically left and right political ideologies, ethnonationalism to even religious (Muslim and Christian) ideologies (Kis-Katos *et al.*, 2014).

Each of these ideologies shapes the tactics and targets of terrorist activities and the narratives these groups use to justify their actions.

Moreover, terrorism does not remain confined within the borders of a single country. It tends to spill over into neighbouring regions, creating broader regional instability. Several factors, including porous borders, facilitate this spillover effect, shared ethnic or religious ties across countries, and weak governance structures that fail to effectively control or monitor such cross-border movements. Understanding the mechanisms of this spillover is critical for devising strategies to prevent the spread of terrorism from one country to another, thereby containing the threat before it escalates into a broader regional or even global issue.

In addition to addressing the drivers and spread of terrorism, it is equally important to focus on the resilience of economies that have been affected by terrorist attacks. Terrorism can severely disrupt economic activities, leading to a loss of investor confidence, a decline in tourism, and the destruction of critical infrastructure. However, the extent of this economic damage and the speed of recovery can vary significantly depending on the country's institutional quality, governance, and level of economic diversification. An economy's ability to rebound from terrorism and its economic resilience depends on how well it can absorb the shock, adapt to the new conditions, and restore confidence among businesses and consumers.

Thus, a thorough understanding of terrorism involves identifying its immediate causes and impacts and examining the broader, long-term processes that allow terrorism to increase and spread across regions. It also involves studying the capacity of affected economies to recover and rebuild in the aftermath of terrorism. This comprehensive approach is essential for developing effective counter-terrorism strategies that focus not only on immediate security concerns but also address the underlying issues that contribute to terrorism, prevent its spread, and support the recovery of economies impacted by terrorist activities.

To this end, this dissertation faces questions that must be solved and tested to provide comprehensive insight to policymakers, government, investors, and society. The questions set out in this dissertation are as follows:

- What drives individuals in selected African Countries to engage in terrorism?

- What drives different ideologies of terrorism in Africa?

- Are the drivers of terrorism significantly different when treated as a single uniform phenomenon?

- Are there countries in Africa that share similar patterns and characteristics of terrorism?

- How does terrorism in one region impact the spread and intensity of terrorist activities in other regions?

- How effectively can an economy recover after a terrorist attack, considering the role of institutional quality in the recovery process?

Consequent chapters in this dissertation will address the above questions to attempt to close gaps in the existing body of literature.

The fourth chapter examines the determinants of terrorism in Africa. The chapter is motivated by the increasing threat of terrorism in Africa, which has significant implications for regional stability, economic progress, and human security. While much of the existing research on terrorism focuses on global trends or specific high-profile regions like the Middle East, Africa's unique context has been relatively overlooked. The chapter seeks to fill this gap by exploring the specific determinants of terrorism in Africa, focusing on macroeconomic, socio-economic, political, and institutional variables and the different ideologies driving terrorism on the continent. The chapter analyses data from 20 African countries over 31 years (1990-2021) using Negative Binomial and Poisson models to accomplish this. These methodologies were chosen for their ability to handle over-dispersed count data, unobserved heterogeneity, and endogeneity, making them well-suited for analysing terrorism incidents and casualties.

The results indicate that corruption is a significant driver of terrorism in Africa, alongside factors such as poor institutional quality. Conversely, economic growth, trade openness, job opportunities, good healthcare systems, and full democracy have mitigated terrorism. The study also reveals that terrorism determinants in Africa are not significantly different from those in other regions despite the continent's unique context.

Overall, the study contributes to a deeper understanding of the specific factors driving terrorism in Africa and emphasises the need for counter-terrorism policies that address corruption, military spending, and institutional quality while promoting economic growth, trade, employment, and democratic governance.

The fifth chapter investigates the spillover of terrorism in Africa. The chapter is motivated by the growing concern over the spillover effects of terrorism in Africa, particularly in regions like the Sahel and West Africa, where terrorist activities have been escalating (Mensah, 2022). Despite the critical security challenges posed by terrorism in these regions, there has been no research focusing specifically on how terrorism in one country can impact other nations. The Accra Initiative, aimed at regional collaboration to combat terrorism, highlights the urgent need for a deeper understanding of the transnational nature of terrorism in Africa. This chapter seeks to fill the gap by investigating the spillover effects of terrorism across different African regions, emphasising understanding how regional dynamics influence the spread of terrorism.

The chapter employs a comprehensive methodological framework to analyse the effects of terrorism spillovers. Vector Autoregression (VAR) analysis, specifically the Impulse Response Function (IRF), explores how terrorism shocks in one region impact neighbouring regions over time. To manage the large dataset of African countries, the chapter uses the Phillips and Sul (2007) club convergence method to group countries with similar terrorism characteristics. Factor Analysis (FA) is employed as a robustness check for these groupings. Principal Component Analysis (PCA) reduces the dimensionality of these groups' terrorism data, facilitating the time series analysis required for the VAR/IRF estimation.

The VAR/GIRF analysis reveals complex dynamics in terrorism spillover across African regions. In highly terrorised regions (HTR), internal shocks lead to an initial increase in terrorism, which diminishes over time. In contrast, terrorism shocks from moderately terrorised regions (MTR) cause a short-term rise in terrorism in HTR, but this effect also decreases over time. Interestingly, shocks from low terrorised regions (LTR) reduce terrorism in HTR. These findings highlight the intricate nature of terrorism spillover, suggesting that the immediate impact of terrorism in one region can differ significantly from long-term outcomes. The study underscores the importance of

regional stability and socio-economic conditions in mitigating the spread of terrorism across borders.

The objective of the sixth chapter focuses on how well Africa recovers from terrorism. The chapter is motivated by the need to understand the economic impact of terrorism in Africa, particularly in the context of institutional quality, which has been relatively unexplored in existing literature. While previous studies have examined several factors related to terrorism, such as globalisation, poverty, and governance, the specific role of institutional quality as a moderating factor in economic recovery after terrorist attacks has not been adequately addressed. This study seeks to fill this gap by integrating institutional quality into the analysis, providing a more nuanced understanding of how it influences the resilience of economies facing terrorism. The chapter employs an economic resilience measure based on established frameworks (Briguglio *et al.*, 2014; Koo, 2015). This resilience index integrates key indicators, including GDP per capita, population, inflation rates, trade openness, literacy rate, and life expectancy. These indicators collectively evaluate an economy's capacity to absorb and recover from external shocks. The authors argue that this combination of metrics offers a robust assessment of an economy's overall resilience, capturing its ability to adapt and sustain growth in the face of disruptions.

This chapter adopts a rigorous methodological approach by utilizing dynamic panel data estimation techniques. It includes an empirical exercise comparing various models, such as the First Difference Generalized Method of Moments (FDGMM), System Generalized Method of Moments (SYSGMM), and Corrected Least Squares Dummy Variable (CLSDV), to identify the most suitable model for explaining the complex relationships under investigation. By doing so, the study enhances the robustness and accuracy of its findings, offering a validated model that effectively captures the intricate dynamics between globalization, economic resilience, institutional quality, and terrorism in Africa.

Chapter Two

2.0 General Literature Review

2.1   Introduction to Terrorism: Conceptual Challenges

Since the early 1970s, there has been a noticeable change in terrorism on a global scale due to the unique characteristics of the notion. In response to ongoing economic and social events, terrorist organisations have demonstrated their ability to adjust their actions to remain relevant in this dynamic environment. Locatelli (2014) has compared terrorism to a chameleon because it has taken several forms throughout history. Given this, there is much difficulty in defining the notion and providing many other approaches that terrorists employ. According to experts, the intricate nature of the concept has made it extremely challenging to come up with a single definition that precisely elucidates what terrorism is without incorporating aspects that go beyond the concept's boundaries or eliminating factors connected to the notion (Schinkel, 2009).

Locatelli (2014) identifies three difficulties that complicate the process of defining the concept of terrorism. The primary rationale revolves around the matter of perception. Given the sensitive nature of this topic, several social groups, including the government, mass media, scholars, and the public, hold a wide range of perceptions. These social groupings interpret terrorist activities and the notion of terrorism according to their opinions and beliefs, resulting in a concept influenced by individual biases. Schmid (2022) argue that the perceptions labelled "Perception Bias" pose an empirical challenge and complicate establishing a unified definition for the concept. The second issue pertains to a phenomenon known as "Recency and Myopia". This dilemma highlights the tendency of the research community and government organisations to define terrorism based on the latest and most extreme terrorist activity rather than relying on objective scientific evidence. As a result, the basic structure of terrorism has been constructed based on characteristics of recent acts of terrorism. This issue, according to Bird *et al.* (2008) is characterised by individual

shortsightedness or short-term impacts that only last temporarily, making them insufficient as a foundational argument for the idea of terrorism.

The third difficulty exemplifies the normative approach embraced by social groups. In this context, social groupings have linked concerns over terrorism with matters of governance, democracy, or national interest. Accordingly, this complicates the process of defining the concept of terrorism, as it becomes dependent on the subjective opinions of others, which are often influenced by political biases rather than objective scientific evidence. Based on these three issues, it could be reasonable to define terrorism and develop a working definition for this study. Figure 2.1 below summarises the features of terrorism.

Figure 2.1 Features of Terrorism
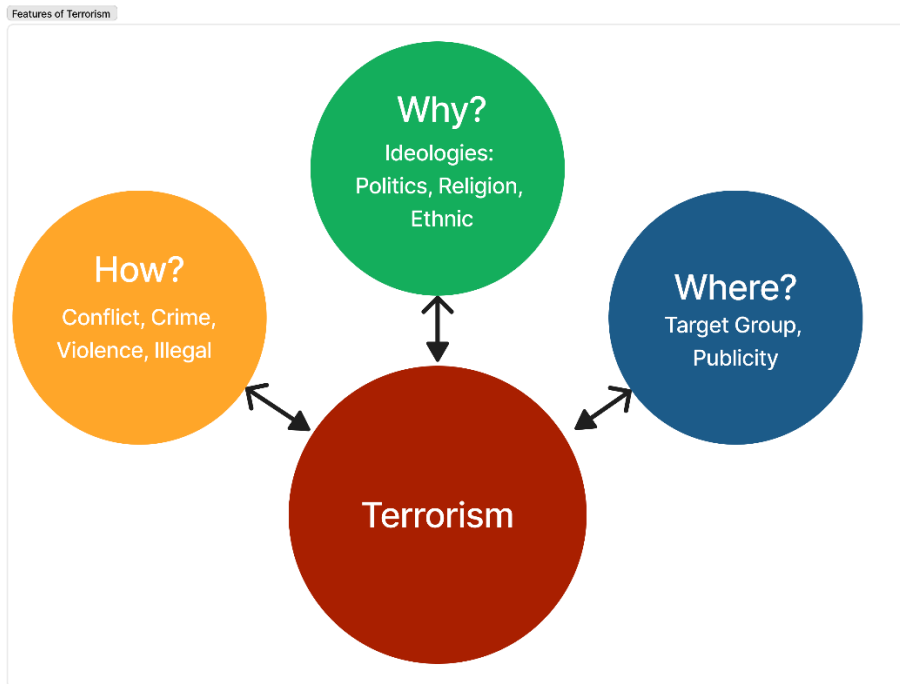
Figure 2.1

Source: Author's Compilation

Figure 2.1 illustrates the various components that make up the concept of terrorism. While these characteristics may not directly lead to terrorist operations on their own, when considered together, they can largely represent the essence of terrorism. The diagram depicts terrorism as an illegal and catastrophic activity executed through criminal activities, conflicts, and acts of violence. These

actions are not random occurrences but rather part of a larger plan to achieve specific goals. These objectives are frequently based on ingrained ideals that motivate the groups responsible. Political intentions can involve actions to destabilise a government or attract attention to a specific cause. On the other hand, religious motives may involve attempts to impose a particular belief system or seek revenge for perceived injustices. We can better understand why certain groups resort to radical actions by comprehending these underlying motivations.

Furthermore, an attack against a specific population may be planned to generate media and government attention (Bird *et al.*, 2008; Crenshaw, 2000). The need for publicity is a vital element of terrorism, as the perpetrators frequently aim to disseminate their message to a broader audience. The media substantially influences this situation, as its broad coverage can magnify the effects of terrorist acts. Terrorism is the overarching term that encompasses criminal activity, ideological motivations, and the strategic use of violence to gain publicity. The mix of several elements in terrorism makes it a complex issue. It encompasses physical acts of violence and psychological and strategic aspects aimed at accomplishing wider socio-political objectives.

Similarly, Fletcher (2006) identifies eight primary components that define terrorism: violence, intent, choice of victims, the relationship between the perpetrator and the state, underlying motive, the organisational structure of the terrorist group, the method of attack, and the lack of remorse. These components offer a more intricate analysis of terrorism, emphasising the complex nature of defining and comprehending terrorist operations. Every aspect has a substantial impact on the overall dynamics of terrorism, adding to the complex and varied nature of terrorist acts. The thorough listing emphasises the difficulties in creating a singular, all-encompassing definition of terrorism, as it encompasses various components and situations.

According to Jenkins (2001) the definition of terrorism has evolved, and it is still an ongoing work. However, various government organisations have tried to propose definitions that can help recognise terrorism and terrorist acts. These endeavours are essential for establishing legal and policy frameworks to counteract terrorism effectively. Nevertheless, the divergent viewpoints and preferences of distinct organisations can result in contrasting interpretations, thereby complicating international collaboration and the execution of policies. The next subsection will discuss the various definitions of terrorism.

2.2   Definitions of Terrorism

This subsection examines a few definitions proposed by international organisations, some nations, and academics to get a comprehensive knowledge of the idea and to direct the road towards developing a distinct and practical definition for this investigation. This study believes that it is appropriate to take into consideration the definitions of terrorism offered by the United Nations and the African Union, as numerous countries in Africa are members of both international organisations.

Similarly, the study examines the concept of terrorism as stated by the United Kingdom and the United States of America since these countries are the major source of acquiring capital for these African countries. Due to the historical ties between African countries and the United Kingdom, the English legal system heavily influences African legal systems. As a result, some of the laws that were in effect in the territories formerly under British colonial rule are still in effect in these countries (Nwogugu, 2014; Obilade, 1985).

The academic definitions included in this part have been selected, considering the total amount of citations they have earned throughout their existence. This subsection also includes the definition of terrorism provided by the National Consortium for the Study of Terrorism and Responses to Terrorism (START), responsible for the Global Terrorism Database (GTD). START is a research and education centre comprised of international scholars at the University of Maryland, USA. Researchers in terrorism widely use the GTD employed in this study.

United Nations Security Council (2004) discusses terrorism by emphasising that criminal acts targeting civilians with the intent to cause death, severe injury, or hostage-taking to foster a state of terror or compel governments or international organisations to act in specific ways are unjustifiable under any circumstances. These reasons may be political, ethnic, or religious. This broad description emphasises the international community's opposition to terrorism's underlying motivations. Still, it lacks a specific definition, leading to varying interpretations and challenges in uniformly implementing counter-terrorism measures. The UN's emphasis on the unjustifiable nature of such acts emphasises the moral and ethical dimensions of terrorism. However, it allows for different legal and cultural interpretations, which may complicate global counter-terrorism efforts.

The African Union, formerly known as the Organisation for African Unity(Organization of African Unity (OAU)), defines terrorist acts broadly as any violation of criminal laws that endangers life, causes severe injury, or damages property, natural resources, or cultural heritage. These acts are intended to intimidate, coerce, or force governments, institutions, or the public to take specific actions, disrupt public services, or incite an insurrection. This broad definition includes promoting, sponsoring, or aiding such acts. The African Union's approach is particularly inclusive, encompassing a broad spectrum of actions and intentions that reflect the several types of terrorism encountered across the continent. However, the broad scope of the term "terrorism" can complicate enforcement and judicial processes, as the broad range of activities covered by the term may make it difficult to apply the law uniformly and ensure consistent judicial outcomes across African states (Organization of African Unity (OAU), 1999).

The Terrorism Act of 2000 in the United Kingdom defines terrorism in detail, focusing on actions intended to influence the government or intimidate the public for political, religious, or ideological reasons. It includes serious violence against people, serious property damage, endangering lives, and posing a public health risk, with a particular emphasis on the use of firearms and explosives. This precise and legally sound definition aids in clearly identifying and prosecuting terrorist acts within the UK's legal framework. However, its stringent criteria may exclude certain acts classified as terrorism under broader definitions, limiting its applicability in other contexts. While the UK approach provides clarity and specificity for law enforcement and judicial processes, it may need to be modified to effectively address the nuances of terrorism in various cultural and political contexts (Terrorism Act 2000).

On the other hand, the United States defines terrorism as the illegal use of force and violence directed against persons or property to threaten or compel a government or civilian population to promote political or social goals. This straightforward definition focuses on the intent and methods of terrorism, emphasising the illegal nature and coercive goals of such actions. While this clear and concise definition helps with practical identification and prosecution, it may be perceived as too narrow, missing the broader ideological and psychological dimensions of terrorism that other definitions capture. Despite its clarity, the US definition may require additional context to address the full range of terrorist motivations and implications, which is critical for effective counter-terrorism strategies (United States Department of State, 2001).

According to the Global Terrorism Database (GTD), terrorism is defined as the use of threat or unlawful force and violence by non-state actors to attain social, political, economic, or religious goals via intimidation, coercion, or fear. This definition is notable for including non-state actors and emphasising terrorism's broad goals and its strategic use of fear and coercion. This nuanced understanding of terrorism's impact is academically sound and well-cited, providing valuable insights for research and policy analysis (Start, 2001).

Schmid (2022) provide a comprehensive definition of terrorism, describing it as an anxiety-inducing method of repeated violent action used by (semi) clandestine individuals, groups, or state actors for a variety of purposes. This definition focuses on the psychological impact and communicative aspect of terrorism, in which the immediate victims are not the primary targets but rather serve to convey a message to a larger audience. This comprehensive understanding of terrorism's strategic and psychological dimensions is useful in academic and strategic analysis. However, its complexities may limit its practical application in legal and operational contexts where a simpler definition would be more effective.

Crenshaw (1981) focuses on terrorism against governments to effect political change, which involves conspiratorial organisations using or threatening symbolic, low-level violence. This definition emphasises the symbolic nature of terrorist violence and its broader political objectives. While useful for understanding the political motivations behind terrorism, it may be perceived as too narrow, excluding other forms of terrorism that are not directed at governments or involve several types of violence. This definition is useful in specific contexts, but it may need to be expanded to encompass the full range of terrorist activities.

According to Laqueur (1999) terrorism is the use of unlawful force against innocent people to achieve a political goal. This straightforward definition emphasises the illegality and moral repercussions of targeting innocent people for political gain. Its simplicity makes it easy to understand and apply, but it may be viewed as overly simplistic, lacking the depth required to capture terrorism's strategic and psychological dimensions. While effective for clear legal and moral condemnations, this definition may necessitate additional context for comprehensive policy and academic analyses.

Hoffman (2017) distinguishes terrorism from other forms of crime and irregular warfare by defining it as the intentional use and manipulation of fear through acts of violence or the threat of

such acts to achieve political change. This definition focuses on terrorism's strategic use of fear and political motivations, providing a clear and practical framework for understanding and combating terrorism. It is useful for both academic research and practical counter-terrorism efforts. However, more context may be required to fully capture the diverse methods and motivations of various terrorist groups, which could benefit from further elaboration.

The definitions of terrorism vary as much as the scholars and organisations that study it. Despite the diversity of viewpoints, no single definition has achieved universal acceptance. Common themes in definitions include illegal acts, harm, non-combatants (civilians), intention, force, political and religious ideologies, and intimidation, but these elements do not always lead directly to terrorism. For example, while terrorism involves violence, not all violence constitutes terrorism (Laqueur, 2003).

Terrorism's evolving nature reflects changing global contexts, making it difficult to provide a definitive description. As such, it provides opportunities for researchers to contribute nuanced definitions, particularly by considering specific regional characteristics and the various manifestations of terrorism worldwide.

2.3 Understanding Terrorism and Civil War

The aftermath of the 9/11 terrorist attacks offers a powerful illustration of how political violence can shape global politics. In response to the attacks, the United States launched the "War on Terror," aimed at eradicating terrorist groups like al-Qaeda. This initiative included military interventions in Afghanistan and Iraq, where democratic principles such as human rights and accountability were often compromised (Chomsky, 2003; Holloway, 2008). For example, detainees were held without trial in Guantanamo Bay, and revelations of torture at Abu Ghraib prison drew global condemnation. Additionally, mass surveillance programs, justified as necessary for national security, sparked fierce debates on civil liberties, particularly after Edward Snowden exposed their scope in 2013 (Hoffman, 2004).

However, this approach to counterterrorism influenced how other countries addressed political violence. Some autocratic leaders used the global narrative on terrorism to justify harsh crackdowns on dissent. In Russia, Vladimir Putin used terrorism as a pretext for the brutal suppression of Chechen separatists, portraying the Chechen conflict as part of the broader War on

Terror (Russell, 2007). Similarly, China labelled its repressive actions against Uyghur Muslims in Xinjiang including mass detentions, forced re-education camps, and invasive surveillance as counter terrorism efforts to combat extremism (Byler, 2019).

In the Middle East, during the Arab Spring uprisings, regimes in countries like Egypt under Abdel Fattah el-Sisi declared opposition groups to be terrorists, using this justification to violently suppress protests and consolidate power. Turkey, under President Recep Tayyip Erdoğan, similarly escalated crackdowns on Kurdish political movements and independent media, branding them as security threats tied to terrorism (Brownlee *et al.*, 2015).

This global shift reveals how states manipulate the concept of terrorism to maintain control and limit freedoms, often eroding democratic norms, highlighting the important distinctions between terrorism and civil war, two forms of political violence with differing characteristics and impacts.

Political violence takes different forms, from the sudden and shocking acts of terrorism to the prolonged struggles of civil wars. Civil wars are large-scale conflicts within a country, involving organized groups fighting for control of the government, independence, or significant political change. A notable example is the Nigerian Civil War, also known as the Biafran War, which took place between Nigeria and the Republic of Biafra from 1967 to 1970. This conflict was rooted in political, ethnic, and economic tensions, as well as struggles for independence. The Igbo people of Biafra felt they could no longer coexist with the Northern-dominated federal government, illustrating the complex dynamics often seen in civil wars. They usually involve direct confrontations between armies or militias and require substantial resources and workforce. Kalyvas (2006) explains that civil wars often focus on controlling territory and winning over local populations, making them larger in scale and more structured than terrorism.

In contrast, terrorism employs smaller, targeted acts of violence to instil fear and achieve political or ideological goals. The September 11, 2001, attacks in the United States illustrate this difference. Al-Qaeda, led by Osama bin Laden, targeted symbolic locations such as the World Trade Centre and the Pentagon. Bin Laden emphasized terrorism's use of fear, declaring, "We love death, the US loves life," showcasing how terrorism strategically uses psychological impact to achieve its goals. Unlike civil wars, terrorism typically avoids direct confrontations and instead relies on calculated violence like bombings or assassinations. Crenshaw (1981) notes that terrorism often emerges as a deliberate choice when conventional methods of political change are unavailable.

The primary distinction between these two forms of violence lies in their scale and purpose. Civil wars cause widespread destruction and aim for systemic change or control. Terrorism, while deadly, is more symbolic and designed to erode confidence in authorities rather than seize direct control.

2.3.2 The Global Terrorism Database Criteria: Clarifying Overlap with Civil War

The Global Terrorism Database (GTD) which is the data source of terrorism data for this thesis. The GTD does not include civil war data as its primary focus is on acts of terrorism. The GTD is a comprehensive, open-source database that records terrorist incidents worldwide, emphasizing deliberate acts or threats of violence by non-state actors targeting civilians, governments, or other entities to achieve political, religious, or ideological objectives. Its focus on individual terrorist acts ensures that it remains distinct from datasets on civil wars.

The GTD and civil war datasets differ significantly in scope and focus. Civil war data, such as that collected by the Uppsala Conflict Data Program (UCDP) or the Correlates of War (COW) project, captures larger-scale conflicts involving organized armed forces and government forces, often with specific casualty thresholds and prolonged engagement. In contrast, the GTD concentrates on discrete terrorist acts rather than the sustained, broader conflicts typical of civil wars. While the GTD may include certain violent acts within a civil war if they meet its criteria for terrorism, most civil war-related violence falls outside its scope.

GTD employs specific criteria to define and catalogue incidents of terrorism, ensuring a clear distinction from civil war events. To qualify as terrorism, an event must meet the following criteria: it must be an intentional act of violence or threat thereof, perpetrated by sub-national actors (excluding state entities). Additionally, the act must aim to achieve a political, economic, religious, or social objective, involve an intent to coerce or intimidate a broader audience beyond the immediate victims, and violate established norms of international humanitarian law. To be included in the GTD, incidents must satisfy the first two criteria and at least two of the remaining three.

In contrast, civil war events typically involve sustained, large-scale conflicts between state and organized non-state groups or between such groups themselves. These engagements are generally characterized by prolonged military confrontations over governmental control or territorial disputes, which do not inherently meet the GTD's terrorism criteria. Specifically, civil wars often

lack the exclusive involvement of sub-national actors and the specific intent to intimidate or coerce a broader audience through unlawful violence.

While certain violent acts during a civil war, such as bombings or assassinations aimed at spreading fear, might be included in the GTD, the overall scope of civil war activities generally lie outside GTD's purview. This clear delineation ensures that the data sets for terrorism and civil war events remain distinct, minimizing overlaps and maintaining clarity in the classification of political violence. Understanding these differences allows researchers and policymakers to analyse each phenomenon within its unique context while acknowledging areas where they may intersect.

2.3.1 Overlapping Elements and Their Similarities

The overlapping elements between terrorism and civil war often create ambiguities, complicating efforts to classify and respond to these forms of violence. Sambanis (2008) highlights the challenges in distinguishing between acts of terrorism within a civil war and standalone terrorist campaigns. For example, the use of terrorist tactics such as bombings, assassinations, or hostage-taking within a broader civil war may be categorized differently depending on the context and analytical framework.

The ambiguity is further amplified by the evolving nature of these conflicts. Terrorism can act as a precursor to civil war, serving as an insurgent strategy during the early stages of mobilization. Conversely, civil wars can produce environments that sustain terrorism even after large-scale hostilities have ceased. For instance, the post-civil war instability in Iraq allowed terrorist organizations like ISIS to flourish, exploiting political and security vacuums.

The conceptual ambiguity also arises in state responses to these threats. Governments may frame insurgencies as terrorist movements to delegitimize opposition and garner international support. This rhetorical conflation, as noted by Crenshaw (1981), can obscure the structural causes of political violence and hinder efforts to address underlying grievances.

Terrorism and civil war are distinct yet interconnected forms of political violence, each characterized by unique dynamics and objectives. While civil wars involve large-scale, organized conflicts over political control or secession, terrorism relies on symbolic violence to instil fear and influence policy. However, the overlap in their environments, tactics, and impacts creates significant ambiguities, complicating efforts to define, study, and respond to these phenomena.

Kalyvas (2004) introduces a paradox: while terrorism-like tactics are often employed in civil wars to achieve specific strategic objectives, these same tactics can undermine long-term goals. Indiscriminate violence tends to alienate civilian populations, fostering resentment and reducing compliance. This paradox illustrates a key difference between standalone terrorism and terrorism within civil wars: the latter is more closely tied to the strategic calculus of gaining or maintaining civilian support, which is essential for insurgent success.

This dynamic reveals why the overlap between terrorism and civil war is both significant and fraught with tension. On the one hand, terrorist tactics can serve as a force multiplier for weaker actors in civil wars. On the other hand, their indiscriminate use can erode the very support that insurgents depend on to sustain their campaigns.

Crenshaw (1981) emphasizes the strategic rationality of terrorism, arguing that it arises from deliberate choices by groups seeking political influence. This perspective is echoed by (Sambanis, 2008), who examines the structural factors that link terrorism to civil war, including economic inequality, weak governance, and ethnic divisions. These shared drivers suggest a continuum of political violence rather than discrete categories.

Kalyvas (2006) provides a more granular analysis of violence within civil wars, distinguishing between selective and indiscriminate violence. He argues that selective violence, often associated with terrorism, can be an effective strategy for insurgent groups to consolidate control and weaken opposition. This observation highlights the tactical overlap between terrorism and civil war, as both forms of violence rely on targeted attacks to achieve strategic goals.

Adding to this discourse, Hoffman (2006) delves into the organizational and psychological factors driving terrorism, asserting that terrorist groups often mirror insurgent organizations in their structure but differ in scale and objectives. Meanwhile, Fearon and Laitin (2003) explore how weak state institutions, often precursors to civil wars, also serve as breeding grounds for terrorist activities, emphasizing that both forms of violence thrive in environments of political instability and limited governance. Additionally, Tilly (2004) argues that terrorism and civil wars are forms of "coordinated destruction," driven by shared mechanisms of political contention and resource mobilization.

Despite these differences, terrorism and civil war share significant overlapping characteristics, often making them difficult to disentangle in practice. Scholars like Sambanis (2008) and Kalyvas (2006) have examined these intersections, noting the ways in which these phenomena influence and transform one another.

One critical overlap is the use of violence as a strategic tool for political gain. In both cases, violence is not an end but a means to achieve broader political or ideological objectives. This similarity is especially pronounced when insurgent groups in civil wars employ terrorist tactics to supplement their campaigns. For instance, the Irish Republican Army (IRA) during the Northern Ireland conflict used terrorism to complement its larger struggle for independence, blurring the lines between civil war and terrorism.

Furthermore, terrorism often emerges in environments shaped by civil war. Kalyvas (2006) and Sambanis (2008) argue that civil wars create conditions conducive to terrorism, including weak state capacity, fragmented authority, and polarized societies. These conditions provide fertile ground for terrorist organizations to recruit, operate, and thrive. The interplay is reciprocal: terrorism can also escalate into civil war under specific circumstances. When terrorist groups gain sufficient resources and public support, they may transition into organized insurgencies, as seen with the Taliban in Afghanistan.

The role of civilians also underscores the overlap between the two phenomena. Both terrorism and civil war heavily involve and impact civilian populations. In civil wars, control over civilians often determines the conflict's trajectory, as armed groups rely on local populations for resources, information, and legitimacy. Similarly, terrorism targets civilians to undermine public morale and challenge state legitimacy. Kalyvas (2006) emphasizes how civilian allegiance in contested territories becomes a battleground for both terrorists and insurgents, further highlighting the convergence of their strategies.

2.4   Global Trend of Terrorism

Terrorism is a concept that is difficult to trace back to its global origins. While it may be simpler to debate its origins at the national level, knowing the history of the concept improves the monitoring of global terrorist occurrences. According to White (2006) the French Revolution pioneered the use of the terms 'terrorist' and 'terrorism' in relation to the revolutionary government's

'Reign of Terror' from 1794 to 1795. Thus, it clearly shows that acts of violence committed before this era in early history were not classified as 'terrorism'. Even if they were, the complex and changing nature of the concept means that what was considered terrorism years ago may not fall under today's definition. Despite this issue, research suggests that the French Revolution was the origin of terrorism, also known as modern terrorism. Since then, the globe has seen numerous cases of terrorism, and it is only lately that terrorism databases have arisen, including recordings of some of these terrorist acts. The Global Terrorism Collection (GTD) is the most comprehensive collection of terrorist incidents globally. It presently gives statistics on terrorism from 1970 to 2020.

Figure 2.2: Global Terrorism Incident
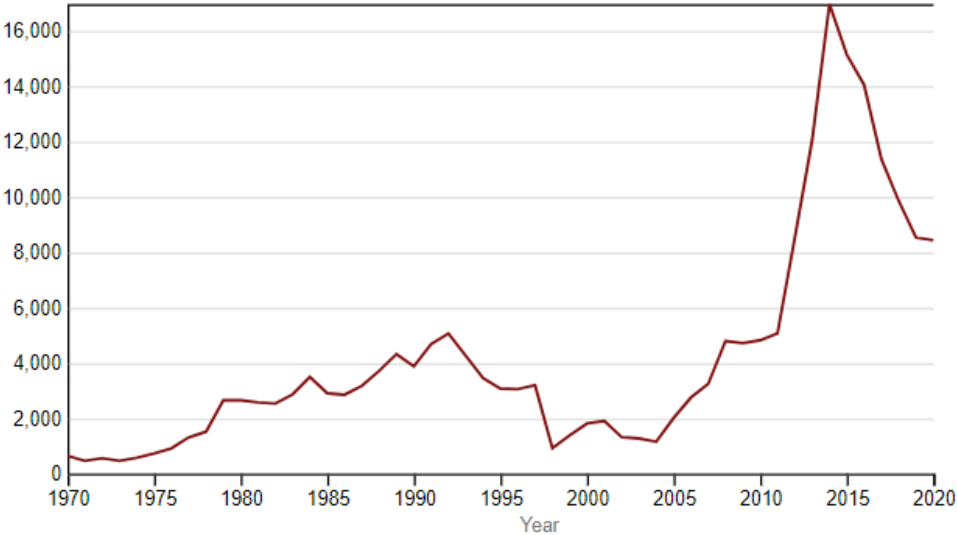
Figure 2.2 | Source: (Stata, 2020)

Terrorist incidents increased steadily throughout the first ten years, as seen in Figure 2.2 above, from roughly 600 in 1970 to 2621 in 1980. Terrorist activity rose by over 313% during this period compared to 1970 levels, indicating the effectiveness of multiple worldwide attacks. This increase can be due to a variety of factors, including increased activity by well-known terrorist organisations such as the Red Army Faction in Germany and the Red Brigades in Italy, both of which have carried out numerous high-profile kidnappings and assaults (Nesbitt, 2023). Furthermore, the Palestinian Liberation Organisation (Arieff *et al.*) was particularly active during this time, carrying out attacks like the Munich Olympics massacre in 1972. These events contributed to the significant increase in global terrorist activity observed over the decade.

Following this increase, the trend of terrorist incidents remained somewhat inconsistent over the next decade, possibly due to two reasons. First, a sudden increase in terrorist attacks over the last decade may have spurred governments throughout the globe to employ a range of counter-terrorism measures, resulting in this variation. For example, in response to a series of high-profile incidents, including the 1979 Iran hostage crisis, the United States implemented strict anti-terrorism policies (Hoffman, 2006; Laqueur, 2017).

Secondly, in the 1980s, terrorist strikes were more focused on targeting specific political targets rather than large-scale affairs. For example, the assassination of Indian Prime Minister Indira Gandhi in 1984 by her Sikh bodyguards demonstrated the targeted nature of political violence during this time (Piazza, 2009; Wolpert, 1989). Also, this time saw the killing of presidents, ambassadors, government, and military leaders in 1973, for example, the assassination of Chilean President Salvador Allende during a military coup. Another significant period is the 1990s, with the assassination of Israeli Prime Minister Yitzhak Rabin in 1995 and the Rwandan genocide in 1994, where many government officials were killed (US Department of State, 2004). This period saw the killing of presidents, ambassadors, government, and military leaders. In spite of these fluctuations, the number of events increased by 48% by the end of the decade, from 1980 to 3876 in 1990, demonstrating ongoing instability and instability in many areas.

Terrorist incidents steadily reduced from 1996. This period saw a relative decrease in large-scale attacks, possibly due to the collapse of the Soviet Union and the end of the Cold War, which reduced state-sponsored terrorism. The next four years showed a stabilization of terrorist occurrences, but in 1998 there was a further 71% drop in the global pattern of terrorism. This significant decrease could be attributed to increased international cooperation in counter-terrorism efforts and the disruption of major terrorist networks. However, notable attacks, such as the nearly simultaneous bombings of the US embassies in Tanzania and Kenya in 1998, highlighted the ongoing threat of terrorism despite the overall decrease (US Department of State, 2004).

The success of these events led to a sharp increase in terrorist activity over the next three years, which culminated in the 9/11 assault in 2001. The 'War on Terror' was declared after al-Qaeda launched its terrorist strikes on the United States, resulting in fatalities, injuries, and property damage (Holloway, 2008). This anti-terrorism effort spurred various governments throughout the globe to enact strict anti-terrorism and counter-terrorism laws. For example, the

United States passed the Patriot Act, and multinational coalitions were created to confront terrorist organisations in Afghanistan and elsewhere (McCarthy, 2002). By the end of 2004, global terrorism had decreased by around 39%, owing to strengthened security measures and international collaboration.

Incidents increased dramatically between 2005 and 2008, coinciding with an increase in terrorist activities in Iraq and elsewhere. Following the coalition forces' 2003 invasion of Iraq, the insurgency erupted, increasing terrorist attacks, including bombings and assassinations by groups such as al-Qaeda in Iraq (Katzman, 2009; Lewis, 2013).

Following a 1.4% reduction in 2009, the figure indicates that worldwide terrorist attacks continued to rise in 2010, peaking at 16,860 in 2014, making a 257% increase, which may be linked to a spike in terrorist activities in Iraq, Afghanistan, Nigeria, Pakistan, Syria, and India. Stated by Start (2015) report, Iraq and Nigeria alone accounted for 53% of all fatalities in 2014. These nations are home to the world's two most infamous terrorist groups, ISIL, and Boko Haram. ISIL, or ISIS, killed the most people in 2014, with 9,929, followed by Boko Haram, which killed 6,644, making it the world's second most deadly terrorist organisation.

Due to governments' increased efforts to combat terrorism, terrorist incidents decreased by 12% in 2015 despite these high proportions. This drop is the result of successful military battles against ISIS in Iraq and Syria, as well as greater international collaboration in counter-terrorism operations. In 2016, there was an additional 9% drop. However, it is crucial to look beyond the immediate drop and analyse the long-term trajectory of the global terrorist movement. When comparing the figures from 2020 and 1970, the percentage change in the worldwide terrorism trend corresponds to a startling 2024% rise in the number of events. It is thus critical to investigate what motivates it, how it spreads across regions, and how it can be mitigated, as this increase has had an impact on economic situations in various countries around the world, as sustained high levels of terrorism can significantly disrupt economic growth, discourage foreign investment, and strain government resources.

2.5   Terrorism in Africa

Terrorism in Africa has a complex and multifaceted history, influenced by a combination of internal dynamics and external interventions. The roots of terrorism in Africa can be traced to several key factors, including colonial legacies, political instability, socio-economic grievances, and the influence of global jihadist movements. The seeds of terrorism in Africa can be traced back to the colonial era. During this period, various African groups resorted to violent resistance against colonial powers to achieve independence (Crenshaw, 1981). These early movements were often labelled as "terrorist" by the colonial authorities, although they were primarily anti-colonial and nationalist. For instance, the Mau Mau uprising in Kenya (1952-1960) involved guerrilla warfare against British colonial forces, aiming to end colonial rule and reclaim land rights (Nissimi, 2006).

The post-colonial period saw many African nations struggling with political instability, weak governance, and civil wars (Crenshaw, 1981). These conditions created fertile ground for the emergence of violent groups. In Algeria, for example, the struggle for independence from France (1954-1962) was marked by violent tactics employed by the National Liberation Front (FLN). After independence, Algeria experienced further turmoil, including a brutal civil war in the 1990s between the government and various Islamist factions such as the Armed Islamic Group (GIA), which used terrorism as a tactic which happened to be one of the early significant instances of terrorism in Africa. AQIM (Al-Qaeda in the Islamic Maghreb) emerged in the early 2000s from the Algerian civil war of 1990 (Detreux, 2008). Initially part of the Armed Islamic Group (GIA), it rebranded itself as the Salafist Group for Preaching and Combat (GSPC) before officially aligning with Al-Qaeda in 2006. AQIM has been active in North and West Africa, engaging in kidnappings, bombings, and arms trafficking across the Sahel region. It has established strongholds in Mali and Niger, exploiting political instability and the vast, ungoverned spaces of the Sahara. AQIM's offshoots, such as Ansar Dine and the Movement for Unity and Jihad in West Africa (MUJAO), have further contributed to the region's instability (Cristiani & Fabiani, 2011). These groups have been particularly active during and after the 2012 Malian crisis, leading to a French-led military intervention to curb their advances (Detreux, 2008).

The strategic use of Africa by global jihadist networks became prominent in the 1990s with the involvement of Al-Qaeda. After being expelled from Saudi Arabia due to his radical views and activities, Osama Bin Laden, a prominent Al-Qaeda leader, found refuge in Sudan and established

a base there from 1991 to 1996. The Sudanese government, under the leadership of Hassan al-Turabi, welcomed bin Laden and his followers, providing them with a haven through which bin Laden was able to invest in local infrastructure businesses and established training camps, transforming Sudan into a central hub for Al-Qaeda's operations (Bergen, 2006). The period was critical for Al-Qaeda because it enabled the organisation to reorganise, recruit, and train members from all over the world, especially in Africa, culminating in the deadly bombings of the US embassies in Kenya and Tanzania in 1998 (Blanchard, 2007; US Department of State, 2004). These attacks, orchestrated by Al-Qaeda, were meticulously planned, and executed. The simultaneous bombings resulted in the deaths of over 250 people and injured more than 5,000, most of whom were African civilians. The attacks were a direct assault on American interests and signalled Al-Qaeda's capability and willingness to conduct large-scale operations outside the Middle East (US Department of State, 2004). These attacks marked a significant escalation and brought global attention to the presence of international terrorist networks in Africa.

Following the embassy bombings, Al-Qaeda's influence began to spread across East Africa, particularly in Somalia. The country's long-standing political instability and lack of central government made it an ideal breeding ground for jihadist activities. Al-Qaeda operatives provided training, funding, and strategic support to local Islamist groups, including Al-Shabaab, which later became a significant force in the region. Al-Shabaab adopted Al-Qaeda's tactics, including suicide bombings, guerrilla warfare, and propaganda, to further its goal of establishing an Islamic state in Somalia (Shinn, 2011).

Kenya has been a primary target for Al-Qaeda and its affiliates due to its strategic location and close ties with Western countries. Besides the 1998 embassy bombing, Al-Qaeda carried out the bombing of the Israeli-owned Paradise Hotel in Mombasa in 2002, killing 13 people and injuring 80. Additionally, there was an attempted shoot-down of an Israeli charter plane on the same day (Fighel, 2014). These attacks highlighted Kenya's vulnerability and underscored Al-Qaeda's ability to strike at international targets on African soil.

In North Africa, particularly in the Maghreb and Sahel regions, Al-Qaeda expanded its reach through the establishment of Al-Qaeda in the Islamic Maghreb (AQIM). Originating from the Salafist Group for Preaching and Combat (GSPC) in Algeria, AQIM formally aligned with Al-

Qaeda in 2007 (Ibrahim, 2014). AQIM capitalised on the regional instability, engaging in kidnappings, bombings, and smuggling operations across Algeria, Mali, Niger, and Mauritania

Mali has been a hotspot for AQIM's activities, especially in the northern regions. The 2012 Tuareg rebellion, which saw Islamist groups temporarily seize control of northern Mali, highlighted the precarious security situation (Ibrahim, 2014). AQIM, along with affiliated groups like Ansar Dine and MUJAO (Movement for Unity and Jihad in West Africa), implemented harsh Sharia law and conducted numerous attacks on Malian and international forces.

According to (Gentry, 2020), The collapse of Muammar Gaddafi's regime in 2011 and the ensuing civil conflict in Libya had profound implications for regional security. The collapse of the Libyan state led to a proliferation of weapons and fighters across the Sahel and other parts of Africa. This influx of arms and the weakening of state control provided an opportunity for terrorist groups to expand their operations. Libya became a significant hub for jihadist activity, further destabilising the region. AQIM and its affiliates exploited these conditions to enhance their operational capabilities and expand their influence (Gentry, 2020).

Al-Qaeda's strategy in Africa has evolved, adapting to changing political and security landscapes. The organisation has focused on building alliances with local jihadist groups, providing them with training, funding, and ideological guidance. This decentralised approach has allowed Al-Qaeda to maintain a presence in diverse regions, from the Horn of Africa (Sudan, Eritrea, Ethiopia, Djibouti and Somalia) to the Sahel (Burkina Faso, Cameroon, Chad, The Gambia, Guinea Mauritania, Mali, Niger, Nigeria and Senegal) and the Maghreb (Algeria, Libya, Mauritania, Morocco, and Tunisia).

In 2002, the criminal organisation was initiated by Yusuf in Maiduguri, the capital of Borno State, northeastern Nigeria. It started as a local Salafi jihadist group, initially called Jamāʕat Ahl al-Sunnah li-l-Daʿawah wa al-Jihād, translating to "Association of the People of the Sunnah for Preaching and Jihad." Neighbours then gave the group the nickname Boko Haram, which means "Westernisation is sacrilege." Most people interpret the phrase to mean "Western education is forbidden' because it sees Westernisation as a threat to Islamic principles. Boko Haram claims that Western influences are to blame for Nigeria's widespread corruption and extreme economic inequality (Walker, 2016). Over time, Boko Haram evolved into a violent insurgency responsible for thousands of deaths and the displacement of millions. Its activities have spread beyond

Nigeria's borders, affecting neighbouring countries such as Cameroon, Chad, and Niger. Boko Haram has carried out numerous devastating attacks, primarily in the northeastern region. Their most infamous attack was the kidnapping of 276 schoolgirls from Chibok in April 2014, which drew international condemnation (Walker, 2016). Besides kidnappings, Boko Haram has been responsible for countless bombings, massacres, and raids on villages, resulting in thousands of deaths and the displacement of millions. The group's violent campaigns have targeted both civilians and military forces, severely destabilising the region and prompting extensive military operations to counter their influence.

In Cameroon, Boko Haram's insurgency has significantly impacted the Far North Region. The group has conducted numerous cross-border attacks, including bombings, kidnappings, and assaults on villages. The Cameroonian government has reported that Boko Haram militants often use Cameroon as a base for launching attacks into Nigeria and for retreating after Nigerian military operations (Angerbrandt, 2017). One notable incident was the kidnapping of over 200 people, mostly women and children, from a village in Cameroon. The continuous threat posed by Boko Haram has led to increased military cooperation between Cameroon and neighbouring countries, as well as support from international partners to strengthen their counter-terrorism capabilities.

In Niger and Chad, Boko Haram has also extended its violent reach. In Niger, the group has launched attacks primarily in the Diffa region, which borders Nigeria. These attacks have included raids on towns, suicide bombings, and kidnappings. For example, in February 2015, Boko Haram attacked the towns of Bosso and Diffa, causing significant casualties and displacement. Chad, which has been a key player in the regional military coalition against Boko Haram, has faced retaliatory attacks on its territory (Duta, 2016). The group's assaults on Chadian soil include a series of suicide bombings in the capital, N'Djamena, in June 2015, which targeted police offices and a school, killing dozens of people (Nwankpa, 2015). The persistent threat of Boko Haram has necessitated a coordinated regional response, exemplified by the Multinational Joint Task Force, which includes troops from Nigeria, Cameroon, Niger, Chad, and Benin, working together to combat the insurgency and restore stability to the affected areas.

Another significant group is Al-Shabaab, based in Somalia, which has carried out numerous attacks within Somalia, capitalising on the country's prolonged state of anarchy following the

collapse of the central government in 1991. Al-Shabaab, an affiliate of Al-Qaeda, has aimed to establish an Islamic state in Somalia and has controlled significant portions of the country at various times (Shinn, 2011). Within Somalia, Al-Shabaab has been responsible for numerous bombings, assassinations, and armed assaults, targeting government officials, peacekeepers, and civilians. In October 2017, one of the deadliest attacks occurred when a truck bomb exploded in Mogadishu, killing over 500 people (Shinn, 2011). This attack highlighted the group's capability to carry out large-scale operations and its continued threat to stability in Somalia. Al-Shabaab's presence has severely hindered humanitarian efforts and development, exacerbating the suffering of the Somali population.

In addition to its activities within Somalia, Al-Shabaab has also targeted neighbouring countries, particularly Kenya, in retaliation for their military involvement in Somalia as part of the African Union Mission in Somalia (AMISOM). One of the most infamous attacks was the Westgate shopping mall assault in Nairobi in September 2013, where militants killed 67 people during a four-day siege (Onguny, 2020). In April 2015, Al-Shabaab attacked Garissa University College in Kenya, killing 148 people, mostly students, in one of the deadliest terrorist attacks in Kenyan history (Onguny, 2020). These attacks have instilled fear and insecurity in the region, increasing military and security measures in the affected countries. Despite these efforts, Al-Shabaab poses a significant threat, demonstrating resilience and adaptability in its tactics and operations.

Both Boko Haram and Al-Shabaab have pledged allegiance to international terrorist networks such as ISIS (The Islamic State of Iraq and Syria) and Al-Qaeda, respectively, highlighting the transnational nature of terrorism in Africa. These groups exploit local grievances and weak governance structures, making counter-terrorism efforts difficult. Al-Qaeda's influence in West Africa is exemplified by its relationship with Boko Haram in Nigeria. Initially, Boko Haram maintained loose ties with AQIM, receiving training and funding. However, the group's later allegiance to ISIS marked a shift in its affiliations. Nonetheless, Al-Qaeda's ideological and operational influence on Boko Haram and other militant groups in West Africa remains significant.

Other notable groups include the Allied Democratic Forces ADF () and the Lord's Resistance Army (Makkonen *et al.*, 2020). The ADF, originating in Uganda in the 1990s, has caused significant unrest in the Democratic Republic of the Congo (DRC), carrying out brutal attacks on

civilians and engaging in illegal exploitation of resources (Nsobya & Brigaglia, 2020). The LRA, led by Joseph Kony, is infamous for its abduction of children to use as soldiers and sex slaves, causing widespread terror in Uganda, South Sudan, the Central African Republic, and the DRC (Arieff *et al.*, 2011).

Additionally, Ansar al-Sharia translates to "Supporters of Islamic Law." These groups generally share a common ideology centred around the implementation of Sharia law and often have ties to or sympathise with larger terrorist organisations such as al-Qaeda, which is active in Libya, Yemen, Egypt and Tunisia, has been involved in various attacks and has played a role in the instability following the Arab Spring uprisings (Gartenstein-Ross *et al.*, 2022).

Al-Mourabitoun, another offshoot of AQIM, has conducted high-profile attacks in Mali and Burkina Faso, often targeting foreign nationals and peacekeeping forces (Saverio Angió, 2018). These organisations, while perhaps less known globally than Boko Haram and Al-Shabaab, continue to pose significant threats to regional stability and development in Africa, exploiting local grievances and weak state structures to further their agendas.

Chapter Three

3.0   Terrorism Data Description

3.1   Terrorism Data Description

The terrorism data used in this thesis was from the Global Terrorism Database (GTD), which is a comprehensive library of information on terrorist incidents around the world. Since 1970, the GTD has records of terrorist incidents and casualties, including the groups involved for each incidence. This makes the GTD the most comprehensive and publicly accessible terrorist database available and used by many researchers (Bagchi & Paul, 2018; Freytag *et al.*, 2011; Jetter *et al.*, 2024; Kis-Katos *et al.*, 2014; Nasir *et al.*, 2011; Okafor & Piesse, 2018). The GTD's records are detailed, allowing for a full investigation of trends, patterns, and impacts across diverse areas and periods.

The Institute for Economics and Peace (2022) was used as a selection criterion for the sample. The GTI assesses the impact of terrorism on the economies of around 160 countries globally. It offers a detailed picture of how terrorism impacts different countries, allowing for a more targeted examination. The GTI's comprehensive analysis of the economic impact of terrorism assures that the countries chosen are at least affected by terrorist operations. This emphasis on the most affected countries enables a more relevant examination of the link between terrorism and numerous economic and social variables. Furthermore, GTI's annual updates and extensive coverage give a timely and relevant backdrop for the study.

According to the GTI, most of the top 50 countries seriously affected by terrorism in 2020 were African nations. Surprisingly, the top 47 countries on this list were African, demonstrating terrorism's devastating impact on the continent. This thesis dataset comprises 32 African countries with both terrorism data and key economic variables. Some countries have complete data across the observed period, while others have missing years, resulting in an unbalanced panel dataset. Out of the 56 African countries, 24 were excluded due to either a complete lack of available data or an insufficient number of data points for key variables. Including these countries would have introduced significant gaps and inconsistencies, making meaningful analysis impractical. For

example, some of the countries excluded had only 10 years for corruption, with no data on some relevant economic variables, this justifies the reason for their exclusion.

This exclusion was not discretionary but a methodological necessity to preserve the reliability and validity of the analysis, as statistical models require sufficient and consistent data coverage for meaningful and accurate results. The final dataset of 32 countries ensures a more robust and precise analysis across all chapters.

The time span for the dataset is from 1990 to 2021, is due to the unavailability of comprehensive data for most countries in the 1970s. While a few countries have incomplete records from that period, the majority lack data entirely, some countries for terrorism incidents and most for other relevant variables crucial to this thesis. This justifies the focus on 1990 onward, as it provides a more robust and consistent dataset for analysis.

Moreover, while Rapoport's "Four Waves of Modern Terrorism" framework identifies the fourth wave as religious terrorism starting in 1979 and continuing to the present, it is overly reductive to assume that this period exclusively involves religiously motivated terrorism. The 1990–2021 timeline in this thesis incorporates incidents of political terrorism because Rapoport's framework, though valuable, does not fully account for the significant overlap between religious, political, economic, and social motivations in acts of terrorism. As discussed in the introduction of the thesis, terrorism is rarely monolithic in its drivers, and political motivations have persisted and evolved alongside the religious wave during this period. This overlap strengthens the rationale for studying political terrorism within the specified timeframe.

Based on the study of Kis-Katos *et al.* (2014) we used four different terrorism ideology groups: Political, Religious, Ethnic, and undefined, particularly in the fourth chapter, to access the different determinants of different terrorism ideologies. Kis-Katos *et al.* (2014) who studied the global determinants of terrorism argued that terrorism should not be treated as a uniform phenomenon, as discussed in detail in the following chapter.

Finally, combining GTD's thorough incident records and the GTI's economic impact evaluation provides a solid foundation for this thesis. The thorough selection of nations based on data availability and GTI rankings guarantees that the study is both extensive and focused, resulting in significant and trustworthy findings about the impact of terrorism in Africa from 1990 to 2021.

Figure 3.1 Geographic Representation of Countries

Legend:
Algeria | Angola | Arab Republic of Egypt | Benin | Burkina Faso | Cameroon | Chad
Congo | Democratic Republic of Congo | Ethiopia | Ghana | Kenya | Liberia | Libya
Madagascar | Mali | Morocco | Mozambique | Niger | Nigeria | Rwanda | Senegal
Sierra Leone | Somalia | South Africa | Sudan | Tanzania | Togo | Tunisia | Uganda
Zambia | Zimbabwe

Source: Author's Compilation

3.2 Descriptive Summary

The subsection gives insights into the descriptive statistics for different terrorism-related variables utilized in this thesis. Table 3.1 summarises the major statistical metrics for each variable, including mean, standard deviation, minimum, maximum, skewness, and variance.

Table 3.1 Descriptive Statistics

Variables	Obs	Mean	Std. Dev.	Min	Max	Skewness	Variance
Incidence	858	27.683	80.043	0	727	5.091	6406.816
Casualties	858	198.278	658.707	0	10218	8.454	433895.3
Political	851	2.857	14.869	0	223	9.86	221.0971
Religion	851	10.122	40.051	0	437	6.45	1604.096
Ethnicity	851	2.388	17.941	0	315	12.373	321.8706
Undefined	848	18.1	67.45	0	871	7.073	4549.509

Source: Stata (2025)

The incidence variable has a mean value of 27.683, suggesting an average of approximately 28 incidents of terrorism per observation. The standard deviation is relatively large at 80, indicating significant variability in the number of events. The minimum value is 0, while the maximum is 727, reflecting a wide range of incidents. The skewness of 5.091 suggests the data is highly right-skewed, meaning most observations report lower incident counts, with a few extreme outliers. The variance, at 6407, further highlights the overdispersion in the data.

The casualty's variable has a mean of 198.278, indicating that, on average, there are around 199 casualties per observation. The standard deviation is high at 658.707, showing considerable variation in the number of casualties. The minimum value is 0, and the maximum is 10,218, signifying the presence of extreme outliers with exceptionally high casualties. The skewness of 8.454 indicates a strong right skew, with most observations reporting lower casualty counts and a few very high values. The variance, at 433895, reflects the wide range of outcomes.

The political variable has a mean value of 2.857, suggesting an average of around 2 politically motivated terrorist incidents per observation. The standard deviation is 14.869, indicating significant variability. The minimum is 0, and the maximum is 223, showing a considerable range of politically motivated events. The skewness of 9.86 indicates a very strong right skew, with most

values being low and a few extreme outliers. The variance, at 221.0971, reflects substantial dispersion in the data.

The religion variable has a mean value of 10.122, suggesting that, on average, about 10 religiously motivated terrorist incidents occur per observation. The standard deviation is 40.051, indicating substantial variability. The minimum is 0, and the maximum is 437, highlighting a wide range of values. The skewness of 6.45 shows a strong right skew, with many observations at lower levels and a few high outliers. The variance is 1604.096, underscoring the data's dispersion.

The ethnicity variable has a mean of 2.388, indicating an average of around 2 ethnically motivated terrorist incidents per observation. The standard deviation is 17.941, suggesting significant variability in the data. The range extends from 0 to 315, indicating that certain observations have notably higher incidents. The skewness of 12.373 is extremely high, showing a very pronounced right skew with most values concentrated at the lower end. The variance, at 321.8706, reflects the spread of the data.

The undefined variable has a mean of 18.1, indicating an average of about 18 terrorist incidents classified as undefined per observation. The standard deviation is high at 67.45, showing a wide variability. The range of values is from 0 to 871, with the maximum highlighting extreme outliers. The skewness of 7.073 demonstrates a strong right skew, indicating that most observations are at lower levels with some extreme values. The variance, at 4549.509, highlights the significant spread in the data.

3.2.1 Unit Root Test Result

The unit root test results in Table 3.2 evaluate the stationarity of various terrorism-related variables using both individual and common unit root tests, with the former employing the Augmented Dickey-Fuller ADF () test and the latter utilizing the Levin, Lin, and Chu (LLC) test.

Table 3.2: Unit Root Test Result

Variable	Individual Unit Root	Common Unit Root
Incidence	409.687***	-11.174***
Casualties	462.165***	-27.031***
Political	345.440***	-18.150***
Religion	155.091***	-4.960***
Ethnicity	273.519***	-10.073***
Undefined	248.689***	-8.036***

Source: EViews (2025) Unit root process was estimated using the Levin, Lin, Chu test for the common unit root test. Test Unit root process was estimated using the ADF – Augmented Dickey-Fuller Test for the individual unit root test.

The unit root test results for individual and common unit roots across the variables reveal significant findings. For the individual unit root tests, all variables show very high significant results at the 1% level (indicated by ***). This strongly rejects the null hypothesis of a unit root for each variable individually, suggesting that the variables are stationary at the individual level. This means that the variables do not exhibit a random walk and are stable in their behaviour over time within each cross-section.

Similarly, the common unit root tests also yield significant results at the 1% level for all variables, as evidenced by the negative and large test statistics. This indicates that the null hypothesis of a unit root for the panel is also rejected. These findings imply that the variables are stationary both individually and collectively across the panel. Stationarity in the data is critical for avoiding spurious regression results and ensures the reliability of further econometric analysis.

3.2.2 Line Graph of Terrorism in African Overtime

Figure 3.2 Incidence of Terrorism in Africa
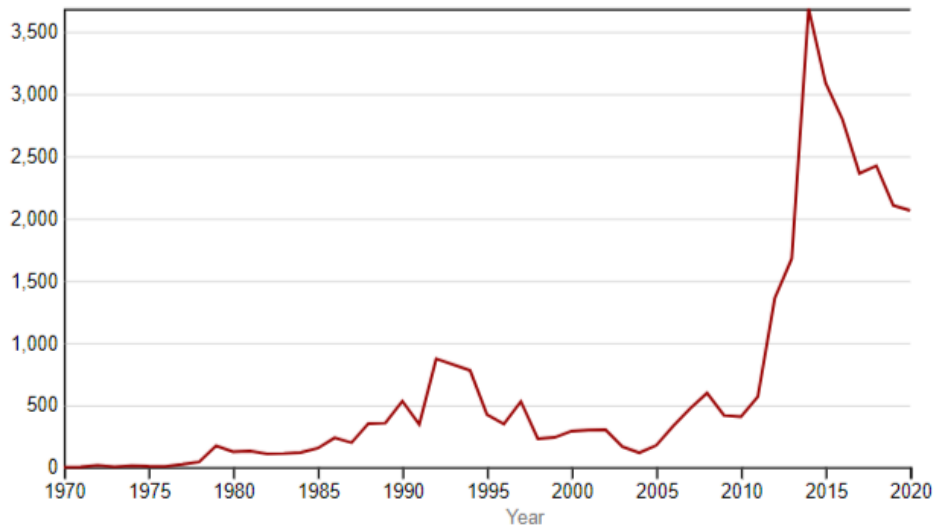
Source: Stata (2020)

The graph depicting the incidence of terrorism in Africa from 1970 to 2020 demonstrates distinct phases of terrorist activity over the decades. Between 1977 and 1995, there was a gradual increase in terrorism, reflecting rising political unrest and regional conflict. During this time, notable events included the 1980 bombing of the Central Railway Station in Bologna, Italy, which had ramifications and links to African extremist networks (Laqueur, 1987). Another significant event was the 1983 US Embassy bombing in Beirut, which, despite being geographically outside of Africa, influenced African terrorist tactics and operations (Blanchard, 2007). The gradual rise in terrorist incidents during this period can be attributed to various liberation movements, as well as increased activity by groups, for instance, the African National Congress (ANC) in South Africa.

From 1996 to 2010, the graph shows that the number of terrorist incidents fluctuated, with periodic increases and decreases. This era includes the 1998 bombings of the US embassies in Nairobi, Kenya, and Dar es Salaam, Tanzania, carried out by Al-Qaeda, which resulted in significant casualties and international attention. In the early 2000s, a variety of violent acts occurred, including the rise of the Salafist Group for Preaching and Combat (GSPC) in Algeria, which later became Al-Qaeda in the Islamic Maghreb. Progressively, from 2010-2020, there was a noticeable

and significant increase in terrorism, peaking around 2014, consistent with global trends. This increase is primarily due to the increase in activities by Boko Haram in Nigeria and Al-Shabaab in Somalia. For example, Boko Haram's 2014 kidnapping of Chibok schoolgirls sparked global condemnation and highlighted the group's growing threat (Walker, 2016). However, from 2015 onwards, there was a significant drop in terrorist incidents, most likely due to increased counter-terrorism efforts by African governments and international coalitions (Botha, 2016). Despite the decrease, overall terrorism levels remain higher than in previous years, highlighting the ongoing challenges in combating terrorism in Africa.

Chapter Four

4.0   Terrorism and Its Determinants Evidence from Africa

4.1   Introduction

Terrorism has become an imminent threat to regional stability, economic progress, and human security. According to Locatelli (2014) terrorist activities in the world and particularly in Africa have increased dramatically in recent decades, affecting multiple countries and causing significant social, economic, and political consequences. Africa's relationship with terrorism is complex and multidimensional, influenced by a variety of causes such as political instability, economic distress, social injustice, and external influences, with countries such as Nigeria, Somalia, Mali, and Kenya being particularly severely affected by terrorist acts carried out principally by Boko Haram, Al-Shabaab, and other Islamic State units. These groups use local grievances, weak governance frameworks, and porous borders to gain traction and carry out their operations (Adeyemi & Musa, 2015).

Despite extensive research, there is still much to be understood about the underlying determinants of terrorism, its evolution, and its impact on societies. Terrorism continues to be one of the most urgent global challenges of our era. Fahmy (2006) with Africa being no exception. The complexity of terrorism makes it challenging to identify a single cause or solution (Schmid, 2004). Instead, terrorism is influenced by a wide range of factors, and the effectiveness of counterterrorism measures also depends on several factors, including political will, legal frameworks, and societal support. Hence, this chapter faces questions such as: What drives individuals in selected African Countries to engage in terrorism? What drives different ideologies of terrorism in Africa? Are the drivers of terrorism significantly different when treated as a single uniform phenomenon? This chapter aims to explore these questions and thoroughly analyse the factors associated with terrorism.

As discussed in the introductory chapter, terrorism seeks to tear apart societies by targeting innocent civilians, causing widespread fear and insecurity. This violence creates tragic deaths and

injuries, as well as long-term psychological trauma for those who survive and witness the events (Williams, 2007). Terrorism can also destabilise economies, disrupt daily life, and undermine trust in public institutions and governance. It is, therefore, important to understand the underlying determinants of terrorism. Is the global determinant of terrorism constant across continents, or are they continent-specific? To answer this question, researchers have been investigating the economic, political, and social factors linked to terrorist activities globally. There is no specific explanation or reason as to why terrorist activities occur, and the multidimensional nature of terrorism makes it impossible to arrive at a singular justification, which further complicates the emergence of counterterrorism measures. As a result, scholars have identified plausible causes and root causes of terrorism, both global and national. This serves as a steppingstone in understanding the determinants of terrorism because identifying its triggers paves the way for workable solutions.

Much of the existing literature on terrorism tends to focus on global trends or specific high-profile regions like the Middle East or combinations of several countries like ESNA (European Salt Action Network countries) Weak/fragile state, Akhmat *et al.* (2014), Kis-Katos *et al.* (2014), Nasir *et al.* (2011), Sun *et al.* (2022), Tahir *et al.* (2019), with only a few on Africa such as Okafor and Piesse (2018) and,Tahir *et al.* (2019).

To contribute to the existing literature, this chapter not only seeks to understand the determinants of terrorism in Africa but also expands the scope of current research by incorporating additional variables such as institutional quality, income inequality, and health expenditure. This approach broadens the analysis of factors that may influence terrorism, categorising them into macroeconomic, socioeconomic, political, demographic, and institutional factors. Furthermore, this chapter introduces terrorism casualties as a measure of terrorism, addressing a gap in the literature where terrorism incidence has predominantly been used as the standard metric, most especially in African studies.

Furthermore, this chapter explores the different ideologies of terrorism within Africa, providing a robust and comprehensive analysis of the determinants of terrorism in the region. Kis-Katos *et al.* (2014) examined the global determinants of terrorism and categorised terrorist groups by political ideology (right- and left-wing), religious ideology (Muslim and Christian), and ethnic ideology. They argue that existing literature on terrorism often yields mixed results because it tends to treat

all terrorist acts the same without considering the differences between groups with distinct ideologies. This generalised approach overlooks how several factors may uniquely influence specific types of terrorist groups, leading to conclusions that only reflect the "average" behaviour rather than accurately explaining the actions of groups.

Terrorism of different ideologies has risen in Africa over the last decade - Institute for Economics and Peace (2022), making it essential to study the determinants of terrorism in Africa to understand better and address this fundamental problem. Africa has always been vulnerable to terrorism and terrorist funding for several reasons. Terrorism in Africa devastates human life security and slows down economic growth and social stability (Ako & James, 2018). This approach offers a more detailed and context-specific understanding of terrorism in Africa, contributing significantly to the broader field of terrorism studies.

Specifically, this chapter examines the relationships between macroeconomic, socioeconomic, political, and institutional variables and terrorism (incidents/casualties) and their ideologies in African countries. The research seeks to comprehensively analyse the factors linked to terrorism in Africa, identifying the African continent-specific determinants of terrorism and their potential consequences for counterterrorism policies. The chapter analyses data from 20 African countries over 31 years (1990-2021) using Negative Binomial and Poisson models with fixed effects to accomplish this. The first two econometric methods were chosen for their ability to accurately account for over-dispersed count variables, unobserved heterogeneity, and endogeneity (fixed effects).

Our findings suggest that corruption is a significant driver of terrorism in Africa, compounded by factors such as military expenditure per capita and institutional quality. On the other hand, economic growth, trade openness, job opportunities, good healthcare systems, and full democracy have been found to mitigate terrorism. Furthermore, our analysis reveals that the aggregate nature and classifications of types of terrorism in Africa are not significantly different in terms of their determinants than those in other nations. Overall, this chapter contributes to understanding the specific determinants of terrorism in Africa and highlights the need for counterterrorism policies that address corruption, military spending, and institutional quality while promoting economic growth, trade, employment, and democratic governance.

This chapter is organised as follows: The following section presents a theoretical motivation for the determinants of terrorism in Africa and presents existing empirical evidence on the determinants of terrorism. Descriptive statistics on selected variables are presented in Section 4.3. Section 4.4 outlines the modelling and estimating methodologies used in this chapter. The penultimate section discusses the results, and the last section offers concluding remarks on the findings and provides policy recommendations.

4.2 Theoretical Insights on the Determinants of Terrorism

Terrorism is a major security concern in Africa, with numerous attacks recorded in the region in recent years. Despite efforts by governments and international organisations to combat terrorism, the problem persists, and its impact on the continent's socioeconomic development is profound. Understanding the determinants of terrorism in Africa is crucial in developing African economies. Terrorism is a complex phenomenon that a range of factors can drive. One of the most widely used frameworks is the "root causes" approach.

The root causes approach is among the most employed theoretical models for understanding the factors that contribute to the rise of terrorism. This concept refers to structural conditions that foster an environment where individuals or groups may feel driven to engage in terrorist activities. Scholars have worked to refine this concept, for example, (Bjørgo, 2004; Crenshaw, 1981).

Crenshaw (1981) identifies two key elements:

- Preconditions: long-term factors that create a conducive environment for terrorism.
- Precipitants: specific incidents that immediately trigger acts of terrorism.

Preconditions for terrorism encompass a wide range of structural factors that contribute to the long-term environment in which terrorism can arise. These preconditions are often rooted in deep-seated social, economic, and political inequalities. For instance, chronic poverty, political oppression, and social marginalization can create a pervasive sense of injustice and disenfranchisement among certain groups. This environment fosters grievances that may not immediately result in violence but gradually erode the legitimacy of state institutions in the eyes of the affected population. Over time, these conditions can lead to the radicalisation of individuals and groups who perceive terrorism as a viable means of addressing their grievances and achieving their political objectives.

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On the other hand, Crenshaw's concept of precipitants refers to specific, often dramatic events that serve as catalysts for terrorist activities. These events might include sudden government crackdowns, military invasions, or significant acts of repression perceived as existential threats by certain groups. Precipitants are immediate triggers that can turn latent discontent into violent action. For example, the invasion of a country or the assassination of a prominent political or religious leader can provoke a backlash that escalates into terrorism. While preconditions set the stage for terrorism, precipitants act as the spark that ignites the powder keg, transforming underlying discontent into organised violence.

This has been criticised for oversimplifying the complex and multifaceted nature of terrorism. Some scholars argue that it places too much emphasis on socioeconomic factors and ignores the role of ideology, religion, and other cultural factors in shaping terrorist behaviour. Others argue that the approach does not fully account for the strategic motivations of terrorist groups, who may use violence for a range of reasons beyond just addressing grievances. Despite these criticisms, the root causes approach remains an important theoretical framework for understanding the complex and interconnected factors contributing to terrorism in Africa.

The criticisms of the root cause approach to understanding terrorism, particularly those that suggest it oversimplifies the complex and multifaceted nature of terrorism, can be addressed by considering the expanded framework offered by Bjørgo (2004). Bjorgo's approach builds on the foundational ideas of scholars like Crenshaw (1981) but adds a deeper understanding of the distinct factors that contribute to terrorism.

Bjørgo (2004) expands on the root cause framework by offering a more detailed breakdown:

- Structural causes are factors that influence people's lives, whether they fully understand their impact.
- Facilitator/accelerator causes elements that make terrorism feasible or appealing, though they are not primary drivers.
- Motivational causes: the specific grievances individuals experience on a personal level.
- Triggering causes are immediate events or provocations that directly lead to acts of terrorism.

Bjørgo (2004) emphasised that terrorism often results from structural conditions and individual motivations. He suggests that understanding terrorism requires analysing both the broader societal factors that create a conducive environment for terrorism (akin to Crenshaw's preconditions) and the specific psychological and situational factors that drive individuals to commit acts of terror (which align with Crenshaw's concept of precipitants).

By considering both the structural and individual dimensions, Bjorgo's approach highlights the complexity of terrorism. It suggests that any effective counterterrorism strategy must address the root causes of terrorism holistically, focusing not only on the immediate triggers but also on the long-term conditions that foster the growth of extremist ideologies and movements.

This broader framework acknowledges that terrorism is not merely a result of socioeconomic grievances but also involves factors that make terrorism appealing or feasible (facilitator/accelerator causes) and the specific psychological and situational motivations of individuals (motivational causes). Additionally, it incorporates the role of immediate provocations or events that directly lead to terrorist acts (triggering causes).

Bjorgo emphasises the importance of understanding both the broader societal conditions and individual motivations, thus addressing the criticism that the root cause approach may neglect factors like ideology, religion, and the strategic use of violence. Considering structural and individual dimensions, this expanded approach provides a more holistic and comprehensive understanding of terrorism. It suggests that effective counterterrorism strategies should address socioeconomic grievances and consider the situational opportunities, psychological factors, and immediate triggers contributing to terrorist behaviour.

In this way, Bjorgo's framework enhances the root cause approach by acknowledging the complexity of terrorism and addressing critics' concerns. It supports the idea that while socioeconomic factors are important, they are part of a larger constellation of causes that must be addressed in a comprehensive counterterrorism strategy.

This chapter is interested in the root cause approach because integrating these approaches provides a nuanced and effective framework for understanding and combating terrorism. This approach

ensures that the underlying drivers and immediate enablers of terrorism are addressed, leading to more comprehensive and sustainable counterterrorism strategies.

These two approaches reveal that the term "root causes" encompasses a broad range of factors: enduring political and societal structures that impact governance, equality, and freedom, along with contemporary events, declarations, or developments that prompt an urgent need for action. The former can give rise to and sustain identity groups and political movements or influence shared perspectives on preferred political goals within a community or segment of society. The latter emphasises the urgency for change and determines the nature of the response. Combined, these historical conditions and disruptive developments can lead to terrorist violence.

This understanding aligns with several theoretical frameworks that explain the drivers of terrorism. For instance, the Frustration-Aggression Theory suggests that unmet expectations and resulting frustrations can lead to aggression and violence. The Contagion Theory of Terrorism posits that terrorist acts can spread through imitation and influence. Relative Deprivation theory focuses on the perception of inequality and the frustration it generates, leading to extremist behaviour. Meanwhile, Rational Choice Theory argues that individuals or groups engage in terrorism as a calculated strategy to achieve specific goals.

4.2.1 Frustration-Aggression Theory

The Frustration-Aggression Theory is a psychological framework that links frustration and aggressive behaviour. The theory, initially developed by Dollard *et al.* (1939), suggests that aggression is a response to any blocking of goal-directed behaviour. When individuals or groups encounter obstacles that prevent them from achieving their goals or satisfying their needs, they experience frustration. According to Dollard *et al.* (1939), this frustration generates a buildup of aggressive energy that seeks an outlet, which can manifest in various forms, including violence. In the context of terrorism, the theory suggests that when socioeconomic and political conditions consistently frustrate individuals or groups, it can lead to an aggressive response, such as participating in terrorist activities.

Frustration-Aggression Theory is particularly relevant in explaining how socioeconomic and political frustrations can drive individuals towards extremism. For instance, when people face

chronic obstacles such as poverty, unemployment, lack of education, and limited access to healthcare, they are likely to experience significant frustration. These barriers prevent them from achieving their basic needs and aspirations, leading to a sense of powerlessness and injustice. This feeling of being trapped in an inescapable situation can build up over time, resulting in a psychological state where aggression becomes a means of expressing discontent. For some, this aggression can be channelled into violent activities, including terrorism, to retaliate against the perceived sources of their suffering.

In the context of Mali, the rise of terrorism can be understood through the Frustration-Aggression Theory, which explains how socioeconomic and political frustrations can lead to aggressive behaviours, including terrorism. Mali has long struggled with severe economic hardships, political instability, and social inequality, particularly in its northern regions (Saverio Angió, 2018). The Tuareg population and other marginalised groups have felt neglected and excluded by the central government, leading to deep-rooted frustrations. These frustrations have been compounded by poverty, unemployment, lack of access to education and healthcare, and inadequate infrastructure. As peaceful means of addressing these grievances seem ineffective, many individuals in these regions have become increasingly disillusioned with the Malian state.

This pervasive frustration has fuelled the rise of militant groups such as Ansar Dine and the Movement for Oneness and Jihad in West Africa (MUJAO), which have exploited the grievances of the local population. For many, joining these groups is seen as an expression of anger and a means of seeking retribution for the long-standing neglect they have endured. The violent actions of these groups, including terrorist attacks and insurgency, can thus be viewed as an outlet for the frustration born from socioeconomic and political marginalisation. Frustration-Aggression Theory helps to explain how these conditions in Mali have created an environment where terrorism is seen as a means of addressing deep-seated grievances and achieving what is perceived as justice in the face of systemic failure (Ordu, 2017).

4.2.2 Contagion Theory

Contagion Theory offers a valuable framework for understanding the spread of terrorism across regions and its replication through imitation. According to this theory, terrorist activities are not isolated events but can influence and inspire similar actions in other locations (Bloom, 2005;

Midlarsky *et al.*, 1980). The visibility of a terrorist act plays a crucial role in this process. When an attack garners significant media attention or public awareness, it can be a powerful example for other groups or individuals with similar grievances or objectives. The theory suggests that the success or perceived impact of one terrorist act can encourage others to adopt similar tactics, leading to a ripple effect where terrorism spreads from one region to another.

The concept of contagion is particularly relevant in the context of modern global communication. In today's interconnected world, information about terrorist attacks is rapidly disseminated through news outlets, social media, and other digital platforms. This widespread coverage not only informs but can also inspire copycat actions. Terrorist groups often recognize the power of media and visibility, using dramatic and violent acts to gain attention and send a message to a broader audience. When these acts are seen as successful in achieving their political or social goals, they can motivate others to emulate them, thus contributing to spreading terrorism. Contagion Theory highlights the strategic nature of terrorism, where the impact of one attack is amplified through imitation, potentially leading to waves of violence across different regions.

4.2.3   Relative Deprivation Theory

Relative Deprivation Theory provides a framework for understanding terrorism that centres on the perceived gap between what individuals or groups believe they deserve and what they have. This theory suggests that when people or communities perceive themselves as being unfairly disadvantaged or deprived compared to others, especially when they believe they are entitled to better conditions, this sense of deprivation can lead to resentment and frustration (Moghaddam, 2005). The perceived inequality, particularly when it involves essential needs or social status, can motivate individuals to seek redress or justice, sometimes through extreme measures such as terrorism (Gurr, 2015). The theory highlights that it is not the absolute level of deprivation that drives people to violence but the relative sense of being worse off compared to others or compared to their expectations.

Relative Deprivation Theory suggests that individuals or groups who see themselves as victims of social or economic injustice are more likely to resort to violence to address their grievances. This is particularly true when peaceful means of redress are seen as ineffective or unavailable. For example, in regions where certain ethnic or religious groups feel marginalised or excluded from

political power, economic opportunities, or social recognition, the perceived disparity between their situation and that of more privileged groups can fuel anger and a desire for revenge. When these feelings of relative deprivation are widespread and deeply felt, they can provide a fertile ground for radicalisation and recruitment into terrorist organisations, which promise to rectify these perceived injustices through violent action.

4.2.4   Rational Choice Theory

Becker's theory of rational choice posits that individuals make decisions by weighing the costs and benefits of their actions in a way that maximizes their utility or satisfaction. This theory, which Becker applied to various areas such as crime, discrimination, and addiction, assumes that individuals act rationally, even in situations that might seem irrational at first glance. For instance, in his work on rational addiction, Becker argues that people become addicted because they anticipate the future benefits and costs of their consumption choices, making decisions that they believe will maximize their overall utility over time, despite the long-term consequences (Becker & Murphy, 1988).

Becker's Rational Choice theory offers a distinct perspective on why individuals and groups engage in terrorism by emphasizing the role of deliberate decision-making processes. According to this theory, terrorism is not merely an impulsive or emotional reaction but rather a calculated action where individuals or groups carefully evaluate the potential costs and benefits of their actions. The theory posits that terrorists act rationally, selecting their targets and tactics based on a strategic assessment of how best to achieve their goals, whether those goals are political, ideological, or social. This approach suggests that rather than being driven solely by frustration or deprivation; terrorist groups weigh the advantages, such as gaining attention, weakening opponents, or advancing their cause, against the risks, including potential retaliation or loss of support (Caplan, 2006).

In the context of groups like Boko Haram, Rational Choice Theory can explain why such organisations decide to carry out specific attacks. For instance, Boko Haram may choose to target government institutions, military installations, or civilian populations to achieve strategic objectives, such as undermining the authority of the Nigerian government, disrupting its operations, or drawing international attention to its cause (Walker, 2016). The decision to engage

in terrorism is seen as a rational calculation aimed at maximising the group's effectiveness in achieving its broader goals. By analysing the expected outcomes, such groups determine that the potential benefits, such as media coverage, recruitment, or the weakening of state structures, outweigh the potential costs, including military retaliation or international condemnation.

4.3 Empirical Literature on the Determinant of Terrorism

Over the past few decades, terrorist attacks in Africa have surged, devastating lives, and hindering development. Despite its growing importance, the causes of African terrorism remain debated. This review aims to comprehensively analyse existing empirical research on terrorism in Africa and discuss its determinants. Research studies have been done to show the factors contributing to terrorism in Africa. This chapter provides a comprehensive review of the existing empirical literature on the determinants of terrorism, focusing on the methodologies employed by numerous studies. By examining the findings of these studies, we can gain a deeper understanding of the root causes of terrorism in Africa. Existing research on the chapter on the determinants of terrorism, such as Bagchi and Paul (2018), Freytag *et al.* (2011), Jetter *et al.* (2024), Kis-Katos *et al.* (2014), Krieger and Meierrieks (2019), Li and Schaub (2004), Nasir *et al.* (2011), Okafor and Piesse (2018), Tahir (2020) employed negative binomial estimation techniques. Other studies, such as Abadie (2006), Akhmat *et al.* (2014), Chakma (2022), Sun *et al.* (2022), employed panel ordinary least square, panel cointegration, feasible generalised least square (FGLS), and general method of moments (GMM), respectively.

4.3.1 The Role of Macroeconomic Indicators

The macroeconomic performance of a nation plays a critical role in determining its overall economic condition. One of the primary indicators of a country's economy is its gross domestic product (GDP), which indicates the value of goods and services produced within its borders over a specific period. GDP is an essential indicator for assessing a country's macroeconomic performance since it helps to gauge the overall economic health of a nation. The Becker rational choice theory posits that individuals' economic behaviours are determined by the costs and opportunities underlying violent activities. For instance, a nation with a low GDP per capita may experience low-income levels, leading to low utility and poor living standards for citizens. These conditions can contribute to poverty, leading citizens of that given country to participate in violent

activities like terrorism to improve their utility or fight against the government for better economic conditions. Individuals who engage in terrorism carefully weigh the costs of such actions against their potential benefits to determine their level of terrorist activity.

In settings where individuals have limited access to a high quality of life or experience little utility, they may become dissatisfied, angry, and despondent, increasing the likelihood that they would engage in violent behaviour as a means of escape. Moreover, a decline in a country's GDP could result in a decrease in family income, leading youths to seek employment opportunities to supplement their parents' income, which may lead some to engage in criminal activities for financial gain. In certain African countries, such as northern Nigeria, poverty is an extreme issue that drives individuals to take drastic measures to survive, even when the cost of engaging in criminal activities exceeds the expected punishment. Despite the potential consequences, people still perceive the rewards of participating in such activities to be greater than the costs. Therefore, this chapter hypothesises a negative relationship between GDP and terrorism.

The rational choice theory supports such a perspective, characterising terrorists as rational actors who maximise expected utility or net payoffs subject to constraints. Lower income means higher opportunity costs of breaking the law because people use rational calculations to make rational choices and achieve outcomes aligned with their objectives. This implies that individuals are rational, and those who cannot afford to put food on the table due to low income may become dissatisfied and frustrated, driving them to join a terrorist organisation as a means of escape. Therefore, this chapter predicts a positive relationship between poverty and terrorism.

When examining the determinants of terrorism, several studies Nasir *et al.* (2011), Sun *et al.* (2022) have found a negative correlation between GDPs per capita and terrorist activity in Asian and Arab countries, respectively. This suggests that when a nation experiences slow economic development, terrorist organisations may attempt to control the government or overthrow the system to achieve better economic circumstances on their terms. Similarly, Jetter *et al.* (2024) utilised a sample of 1,527 subnational areas in 75 states between 1970 and 2014 to explain the link between GDP and terrorist attacks. They found that terrorist attacks are closely correlated with regional wealth levels. This suggests that people who are unable to provide food for their families become dissatisfied and may be compelled to join a terrorist group as a means of escape. Li and Schaub (2004) found

that underdeveloped countries are more vulnerable to terrorist strikes than economically advanced OECD countries. Similarly, Lai (2007) discovered that when a country has lower economic disparity, the likelihood of terrorist incidents decreases compared to a country with higher levels of economic disparity. Without rejecting this view, (Blomberg & Hess, 2009) defines economic progress free of inequality and prejudice as a two-edged sword capable of both diminishing and recruiting terrorist activity. According to them, economically developed countries are more vulnerable to terrorist strikes than undeveloped countries. This could be because terrorist perpetrators have access to a more appealing target, a broader range, lethal weaponry, and advanced communication technologies to maximise the spread of the attack (Berman, 2019; Harrison, 2018). As a result, an economically developed country may suffer from foreign terrorism rather than internal or in-bred terrorism.

Trade openness is another macroeconomic variable that can affect the likelihood of terrorist activity. An open economy permits imports and exports, as well as other non-domestic transactions, which can lead to economic growth. This can create new job opportunities, investment opportunities, and access to new markets, all of which can help to reduce poverty and enhance economic stability, which may, in turn, lower the risk of terrorism.

However, several potential risks associated with trade openness could also lead to terrorist activity. First, increased trade openness can lead to the exchange of weapons and drugs, especially among countries with close borders. Terrorist organisations can also use trade to access other essential resources for their operations.

Additionally, terrorists can use trade openness to move people, goods, and funds across borders without detection. This can lead to an increase in violent activities, especially in countries with high levels of corruption and limited border control, which makes it easy for terrorism to spread to neighbouring nations, particularly in the case of Africa. Boko Haram in Nigeria, Niger and Cameroon has been linked to Al-Qaeda in the Islamic Maghreb (AQIM) and has reportedly received funding and training from Al-Qaeda affiliates in the Sahel region (Angerbrandt, 2017; Duta, 2016). Similarly, Al-Shabaab in Somalia has been linked to Al-Qaeda and has received support from foreign fighters who have travelled to Somalia to join them (Cristiani & Fabiani, 2011; Shinn, 2011). International linkages can also involve the flow of weapons, drugs, and other

illicit goods that can provide funding and support for terrorist groups. For example, the Sahel region has become a major transit point for the trafficking of drugs, weapons, and other illicit goods, which can provide funding and support for terrorist groups operating in the region (Onguny, 2020).

Also, increased trade openness could lead to increased immigration from other countries, including countries that may be more prone to terrorist activity. This could result in increased competition for jobs and resources, as well as an increase in cultural tensions between distinct groups living in these countries.

Kis-Katos *et al.* (2014); Li and Schaub (2004) suggests that when nations are more open to trade, they are less likely to experience political or separatist terrorism. This could be due to increased economic and social stability and better resource access. Additionally, more open trade can lead to better diplomatic relationships, reducing the potential for political and separatist terrorism. Li and Schaub (2004) further explain that openness can lead to increased access to markets, capital, and technology, while FDI can bring new investments and jobs into a country. Together, these two processes can help foster economic development and growth.

In today's society, unemployment is a major contributing factor to terrorism. This economic aspect is closely linked to the factors that were previously examined. Anecdotal data indicates that there is a positive correlation between the likelihood of terrorist acts and the unemployment rate resulting from economic hardship, particularly poverty. Additionally, studies indicate the emergence of a bourgeois elite primarily focused on profit maximisation. This focus often leads to actions that fail to create employment opportunities or other tangible economic benefits for society.

When individuals are unemployed, they are more likely to turn to radical ideologies for support and a sense of purpose. They may feel helpless and powerless in their current situation, which can lead to a strong desire to act. Terrorist organisations often target those who possess these feelings, as they can be easily swayed by the promise of a better life and a sense of belonging. Unemployment can lead to various negative outcomes, such as poverty, experiences of violence, and inadequate access to essential needs. Unemployed individuals may resort to illegal activities as a source of income, which can further fuel desperation and hopelessness, increasing the risk of being influenced by extremist groups and ideologies.

Certain studies have also documented a positive relationship between unemployment and terrorism (Bagchi & Paul, 2018; Cruz Lugovskyy, 2014). Their findings suggest that countries with high levels of unemployment may be more susceptible to terrorism than those with lower unemployment rates.

Richardson (2011) reveals unemployment as a predictor of terrorism activity, particularly in nations where there have been prior terrorist attacks. This finding is similar but with extra data. Butler (2015) findings, in contrast, show that higher unemployment rates correlate with lower terrorist activity. Despite the lack of significance in the association, this negative outcome could have been caused by the variable's measure selection. In this case, unemployment served mostly as a stand-in for poverty when it came to the economic reasons of terrorism. The agriculture sector in Israel and Palestine showed a positive correlation between both variables, as shown by (Caruso & Gavrilova, 2012). The main finding of these results was the difference in male versus female juvenile unemployment, which explained this outcome.

Additionally, Krueger and Pischke (1997) showed no correlation between ethnic violence and unemployment across 543 German counties during a period of high unemployment and serious violent crime. They concluded that terrorism was more likely to be caused by a breakdown in the institutions that uphold the law than by the nation's economic inefficiencies. Although some have argued that unemployment is not a sign of poverty, unemployment is not the only indicator of poverty in a nation. Indicators or a combination of indicators may have been employed to measure poverty because other factors also contribute to poverty.

Foreign Direct Investment (FDI) has long been recognised as a valuable source of economic development. Research has shown that it can create job opportunities and economic growth, reduce poverty, and mitigate conditions that lead to terrorism. A negative relationship between FDI and terrorism is expected. Okafor and Piesse (2018) investigated the determinants of terrorism among 38 fragile countries from various world regions and discovered that FDI may help reduce terrorist activities. Li and Schaub (2004) also suggested that FDI promotes economic development with a negative impact on terrorism.

Although FDI can have a positive impact on terrorism, terrorism is almost unavoidable when multinational enterprises seek to profit from host country endowments, resulting in income inequality, unemployment, and so on. This means that as information and communication technology (ICT) and transportation infrastructure advance, terrorist activities may shift from domestic to transnational terrorism, upending the global economic landscape, and terrorist offenders may create new terrorism strategies. Additionally, terrorist groups may attract disgruntled civilians by giving them a forum to vent their frustrations with government actors (Bird *et al.*, 2008; Crenshaw, 1981; Newman, 2006).

In the case of military expenditure, it is known to discourage and make it difficult for large insurgency forces to form. Spending a significant amount of money on the military wisely makes it easier for counterinsurgency units to work together and for the military to receive better training. Nasir *et al.* (2011) studied the determinants of terrorism and used data from South Asian nations to explain the causes of terrorism. According to Nasir *et al.* (2011), increased military spending can help reduce terrorist activities because it allows for the increased purchase of military equipment to protect the country. However, in fragile states, military expenditure is less effective and cannot prevent terrorism activities to a greater extent due to corruption.

Okafor and Piesse (2018) identified a positive relationship between military spending and corruption, noting that military expenditures are often hard to oversee and can serve as a channel for corrupt activities, especially in developing nations. This problem is widespread in many developing countries., exemplified by instances in Nigeria where funds intended for combating insurgency were misappropriated. Despite ongoing allocations for arms procurement, these diversions allowed terrorist groups to thrive.

Studies repeatedly show that governments' defensive response to terrorist events is often increased military expenditure. For instance, the study by Knight *et al.* (1995) makes use of vector autoregression-intervention analysis and discovers that terrorism incidents much raise military expenses. A simple justification for this is that governments provide more resources to military and security forces in response to terrorist threats to guarantee national security and stop more attacks (Knight *et al.*, 1995, 1996). Likewise, Feridun and Shahbaz (2010) verify that rising military budgets follow from often occurring spikes in terrorism. This chapter provides empirical

evidence from Türkiye, demonstrating that while military spending reacts to terrorism, the effectiveness of such spending in reducing future terrorist incidents is not guaranteed, indicating a strong unidirectional causality from terrorism to military expenditure (Feridun & Shahbaz, 2010).

Overall, macroeconomic variables are vital to consider when addressing the causes of terrorism. For example, in Nigeria's northeast, the Boko Haram insurgency has been fostered by poverty, corruption, and political isolation. The group's members are primarily from low-income and marginalised neighbourhoods with restricted access to education, healthcare, and work prospects. These socioeconomic conditions make it easy for Boko Haram to recruit and radicalise people by exploiting their frustrations and feelings of helplessness (Omenma *et al.*, 2020).

In Somalia, where poverty rates are among the highest in the world, young males are frequently recruited into Al-Shabaab as a way of economic survival. The organisation provides its members with food, lodging, and cash assistance, which may appeal to people with restricted economic options. This recruitment method is motivated by Somalia's severe economic situation, where a lack of investment in human capital and economic growth reinforces cycles of poverty and limited opportunity (Hansen, 2013).

4.3.2   The Role Socio-Economic Variables

The phenomenon of terrorism has become a pressing concern for governments, organisations, and individuals across the globe. While there is no single cause of terrorism, it is widely acknowledged that socioeconomic variables play a crucial role in creating the conditions that lead to the emergence of extremist ideologies and terrorist activities. The following paragraphs explore how socioeconomic variables, specifically inequality, literacy, and public health, can be significant determinants of terrorism. Terrorism is a social challenge that is closely linked to a country's economic conditions, and factors such as inequality may contribute to poorer socioeconomic outcomes. Inequality can make it easier for terrorists to organise as it lowers the opportunity costs of engaging in terrorism. When earning a fair share of the economy's income through normal economic activity becomes difficult, individuals may turn to violence to express their grievances. This is in line with Becker's theory of rational choice, which posits that individuals are rational, and those who feel deprived of resources, power, and opportunities may resort to terrorism, such as bombings, shootings, or other forms of destruction (Becker & Murphy, 1988).

For example, Akhmat *et al.* (2014) demonstrated that income inequality is a significant variable that contributes to terrorism activities. In developing nations, terrorism has increased due to the declining living standards of people. Krieger and Meierrieks (2019) investigated the impact of income inequality on terrorism in 113 countries from 1984 to 2012. They found that developing nations record high levels of terrorism due to increased violence associated with economic inequality, which is consistent with the findings of Nasir *et al.* (2011).

Literacy is an important determinant of terrorism as it can influence the level of political awareness, access to education, and the ability of individuals to understand the complexities of the world. Much more study is needed to determine the exact cause of the uncertain relationship between literacy and terrorism. Previous studies have shown that there is a mixed association between the two factors. Education, however, has a more confusing link with terrorism than do modernization and economic progress. It is a widely held idea that terrorist activities are mostly committed by ignorant people with little to no formal education, i.e., Individuals who are illiterate may lack the ability to think critically and are more prone to being swayed by extremist ideologies that can lead to terrorist activities. Additionally, the lack of access to education can lead to little or no understanding of the political process, making individuals more vulnerable to extremist ideology.

Conversely, higher literacy rates can lead to a more educated population that is not easily influenced by extremist propaganda. Individuals with a higher level of education will be more likely to understand the complexities of the world and will be better able to think critically about different political issues. This increased understanding can help reduce the appeal of extremist ideologies and terrorism. Kis-Katos *et al.* (2014), Sun *et al.* (2022) argue in favour of this perspective as they found a negative relationship that suggests a low level of education can make it easy for people to get influenced by terrorist activities through political rallies.

Critics of this position have, however, pointed out that terrorist icons like Osama bin Laden and the September 11, 2001, assault perpetrators are well-educated and skilled individuals who yet engage in terrorism (Berrebi, 2007). Similarly, Krueger and Maleckova (2003) in their investigation of a causal relationship between education/poverty and terrorism with a focus on three terrorist organisations, indicate that members of those terrorist organisations come from

relatively rich homes and have high levels of education. This finding, which translated into a positive link between the factors examined, refutes the popular idea of ignorant terrorist offenders. This raises further doubts about the tentative empirical evidence. To clarify this, it may be useful to examine both the geographical context of the study and the reason or theology of the terrorist groups.

Geographically speaking, the majority of industrialized economies have established high-quality educational systems that give people access to a basic education. For developing and growing economies, this might not be the case, and alternative outcomes might follow. For instance, research on how international aid and education may help both developed and developing nations combat terrorism Azam and Thelen (2008) suggests a negative relationship where higher secondary school enrolment decreases terrorist activities. In terms of motivation, certain terrorist organisations may be prepared to fund their members' acquisition of sophisticated expertise in order to carry out highly secret and tactical terrorist operations. According to the preceding debate, the absence of a tangible causal relationship between education and terrorism may be attributed to the diverse measures of education used in the statistical analysis of variables Krieger and Meierrieks (2011). Nasir *et al.* (2011) found that the literacy rate has a positive relationship with terrorism at significant levels.

Low health expenditure per capita in Africa, which was around $188.53 in 2020 compared to the global average of $1,115.01 (World Bank, 2022), exemplifies a significant barrier to achieving basic health standards. This underinvestment in healthcare results in limited access to hospitals, medical equipment, and specialised medical personnel. Consequently, this leads to malnutrition, untreated illnesses, and higher mortality rates. The frustration-aggression theory suggests that such adverse conditions create frustration among individuals who are unable to secure healthcare and other essential services. This frustration can make them more susceptible to recruitment by terrorist groups, who exploit their vulnerabilities by offering financial support and other incentives (Kis-Katos *et al.*, 2014).

By linking the frustration-aggression theory to the practical example of health expenditure, it becomes clear that improving health investment is crucial not only for better health outcomes but

also for reducing the socioeconomic conditions that foster terrorism. This underscores the interconnectedness of socioeconomic stability and national security.

4.3.3 The Role of Political Stability Indicators.

Terrorism is often linked to the political system in a country, reflecting the extent to which citizens have access to rights and civil liberties. In nations lacking democracy, citizens may become frustrated, leading to aggressive responses that express their dissatisfaction. This notion is supported by relative deprivation and frustration-aggression theories, which suggest a negative relationship between political oppression and terrorism. When political systems deny citizens their political rights and civil liberties, it can foster conditions that lead to terrorist activities.

Krueger and Laitin (2008) explored the sources and targets of terrorism using datasets on international terrorist incidents and suicide attacks, finding that a lack of democracy significantly influences the origin and targets of terrorist activities. Similarly, Kis-Katos *et al.* (2014) indicated a positive relationship between full democracy and a reduction in Islamist terror attacks. Their findings suggest that political oppression can drive individuals towards terrorism as a means of addressing grievances.

Moreover, evidence suggests that individuals engage in terrorist activities when deprived of political rights and civil liberties, as seen in the work of (Nasir *et al.*, 2011). On the other hand, Chakma (2022) analysed data from a panel of seven Asian nations and argued that increased political freedom post-Cold War has paradoxically contributed to terrorism activities. This suggests that the relationship between political freedom and terrorism is complex and multifaceted, requiring nuanced understanding and policies to address the root causes effectively.

Regime stability is a crucial factor in determining the level of terrorism in a country. More stable countries tend to experience fewer terror operations and are considered less attractive targets for terrorist activities. On the other hand, a lack of stability can create an environment that is conducive to the emergence of terrorist groups. Factors such as political instability, economic inequality, and social injustice can contribute to such instability. When a country faces an uncertain future, some individuals may resort to violence to achieve their goals. This can lead to the emergence of terrorist groups seeking to destabilise the government and create chaos. Therefore, a negative relationship is expected between regime stability and terrorism.

Kis-Katos *et al.* (2014) indicates that regime durability can have an impact on terrorism, as more stable regimes are better equipped to counter terrorist activities than unstable ones. Nasir *et al.* (2011) studied the determinants of terrorism, focusing on Asian nations, and found that countries with a strong political system and structure are better prepared to handle terrorist groups, making them less vulnerable to terrorist activities. Regime resilience may also affect terrorism, as more durable regimes are more likely to reduce terrorism by countering it effectively. Krieger and Meierrieks (2019) discovered that unstable regimes often create power vacuums that terrorist groups can exploit, leading to an increase in terrorism. Therefore, regime durability has a negative influence on terrorism.

Corruption is a major contributing factor to terrorism, especially in countries lacking effective governance and oversight. When corruption is prevalent, it creates a conducive environment for organised criminal activities, including terrorism. This is because corruption weakens state institutions, enabling terrorists to operate more freely and exploit vulnerable populations. Moreover, corruption erodes citizens' confidence in the government and the rule of law, increasing their susceptibility to radicalisation. Additionally, corruption can provide terrorists with resources such as money and weapons. Terrorists can access these resources through bribery, misappropriation of public funds, and diversion of funds for terrorist activities. By exploiting the government's weaknesses, terrorists can carry out their operations more effectively.

Kis-Katos *et al.* (2014) argue in favour of this perspective, explaining that a high level of corruption leads to more terrorist activities in a nation. When a country has high levels of corruption, it is more likely to experience an increase in the number of terrorist attacks originating within its borders. However, Tahir (2020); Tahir *et al.* (2019) suggested that corruption cannot be blamed for causing terrorism as they found an insignificant impact.

Institutional quality is critical in counterterrorism efforts because it addresses both the root causes and the opportunities for terrorist activity. High-quality institutions are distinguished by effective governance, the rule of law, transparency, and equitable access to resources. These institutions can address the underlying causes of terrorism by reducing socioeconomic disparities, providing education and employment opportunities, and promoting political inclusion. When people have access to fair and just systems that meet their basic needs and allow them to participate

meaningfully in society, the grievances that frequently lead to radicalisation and terrorist activity are significantly reduced. Furthermore, effective institutions can implement and enforce laws that prohibit the formation and operation of terrorist groups, limiting the opportunities for terrorism to thrive.

Easterly (2000) examined whether institutions can resolve ethnic conflict in 16 different countries around the world. Easterly (2000) discovered that high-quality institutions contribute to national stability by decreasing the likelihood of violent conflicts and genocide, even in the presence of ethnic fractionalisation. By promoting social cohesion and protecting minority rights, these institutions prevent marginalisation and disenfranchisement, which can lead to inter-ethnic conflict and mass atrocities. For example, strong judicial systems and accountable governance structures can deter state and non-state actors from violating human rights, lowering war casualties and the likelihood of genocidal acts. The ability of high-quality institutions to manage diversity and conflict in a peaceful and legal manner fosters an environment in which terrorism is less likely to emerge as a means of political expression or rebellion.

4.3.4   The Role of Population Dynamics

It is worth noting that most of the causes of terrorism appear to overlap, demonstrating that no sole source may exclusively produce terrorist activity. Some reasons pave the way for other causes to result in terrorist acts. Having said that, a country's population may not directly cause terrorist operations, but it may create a climate in which terrorist activities can thrive. Newman (2006) identifies high population growth and population shifts between ethnic regions as demographic factors capable of boosting the frequency of terrorist attacks. The underlying assumption is that an increase in population, particularly among young, vigorous guys, will increase terrorist actions.

Richardson (2011) research confirms this concept, proving that population size is significantly related to increasing terrorist attacks in many countries. However, Gaibulloev and Sandler (2011) identify fast population growth as one of many characteristics unique to the African continent that may cause it to respond differently to terrorism. Their findings show that the impacts of population growth on transnational terrorism are not statistically significant, which could be because Africa is more typified by domestic rather than transnational terrorism. In a similar line, Newman (2006) discovered a negative correlation between terrorist attacks and population density. That is, the rate of terrorist incidents decreased as population density grew.

Migration of ethnic groups to other regions may lead to conflicts and, in severe instances, terrorism. These changes, mostly driven by regional urbanisation, necessitate the relocation of ethnic populations from one area to another. Ethnic terrorism, akin to religious extremism, is often initiated by minority groups that see marginalisation by the ethnic majority, prompting them to resort to terrorism as a means of articulating their concerns (Crenshaw, 1981). As a result, this sort of terrorism promotes equality and freedom from the oppressive status quo imposed on them by the majority ethnic group. Stern (2003) observed in her work that migration and demographic changes in some regions of Indonesia led to an increase in terrorist activities.

Population movements among ethnic groups result in language fractionalisation, which Montalvo and Reynal-Querol (2005) linked to terrorist risks, but Kurrild-Klitgaard *et al.* (2006) found no significant relationship. Notwithstanding the differences in the outcomes, it is crucial to examine the context problem. The diverse circumstances in which this study was carried out might impact the conclusions drawn from the different studies. For example, a country's high population density may be expected to increase terrorist occurrences. However, if the bulk of the population is composed of a high working class, the results of such a study are quickly influenced by other probable outcomes. The same is true if a country has a low population density, with most living below the poverty level. In this case, the majority may be obliged to organise movements to express their grievances to alleviate their suffering. Where the state or relevant institutional structures fail to recognise these plights, this movement may escalate into terrorist activity.

4.4 Terrorism Ideologies

Terrorism takes many different forms, and various ideological motivations frequently shape its goals and strategies. This chapter based its terrorism ideologies on the works of Kis-Katos *et al.* (2014) as we both use similar datasets Kis-Katos *et al.* (2014) used five terrorism ideologies: religious (Islam), left-wing, right-wing (political), ethnic separatist and Undefined. While right-wing extremists push for racial or national supremacy, left-wing organisations pursue socialist or communist agendas. While religious terrorists, particularly Islamist groups in our analysis due to their predominance, seek to establish their faith's dominance, ethnic separatist movements seek autonomy or independence for their ethnic group. This chapter used four terrorism ideologies: Religion (Islam and Christianity), Political, ethnic, and undefined. Undefined represents terrorist attack not claimed by any terrorist organisation or is unknown. Comprehending these ideological

subtleties is imperative to formulate focused counterterrorism tactics and tackle the fundamental causes of terrorism in Africa.

4.4.1 Political Ideologies of Terrorism

The goals and behaviours of terrorist organisations are influenced by political ideologies, which can be categorised into two groups: right- and left-wing extremism, each with its traits and goals. Marxist-Leninist, socialist, or anarchist ideologies that aim to topple capitalist structures and create a classless society are often the source of left-wing terrorism.

Left-wing terrorist groups, like the Weather Underground in the US Lambert (2017) and the Red Army Faction (RAF) in Germany, target corporations, government buildings, and symbols of perceived oppression to upend the status quo and spur revolutionary change (Crenshaw, 2011). Their motivation for taking drastic measures to promote social justice and address systemic inequalities drives their actions.

On the other hand, nationalist, fascist, or racist ideologies that seek to uphold or restore an imagined traditional social order are what define right-wing terrorism. Right-wing terrorism is typified by groups such as the Ku Klux Klan (KKK) in the United States and various neo-Nazi organisations in Europe. These organisations frequently target immigrants, minorities, and political opponents to spread fear and uphold their dominance through physical force (Berlet & Sunshine, 2019; Mudde, 2019). Growing political division and economic unpredictability have contributed to the rise of right-wing terrorism in recent years, underscoring the ongoing threat these extreme ideologies pose (Mudde, 2019).

Political ideologies have had a major impact on the formation and operations of terrorist organisations in Africa. Al-Shabaab, for example, is an Islamic militant group operating in Somalia that opposes the Somali federal government and its allies while promoting an Islamist state and imposing Sharia law (Marchal, 2009). Another example is the Nigerian group Boko Haram, which combines political objectives with religious extremism to topple the government of Nigeria and establish an Islamic state (Walker, 2012). Furthermore, during civil conflicts, organisations such as the Revolutionary United Front (RUF) in Sierra Leone and the National Union for the Total Independence of Angola (UNITA) have utilised terrorism as a component of their larger political plans to seize resources and governments (Clapham, 2003). These instances demonstrate how

political grievances and goals, which result from a complex interaction between local, regional, and global dynamics, motivate terrorist activities throughout the continent.

4.4.2 Ethnic Ideologies of Terrorism

Ethnic terrorism stems from the grievances and aspirations of specific ethnic groups, who frequently seek self-determination, independence, or increased political representation. Territorial conflicts, social discrimination, and historical injustices are at the core of these conflicts. The Irish Republican Army (IRA) uses terrorist tactics to end the British regime in Northern Ireland and achieve the reunification of Ireland, is one well-known example. Ethnic nationalism and the desire to right historical wrongs against the Catholic minority in Northern Ireland propelled the IRA's actions (English, 2008). The political and religious facets of these ethnic conflicts frequently intersect, making efforts to address their underlying causes more difficult.

Ethnic terrorism in Africa is evident in the actions of organisations such as the Lord's Resistance Army Makkonen *et al.* (2020) in Uganda. The LRA, led by Joseph Kony, has waged a bloody campaign supposedly to create a theocratic state founded on the Ten Commandments. Still, it is deeply entrenched in the Acholi people's ethnic grievances against the Ugandan government (Seay, 2013). The necessity for comprehensive approaches to conflict resolution that address both ethnic and more general socio-political issues is highlighted by the fact that these ethnic conflicts frequently result in protracted cycles of violence and instability.

Several Tuareg rebel factions, including the National Movement for the Liberation of Azawad (MNLA), have engaged in terrorist activities to gain greater autonomy or independence for their ethnic homeland. This conflict involves the Tuareg ethnic group in Mali and Niger. Boas and Torheim (2013) cite this conflict as one notable example. Another instance of ethnic violence is the 1994 genocide against the Tutsi population in Rwanda, which was carried out by the Interahamwe militia under the influence of ethnic Hutu ideology (Des Forges, 1999). Conflicts over resources and ethnic identity have frequently been used as a justification for violent confrontations and terrorist acts in Nigeria between the Fulani herders and other farming communities, such as the Tiv and Berom (Blench, 2010). These instances highlight the vital role that ethnic ideologies play in stoking violent conflicts and terrorism in Africa.

4.4.3 Religious Ideologies of Terrorism

Religious terrorism is arguably the most well-known form of ideological terrorism today. Religiously motivated groups that want to establish a government or society based on their interpretation of religious laws and principles frequently see their violent acts as a divine duty or a kind of spiritual warfare.

In recent decades, international counterterrorism efforts have focused primarily on Islamic extremism, with organisations such as Al-Qaeda, the Taliban, and ISIS promoting the creation of an Islamic caliphate subject to Sharia law. These organisations use terrorism as a means of resisting Western influence, toppling secular governments in nations with a majority of Muslims, and exacting revenge on those they consider to be disbelievers or apostates (Hoffman, 2006). Events like the September 11 attacks and ISIS's territorial gains in Iraq and Syria serve as prime examples of the worldwide impact of religious terrorism motivated by Islamic extremism (Byman, 2018).

Though not as well-known worldwide, Christian extremism can nonetheless be extremely dangerous in some situations. To oppose abortion and advance their understanding of Christian doctrine, organisations such as the Army of God in the United States have engaged in acts of terrorism, including bombings and assassinations. These groups frequently use apocalyptic and millenarian beliefs to justify their actions, seeing violence as necessary to accomplish divine goals (Juergensmeyer, 2017). Similar to this, radical Hindu and Buddhist organisations in South Asia have carried out terrorist acts motivated by religious and nationalist beliefs. Driven by the ideology of Hindutva, which aims to establish India as a Hindu nation, Hindu nationalist groups in India, like the Rashtriya Swayamsevak Sangh (Larsson & Gabrielle, 2012), have been implicated in violence against Muslims and other minorities (Gunaratna, 2013). Viewing the Rohingya Muslim population as a threat to Buddhist identity and national integrity, Buddhist nationalist groups in Myanmar, such as the 969 Movement, have incited violence against them (Berlie, 2008).

4.5   Data Commentary on Terrorism and its Determinants

All the data used for this chapter were collected from secondary sources, including the Global Terrorism Database (GTD), World Bank Development Indicators (WDI), the Institute of Statistics, the World Health Organization (WHO), World Bank Governance Indicators (WGI), The Integrated Network for Societal Conflict Research (INSCR), The Standardized World Income

Inequality Database (SWIID), and Transparency International. These sources provided comprehensive and reliable datasets that are essential for analysing various aspects of terrorism and its correlates in the selected countries.

In this Chapter, terrorism is the independent variable, measured by the number of terrorist incidents recorded and the number of casualties involved in each incident. The data spans the period from 1990 to 2021 and encompasses 32 African countries. The selection of these countries, detailed in Chapter 3.1, was guided by specific criteria to ensure a representative sample. Figure 3.1 provides a map illustrating the selected countries used in this chapter.

The definitions and sources of the variables used, along with the presentation of data properties (descriptive statistics), are outlined in Tables 4.1, 4.2, and 4.3, respectively. Table 4.1 defines each variable and its source, ensuring clarity on the data's origin and meaning. Table 4.2 presents the descriptive statistics, offering a summary of the central tendencies and dispersions of the variables.

Table 4.1 Variable Definition

Variables	Descriptions	Sources	Expected signs of terrorism
Growth Rate	Annual percentage growth rate of GDP	The World Bank - TCData360	Negative Relationship
Schooling Enrolment	Number of children of any age group who are enrolled in secondary education expressed as a percentage of the total population of the official secondary school age.	UNESCO Institute of statistics	Positive/Negative Relationship
Unemployment	Labour force without work but available for work and seeking employment.	International Labor Organization, ILOSTAT database - World Bank	Positive Relationship
Health Expenditure pc	The total expenditure on health relative to the population in U.S. dollars.	World Health Organization Global Health Expenditure database - World Bank	Negative Relationship
FDI	Foreign direct investment (FDI) refers to the net inflows of investment aimed at acquiring a lasting management interest (10 per cent or more of voting stock) in an enterprise operating in a different economy than that of the investor.	The World Bank Data	Negative Relationship
Inflation	The Consumer Price Index (CPI) reflects the annual percentage change in the cost of goods and services for the average consumer.	The World Bank Data	Positive/Negative Relationship
Inequality	How income is distributed throughout a population (Gini Coefficient)	The Standardized World Income Inequality Database	Positive Relationship
Corruption	The Corruption Perceptions Index (CPI) measures perceived public sector corruption on a scale from 0 (highly corrupt) to 100 (very clean).	Transparency International	Positive Relationship

Military Expenditure Per Capital	Military expenditure as a percentage of the population. Spending on the armed forces, including peacekeeping troops, defence ministries, other government organizations working on defence initiatives, and paramilitary groups, encompassing all ongoing and capital expenses in USD.	The World Bank Data	Positive/Negative Relationship
Openness	The sum of exports and imports per total GDP. Kis-Katos *et al.* (2014) measured in 10 percentage points	Penn World Table version 10.01	Positive/Negative Relationship
Institutional Quality	The institutional quality index includes the following indicators: Government Effectiveness, Regulatory Quality, Voice and Accountability, Political Stability and Absence of Violence/Terrorism, Rule of Law, and Control of Corruption. High values mean good Institutional Quality and low values mean bad Institutional Quality.	Worldwide Governance Indicators	Negative Relationship
Democracy	Indicator variables for the composite Polity score lie in the range of 1/10 democracy.	Polity IV dataset	Negative Relationship
Regime Durability	Years since the last drastic regime change, defined by a three-point change in the Polity score over three years (Kis-Katos *et al.*, 2014)	Polity IV Dataset	Negative Relationship
Population	Total population is based on the de facto definition of population, which counts all residents regardless of legal status or citizenship.	The World Bank Data	Positive Relationship
Urbanisation	Percentage share of population living in urban areas.	World Development Indicators	Positive Relationship

Source: Stata (2022) - Author's compilation.

4.5.1 Descriptive Statistics

Descriptive statistics show the basic summary of the data set, providing information about the variability, central tendency, and distribution of the observed variables. The descriptive statistics, including the number of observations, mean, standard deviation, minimum and maximum values, and skewness, are shown for each variable in the chapter in Table 3. The standard deviation shows how far a value deviates from the mean, whereas the mean provides an average value. The minimum and maximum values indicate the data range, and the distribution's asymmetry is gauged by skewness. Understanding the fundamental traits and underlying patterns in the dataset is made possible by this statistical summary, which also makes it easier to make more informed and precise interpretations during the analysis that follows.

Table 4.2: Descriptive Statistics

Variables	Obs	Mean	Std. Dev.	Min	Max	Skew.
Growth Rate	992	3.851	8.986	-58.339	91.78	4.465
Trade Openness	840	1.081	0.143	0.745	1.668	0.1
FDI	979	3.664	9.77	-82.892	103.337	4.147
Unemployment	981	8.188	7.221	0.317	35.707	1.237
Inflation	907	18.078	145.724	-9.798	145.106	22.722
Military Expen$_{pc}$	889	32.696	58.203	0.016	727	4.059
Schooling Enrol.	847	76.970	19.19	19.59	99.99	-0.73
Inequality	782	43.619	6.722	32.2	63.1	0.916
Health Expen$_{pc}$	796	97.88	135.819	5.19	785	2.551
Corruption	922	21.574	15.623	1.5	56	0.028
Democracy	863	-2.282	21.727	-88	10	-3.312
Regime Durability	895	12.39	13.634	0	81	1.446
Institutional Qua.	893	-0.324	1.697	-6.246	3.907	-0.488
Urban Population	992	37.686	15.935	5.416	80.994	0.326
Ln Population	992	16.158	1.414	11.149	19.144	-0.911

Source: Stata (2025) - Author's Compilation

The given descriptive statistics provided information on all variables in the dataset. Below is a brief discussion of each variable:

Growth Rate: The average growth rate in the dataset is 3.851%, with a standard deviation of 8.986%. This indicates that, on average, the economies represented are growing at a moderate pace, though there's significant variability. In comparison, Europe's GDP growth rates have been relatively modest in recent years. For instance, as of September 2024, the European Union reported

an average growth rate of around 1%. This suggests that the regions in your dataset are experiencing higher growth rates than Europe, which could be attributed to factors such as emerging market dynamics, investment inflows, or differing economic policies.

Trade Openness: Trade openness, measured as the ratio of exports and imports to GDP, has a mean value of 1.081 (or 108.1%) with a standard deviation of 0.143. This suggests that, on average, the economies are quite open to international trade. In contrast, European countries exhibit varying degrees of trade openness. For example, in 2018, Luxembourg had a trade openness of 362.42%, while Italy's was 59.27%. This comparison indicates that while some European countries are highly open, others are less so, and the economies in your dataset have a moderate level of trade integration.

Foreign Direct Investment (FDI): The mean FDI inflow is 3.664% of GDP, with a standard deviation of 9.77%. This reflects a substantial variation in FDI, including instances of significant disinvestment. In Europe, FDI inflows also vary widely. For instance, in 2022, countries like Ireland attracted FDI inflows exceeding 20% of GDP, while others like Greece had negative inflows, indicating net disinvestment. This comparison highlights that both regions experience significant variability in FDI, influenced by factors such as economic stability, market size, and investment policies.

Unemployment Rate: The average unemployment rate is 8.188%, with a standard deviation of 7.221%. This suggests moderate unemployment levels, though some countries experience very high rates. In Europe, unemployment rates also vary. For example, Spain had an unemployment rate of approximately 12.9% in 2022, while countries like Germany maintained rates below 4%. This indicates that unemployment challenges are present in both regions, though the severity and distribution differ.

Consumer Price Index (CPI): The average CPI is 18.078, with a high standard deviation of 145.724, indicating significant inflation variability. Some countries experience hyperinflation, while others have stable prices. In Europe, inflation rates have been more contained. For instance, Türkiye had the highest inflation rate among European countries in 2022, at approximately 64.27%, while others like Switzerland maintained rates around 2%. This comparison shows that the economies in your dataset face more extreme inflationary pressures than most European countries.

Military Expenditure Per Capita: The mean military expenditure per capita is 32.696 units, with a standard deviation of 58.203, indicating substantial variation. In Europe, military spending per capita also varies. For example, in 2022, countries like Norway spent over $1,500 per capita, while others like Albania spent less than $100. This suggests that both regions exhibit a wide range of military spending, influenced by factors such as security policies, economic capacity, and geopolitical considerations.

School Enrolment: The average school enrolment rate is 76.970, with a standard deviation of 19.19, indicating relatively high enrolment rates. In Europe, school enrolment rates are generally high, with many countries achieving near-universal enrolment in primary and secondary education. This comparison suggests that the countries in your dataset have made significant progress in education, approaching the high enrolment levels seen in Europe.

Income Inequality: The average Gini coefficient is 43.619, with a standard deviation of 6.722, indicating moderate to high income inequality. In Europe, Gini coefficients are generally lower, reflecting more equitable income distribution. For instance, Slovakia had a Gini coefficient of 20.9 in 2022, one of the lowest levels of income inequality. This suggests that the countries in your dataset experience higher income inequality compared to many European nations.

Health Expenditure Per Capita: The mean health expenditure per capita is 97.88 units, with a standard deviation of 135.819, indicating significant variation. In Europe, health expenditure per capita is generally higher. For example, in 2022, countries like Switzerland spent over $7,000 per capita on health, while others like Romania spent around $1,000. This comparison highlights that the countries in your dataset invest less in health per capita compared to European nations, which may impact health outcomes.

Corruption: The mean corruption score is 21.574, with a standard deviation of 15.623, on a scale where higher values indicate more corruption. In Europe, corruption levels are generally lower. For instance, Denmark consistently ranks as one of the least corrupt countries globally, with low corruption scores. This suggests that the countries in your dataset face greater challenges with corruption compared to European nations.

Democracy: The mean democracy score is -2.282, with a standard deviation of 21.727, indicating varying levels of democratic governance. In Europe, democracy scores are generally higher,

reflecting established democratic institutions. For example, countries like Norway and Sweden score highly on democracy indices, indicating strong democratic practices. This comparison suggests that the countries in your dataset may have less entrenched democratic systems compared to Europe.

4.6   Methodology and Model Specification

The data sources were used to create a panel dataset with 640 observations across 20 nations from 1990 to 2021. The dependent variables examined in this chapter are terrorism incidence and terrorism casualties. Terrorism, both Incidence and Casualties, is an over-dispersed count variable with high variability and many zero values, which contribute to its over-dispersion. Terrorism Incidence represents the annual frequency of terrorist actions in the twenty African nations, while casualties represent the count of every death and injury during each incidence. The substantial number of zeros reflects the fact that there were no terrorist occurrences in some years and regions, while the number of attacks varied greatly in others.

This irregular and unequal distribution emphasises the data's over-dispersed character. Over-dispersion happens when the variance of a variable is significantly greater than its mean, which is commonly caused by the presence of surplus zeros and infrequent high counts (Berk & MacDonald, 2008). Such a pattern is common in phenomena such as terrorism when occurrences occur infrequently but cluster together, resulting in high variability. Standard linear regression models are insufficient for this type of data because they assume constant variance and cannot adequately account for the high level of variability and clustering (Berk & MacDonald, 2008).

To accurately estimate the over-dispersed Terrorism Incidence data, statistical methods capable of dealing with this variability must be used. Models such as Poisson and Negative Binomial regression are suited since they allow the variance to surpass the mean, resulting in a precise fit and stronger inference (Hausman *et al.*, 1984; Kis-Katos *et al.*, 2011, 2014). Other methods like the multinomial logit and probit models have some major limitation when it comes to handling over-dispersed count data as they are not built to account for the unequal variance inherent in such data. As mentioned earlier overdispersion arises when the variance of the data exceeds the mean, a common occurrence in real-world count data, particularly in events that happen sporadically but with bursts in certain contexts. Neither multinomial logit nor probit models can directly incorporate a dispersion parameter to address this. Instead, these models assume independent and

identically distributed errors with constant variance, making them unsuitable for handling count data where the variance increases with the mean. This can lead to poor model fitness, biased parameter estimates, and incorrect inference.

Kis-Katos *et al.* (2014) suggested that the Poisson and Negative Binomial regression models are suited to managing the data's complexity and irregularity, particularly the fixed-effect negative binomial (FENB), ensuring that the analysis accurately reflects the nature of terrorist activities across nations and time periods. This has become the standard model in the empirical analysis of terrorism, given the nature of the data. These models are designed to handle count data, where the outcomes are non-negative integers (0, 1, 2, ...), and they can accommodate the non-linear relationship between the variables.

The Poisson Model (FEPM) is commonly used for count data. In the context of panel data, FEPM allows for the control of unobserved heterogeneity by introducing fixed effects, which account for time-invariant characteristics within the observational units (such as countries) (Wooldridge, 2010). It assumes the data follows Poisson distribution; a specific probability distribution commonly used for modelling the number of events occurring in a fixed interval. According to Berk and MacDonald (2008) a key assumption of the Poisson distribution is that the mean (average number of counts) equals the variance (variability in the counts). However, count data often exhibits overdispersion. This means the variance is greater than the mean, violating the core assumption of FEPM. Despite this, research by Hausman *et al.* (1984) suggests that FEPM can still provide reliable estimates (unbiased estimates converging to the true value) even with mild overdispersion. The problem arises when overdispersion becomes significant. In these cases, FEPM can underestimate the standard errors of the estimates. Standard errors reflect the spread or uncertainty around the estimated value. Underestimating them makes them appear smaller than they truly are, leading to two key issues. The estimates become less precise, with wider confidence intervals, which means the true value will likely fall within a larger range. Depending on the specific test used, the estimates might be skewed in a particular direction, leading to misleading conclusions (Hilbe, 2011).

Researchers have developed alternative models to address overdispersion. One such option is the Fixed Effect Negative Binomial Regression (FENB) (Hilbe, 2011). This model explicitly acknowledges overdispersion by including an additional parameter that allows the variance to

differ from the mean. By using FENB when overdispersion is substantial, researchers can obtain more accurate estimates and avoid drawing incorrect inferences from their data (Kis-Katos *et al.*, 2014).

Fixed Effect Negative Binomial Regression (FENB) addresses the limitations of the FEPM by allowing the variance to exceed the mean, thus directly modelling over-dispersion. This model assumes that the count data follow a Negative Binomial distribution, which introduces an additional parameter to account for the over-dispersion. The fixed effects in FENB control for unobserved heterogeneity, like FEPM, but the added flexibility in handling variance makes FENB particularly suitable for highly variable count data.

(Allison & Waterman, 2002; Greene, 2008) highlighted that FENB is more robust than FEPM in the presence of over-dispersion, providing more reliable standard error estimates and improving the accuracy of the coefficients, thereby making FENB a preferred choice in empirical studies where count data exhibit significant variability, such as terrorism incidents. Even with minor overdispersion, FEPM might be an excellent place to start when analysing count data. However, if significant overdispersion is expected, it is advisable to use a model such as FENB to get more precise estimates and prevent erroneous results.

On the other hand, while the Fixed Effects Negative Binomial (FENB) model offers some advantages, it has limitations. Allison and Waterman (2002) highlight that FENB allows parameters to vary across countries but does not account for unobserved factors specific to each country. These unobserved factors could be anything that consistently influences the outcome variable within a particular country but is not directly included in the model.

To address this issue, Allison and Waterman (2002) propose the Negative Binomial with Country Dummy (NBCD) model. This approach estimates a fixed effect for each country within the negative binomial regression framework. i.e., manually adding the fixed effect in the negative binomial regression, particularly adding a dummy variable for each country to the regression. This dummy variable captures the unobserved country-specific effects, essentially controlling for them and providing a more accurate picture of the relationship between the independent and outcome variables.

The advantage of the NBCD model over the FENB model is that it can more accurately capture the effect of country-specific characteristics, which can help reduce omitted variable bias and improve the accuracy of the regression analysis. For example, the FENB model underestimates the effect of certain policies in a certain country. A country may have certain policies that reduce crime as compared to other countries, even after controlling other factors. The NBCD model can control for this unobserved effect (policies) by including a country-specific fixed effect. Furthermore, the NBCD model can provide clearer and more meaningful interpretations of results by controlling for country-specific fixed effects and other confounding factors, which can help identify a particular variable's true effect on terrorism incidence or casualties.

The Negative Binomial with Country Dummy (NBCD) model is useful for analysing terrorism incidence and its determinants. To account for unobserved country-specific effects, we included country dummies in the Negative binomial regression model, making it (NBCD). These dummies represent the fixed effects of each country and control for unobserved heterogeneity that may exist between countries, which allows us to estimate the effect of the independent variables on terrorism incidence while holding constant country-specific effects.

To specify this model, we begin with the dependent variables--Terrorism Incidence and Terrorism Casualties. Next, we add a set of independent variables hypothesized to influence terrorism incidence and casualties. These include poverty, political instability, religious extremism, international linkages, and other relevant factors. It is important to choose variables with a strong theoretical justification and supported by empirical evidence is important.

This chapter employs a multi-pronged approach to estimate the determinants of terrorism. We begin with the Fixed Effect Negative Binomial Regression (FENB), which serves as a valuable baseline model. Negative Binomial with Country Dummies (NBCD) serves as the main model in the chapter as it effectively incorporates fixed effects for each country and the potential issue of overdispersion in count data. The Fixed Effect Poisson Model (FEPM) is also used as an alternative model.

The specification of the main model (NBCD) model can be written as:

$$Incidence_{it} = \beta^0 + \beta^1 Growthrate_{it-1} + \beta^2 Openness_{it-1} + \beta^3 Unemployment_{it-1}$$

$$+ \beta^4 FDI_{it-1} + \beta^5 Inflation_{it-1} + \beta^6 Militayexp_{it-1} + \beta^7 LiteracyRate_{it-1}$$

$$+ \beta^8 Inequality_{it-1} + \beta^9 Healthexp_{it-1} + \beta^{10} Democracy_{it-1}$$

$$+ \beta^{11} Regimedurability_{it-1} + \beta^{12} Corruption_{it-1} + \beta^{13} InstitutionalQuality_{it-1}$$

$$+ \beta^{14} Urbanization_{it-1} + \beta^{15} Log(Population)_{it-1} + \Delta_i + \varepsilon_{it} \qquad (4.1)$$

From Eq 4.1 where β_0 is the intercept term, β_1-β_{16} are the coefficients for the independent variables, $_{it}$ is the time-varying independent variables for each country $_i$ at time t, and $_{t-1}$ represent the previous year of each variable (Lagged Variables) to capture the effect of each variable from the previous year on the current incidence. $\Delta_{\_i}$ represents the country dummies, and $\varepsilon_{\_it}$ is the error term which captures the random error or unexplained variation in terrorism incidence that is not accounted for by the independent variables in the model. The other model used in this chapter follows the same model specification.

Economic and social phenomena often exhibit delayed effects, meaning that changes in key indicators or policies may take time to influence outcomes such as terrorism or other forms of political violence. To account for these delays, many studies include lagged independent variables in their models. This approach helps capture the gradual impact of changes in economic, political, and social conditions. For example, Freytag *et al.* (2011) used one-period lagged variables in their analysis of terrorism to better understand how socio-economic factors such as income inequality and institutional quality affect the likelihood of attacks over time.

Similarly, Kis-Katos *et al.* (2014) incorporated lagged variables to address endogeneity and capture delayed effects in their study on the origins of domestic and international terrorism. They found that changes in governance and economic conditions, such as shifts in corruption levels or unemployment rates, do not immediately influence terrorist activity but instead have a cumulative impact over subsequent periods. By including these lags, their analysis provided a more accurate representation of the relationship between socio-economic factors and terrorism risk.

Iheonu (2023) also emphasized the importance of lagged variables in studies on governance and security in Africa. His research demonstrated that improvements in institutional quality, such as reductions in corruption or better service delivery, take time to translate into tangible security outcomes. Lagged variables thus allow models to reflect real-world dynamics, where immediate effects are rare, and policy interventions may require years to fully manifest their intended impact. These examples illustrate how lagging key variables helps address both endogeneity and the inherent time delays in socio-economic processes.

Finally, Since the Negative Binomial model with country dummies (NBCD), which accounts for unobserved heterogeneity, does not directly address endogeneity, the System Generalized Method of Moments (SYSGMM) model is used in this research to handle this issue effectively. Endogeneity, caused by omitted variables, measurement errors, or simultaneity, can lead to biased and inconsistent estimates if not effectively managed. SYSGMM addresses this by generating internal instruments from lagged levels and lagged differences of endogenous variables, thereby mitigating correlation between the explanatory variables and the error term. Unlike the first-difference GMM model, which only uses lagged differences as instruments and may face weak identification when there is minimal within-panel variation, SYSGMM leverages both level and difference equations. This dual-equation system enhances efficiency and instrument strength by incorporating more information from both cross-sectional and time-series dimensions.

Consequently, SYSGMM is particularly useful when working with persistent variables or shorter time periods, offering more precise and reliable estimates than first-difference GMM. However, even as SYSGMM handles endogeneity effectively, it does not account for or handle over dispersed count data, a critical limitation that NBCD models are specifically built to address. Overdispersion, where the variance exceeds the mean in count data, can result in poor fit and biased estimates if ignored. Therefore, it is important to compare the results from both models in this chapter, as SYSGMM corrects for endogeneity while NBCD is better suited to handle over dispersed count data. This comparison helps provide a balanced assessment of the robustness and accuracy of the estimates across models.

4.7   Results and Discussion

This section provides an in-depth analysis of the empirical findings on the determinants of terrorism in Africa, using the Fixed effect negative binomial (FENB) as the baseline model,

negative binomial with country dummies (NBCD) as the main model, fixed effect Poisson Model (FEPM) as the alternative model and negative binomial with country dummies (NBCD) is used for the analysis of terrorism casualties as a dependent variable which serve as a robustness check for terrorism incidence. This section also presents robustness checks of investigating each classification of terrorism (Political, Religion, Ethnic and Undefined) (Kis-Katos *et al.*, 2014).

Table 4.3 Terrorism Regression Result

Variables	FENB	Poisson	NBCD	SYSGMM	NBCD (casualties)
Incidence $_{(t-1)}$	-	-	-	0.220*** (0.051)	-
Growth Rate $_{(t-1)}$	0.012*** (0.004)	-0.006 (0.004)	-0.0011*** (0.001)	-0.417*** (0.145)	-0.012*** (0.002)
Trade Openness $_{(t-1)}$	0.104 (1.115)	0.090 (0.791)	-1.399*** (0.274)	-19.741 (43.964)	-2.576 (2.318)
Unemployment $_{(t-1)}$	0.038* (0.021)	0.048 (0.073)	0.262*** (0.018)	1.814** (0.756)	0.148 (0.997)
FDI $_{(t-1)}$	0.008 (0.006)	-0.001 (0.006)	-0.008*** (0.002)	-0.385 (0.317)	-0.022 (0.166)
Inflation $_{(t-1)}$	0.001 (0.003)	-4.08×10^{-4} (0.002)	-0.001 (0.001)	0.026 (0.03)	0.11*** (0.030)
Military Expen pc $_{(t-1)}$	-0.001 (0.001)	-2.28×10^{-4} (0.001)	-0.002** (0.001)	-0.014 (0.028)	-0.014 (0.015)
School Enrolment $_{(t-1)}$	-0.222* (0.119)	-0.302** (0.129)	-0.296*** (0.031)	-4.516 (5.635)	-1.048* (0.620)
Inequality $_{(t-1)}$	0.045** (0.021)	0.035 (0.026)	0.059*** (0.004)	3.855** (1.927)	0.264*** (0.093)
Health $_{(t-1)}$	-0.004** (0.002)	0.001 (0.003)	-0.002** (0.001)	-0.034 (0.032)	-0.003 (0.003)
Democracy $_{(t-1)}$	-0.005 (0.003)	-0.010*** (0.003)	-0.001 (0.002)	-0.121 (0.13)	-0.009* (0.005)
Regime Durability $_{(t-1)}$	-0.004 (0.009)	-0.008 (0.009)	-0.006*** (0.002)	-0.323 (0.388)	-0.031 (0.052)
Corruption $_{(t-1)}$	-0.049*** (0.014)	-0.033 (0.03)	-0.029*** (0.007)	-0.194 (0.289)	-0.07** (0.035)
Institution $_{(t-1)}$	-0.123** (0.058)	-0.256* (0.145)	-0.071* (0.043)	-0.153 (2.309)	-0.531* (0.302)
Urban Population $_{(t-1)}$	0.005 (0.008)	-0.231 (0.150)	-0.016 (0.025)	-0.106 (0.21)	0.003 (0.028)
Population $_{(t-1)}$	0.159 (0.163)	2.05** (0.961)	4.470*** (0.894)	1.422 (2.091)	0.589*** (0.200)
Number of obs	542	542	542	562	542

Prob > chi2	0.000	0.000	0.000	0.000	0.000
Chi-square	85.38	116.04	214.02	296.88	107.57
Sargan Test	-	-	-	0.08	-
ABTest (1) (pvalue)	-	-	-	0.070	-
AB Test (2) (pvalue)	-	-	-	0.336	-

Note: Estimation results in column (1) to (5) represent the fixed effect Negative Binomial (FENB), Negative Binomial with Country Dummies (NBCD), fixed effect Poisson Model (FEPM), System Generalized Moment of Method (SYSGMM) and (Casualties which serve as another form of terrorism measure for robustness check) Respectively. *** p<.01, ** p<.05, * p<.10 values in bracket () are the standard error, (t-1) means Lag 1.

4.7.1 Terrorism Incidence

The results of the chapter are presented in Table 4.3 below, which includes five columns addressing the determinants of terrorism incidence and casualties. The first four columns of the table present the results of the analysis using FENB, FEPM, NBCD and SYSGMM while maintaining terrorism incidence as an indicator for terrorism. The last column "NBCD-Casualties" indicates terrorism casualties as the dependent variable while using NBCD model. Although this subsection will focus on the first four columns (FENB, FEPM, NBCD and SYSGMM), showing how the lagged values of the independent variables (including macroeconomic, socioeconomic, institutional, political, and demographic factors) influenced terrorism incidence. As previously mentioned, Economics and social factors often have delayed effects; changes in economic indicators or policies may take time to affect outcomes in the economy.

The FENB model, while often used for count data, differs substantially from the other models because it does not fully account for true fixed effects. This can result in biased coefficients when country-specific factors are influential. The NBCD improves on FENB by incorporating country dummies to control for these effects, leading to more reliable estimates of the impact of variables such as trade openness, unemployment, and school enrolment. FEPM, like NBCD, also manages over dispersed data effectively, providing consistent results across several variables. However, both NBCD and FEPM are limited by their inability to directly address endogeneity, which may explain differences in the significance and magnitude of relationships compared to SYSGMM. Ultimately, while SYSGMM is better suited for handling endogenous relationships, its lower efficiency with over dispersed data can undermine the precision of its estimates, making NBCD and FEPM more reliable for datasets with high variability. The choice of the most appropriate

model, therefore, depends on the balance between controlling for endogeneity and managing data dispersion.

4.7.1.1 Macroeconomic Variables

This subsection examined the relationship between macroeconomic variables and terrorism incidence. The incidence of terrorism in the previous period is significant with a positive coefficient (0.662) in the System Generalized Method of Moments (SYSGMM) model underscores the persistence of terrorism over time. This result is consistent with previous studies indicating that terrorism is often characterized by path dependence, where previous attacks increase the likelihood of future incidents. This persistence can arise from a variety of factors, including unresolved political grievances, the establishment of operational networks, or cycles of retaliation (Enders & Sandler, 2006). Regions like the MENA, where protracted conflicts such as the Israeli Palestinian conflict or civil wars in Iraq and Syria have occurred, terrorism often persists due to the presence of extremist groups, ideological networks, and unresolved security issues (Krueger & Laitin, 2008). These regions exhibit a cyclical pattern of attacks as armed groups maintain capabilities and continue to mobilize around long-term grievances.

Growth rate has mixed results. It is positively significant in the FENB model but becomes significantly negative in both the NBCD and SYSGMM models. This indicates that while initial models may suggest a positive association, more robust model reveal that economic growth potentially reduces terrorism risk, possibly by improving living standards and reducing grievances. This negative relationship means that an increase in growth rate is associated with a decrease in terrorism incidence. This result is consistent with existing literature and makes intuitive sense, as countries with higher levels of economic development tend to have more stable political systems, better social services, and greater opportunities for their citizens. These factors can reduce the likelihood of individuals turning to terrorism to express their grievances or achieve their goals.

Additionally, higher growth rate levels can indicate greater economic integration and cooperation with other countries, which may decrease the tendency for violence indirectly via trade gains. However, it is important to note that the relationship growth rate and terrorism is complex, and other factors may also influence this relationship. For example, some researchers have argued that

very high levels of inequality and economic disparity within a country can also contribute to the incidence of terrorism, even in countries with high levels of growth rate (Krueger & Maleckova, 2003).

Trade openness shows a negative relationship with terrorism in both the NBCD and SYSGMM models, though it is statistically significant only in the NBCD model. This suggests that, in models that account for country-specific effects, greater trade integration may reduce terrorism by promoting economic stability, increasing employment opportunities, and fostering interdependence among nations. The finding that openness has a negative and significant relationship with terrorism incidence and casualties has several theoretical implications. Firstly, it suggests that economic integration and trade can have a positive effect on security, by reducing the tendency for violence indirectly via trade gains. Secondly, it suggests that countries that are more open to trade and economic exchange may be less vulnerable to terrorism. Bandyopadhyay *et al.* (2014) study found that trade openness is associated with a lower incidence of terrorism, although they caution that this effect is likely to be small and contingent on other factors such as political stability and the quality of institutions. Trade openness can mitigate some of the economic and political grievances that often drive terrorist activity, particularly by reducing poverty and inequality in vulnerable regions (Blomberg & Hess, 2006).

Conversely, models that do not adequately control for fixed effects, such as FENB show a positive relationship between trade openness and terrorism. This could result from omitted variable bias, where unobserved country-specific factors such as weak institutions or political instability distort the relationship. In such contexts, increased trade may exacerbate vulnerabilities by exposing economies to external shocks, which in turn could heighten economic insecurity and political grievances, conditions that are conducive to terrorism (Li & Schaub, 2004).

However, in the context of many African countries, this positive relationship between trade and terrorism is less relevant. Trade relationships for most African nations are primarily with regions like the European Union (EU), where terrorism ideologies are less pervasive. The EU often promotes initiatives tied to economic development, governance reform, and social stability, reducing the potential for trade to fuel terrorism. Additionally, increased trade with major partners such as China and the EU has contributed to economic advancement in many African countries,

promoting infrastructure development, investment, and job creation (Collier & Gunning, 1999). These benefits help address the economic grievances that might otherwise increase the risk of terrorism.

For example, infrastructure projects supported by China, such as roads and energy projects across East and Southern Africa, have improved trade logistics and economic stability, indirectly contributing to a decline in violent activities. Similarly, the EU's trade partnerships through programs like the Economic Partnership Agreements (EPAs) have fostered more structured development and capacity building, leading to enhanced economic security and reduced vulnerabilities to extremist ideologies (Dollar, 2019; *Economic Partnerships*, 2025).

Unemployment is positively significant across all models except the Fixed Effects Poisson Model (FEPM), where it is not statistically significant. The positive coefficients suggest that higher unemployment may increase the risk of terrorism, aligning with theories that link economic deprivation to radicalization. This relationship has both theoretical and practical implications.

From a theoretical perspective, it supports the notion that economic hardship plays a crucial role in shaping individuals' decisions to join terrorist organizations. High unemployment can foster feelings of marginalization, hopelessness, and desperation, which extremist groups may exploit for recruitment. These dynamics are particularly pronounced in regions where there are limited social safety nets or alternative economic opportunities.

Empirical research corroborates this connection. For example, Abadie and Gardeazabal (2008) found that high unemployment is linked to an increased likelihood of domestic terrorism. Similarly, Gassebner and Luechinger (2011) demonstrated that unemployment and other economic factors are significant predictors of terrorist incidents across Western Europe. Their findings highlight the need for policy interventions that address unemployment and provide economic opportunities, particularly in areas vulnerable to extremist recruitment.

Foreign direct investment (FDI) shows a negative relationship with terrorism across models expect FENB, but this relationship is significant only in the NBCD model. This result suggests that FDI may reduce the risk of terrorism by promoting economic development, job creation, and improved infrastructure. FDI often brings capital, technology, and expertise, which can stimulate local

economies and create employment opportunities, thereby addressing some of the economic grievances that drive individuals toward extremism. This finding aligns with the broader economic theory that increased economic opportunity reduces the incentives for violence and crime, including terrorism. Countries that attract substantial FDI may experience a stabilizing effect through increased economic growth, which can reduce unemployment, poverty, and social inequality all of which are risk factors for terrorism.

In post-conflict African countries such as Rwanda, FDI in sectors like agriculture, tourism, and infrastructure has been a critical component of rebuilding efforts. By providing jobs and stimulating local business development, FDI has helped reduce the potential for the resurgence of violence and terrorism. For instance, investments in Rwanda's tourism sector, including projects such as eco-tourism and national park development, have provided economic opportunities in rural areas that might otherwise be susceptible to unrest (Nielsen & Spenceley, 2010).

Several studies support the link between FDI and reduced terrorism. Azam and Delacroix (2006) found that in developing countries, FDI can reduce political violence, including terrorism, by alleviating economic grievances. Similarly, Enders *et al.* (2006) concluded that FDI inflows were associated with lower terrorist activity in countries with robust economic institutions.

However, the relationship between FDI and terrorism risk is context dependent. In some cases, if FDI projects fail to distribute economic benefits equitably or displace local communities without adequate compensation, they can exacerbate tensions and even provoke violence. For instance, poorly managed resource extraction projects have sometimes led to protests and armed conflicts, particularly in regions with weak governance structures.

Inflation does not show significant effects in any model, indicating that price stability may not have a direct influence on terrorism. This finding suggests that other economic indicators might be more relevant in this context.

Military expenditure per capita exhibits a negative relationship with terrorism across all models, though it is statistically significant only in the NBCD. This suggests that increased defence spending may lower terrorism risk, possibly by enhancing a country's capacity to deter and combat terrorist activities. Higher defence expenditure can strengthen military capabilities, improve

intelligence gathering, and increase counter-terrorism operations, all of which may reduce the frequency and severity of terrorist incidents.

However, in countries with well-functioning institutions, increased military expenditure is often used effectively to enhance national security and stabilize regions affected by violence. Conversely, in countries with weak institutions or corruption, increased defence budgets may not translate into better security outcomes and could even fuel instability if funds are mismanaged or used for political repression. Nigeria provides a case study of how increased defence spending can influence terrorism risk. Over the past decade, Nigeria has significantly increased its military budget to combat the Boko Haram insurgency in the northeastern region. The government allocated additional resources to improve military logistics, acquire modern equipment, and train security forces. These investments, along with regional cooperation through initiatives like the Multinational Joint Task Force (MNJTF), have contributed to a reduction in large-scale attacks and recaptured territories previously held by Boko Haram.

However, challenges remain. Inadequate oversight and corruption within Nigeria's military have occasionally hindered the effective use of defence resources, highlighting the importance of institutional quality in determining the success of increased military spending on counter-terrorism efforts.

Empirical research supports the finding that increased military expenditure can reduce terrorism under certain conditions. For instance, Enders and Sandler (2006) argue that targeted defence spending can mitigate the risk of transnational terrorism by deterring attacks and strengthening law enforcement capabilities. Similarly, Feridun and Sezgin (2008) found that military expenditure had a significant negative effect on terrorism in Turkey, suggesting that enhanced security infrastructure can play a crucial role in reducing both domestic and international terrorist incidents.

On the other hand, research also emphasizes that excessive reliance on military solutions without complementary socio-economic policies may not address the root causes of terrorism. Studies such as those by Collier and Hoeffler (2004) indicate that balanced strategies combining security measures with investments in economic development and governance reforms are more effective in achieving long-term stability.

Overall, the subsection provides valuable insights into the relationship between macroeconomic variables and terrorism incidence, and the results are consistent with existing literature.

4.7.1.2   Socioeconomic Variables

The subsection of this chapter explains the results of the socioeconomic variables from Table 4.3 below. School enrolment is negatively significant in all models except SYSGMM. This robust negative association implies that higher education levels reduce terrorism risk, likely by promoting social stability, opportunities. Increased access to education can reduce individuals' susceptibility to radicalization by equipping them with skills for economic self-sufficiency and fostering critical thinking, which can counter extremist ideologies. For example, In Tunisia, which experienced significant unrest following the Arab Spring, education reforms aimed at reducing unemployment and promoting social inclusion have played a vital role in stabilizing the country. The expansion of vocational training programs and investments in higher education have helped to provide young people with alternatives to extremist movements. These efforts have demonstrated the potential for education to support long-term security by addressing the socio-economic roots of radicalization.

Krueger and Maleckova (2003) argue that higher education reduces the likelihood of terrorism by increasing human capital and improving economic opportunities. When people have access to education, they are better able to secure employment and participate in political and social institutions, reducing the appeal of violent solutions to perceived injustices. Conversely, in areas where educational access is limited, individuals may be more vulnerable to recruitment by extremist groups that exploit poverty and ignorance. Brockhoff *et al.* (2015) found that higher school enrolment rates are associated with lower levels of terrorism, particularly in countries with inclusive political institutions. Similarly, Abadie (2006) concluded that countries with higher literacy and education levels experience fewer terrorist incidents, as education fosters greater political engagement and social integration.

Inequality is positively significant in the FENB, NBCD, and SYSGMM models, indicating that higher income inequality is associated with an increased risk of terrorism. This finding aligns with the view that socio-economic disparities can foster unrest and violence by exacerbating divisions within society. Economic inequality can create conditions where marginalized groups feel

excluded from the benefits of economic growth and political power, leading to frustration and resentment. These grievances may drive individuals or groups to engage in violent behaviour as a way of expressing their discontent and seeking change.

The positive relationship between inequality and terrorism is well-documented in previous literature. Researchers have argued that when large segments of the population perceive themselves as disadvantaged or unfairly treated, the resulting socio-economic tensions can escalate into acts of violence. For instance, Fajnzylber *et al.* (2002) found that income inequality was positively associated with the incidence of civil conflict, which often has ties to terrorism. Their study demonstrated that higher levels of inequality increase the risk of violence and unrest, particularly in contexts where political institutions fail to address or mitigate economic grievances. Similarly, Abadie and Gardeazabal (2003) found that regions with greater income inequality were more likely to experience terrorist attacks, emphasizing the role of socio-economic imbalances in driving political violence.

In regions where inequality persists, individuals who feel marginalized may see terrorism as a means of voicing their opposition to the existing economic and social order. This phenomenon is particularly pronounced in areas with limited access to education, healthcare, and economic opportunities. Over time, such disparities can lead to the erosion of trust in state institutions, creating fertile ground for extremist ideologies to take root and for terrorist organizations to recruit members. As the empirical evidence suggests, addressing income inequality through policies that promote inclusive growth, social protection, and equitable access to resources may reduce the structural factors that contribute to terrorism.

According to the NBCD and SYSGMM model the health variable has a negative relationship with terrorism but only significant in the NBCD model, suggesting a weak but noteworthy association between health expenditure per capita and terrorism risk. This finding indicates that increased investment in health care may reduce the likelihood of terrorism, though the effect is not consistently significant across all models. Nevertheless, the negative coefficient in the NBCD model supports the idea that improved access to health care and better health outcomes can contribute to greater social stability and security.

The theoretical implication for this relationship lies in the role of health care as a key component of social development. Increased health expenditure can improve overall well-being, reduce mortality rates, and enhance the quality of life, particularly in underserved or conflict-prone regions. When people have access to reliable health services, they are less likely to experience the economic insecurity and social marginalization that can drive them toward extremist ideologies. Better health care can also lead to improved productivity, education, and long-term economic growth, all of which reduce the structural conditions that make societies vulnerable to terrorism.

This result is consistent with existing literature that links social development to reduced violence and terrorism. For example, Gaibulloev and Sandler (2008) found that investment in public services, including health care, lowers the likelihood of terrorism by promoting social cohesion and trust in state institutions. Similarly, Piazza (2006) concluded that higher levels of socio-economic development, particularly in health and education, are associated with fewer terrorist incidents. These studies suggest that terrorism is not only driven by ideological factors but also by socio-economic conditions that influence individuals' choices and opportunities.

4.7.1.3   Political Stability Variables

Examining the impact of political variables on terrorism incidence. Democracy and regime durability both exhibit negative relationships with terrorism across all models, indicating that higher levels of democracy and longer-lasting political regimes are associated with reduced terrorism risk. However, democracy is only statistically significant in the Poisson model, while regime durability is significant only in the NBCD model. These findings reflect the complex roles that political systems and institutional stability play in influencing terrorism incidence and casualties.

The negative relationship between democracy and terrorism can be theoretically explained through democracy's role in providing legitimate channels for political expression and representation. Democratic institutions allow citizens to voice grievances, engage in peaceful protest, and participate in decision-making processes, reducing the need to resort to violence. By offering these outlets for political engagement, democracies help prevent the buildup of frustration and resentment that might otherwise lead to terrorism. In contrast, authoritarian or non-democratic regimes often suppress political freedoms and civil liberties, stifling avenues for peaceful dissent.

Such repression can create conditions where individuals or groups feel compelled to use violence as a form of resistance. Empirical research supports this view. For example, Piazza (2006) found that countries with lower levels of democracy face a greater risk of experiencing terrorist attacks, emphasizing the role of political openness in mitigating violence.

On the other hand, regime durability defined as the length of time a regime has remained in power also has a negative relationship with terrorism, though it is only significant when casualties are used as the dependent variable. Stable and enduring regimes are often more effective at maintaining control over their territories, enforcing laws, and ensuring security. Their long-term presence may grant them greater institutional strength and legitimacy, allowing them to respond to grievances through peaceful mechanisms rather than coercion. By fostering trust between the government and the populace, durable regimes may reduce the appeal of terrorist organizations, which often thrive in environments of instability and weak governance.

Empirical evidence further supports the negative association between regime durability and terrorism. Freytag *et al.* (2011) found that increases in regime durability were linked to decreases in terrorist incidents in a study of 113 countries. Similarly, Kis-Katos *et al.* (2014) found a negative relationship between regime durability and terrorism in a sample of 96 developing countries, suggesting that long-standing regimes are better equipped to handle both security and socio-economic challenges. Krieger and Meierrieks (2019) also confirmed this negative relationship in a global study involving 168 countries, highlighting the importance of political stability in countering terrorism.

4.7.1.4 Governance Variables

Governance variable represented by Corruption and Institutional Quality are discussed in this subsection. Corruption exhibits negative relationships with terrorism across all models, with statistically significant results in the FENB and NBCD models. This suggests that lower levels of corruption are associated with reduced terrorism risk. The significance of these results aligns with theories emphasizing that governance quality, institutional integrity, and public trust play crucial roles in mitigating violence and extremism. When corruption is reduced, institutions are more

effective in maintaining law and order, allocating resources fairly, and addressing socio-economic grievances that could otherwise lead to radicalization.

The negative association between corruption and terrorism is particularly relevant when examined through a corruption index ranging from 0 to 100, where 0 represents a highly corrupt environment and 100 represents a very clean, corruption-free environment. As corruption scores rise indicating lower levels of corruption the incidence of terrorism tends to decrease. This implies that reducing corruption not only improves governance but also helps to dismantle the enabling conditions for terrorism. Corruption undermines a country's ability to maintain security and provide basic services, creating an environment in which terrorist organizations can flourish.

In Africa, where corruption has been a persistent challenge, its link to terrorism is especially pronounced. Corruption can hinder economic development by diverting resources from essential services and weakening state institutions. Corrupt officials may facilitate terrorist activities by accepting bribes to overlook suspicious behaviour or by providing access to critical information or supplies. This complicity establishes a breeding ground for terrorism, as extremist groups exploit grievances against corrupt governments to garner support. When citizens perceive the state as corrupt and self-serving, their trust in institutions erodes, making them more susceptible to radical ideologies. Terrorist organizations often frame their violent actions as a fight against corruption and injustice, using this narrative to recruit disillusioned individuals (Byman, 2019).

Empirical studies support the link between corruption and terrorism. For example, Mauro (1994) demonstrated that corruption undermines a government's ability to provide essential public goods and services, leading to widespread dissatisfaction and unrest. This breakdown in governance creates conditions that increase the likelihood of terrorism. Similarly, Piazza (2011) found that corruption contributes to economic disparity and political marginalization, both of which can drive individuals to terrorism as a form of protest and a quest for justice. These findings highlight how corruption exacerbates inequality, alienates marginalized groups, and weakens state capacity to respond to security threats.

The impact of corruption on terrorism extends to law enforcement and security operations. Resources that could be used to strengthen security measures are often misallocated due to corrupt

practices. Corruption within the security apparatus itself can further weaken anti-terrorism efforts. Officials may be bribed to ignore terrorist activities or even actively collaborate with extremist groups. This undermines both the effectiveness and credibility of law enforcement agencies, making it easier for terrorist organizations to plan and execute attacks.

Institutions exhibit significant negative relationships with terrorism across all models, except for the SYSGMM model where the relationship is not significant. The negative coefficients suggest that stronger institutions are effective in reducing terrorism risk. This result is expected, as institutional quality characterized by effective governance, openness, accountability, and adherence to the rule of law plays a crucial role in mitigating the conditions that foster terrorism. Good institutions increase public trust in government, reduce corruption, and provide equitable access to services and opportunities, thereby addressing grievances that might otherwise drive people toward extremist ideologies.

When citizens perceive their government as fair and just, they are less likely to support or engage in terrorist activities. On the other hand, in highly corrupt societies where governance is ineffective and officials exploit their positions for personal gain, public discontent often rises. This environment of mistrust and resentment provides a fertile ground for terrorist organizations to recruit and radicalize individuals who feel marginalized and powerless. Corruption undermines public services, creating socio-economic conditions such as poverty, unemployment, and inequality that extremists can exploit to gain support.

Strong institutions are also essential for implementing security measures and counter-terrorism policies effectively. Countries with robust institutions can allocate resources efficiently, maintain reliable intelligence networks, and foster collaboration among distinct levels of government and international partners. These capabilities enhance the ability to prevent and respond to terrorist threats. Additionally, good institutions promote economic development and social stability by advocating for policies that create jobs, reduce poverty, and promote equitable growth. When citizens have access to economic opportunities and social support, they are less inclined to resort to violence as a means of expressing grievances or achieving their goals.

Conversely, corrupt, or weak institutions often exacerbate socio-economic disparities, leading to heightened social unrest and vulnerability to terrorism. Terrorist groups thrive in environments where poverty, exclusion, and political instability are prevalent. They often use narratives of injustice to recruit individuals who feel abandoned by the state. In such contexts, improving institutional quality can be a key component of a comprehensive counter-terrorism strategy.

Empirical evidence on the relationship between institutional quality and terrorism is mixed. Some studies have found a clear negative association, while others have found no significant relationship or even a positive relationship in specific regions. For example, Kurrild-Klitgaard *et al.* (2006) found that higher levels of institutional quality were associated with lower levels of terrorist activity, particularly in developed nations with stable governance structures.

However, Braithwaite (2017) observed that in regions such as Sub-Saharan Africa, higher levels of democracy and institutional quality were sometimes associated with increased terrorism. This may reflect the transitional challenges faced by emerging democracies, where reforms aimed at improving institutional quality can provoke resistance or destabilization in the short term. [1]

4.7.1.5 Demography Variables

Urban population is not significant across all models but shows mixed results. The FENB and SYSGMM models reveal a positive relationship between urban population and terrorism, while the other models suggest a negative relationship. These contrasting results reflect the complex and context-dependent relationship between urbanization and terrorism, a topic that has generated conflicting findings in previous research. While some studies have identified a correlation between

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[1]**Multicollinearity**

In the appendix section of this chapter, table A.1, we estimate a multicollinearity test, which suggests a VIF value for all variables less than 10, with a mean VIF of 2.17, max of 4.9 by health expenditure per capita, and a min of 1.07 by past events. This means that there is no presence of multicollinearity among all variables used in this chapter. Therefore, all regression is estimated without the risk of multicollinearity distorting the result. Table A.2 shows another robustness check by estimating the NBCD model without Nigeria, as Nigeria can be picked as an outlier; the result remains fairly the same, with the significance level differing from variable to variable.

urban growth and terrorism, others have found no significant link, suggesting that the relationship is influenced by multiple interacting factors.

One explanation for why urban areas might experience higher risks of terrorism is the anonymity and social isolation they can provide. In densely populated cities, it is easier for individuals to remain unnoticed, which may allow extremist groups to operate and plan attacks without immediate detection. Urban environments also offer a wide range of potential targets, including government institutions, commercial centres, and transportation hubs. The concentration of these critical assets increases the strategic value of urban areas for terrorist activities, potentially making them more attractive targets.

Additionally, rapid urbanization can exacerbate socio-economic inequalities. Cities experiencing high population growth may struggle to provide adequate housing, jobs, and social services, leading to increased poverty and social unrest. Disparities in access to opportunities may create resentment among marginalized urban populations, which extremist groups can exploit for recruitment and support. In such contexts, terrorism may emerge as a response to perceived economic and political injustices, particularly in regions where state institutions are weak or perceived as corrupt.

However, it is also important to note that many terrorist attacks are not carried out by individuals living in urban areas. Some research suggests that terrorists often originate from rural areas or small towns, where limited access to education, employment, and political participation can foster radicalization. In these cases, terrorists may target cities due to their symbolic and strategic importance, but the root causes of their radicalization may lie in rural underdevelopment and marginalization.

Moreover, urbanization alone cannot fully explain variations in terrorism risk. Political instability, economic conditions, and unresolved social grievances also play critical roles. In some cases, strong governance, effective law enforcement, and economic development in urban areas can mitigate the risks associated with rapid urban growth. Conversely, in contexts where institutions are weak and unable to manage urban challenges, the risks of violence and extremism may be heightened.

Population shows a positive relationship with terrorism across all models, though it is only statistically significant in the Poisson and NBCD models. This suggests that higher population levels may increase the risk of terrorism, particularly in regions were rapid population growth strains economic and governance systems. In many African countries, for example, rapid population growth often outpaces economic progress, limiting job creation and access to essential resources. According to Baah-Boateng (2016), this dynamic disproportionately affects young people, who are frequently unable to find employment despite having higher levels of education than previous generations. Youth unemployment, combined with a lack of opportunities, can lead to frustration and disillusionment, making young people more vulnerable to recruitment by terrorist organizations. These groups exploit grievances by offering financial incentives and a sense of belonging and purpose to those who feel excluded from mainstream society.

In addition to economic pressures, large populations can exacerbate competition for scarce resources such as land, water, education, and healthcare. In countries with diverse ethnic and social groups, these tensions may escalate into intercommunal violence. Extremist organizations often take advantage of such conflicts by deepening existing divisions and using them to recruit members. For example, disputes over land rights and access to natural resources have contributed to the rise of violence in parts of the Sahel region, where extremist groups exploit local grievances to strengthen their influence.

Moreover, rapid population growth can overwhelm the governance capacity of many states, leading to widespread inefficiency, corruption, and declining trust in institutions. Governments struggling to meet the needs of a growing population may fail to provide adequate infrastructure, public services, and security. This creates an environment where terrorist organizations can operate with relative impunity. Under-regulated urban areas, including informal settlements and slums, are particularly vulnerable. These areas often lack effective law enforcement and governance, allowing extremist groups to conceal their activities, recruit members, and plan attacks.

Empirical evidence supports these findings. Studies on the relationship between population dynamics and terrorism have shown that regions with high population growth often face heightened risks of violence and instability. High youth unemployment, weak institutional capacity, and resource scarcity are key factors driving this relationship. Terrorist organizations

thrive in these conditions by exploiting the socio-economic and political vulnerabilities that result from rapid population increases (Baah-Boateng, 2016).

4.7.2   Robustness check

The subsection of this chapter is a crucial step towards comprehensively analysing the relationship between terrorism and various macroeconomic, socioeconomic, political, institutional, and demographic factors. This section considers series of robustness checks. First, by summarizing the result for the different proxy for terrorism known as Terrorism causalities, as indicated in Table 4.4 above in the fifth column, as well as conducting a robustness analysis check using the different terrorism ideologies as the dependent variables, we can gain insights into the unique characteristics of political, religious, ethnic, and undefined terrorism motives (Kis-Katos *et al.*, 2014). As indicated in Table 4.5, these classifications represent different forms of terrorism that require a nuanced understanding to develop targeted policies to address their specific driving factors. [2]

This subsection aims to provide a more comprehensive picture of the determinant of terrorism and how it varies across different contexts. Furthermore, it is important to note that understanding the nuances of terrorism is critical in developing effective counter-terrorism policies that not only respond to immediate threats but also address the root causes of distinct types of terrorism. Thus, this section is an essential contribution to literature on terrorism and its relationship with various socioeconomic, political, and demographic factors. This chapter also conducted other set robustness analysis (results presented in the Appendix section) using two lags and older years from 1970 – 2021.

4.7.2.1   Terrorism Casualties

Terrorism Casualties are the total number of deaths and injuries during a terrorist incident. This is an additional proxy (Variable Robustness Check) for terrorism utilized as a dependent variable and is included in Table 4.4 analysis results as "NBCD - Terrorist Casualties," It is evident from the above table that most of the results appear to correspond with the result of "terrorism

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[2] As part of the robustness check for this chapter, I performed an estimation using a lag of 2, which is presented in Table A.1 on page 275 of the Appendix. The results from this estimation confirm the findings obtained with a lag of 1, further validating the robustness of the analysis.

incidence." To this end, we present further explanation following result from Table 4.3 showing the analysis of the relationship between various variables and terrorism casualties in African countries.

The results for terrorism casualties show similarities in the relationship when compared to the results for terrorism incidence, but differences in the significance for each of these variables, indicating varying degrees of robustness across variables. For example, Economic growth has a significant negative relationship with terrorism casualties, suggesting that strong economic performance can mitigate the severity of terrorist violence. This finding aligns with theories that economic opportunities reduce grievances and discourage participation in terrorism.

Income inequality shows a significant positive relationship with both terrorism incidence and casualties, reinforcing the argument that socio-economic disparities contribute to increased terrorism risk. Inequality fuels grievances and perceptions of injustice, leading to both higher attack frequency and more severe outcomes.

Inflation shows a significant positive relationship with terrorism casualties but was not a significant predictor of terrorism incidence. High inflation can exacerbate economic insecurity and social unrest, potentially leading to more severe outcomes during terrorist events. This result implies that macroeconomic instability may increase vulnerability to extreme forms of violence even if it does not consistently drive attack frequency.

On the other hand, school enrolment and institutional quality have weak but significant negative relationships with terrorism casualties, while they are more consistently negative and significant for terrorism incidence. This suggests that while these variables may help reduce the likelihood of terrorism, their role in limiting the severity of attacks is less pronounced. Investments in education and institutional reform may be more effective at preventing terrorism altogether than reducing casualties when attacks occur.

Democracy exhibits a weak but significant negative relationship with terrorism casualties, consistent with its negative relationship with incidence in some models. This suggests that democratic systems, which provide avenues for peaceful political expression, may reduce both the likelihood and impact of terrorist violence, although the strength of this effect varies across models.

Similarly, corruption is negatively associated with both terrorism incidence and casualties, which highlights the importance of good governance in reducing terrorist activities and mitigating their impact. Corrupt institutions undermine law enforcement and service provision, creating an environment where terrorist groups can thrive. In both models, reducing corruption is linked to reduced terrorism risk, suggesting that improving governance is a critical strategy in combating both the occurrence and consequences of terrorism.

Population also shows a significant positive relationship with both terrorism incidence and casualties. High population growth can strain resources, create socio-economic tensions, and weaken institutional capacity, leading to an increased likelihood of both terrorist attacks and casualties. This consistency across models suggests that population pressures are a robust predictor of terrorism-related violence.

Conversely, some variables show no significant relationship with terrorism casualties despite being relevant for incidence. For example, trade openness, foreign direct investment (FDI), military expenditure, and health expenditure per capita were significant predictors of terrorism incidence in certain models but are not significant for casualties. This may indicate that while these variables influence the occurrence of terrorism, they do not directly affect the severity of attacks.

Using both casualties and incidence as proxies for terrorism provides a comprehensive understanding of how various socioeconomic and political factors affect terrorism. The consistency in the core findings across the models suggests that the relationships identified are robust. However, the variations observed in specific variables emphasize the importance of a multidimensional approach to studying terrorism. Casualties, serving as a proxy for the severity of terrorism, and incidence, reflecting the frequency of terrorist activities, together offer a robust framework for understanding the complex dynamics of terrorism. This dual-proxy approach enhances the validity of the results, ensuring a more nuanced and detailed analysis of the factors influencing terrorism in different contexts.

4.7.2.2 Terrorism Ideology

As discussed in section 4.4, the analysis of terrorism ideologies in this chapter builds on the research by Kis-Katos *et al.* (2014). The authors argue that terrorism should not be seen as a single, uniform phenomenon. They suggest that distinct types of terrorism may have distinct determinants

because terror groups address various grievances, engage in distinct levels of compromise, and face unique organizational constraints. This chapter uses four terrorism ideologies: religious (including both Islam and Christianity), political, ethnic, and undefined. This subsection examines the estimation results using the primary model for this chapter (NBCD), as presented in Table 4.4.

Table 4.4 Terrorism Ideology Regression Results (NBCD)

Variables	Political Model	Religion Model	Ethnic Model	Undefined Model
Growth Rate (t-1)	-0.191	0.005	-0.115	-0.254 ***
	(0.172)	(0.077)	(0.133)	(0.070)
Trade Openness (t-1)	-10.394	-9.374**	1.554	-3.889
	(6.818)	(4.509)	(3.607)	(2.543)
Unemployment (t-1)	-0.734	0.658***	0.067	-0.001
	(0.525)	(0.184)	(0.088)	(0.084)
FDI (t-1)	0.057	-0.090***	0.649**	-0.121**
	(0.061)	(0.028)	(0.280)	(0.057)
Inflation (t-1)	0.001	-0.023	-0.024	0.022
	(0.14)	(0.073)	(0.038)	(0.027)
Military Expen pc (t-1)	0.034	-0.153	0.028	-0.026**
	(0.045)	(0.148)	(0.023)	(0.013)
School Enrolment (t-1)	0.215	0.372	0.025	-0.137
	(0.999)	(0.708)	(0.740)	(0.454)
Inequality (t-1)	-0.460	0.440***	0.087**	0.142***
	(0.311)	(0.152)	(0.044)	(0.050)
Health (t-1)	0.035	-0.023 ***	-0.016	0.002
	(0.027)	(0.008)	(0.013)	(0.004)
Democracy (t-1)	-0.068**	-0.026 ***	0.007	0.005
	(0.030)	(0.007)	(0.037)	(0.011)
Regime Durability (t-1)	0.123***	-0.049	-0.011	0.031
	(0.035)	(0.104)	(0.051)	(0.032)
Corruption (t-1)	0.059	-0.021	0.041	-0.005
	(0.091)	(0.085)	(0.032)	(0.030)
Institution (t-1)	-2.149*	0.146	0.428	-0.102
	(1.221)	(0.794)	(0.455)	(0.386)
Urban Population (t-1)	-0.205**	-0.011	-0.022	-0.037
	(0.099)	(0.055)	(0.047)	(0.029)
Population (t-1)	1.821	1.788	-0.235	0.314
	(1.58)	(1.287)	(0.691)	(0.461)
Number of obs	489	489	489	489
Prob > chi2	0.012	0.002	0.001	0.000
Chi-square	51.218	62.086	63.288	76.827

Note: Estimation results in column (1) to (4) represent the results for the Negative Binomial with Country Dummies (NBCD) for the four terrorism ideologies, respectively. *** p<.01, ** p<.05, * p<.10 values in bracket () are the standard error. (t-1) means Lag 1.

4.7.3   Comparing Terrorism Aggregate and Terrorism Classification

The results reveal important distinctions in how distinct factors influence terrorism incidence based on ideological motivations political, religious, ethnic, and undefined. These distinctions

provide insights into the drivers of terrorism across African countries, where varying socio-political contexts shape the nature of extremist violence.

For terrorism driven by political ideology, democracy, regime durability, institutional quality, and urban population all show significant negative relationships with terrorism incidence. This suggests that strong, stable, and democratic institutions reduce the risk of politically motivated terrorism. For example, in Tunisia, the transition to democracy after the Arab Spring has helped mitigate political violence by offering more inclusive political participation and governance (Marks, 2019). Strong institutions foster trust and provide non-violent avenues for addressing grievances, reducing the appeal of terrorism. Similarly, urban population shows a negative relationship, indicating that well-managed cities with strong law enforcement and infrastructure are less vulnerable to political violence. In contrast, politically unstable or corrupt states like Sudan have experienced high levels of political violence due to weak governance and a lack of institutional resilience (Group, 2019).

In the religious terrorism model, trade openness, foreign direct investment (FDI), health expenditure per capita, and democracy all have significant negative relationships with terrorism, while unemployment and inequality show positive relationships. These results suggest that economic development and integration into global markets can reduce the appeal of extremist religious movements. Morocco, for example, has expanded trade and attracted FDI while investing in health and education, helping to curb religious extremism (Zoubir, 2020). Conversely, high unemployment and inequality provide fertile ground for radicalization, as seen in Nigeria, where Boko Haram has exploited economic marginalization in the northeastern regions (Onuoha, 2014). Investments in healthcare and improved governance may weaken the grip of extremist groups by addressing socio-economic grievances.

For ethnic terrorism, inequality shows a strong positive relationship with ethnic terrorism incidence, highlighting the role of economic disparities in exacerbating ethnic tensions. Additionally, FDI shows a surprising positive association with ethnic terrorism, suggesting that poorly managed or inequitable distribution of foreign investments can fuel conflict among ethnic groups. In Kenya, for instance, development projects in marginalized regions like the north have led to tensions between local communities and national authorities, contributing to violence by ethnic-based extremist groups such as the Mombasa Republican Council (MRC) (Mkutu, 2021).

Addressing such conflicts requires inclusive economic policies that distribute the benefits of FDI more equitably.

In the undefined terrorism model, economic growth, FDI, and military expenditure per capita are negatively associated with terrorism incidence, while inequality is positively significant. This indicates that a strong economy and robust security infrastructure reduce overall terrorism risk. For example, Rwanda has experienced significant reductions in violence as a result of sustained economic growth and well-organized security measures (Ansoms & Rostagno, 2020). The government's focus on economic development and military investments has helped maintain stability, despite past ethnic tensions. Conversely, countries like Mali, with high inequality and limited security infrastructure, remain vulnerable to terrorism from multiple sources, including ethnic and religious extremists (Bah, 2020).

Overall, these findings suggest that while the determinants of terrorism incidence and the drivers of specific terrorism ideologies (political, religious, ethnic, or undefined) share many similarities, even subtle differences are significant. This highlights the importance of treating terrorism as a heterogeneous phenomenon rather than a single, uniform issue, i.e. the case of one-size-fits-all strategy may not be effective. Kis-Katos *et al.* (2014) also emphasize this point in their research. Recognizing these distinctions is crucial for researchers and policymakers to develop more targeted interventions.

One notable finding is that foreign direct investment (FDI) has a negative relationship with terrorism incidence and an insignificant negative relationship with terrorism casualties. However, in the case of ethnic terrorism, FDI shows a positive relationship. This suggests that when foreign investors are perceived as disproportionately benefiting from local resources and exerting control over communities, it can provoke resentment and conflict among marginalized ethnic groups. In such cases, the economic presence of foreigners may exacerbate tensions rather than alleviate them.

In contrast, other forms of terrorism, such as those driven by political or religious ideologies, show more robust alignment with the general determinants of terrorism. Policies promoting democracy, reducing inequality, and fostering economic growth tend to have a stabilizing effect across these various forms of terrorism. However, tailored strategies are still necessary to address specific ideological motivations and local contexts. For example, combating political terrorism may require

strengthening institutions and political participation, while reducing religious terrorism may involve addressing socio-economic inequalities and improving access to education and healthcare.[3]

4.8   Conclusion and Recommendation

This concluding section summaries our research's key findings, emphasizing their implications and significance. Based on our analysis, we make targeted recommendations to address the identified issues and optimize future field practices.

4.8.1   Conclusion

This chapter examines the drivers of terrorism and addresses its different ideologies in 46 African countries. The empirical evidence is based on the negative binomial with country dummies (NBCD) to properly control any unobserved heterogeneity that may exist between countries, and the system Generalized Moment of method (SYSGMM) which handle endogeneity better, as well as the traditional Fixed Effect Negative Binomial (FENB) and Fixed Effect Poisson model (FEPM) as alternative models.

This chapter investigated several facets of terrorism and its relationship to economic, political, institutional, and demographic issues. The chapter discovered that a lack in the combination of these factors increases the chance of terrorism. Our findings indicate that African nations with higher growth rate, better trade openness, higher health expenditure per capita, and lower levels of unemployment and inequality are less likely to face terrorist attacks. These findings emphasise the importance of economic stability and equal resource distribution in averting terrorism.

Furthermore, we investigated the influence of democracy and regime durability in mitigating terrorism and discovered that both criteria considerably reduce the prevalence of terrorism. This emphasises the role of democratic institutions in fostering peace and stability. Democratic administration creates legitimate channels for political expression and conflict resolution, which reduces the attraction of violent extremism. Furthermore, stable administrations are better suited to maintaining order and addressing grievances that could otherwise rise to terrorism.

To mitigate the risk of terrorism, it is crucial to strengthen institutional quality by promoting effective governance, transparency, and adherence to the rule of law. Elevated levels of corruption significantly increase the probability of terrorism, but countries with robust institutions can counteract this threat. By ensuring accountability, openness, and fair governance, public trust in government can be bolstered, reducing the grievances that extremist groups exploit. Furthermore, strong institutions are better equipped to implement security measures and counter-terrorism policies, allocate resources efficiently, and foster economic development, which diminishes the appeal of terrorism. Targeted interventions are also necessary in densely populated areas and regions with a history of terrorism, where the risks are more pronounced. Therefore, enhancing institutional quality should be a cornerstone of any comprehensive counter-terrorism strategy, especially in regions vulnerable to corruption and social unrest.

We performed robustness tests of terrorism incidence using terrorist casualties, and the results were consistent with previous findings on terrorism incidence. Another rigorous test involved terrorism categories based on political, religious, ethnic, and undefined reasons, as proposed by Kis-Katos *et al.* (2014). The categorization and aggregate models consistently suggest that economic development, openness, decreasing unemployment, addressing inequality, supporting democracy, preserving regime stability, and reducing corruption are critical tactics for combating terrorism.

While categorization models provide precise information about specific types of terrorism, aggregate models validate these linkages and show broader trends. This integrated approach emphasises the multiple character of terrorism, as well as the importance of comprehensive strategies that address economic, political, and social aspects to effectively confront it. By addressing the core reasons and following these solutions, policymakers can create a safer and more stable environment, lowering the incidence of terrorism in African countries.

4.8.2   Recommendation

To effectively reduce both the incidence and severity of terrorism, a multi-faceted policy approach is essential. The findings in this research indicate that terrorism is driven by a combination of weak governance, socio-economic disparities, limited opportunities, and population pressures. These results align with insights from global organizations, including the World Bank and the United

Nations, which emphasize the need to address the underlying socio-economic and political conditions that foster terrorism.

The World Bank (2011) highlights that terrorism and violence are often rooted in weak governance, corruption, and inequality. Corruption undermines the state's capacity to provide security and public services, creating an environment where terrorist organizations can flourish. When institutions are seen as corrupt and self-serving, public trust erodes, and citizens become more susceptible to radical ideologies. Therefore, improving governance through measures that enhance transparency, accountability, and the rule of law is critical. Strengthened institutions can allocate resources more effectively, maintain reliable security operations, and foster cooperation with regional and international partners to prevent terrorism.

Economic instability and high unemployment, particularly among youth, are significant contributors to terrorism. Rapid population growth in many African countries has outpaced economic development, leading to a shortage of job opportunities. Disillusioned youth, facing limited prospects for upward mobility, are particularly vulnerable to recruitment by extremist organizations that exploit their grievances. Economic growth policies that emphasize job creation, entrepreneurship, and economic diversification are necessary to mitigate these risks. The Forum (2020) stresses that inclusive economic growth can reduce both poverty and violence by offering meaningful alternatives to extremism.

Education also plays a crucial role in reducing terrorism. School enrolment shows a significant negative relationship with terrorism in this study, indicating that investments in education can promote social stability and economic opportunity. Education not only provides individuals with marketable skills but also fosters critical thinking and resilience against extremist ideologies. UNESCO (2017) asserts that education is a powerful tool to combat the root causes of terrorism by promoting tolerance, inclusion, and civic engagement. Targeted educational programs in marginalized communities can further prevent radicalization by addressing socio-economic inequalities and exclusion.

Income inequality also emerges as a robust predictor of both terrorism incidence and casualties. Societies marked by severe inequality often experience heightened tensions and grievances, which can fuel political violence. Policies aimed at reducing inequality by expanding access to healthcare, education, and social protection can help address these underlying drivers of terrorism. The United

Nations Development Programme (UNDP) emphasizes that equitable access to resources and inclusive governance are critical to reducing vulnerability to violent extremism.

Population growth and urbanization present additional challenges. Rapidly growing urban populations can strain infrastructure, social services, and governance capacities, particularly in informal settlements and under-regulated urban areas. These conditions create opportunities for terrorist groups to recruit and operate covertly. Weak law enforcement and inadequate urban planning contribute to the inability of governments to maintain law and order in these areas. To address these challenges, policies should focus on managing population growth through family planning and urban planning initiatives while also strengthening governance in high-risk urban zones.

A coordinated approach involving multiple sectors is essential to address the complex drivers of terrorism. Governments must implement policies that simultaneously improve governance, promote economic development, reduce inequality, and expand access to education and social services. International cooperation is also critical to support capacity-building efforts and to foster regional stability. Partnerships with global organizations, civil society, and the private sector can enhance the effectiveness of these policies by ensuring that security, development, and governance efforts are aligned. By addressing these root causes, countries can reduce both the frequency and severity of terrorist attacks, leading to more stable and resilient societies.

Finally, while distinguishing between different ideologies of terrorism can offer detailed insights, the determinants of terrorism at an aggregate level are largely alike with the various ideologies, but with the existence of a little difference, policymakers should not be too confident that addressing the broader factors influencing terrorism will also impact the specific types. Without addressing these specific drivers, broad counter-terrorism measures may fail to produce lasting results in regions affected by ideological and socio-political divisions.

Chapter Five

5.0 Investigating the Spillover of Terrorism in Africa

5.1   Introduction

Due to the global reach of terrorism, it threatens not only endangers individual nations or regions but also has the potential to undermine worldwide security. The effects of terrorism transcend national boundaries, impacting not just the country where it originates but also neighbouring nations or whole regions, suggesting that a terrorist assault in Boston poses a danger to Washington, just as an incident in Brussels or Paris poses a threat to Berlin. It emphasises the interconnectedness of these cities, implying that harm inflicted on one city affects the others (Pham & Doucouliagos, 2017).

Nations may be closely interconnected not only by physical proximity but also through shared familial, linguistic, religious, and political ties. These connections can heighten security concerns for neighbouring countries, as the interplay of language, culture, and religion contributes to the transnational nature of terrorism. Families living on both sides of open borders, with common language and religion, facilitate communication and coordination between militants, enabling more effective cross-border operations. Amidst escalating violence, neighbouring countries often express heightened concern over the potential spillover of the crisis, which threatens their own security and stability due to their geographical proximity.

The Accra Initiative, launched in 2017 by West African countries Benin, Burkina Faso, Côte d'Ivoire, Ghana, and Togo, seeks to address the region's growing concern about violent extremism. This collaborative effort emphasises the importance of sharing information, training security and intelligence personnel, and assisting with cross-border military operations to combat the spillover of terrorism from the Sahel. The Islamist terrorists progressively expanded their activities from Niger to Burkina Faso and Mali to West Africa's coastal nations, with Mali and Niger initially serving as observers before becoming members in 2019 (Mensah, 2022).

The Accra Initiative's response is crucial due to the stark increase in terrorist activities in the region, including over 1,800 terrorist attacks in West Africa in the first half of 2023, resulting in nearly 4,600 deaths. Terrorism has also spread to coastal states like Benin and Togo, indicating a significant expansion of extremist activities (Mensah, 2022).

The growing number and spread of terrorist attacks highlight the critical need for a thorough investigation of terrorism spillover in Africa. The Sahel and West African regions are facing unprecedented security challenges, with a combination of terrorism, armed rebellion, and political instability fuelling a complex crisis. Mali and Burkina Faso, where jihadist groups leverage on local discontent and state weaknesses, aim to extend their influence across west Africa countries with similar trait (Guiffard, 2023). Understanding their strategies, impacts on both local and international populations makes international responses crucial for developing effective counter-terrorism measures and policies.

The Accra Initiative's efforts, which include joint military operations and the arrest of suspected terrorists, represent early steps towards regional collaboration. However, the ongoing increase in attacks and the expanding geographic scope of terrorism highlight the need for a more research and needed attention.

Also, Gürer (2017) mentioned that international cooperation is critical, as evidenced by the Accra Initiative's engagements and the dire statistics provided by regional officials. Collaborative efforts must be expanded and better integrated to address the multifaceted drivers of terrorism. The initiative's push for joint operations and intelligence sharing is a step in the right direction, but there is still an urgent need for a more proactive, unified, and strategic approach to effectively countering the emerging threat (Mensah, 2022).

While the world is focused on Ukraine, crises in the Sahel should also concern us Guiffard (2023). The Recent coups d'état in Western Africa, the arrival of Russian mercenaries, the withdrawal of French troops in Mali, and an overall spike in violence are all structural breaks in a deep crisis that has been going on for the last decade.

Understanding the spillover of terrorism in Africa necessitates a multifaceted research approach that considers political, social, and economic factors. This will aid in the development of comprehensive strategies that address the root causes of extremism while also ensuring long-term

peace and security throughout the region. The Accra Initiative is a crucial platform for collaboration, but success requires dedicated support from regional and international stakeholders.

It is imperative to comprehend the intricacies of how acts of terrorism frequently surpass national boundaries, hence underscoring the significance of comprehending the ramifications of terrorist activities in a particular country on its neighbouring nations. The analysis of spillover effects enables policymakers and academics to get valuable knowledge regarding the dissemination of terrorism, identify places that are susceptible to such activities, and formulate focused plans for prevention and counter-terrorist endeavours (Oando & Achieng', 2021).

This chapter employs Vector Autoregression Analysis (VAR), specifically the Impulse Response Function (IRF), to examine potential terrorism spillover effects across different African regions. Given the large number of countries in our dataset, we used (Phillips & Sul, 2007) club convergence method to group countries based on similar terrorism characteristics, resulting in three categories: High, Moderate, and Low terrorized regions. To validate this classification, Factor Analysis (FA) was used as a robustness check, yielding consistent results with the Phillips-Sul method. Additionally, Principal Component Analysis (PCA) was applied to reduce the dimensionality of these groups, creating a single terrorism variable for each category, which facilitated the time series analysis for VAR/IRF estimation. The chapter also introduces the influence of the Middle East to assess how African regions respond to external terrorism factors. This methodological framework forms the foundation of our analysis, offering a comprehensive evaluation of regional influences on terrorism dynamics. The results indicate that while terrorism spillover occurs from high-terror regions to moderate regions and from the Middle East to both high and moderate regions, there is a negative spillover into the low-terror region from other areas.

This chapter is organised as follows: the following sections begin with a literature review, followed by a discussion of empirical pieces of evidence. The data collection and methodology are discussed next, followed by the analysis of the data. The final sections discuss these results and conclude with recommendations.

5.2   Literature Overview

This section examines the current literature on the spillover effects of terrorism, highlighting the scarcity of studies that directly address terrorism's direct spillover and the use of Impulse Response

Function in identifying spillover in other aspects. The current body of research is particularly focused on the indirect spillover effects of terrorism on macroeconomic variables such as trade, income, and military spending in neighbouring nations. This section also discusses the channels of terrorism spillover.

5.2.1 Empirical Pieces of Evidence

There is a scarcity of literature covering the immediate spillover of terrorism. Specifically, there is hardly any literature on the direct spillover of terrorism from one region or country to the other, existing literature only investigated the effects of terrorism in one country spilling over to affect macroeconomic variables such as trade, income, military spending in neighbouring nations.

An instance can be found in the work of Pham and Doucouliagos (2017), used gravity model to examine the effects of terrorism spillover to trade in neighbouring countries, using more than 160 countries from 1976 to 2014, they found strong evidence that terrorist attacks in neighbouring countries significantly reduce bilateral trade. Each additional terrorist attack in a neighbouring country leads to an average reduction of about 0.013% in bilateral trade. Spillovers are relatively long lasting; on average, a terrorist attack in a neighbouring nation affects bilateral trade up to five years after the event. Moreover, even terrorist incidents with a small death toll (defined as zero or one death) have a significant adverse trade effect. Neumayer and Plümper (2016) used Poisson pseudo maximum likelihood estimator find that attacks on Western citizens in an Islamic country reduce tourism of both targeted and non-targeted Western tourists to that country and to other Islamic nations. De Sousa *et al.* (2009) estimate the spillover effect of terrorism using gravity model of trade for the bilateral imports data of the USA over the period 1993-2000. They find that the closer a country is to a source of terrorism, the larger the negative spillovers on its trade. An immediate way this can arise is through spatial growth spillovers, whereby an adverse income or growth shock spills over to neighbouring nations (Ades & Chua, 1997; Easterly & Levine, 1998). Using Two-stage least Square (2SLS) for a quarterly data from 1970 to 1988 for 12 OECD countries, Enders *et al.* (1992) found that terrorists have been successful in deterring tourism and that an incident in one country deterred tourism in neighbouring nations.

Oando and Achieng' (2021) examines the strategic importance of Africa on terrorism, particularly within the strategic objectives of Western nations. Although this chapter does not explicitly utilize certain approaches such as Impulse Response Functions (IRFs), The Dynamic Geographical

Durbin Model (DSDM) or Spatial Autoregressive (SAR) models offers valuable perspectives on the geopolitical dynamics and potential ramifications of terrorism in the given region.

Another pertinent scholarly article is titled & Terrorism and Military Expenditure in Africa: An Analysis of Spillover Effects Boly and Kéré (2022) examined the spillover effects of terrorism on military spending in Africa, using a Dynamic Spatial Durbin Model (DSDM). Their results show that the occurrence of terrorist attacks has both domestic and cross border effects on military expenditure (as a % of general government expenditure). Specifically, terrorism, whether it occurs in the home country or in neighbouring countries, leads to an increase in military spending. The increased military spending in an attacked country is consistent with reactive counterterrorism measures to deter future terrorist attacks, while the increase in military spending due to attacks in bordering countries is consistent with preventive counterterrorism measures.

Adamson (2021) looks at how deaths because of terrorism in one African country affect neighbouring countries and finds that smaller states are more likely to have spillover violence that kills more people than bigger ones. More evidence of diverse spillover effects is provided by Buhaug and Gleditsch (2008) who found that low-income areas in nations with lower incomes are far more likely to have internal conflicts than low-income areas in countries with relatively higher incomes. This suggests that violent conflicts tend to concentrate in certain areas. Poverty, religious divisions, hard terrain, and GDP per capita are all inversely correlated with violent disputes, according to the authors. Sorghum, cassava, soya, and yam production were all severely reduced because of the violence caused by the Boko Haram crisis in Nigeria, according to Adelaja and George (2019). Similarly, George *et al.* (2020) found that households lowered their intake of favourite foods and portion sizes because of violence from the Boko Haram insurgency.

When there is a security problem in one area, it may easily spread to other nations or even other regions. In West Africa, this is so. Terrorism is spreading from landlocked nations like Niger, Burkina Faso, and Mali to coastal states around the Gulf of Guinea, such as Togo, Cote d'Ivoire, Ghana, and Benin. Terrorist attacks have increased in all these nations during the last several years. According to the WACCE Report, terrorists are clearly reaching beyond the Sahelian nations that are landlocked (Van den Boogaard *et al.*, 2021). Terrorist organizations, rebel factions, and criminal networks have all contributed to a precarious and complicated state of security in West Africa throughout the last decade. The presence of terrorist groups in the area has been firmly

established by groups like the JNIM, ISGS, and Al-Qaida. While existing literature primarily examines the causes of spillover and the impact of terrorism spillover on various macroeconomic factors in both domestic and foreign settings, there is a noticeable gap in understanding the direct effects of terrorism spillover on both home and international countries based on either border proximity and shared economic or religious commonalities.

5.2.2   Impulse Response Function for Spillover

It is crucial to acknowledge that conventional techniques such as regression analysis, analysis of time series, and spatial econometric models (such as the DSDM discussed earlier) have frequently been utilized to investigate the occurrence of spillover effects in diverse fields, including the field of terrorism study as mentioned above. Although there may be variations in the methodologies utilized in numerous studies, both conventional approaches and techniques such as Impulse Response Functions (IRFs) and Spatial Autoregressive (SAR) models play a significant role in enhancing our comprehension of the spread and consequences of terrorism beyond African borders.

In this chapter, we group countries based on their terrorism-related similarities using Phillips and Sul (2007) club convergence, and then use the Impulse response function to identify potential spillovers. There is currently no literature that uses these statistical methods to identify spillover in the context of terrorism, but it has been used in other areas such as housing, energy, and growth.

An instance can be found in the work of MacDonald and Taylor (1993). The study used a vector autoregression (VAR) model and impulse response functions to estimate the house prices Impact of price shocks in one region on house prices in other regions. The study found a ripple effect but did not investigate the underlying causes. Also, Forbes and Rigobon (2002) employed VAR models to investigate the spillover effects of financial shocks across different countries.

Montagnoli and Nagayasu (2015) use quarterly data from the Lloyds Banking Group from 1983 to 2012 on twelve UK regions and use the log t-test, as proposed by Phillips and Sul (2007) to test for regional house price convergence, revealing the existence of four distinct convergence clubs in the UK housing market. This finding suggests an elevated level of heterogeneity and calls into question the concept of a single, uniform national housing market.

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Furthermore, the study finds that these convergence clubs are distinguished by their house prices rather than their geographic proximity. The researchers used a Vector Autoregression (VAR) model to investigate the spillover effects between regions. Their analysis reveals substantial regional spillover, with London having a significant impact on other areas, confirming the existence of a "ripple effect." Notably, the impact of this effect decreases with increasing distance from London and varies between convergence clubs, highlighting the complexities of the UK housing market.

Tomal (2020) investigated the presence and impact of spillovers among various house price convergence clubs in Poland's housing market. The club convergence methodology is used to identify distinct groups (clubs) of cities that exhibit similar house price trends over time, allowing for the comparison of localized versus more widespread market dynamics and then uses impulse response functions (IRFs) and a Spillover Index to quantify and analyse the magnitude and direction of spillovers across various house price convergence clubs. The study's findings indicate that there are significant spillover effects in the Polish housing market.

Gong *et al.* (2021) uses the Time-varying Parameter Vector Autoregressive with Stochastic Volatility (TVP-VAR-SV) model to investigate the spillover effects between the carbon and fossil fuel markets. Their findings show that there are weak but significant spillovers, with the coal market having the greatest influence on the carbon market, and that these effects typically last three weeks.

Huidrom *et al.* (2020) use a Probabilistic vector autoregression model to investigate spillovers from the seven largest emerging markets (EM7), finding that a 1% increase in EM7 results in significant increases in the growth rates of other emerging and developed markets, albeit less so than G7 nations. China is identified as having the most significant spillover effects among the EM7.

Antonakakis and Badinger (2016) examine the G7's production growth and volatility, discovering a strong correlation between the two and identifying the United States as a major source of economic shocks during the global financial crisis, with mixed spillover effects on growth and volatility.

5.2.3   Channel of Spillover

Recent events, including the disintegration of the G5 Sahel, the departure of the French anti-terrorism force, and military coups in Burkina Faso and Mali, worsened West Africa's security crisis. Between July and September 2022, the area had 264 terrorist incidents, resulting in 745 fatalities (Marie *et al.*, 2021). Even Ghana, a country noted for its peaceful coastal setting, has seen an increase in terrorist activity near its northern border. Extremist organisations such as ISGS and GSIM have had a foothold in northern Ghana's Cascades area since 2021, using it as an "ideal fallback region" for their activities. In 2019, the Western African Association for Peacebuilding (WANEP) identified 189 unauthorised entrance locations along the Burkina Faso-Ghana border. Furthermore, French forces participating in the "Barkhane Operation" discovered that detained terrorists' mobile phones had Ghanaian area codes (Marie *et al.*, 2021).

In response to these dangers, efforts such as the Accra Initiative have been established to encourage cooperation. These measures prioritise exchanging crucial information, training security and intelligence professionals, and assisting cross-border military operations to stop the spread of terrorism. Given this background, understanding the pathways via which terrorist spillover happens is critical. These pathways include the physical spillover channel, the involvement of organised crime, and the political spillover channel.

5.2.3.1   Physical Spillover Channel

Despite attempts are being made to address these challenges, it seems that they are insufficient to keep northern Ghanaian territory from becoming a breeding ground for terrorists. Several reasons contribute to this vulnerability, including unresolved ethnic conflicts, impassable roads, inadequate healthcare and educational facilities, a shortage of safe drinking water, and significant young unemployment. In 2021, a Ghanaian suicide bomber linked with JNIM made a video asking his fellow citizens to revolt against the Ghanaian government (Iocchi, 2020). This event, among others, highlights the ethnic component of Ghana's extremist danger and the growing number of Ghanaians recruited by JNIM terrorist organisations.

Terrorist activity has also increased in northern Togo. Côte d'Ivoire, another coastal country, saw its first significant terrorist assault in March 2016 with the Grand Bassam incident, which killed at least 19 people. Since then, terrorism has been a major issue in the nation, but at a slow pace. In

recent years, the Gulf of Guinea's coastline republics, notably Guinea, Benin, and Ghana, have emerged as important recruitment grounds for terrorist organisations such as MOJWA.

Inadequate governance, security gaps, and community tensions provide ideal habitat for terrorist organisations. The northern areas of these countries are particularly at danger, as is Guinea's eastern half. Discontent among border people is a critical weakness that terrorist organisations use to win local support and influence. Insurgency, widespread unhappiness with the government, and a lack of economic prospects and livelihoods are the main components in the extremists' "sweet spot" (Moyo & Nshimbi, 2019).

Furthermore, the movement of refugees and internally displaced individuals (IDPs) escaping war zones may unintentionally aid the physical spread of terrorism. These groups often cross borders into neighbouring nations, bringing not just humanitarian needs but also security concerns. Terrorist organisations may infiltrate these movements and use the disarray to create footholds in new regions. The porous nature of West Africa's borders, with multiple uncontrolled entry points, exacerbates the problem, enabling terrorists to travel freely and avoid detection.

5.2.3.2   Role of Organised Crimes in Spillover

Criminal organizations that deal in illegal goods, people trafficking, and smuggling often find methods to include terrorists in their existing networks. The fact that criminal organisations and pirate bands operating in the Gulf of Guinea would link up with terrorist training camps is expected given their proximity to the coast (Moyo & Nshimbi, 2019).

It is now public knowledge that the nations in the Gulf of Guinea are under terrorist danger, and measures are being taken to combat this. As an example, the United Nations Secretary General's report from November 2022 titled "Situation of piracy and violent theft at sea in the Gulf of Guinea and its fundamental causes" examined the potential connections between the Gulf of Guinea's criminal networks and terrorism in West Africa, Central Africa, and the Sahel. The report revealed that no concrete evidence could be found to support any such links. Terrorist camps in the Sahel have not yet acquired the means to set up shop in coastal regions, it said (Pieri & Zenn, 2016).

The littoral nations of the Gulf of Guinea face danger from terrorism, particularly considering the recent assaults and operations that have targeted them. Additionally, as noted in the UN study,

there is a possibility of links between pirate organisations and terror camps in West Africa. It is not entirely possible to exclude the possibility of terrorist attacks at sea in the area. This problem needs a proactive response from the global community (Makkonen & Williams, 2016; Moyo & Nshimbi, 2019).

It is imperative that we tackle Makehe root causes of extremism in West Africa. It is necessary to empower government institutions and build resilient populations in addition to enabling and improving security infrastructures in the area. Combating terrorism should not be the only goal of international assistance. It is obvious that the effectiveness of such assistance is low. The countries of Burkina Faso, Chad, Mali, Mauritania, and Niger formerly known as the G5 Sahel serve as prime examples (Van den Boogaard *et al.*, 2021).

When Mali pulled out of the G5 Sahel Force, it weakened regional counter-terrorism initiatives. The situation has only worsened over the last decade, despite several regional and international entities increasing their military presence and providing more assistance. The reason for this is that contrary to widely held belief, the main problem in West Africa is not terrorism or Islamist militancy. Socioeconomic disparities worsen the underlying problems of bad governance. Local government institutions and people's living situations should be the primary targets of international help (Van den Boogaard *et al.*, 2021).

The points of access to these terrorist organizations would be significantly reduced if these structural and socioeconomic weaknesses were addressed. About a day's journey from Accra, the coastal capital of Ghana, is the market town of Bawku, tucked away in a corner of the country's most northeastern area. The separation between the two locations, however, is more than just physical. Rural Bawku has become a hotbed of unrest as a long-running dispute over the town chief's legitimacy heats up, in contrast to Accra's vibrant culture, vibrant nightlife, and constant flow of visitors. West African and allied governments are debating the possibility that the Islamist militants causing mayhem in the semi-arid Sahel region south of the Sahara may spread to the more tranquil coastal nations of Benin, Ghana, Togo, and Côte d'Ivoire (Moyo & Nshimbi, 2019).

Stability in the area is at risk. France, Türkiye, and China are among the countries that have invested in West African coastal nations because of their strategic location, worldwide influence, and importance to European shipping routes. If the violent outbursts escalate, the threat might move south, then creep north, and eventually approach Europe (Moyo & Nshimbi, 2019). There

is an ongoing danger of random assaults on inhabitants and police stations in the northern Benin border towns. In December, an IED killed two troops stationed in the village of Karimama, close to the border with Niger. Insurgents have long used the vast W-Arly-Pendjari Complex network of national parks and protected areas spanning Benin, Niger, and Burkina Faso as a conduit for smuggling; in 2022, a bombing at night claimed the lives of nine persons. The parks, which are part of a larger UNESCO World Heritage site, are no longer open to the public, but hotels in the city of Benin, Cotonou, continue to promote them as an attraction. Al-Qaeda affiliate Jama'a Nusrat Ul-Islam wa al-Muslimin and other armed militants have been implicated by the Beninese military. Thousands have died and millions have been forced from their homes by JNIM, a major rebel organisation in the Sahel. Ten per cent of Burkina Faso's population more than 2 million people have been displaced because of violence associated with JNIM and the Islamic State Sahel. Their Neighbours to the west in the Gulf of Guinea have been pleading with their European and American friends to send troops to shore up security while they deal with the aftermath of the epidemic and the interest on their loans.

In recent years, the instability in the Sahel region has intensified because of military coups in many nations that were formerly French possessions. At the same time, military juntas in Mali, Burkina Faso, and Niger have taken advantage of the growing anti-French feeling among the local populations to oust France's forces from those countries. It has created an opening that insurgent groups may use to their advantage since they have shown remarkable resilience during the last decade of fighting against national forces backed by France and the European Union (Moyo & Nshimbi, 2019)

In a bid to halt the flow of Islamist bloodshed, governments throughout the area are becoming more desperate, which has led to the involvement of Russian mercenary organisations. Benin, Burkina Faso, Ghana, Côte d'Ivoire, and Togo are all part of the Accra Initiative, which the European Council on Foreign Relations describes as an effort to "address international organised crime and violent extremist groups in member countries' border areas" and stop the spread of violence from the Sahel to the coast. In response to the instability in their northern regions, some nations have begun sending many police and staff there. Rwandan soldiers have engaged militants in Mozambique, and Benin has agreed to provide military assistance to them as part of a military

cooperation pact. Although a force deployment is in the works, the exact timing of the arrival of Rwandan soldiers in Benin remains uncertain.

Once the Qaddafi regime fell and Libya's political and security situation worsened, Algeria took Centre stage as a peacemaker in the Sahel-Maghreb region. Its goals include stabilising neighbouring Libya, Tunisia, and Mali, as well as securing the Sahel region through joint armed forces and security coordination. In general, the outcomes of Algeria's actions have been unpredictable. To this day, many wonder whether the nation has what it takes to be a major player in the Maghreb-Sahel region. It is possible that Algeria's efforts may be hindered by the constantly shifting geopolitical landscape and unstable security situation in the Sahel area. Furthermore, it is essential to consider one additional crucial factor. Over the last decade, Morocco has strengthened its position in the Sahel by embracing a soft power strategy as an alternative to Algeria's mostly "hard" counterterrorism approach, therefore challenging Algeria's historical dominance in the region. The reorganisation of a regional security structure to address terrorist threats in the Sahel-Maghreb area is impeded by the rivalry between these two nations.

Algeria has been under constant danger to its national security for the last fifteen years due to regional instability and terrorist organisations stationed on its borders. Algeria has long been interested in the securitization and stabilisation of the Sahel-Maghreb region due to its shared history of social and ethnic links with Mali and its 1,300 km (about 807.78 mi) border with the country. In its fight against criminal networks and terrorism, state authorities have chosen a hybrid approach, combining diplomatic and military measures.

Beginning with the 2009 "Tamnrasset plan" that the so-called pays du champ (Mauritania, Algeria, Niger, and Tamanrasset) signed, a joint military operations centre called Comité opérationnel conjoint des chefs d'état major (CEMOC) was established in Tamanrasset in 2010, and a joint intelligence unit called Unité de Fusion et de Liaison (UFL) was established in Algiers the following year (Radil, Castan Pinos, & Ptak, 2021).

This endeavour was the first of its kind in the Sahel area, and it aimed to construct a security architecture with an operational component. According to Algerian officials, the pays du champ doctrine is about empowering neighbouring countries to handle regional security issues on their own. Any cooperation effort from the US or EU should thus focus on targeted activities, such as providing training, logistical support, and intelligence (Radil, Castan Pinos, & Ptak, 2021). While

the model of cooperation among CEMOC member states in assessing security threats and dividing up border management duties is commendable, the initiative has failed to produce any noticeable results so far due to the main roadblocks being the absence of trust between participants and the incapacity to combine military forces (Moyo & Nshimbi, 2019).

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Establishments such as the Comité opérationnel conjoint des chef's d'état major (CEMOC) in Tamanrasset (2010) and the Unité de Fusion et de Liaison (UFL) in Algiers (2011) followed the 2009 "Tamnrasset plan" which the referred to as pays du champ (Mauritania, Algeria, Niger, and Tamanrasset) signed. This endeavour was the first of its kind in the Sahel area, and it aimed to construct a security framework with an operational component (Bach, 2015).

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EU should thus focus on targeted activities, such as providing training, logistical support, and intelligence. While the model of cooperation among CEMOC member states in assessing security threats and dividing up border management duties is commendable, the initiative has failed to produce any noticeable results so far due to the main roadblocks being the absence of trust between participants and the incapacity to combine military forces (Moyo & Nshimbi, 2019).

There was a lot of continuums between colonial and postcolonial nations in Africa because newly independent states lacked the motivation and resources to question the social contracts put in place during colonialism. In response to the growth of informal commerce, governmental institutions failed miserably in providing the public benefits promised by revenue and instead created regulations without really enforcing them. Smuggling became the backbone of the parasitical economy that emerged in the second part of the twentieth century, making it difficult for countries in the area to work together economically and for policies to be harmonised across borders (Bach, 2015). It also facilitated the international mobility of violent actors and the spatial expansion of political violence, highlighting the inherent duality of African borders as potential opportunities and risks for both state and non-state actors (Brambilla & Jones, 2020).

There has been a lot of overlap in the recent history of Boko Haram and ISWAP. Following a series of significant offensives carried out under the auspices of the MNJTF in 2015, Boko Haram shifted their assaults from Northeastern Nigeria to neighbouring Chad, Cameroon, and Niger in response to mounting pressure from government troops (Dowd, 2017). In Central Africa, the Lord's Resistance Army (Makkonen *et al.*, 2020) followed a similar pattern. Originally from northern Uganda, the Joseph Kony-led group began attacking neighbouring countries in the DRC and CAR in the late 2000s, after a string of failed joint military offensives (Schomerus, 2021). The LRA has been around since the mid-1980s when it began as a revolt in northern Uganda against President Yoweri Museveni's administration. The organisation has been able to stay in power because of its strategic and opportunistic exploitation of borders and borderlands. Many anti-terrorism efforts, both domestic and international, have failed throughout West African history. In particular, the Malian government established and supported community-based militias that are still in operation today to quell the Tuareg uprisings that occurred in the country's northern region throughout the 1990s and 2000s.

Even though community-based militias have been an integral part of Malian counter-terrorism efforts in recent years, these groups have exploited their governmental connections and support to further entrench themselves in criminal networks and to undermine established social and political hierarchies in the north of the country (Meagher, 2014). The disastrous results of these anti-terrorism campaigns are now causing unease amongst communities in West Africa.

The influence of Al-Qaeda and the Islamic State in the Sahel is growing, with the group strengthening its grip in Burkina Faso and Mali and spreading to Nigeria, Benin, Togo, Ghana, and even approaching the borders of Guinea and Senegal. Al-Qaeda and the Islamic State in the Sahel tend to recruit more members by playing on pastoralist grievances and other forms of inter- and intra-community animosity. This has complicated national and regional security (Moyo & Nshimbi, 2019).

In addition, jihadists have crafted and used a compelling narrative about safeguarding communities. Their "governance kit" includes provisions for economic assistance, physical defence against "aggressors," such as governments and paramilitary groups, and justice. In reaction to injustices such as land degradation, inadequate services from the government, and predatory governmental techniques, jihadists legitimately reinstate the rights of certain communities to engage in both lawful and illegal activities once again (Raineri & Strazzari, 2015; Strazzari, 2015). The presence of Islamist armed organisations, self-defence groups, and community-based militias is well-received by residents in eastern Burkina Faso, according to a field study. This is because these groups restore security and economic operations.

Paramilitary forces in counter-terrorism policies cast doubt on the state's ability to ensure and enforce security on its territory. To combat terrorism, some administrations and their main foreign allies have depended on community-based responses; yet this approach has resulted in long-term drawbacks. There was a lot of pressure on the Burkinabe government to fix the country's eastern and northern security issues after the coup in October 2014 (Strazzari, 2015). In response to the central government's ineffective attempts to ensure peace and security in various regions, 4,000 self-defence groups known as "Koglweogo" or "defenders of the bushland" comprising about 45,000 men rose. Koglweogo's official mission was to combat crime, but its members frequently applied justice in an arbitrary manner. As a result of the atrocities committed by Kogleweogo, which are mostly linked to Burkinabe Mossi, tensions are rising among other populations.

In 2020, the Burkinabe state decided to form the VDP self-defence organisation to reassert its authority over regional self-defence groups (Thurston, 2020). Governments give in to the armed groups' criminal, nefarious, and violent tendencies when they do not rein in these paramilitaries. Up to this point, VDPs' activities have been mostly unregulated and uncontrolled, and they are often blamed for serious abuses against civilians. There have been reports of arbitrary civilian massacres in Fulbe villages because of the rerouting of military raids by the Wagner mercenaries to eliminate potential terrorist affiliates. The Dogon militia Dan Ambassogou has been responsible for the deaths and robberies of thousands of Fulbe civilians since its establishment, with support from various branches of the Malian state.

Communities like the Fulbes and Tuaregs are singled out by local governments as a political danger and a major source of jihadist recruitment, which in turn fuels inter-communal violence. Concurrently, intercommunal violence has increased due to the proliferation of state-backed defensive strategies militias, which were established to address national security vulnerabilities and eliminate the terrorist threat (Radil, Irmischer, & Walther, 2021). Terrorists' use of Fulbe members has led to sweeping assumptions and has made them an even more attractive target for jihadist recruiters (Aluede, 2019). These discourses have helped stigmatise Fulbe cultures as being "pro-terrorists," even if the strategy's effectiveness appears to be limited (Napoleoni, 2017).

When it comes to this, the situation in Burkina Faso is revealing and has the potential to spill over into neighbouring nations. A new sub-regional terrorist growth focus is emerging in Burkina Faso's eastern area, which borders Benin, Togo, and Niger. It is possible that jihadists in Benin, Togo, and Ghana are taking advantage of the Fulbe community's social and political status to spread insurgency and terrorism beyond Burkina's eastern region (Alusala, 2019). The Fulbe people in these countries are pastoralists, and they face systematic hostility from the country's agricultural and agropastoral populations. Fulbe herders have been impacted by local officials' explicit opposition to unrestricted pastoral migrations. For pastoralists to become sedentary, Benin has even established a high commission (Thurston, 2018).

The authorities in the Gulf of Guinea are making the same mistakes they did in the Sahel, which could lead to the same disastrous outcomes. Much like Mali and Burkina Faso, Togo and Benin have largely ignored the dynamic interaction of economic, religious, and social elements when dealing with the jihadist threat, and this has had a disproportionately negative effect on community

harmony (Anwar, 2024; Debrah, 2021). As an example, the Fulbe community in Northern Togo was allegedly mistakenly targeted by military operations. Five individuals, including two children, were killed and more than 1,500 were displaced in July 2018 in Benin because of an assault on Fulbe pastoralists.

5.2.3.3   Political Spillover

When studying political instability linked to communal differences, Guinea and Cote d'Ivoire provide exemplary cases. Following Alpha Condé's inauguration as president and the events leading up to the 2013 legislative elections, which influenced the Fulbe community, current developments in Guinea imply that political ambitions may escalate inter-community hostilities in the future. Cote d'Ivoire's national socio-political dynamics are characterised by pervasive political animosity that stems from underlying inter-community antagonism. At least 3,000 individuals were killed in 2011 in internal conflicts. Investigations revealed a systematic campaign of community-based violence. Following the 2020 presidential elections, public unrest and many inter-community conflicts were also prominent in Cote d'Ivoire (Skillicorn *et al.*, 2021).

Recently, there has been extensive neighbourhood-based hate speech between rival political parties in Mali and Burkina Faso, and this has contributed to the escalation of violence inside these communities. Using their non-indigenous roots and supposed connection with jihadism as excuses to isolate and promote their "extermination," Fulbe and Tuareg people have been the target of renewed online calls for violence in Burkina Faso. Meanwhile, in Mali, growing tensions between the southern and northern communities are likely to escalate in the next months, potentially leading to violent clashes and a fresh assertion of Azawad independence (Thurston, 2020).

In Nigeria, there have been long-standing territorial disputes between indigenous peoples and settlers. For example, in Kaduna State, there has been violence between the Zangon and Kataf communities, and in Plateau State, there has been violence between the Hausa-Fulani nomadic sheepherders and the Beromn, Anaguta, and Afizere farmer communities. The business interests of local political elites and interfaith tensions further exacerbate the problem. But this study, which is based on a regional review of violence between communities in Africa, shows how politics has played a key role in all the nations studied in forming, widening, and eventually losing control of artificial social divides. This threat is ever-present, and the scars it leaves behind may reverberate over generations, threatening the very fabric of our nation's political and social systems.

The complexity of the intercommunity violence issue in Africa is growing, yet there have been few, if any, political attempts at reconciliation, and those that have been have mostly failed. Governments that lack political legitimacy and have a weak grasp on internal divisions have resorted to weak, awareness-raising statements for national reconciliation rather than implementing strong programmes.

That occurred in Burkina Faso in 2022 when the government firmly denounced the dissemination of Fulbe-inciting hate speech on social media platforms like WhatsApp and Facebook. Despite the importance of recognising and condemning the rhetoric, the government was unable to prevent the mass violence that was planned. The Fulbe and Tuareg communities in Mali are frequently portrayed as "terrorists" and "criminals" on social media, and the authorities do nothing to stop it. Similarly, community-based political parties in Ghana have used the term "terrorist" to demonise their opponents and justify harsh military responses; they have also made heavy use of social media to spread their violent rhetoric. Consequently, we think social media plays a critical role in spreading violent rhetoric and increasing tensions between communities on a national and regional level, and it needs further investigation.

Politics at all levels of government must immediately begin to address this problem since it is a major contributor to inter-community violence. Good practices aimed at resolving inter-community differences stand out, despite variable and frequently restricted governmental responses. The establishment and maintenance of social cohesion networks and transitional justice procedures are exemplary cases, as seen in Nigeria, Cote d'Ivoire, Western Mali, and Burkina Faso. Members of local non-governmental organisations have been calling on national central governments to change their political reaction and instead implement policies that will protect the country's stability by combining social, military, and diplomatic efforts. Some Guinean groups on Facebook, for example, call for a national unity government that would treat Malinkés, Fulbe, and Soussou as one and put an end to the current community-centric divisions; they hope to unite like-minded people under a national identity rather than a community-based one.

The so-called Kabara committee, which was formed in Nigeria to address the persistent farmer-herder violence that was threatening local stability, followed a similar pattern of action in Cote d'Ivoire, aiming to prevent rather than resolve actual intercommunity conflicts. The committee drew on the African tradition of transitional justice systems to mediate disputes without resorting

to overly punitive measures, and it included community members such as traditional and faith-based organisations, local authorities, and youth and women's associations. Specifically, in 2022, Korhogo began a programmed to prevent community-based crises and violence, as well as the escalation of such crises and violence because of terrorist uprisings.

The RECOPA network was a civil society organisation that helped farmers, settled herders, and the local government in Western Mali and Burkina Faso work together peacefully to address land tenure challenges and protect pastoral routes and grazing lands. To avoid being marginalised by the centre, several governments opted to create new institutions, use political initiatives, and change the law. For example, in 2019, the government of Mauritius took structural steps to ensure that the three ethnic groups had an equal number of representatives in national institutions, addressing the disparity between the representation of the Beydan community, the Haratin community, and Afro-Mauritanians. In a similar vein, Ghana set up two bodies—the National Election Institute and the Commission on Human Rights and Administration Justice—to ease conflicts across communities. Regular elections were to be ensured to avoid post-electoral contestation and unrest, and the monitoring of violent actions throughout the nation was to serve as a deterrent against community-based cleavages. Reconciliation initiatives across communities would benefit from a multi-pronged strategy that goes beyond including merely powerful individuals or focusing on specific community members alone. Participation in the reconciliation process should be extended to all those impacted by or involved in inter-community violence, as well as to those who may have benefited from the conflict's continuation.

In conclusion, one dominating population, whether it is the majority or not, is nonetheless seen by some as having monopolised the state in various West African nations, as previously shown. The frequently patronising and nepotistic actions of succeeding political authorities contribute to this impression, which in turn heightens a sense of exclusion for certain individuals.

As a result, they may call for anything from a fair distribution of political power to official acknowledgement of their autonomy or even the establishment of a separate nation. Some groups in nations experiencing crises are systematically marginalised, forcing them to fight the government. Because of their marginalisation, violent extremist organisations can easily seize control of them. Terrorist organisations thrive in environments where minorities are marginalised and persecuted by governments. Given this context, more investigation into the security

implications of Operation "Cow Leg," a routinely conducted initiative by the Ghanaian government to expel Fulbe pastoralists and their herds from the nation, is warranted (Silberfein & Conteh, 2006). Belonging to a certain group may also help one get access to monopolistic power structures via political capital. Politically motivated intercommunity violence is all too common in the Sahel area, fuelling animosities and asserting competing claims to power while threatening political stability on a national and regional scale. Political elections are a flashpoint for these entangled tensions in many West African nations.

Consequently, West African social and political stability has been steadily eroded by the outcomes of the ballots, as well as by electoral propaganda and internal unrest that characterized the sessions leading up to and after the vote. Although there has been some improvement in recent years, the Soninke, Wolof, and Fulbe groups in Mauritania continue to face significant discrimination due to the different paths to citizenship and identity papers, which severely restricts their ability to access public services.

5.2.4 Theoretical Consideration and Hypothesis

In this section, we examine the theoretical basis of terrorist spillover and propose the chapter's hypothesis. Understanding how terrorism crosses border and affects neighbouring regions is critical for developing effective counterterrorism policies. Theories such as social contagion, contagious violence, and the role of social learning in propagating extremist beliefs (Centola, 2010; LaFree & Freilich, 2016) provide a foundational framework for this analysis. By investigating these theories, we may develop hypothesis that attempts to explain the conditions under which terrorism is most likely to spread from one location to another, therefore impacting both regional stability and global security dynamics. This theoretical framework will guide our investigation and aid in the interpretation of the actual data gathered throughout this chapter.

5.2.4.1 Theoretical Discussion

Social contagion refers to the spread of any given occurrence such as behaviours and emotions through social network and interactions (Knight & Narozhna, 2005; Nacos, 2009). Terrorism spreads much like a contagious disease. It can be compared to a virus that moves unpredictably until a community is prepared to combat it. According to the Theory of Contagious Violence, violence spreads among people in the same manner that contagious diseases do. The idea establishes links between the transmission of violence and the spread of contagion, highlighting

how exposure to violence enhances the likelihood that individuals may participate in violent activity themselves (Tajfel *et al.*, 1979).

Extremist ideologies can spread across borders via media, social networks, and personal connections, as well as through community interactions facilitated by globalization (the movement of people, weapons, resources, and even information, allowing terrorism to spread across borders), inspiring similar movements in different regions (Michael, 2013). People often imitate behaviours they witness, especially if they are beneficial or rewarding. This is especially true when terrorist groups in one area serve as examples for others, who adapt their tactics, techniques, and strategy (White, 2022).

Groups in the Greater Sahara, such as the Islamic State of Iraq and Syria (ISIS), profit from the actions of Maghreb-based affiliates by exchanging knowledge, resources, and recruits. This dynamic is seen in Boko Haram's operations, which have moved from Nigeria to nearby Chad, Niger, and Cameroon, producing significant regional instability. The Lord's Resistance Army (Makkonen *et al.*, 2020) in Central Africa, led by Joseph Kony, followed a similar pattern (Dowd, 2017; Schomerus, 2021). This strategy is closely related to Albert Bandura's Social Learning Theory, which states that people learn by observation (McLeod, 2011).

According to Wolfgang (1967) subculture is a normative system of some group smaller than the whole society (Tajfel *et al.*, 1979; Wolfgang & Ferracuti, 2002). Marvin Wolfgang, who is a pioneer of subculture theory, states that a subculture inside a larger community has its own social value system, distinct from the core system (Tajfel *et al.*, 1979). Subcultures exist inside society with comparable normative norms, but distinct values that set them apart from the dominant culture. Value norms shape an individual's perception and reaction to social situations.

A subculture may have a unique set of beliefs and concepts that encourage violence. When a person is socialized in a community rampant with chronic violence, their understanding of the role of violence in their lives differs from that of society. This violent subculture influences people's perceptions on the value of crime. Individuals may regard violence as normal, a respectable means of conflict resolution, or even necessary in their community to achieve their goals. Small groups in a community can be motivated by large terrorist organizations, particularly if the small groups' principles advocate violence.

Regions with similar social and economic conditions are particularly susceptible to the spread of terrorist ideologies. Areas with weak governance and poor security infrastructure are especially vulnerable, as shared grievances within these communities can foster new violent movements. Globalization further facilitates the spread of these ideologies, allowing people or subcultures to connect and mobilize across borders ((Akhmat *et al.*, 2014; Cameron, 2017; Freytag *et al.*, 2011; Khan & Estrada, 2016).

Sageman (2004) explains that jihadist beliefs spread through closely knit social networks, where interpersonal ties and social attachments play a significant role in radicalising individuals. These networks serve as distribution conduits for extreme ideologies, fostering an environment in which extremist beliefs can develop and take root. Individuals in these networks become more vulnerable to radicalization as they unite over common grievances and collective identities, frequently feeling an intense sense of belonging and purpose inside the group. This sense of community and shared identity is strengthened by ongoing communication and ideological reinforcement, making the move from large group ideology to individual or small group radicalism smooth and effective.

In the context of social uncertainty and identity problems, radical groups provide a sense of security and belonging that can be especially appealing to disenfranchised people. According to Hogg *et al.* (2010), people who are threatened by their social identity or who are unclear about themselves are more prone to gravitate towards radical groups that promise a clear, coherent identity and a sense of purpose. This psychological comfort afforded by extremist ideologies can be amplified by strategic narratives created by terrorist groups. According to Bloom (2005), these narratives frequently incorporate historical grievances and collective pain, resulting in a captivating story that connects strongly with potential recruits. Furthermore, the internet has become an important instrument for spreading terrorist beliefs outside of traditional social networks. Weimann (2006a, 2006b, 2008, 2016) investigates how terrorists use internet platforms to reach a worldwide audience, disseminating propaganda and attracting followers from various geographical regions. This internet presence enables terrorist ideology to cross traditional boundaries, entering communities and influencing people who would otherwise be cut off from direct touch with huge terror groups.

To further explain using examples; ISIS, which began in the combat zones of Iraq and Syria, has successfully expanded its radical ideology and brutal tactics throughout the world. The group

exploited social media platforms to spread its message, which reached people well beyond its geographical borders (Hrg, 2016). Digital communication allowed ISIS to inspire lone-wolf attacks and encourage other subcultures with like manners across Southeast Asia and Sub-Saharan Africa. For example, despite their geographical distance, African groups like Boko Haram declared loyalty to ISIS, adopting elements of its branding and techniques. This contagion effect highlights how terrorist ideology, and methods can spread rapidly across borders, often without direct physical touch between the founding group and those it influences (Bloom, 2005).

Nigeria, Mali, Niger, Cameroon, and Burkina Faso face severe threats from terrorist organizations such as Boko Haram, its splinter group ISWAP (Islamic State West Africa Province), ISIS (Islamic State in Iraq and Syria), and other jihadist groups (Barkindo, 2023). These organizations use regional instability, weak government, and porous borders to expand their influence and carry out attacks in numerous nations.

Boko Haram, which was originally based in northeastern Nigeria, has expanded its operations into neighbouring Niger, Cameroon, and Chad, resulting in a regional security problem. The terrorist group has committed countless atrocities, including the infamous kidnapping of nearly 270 schoolgirls from Chibok in Nigeria in 2014 (Habila, 2017). Boko Haram's activities have resulted in massive displacements and major humanitarian disasters in many countries. In response to military pressure, Boko Haram divided into two factions in 2016, with ISWAP emerging as a better organized and ideologically connected group with ISIS. ISWAP has shifted its attention to strategic attacks on military installations and government buildings, further destabilizing the region (Habila, 2017).

Mali and Burkina Faso have seen a major increase in jihadist activity, especially from Al-Qaeda and ISIS affiliates. Mali's war began in 2012, when Tuareg rebels and Islamist militants grabbed control of the country's north (Barkindo, 2023). Despite French military intervention and the installation of a UN peacekeeping operation, Islamist groups have continued to undertake attacks, extending conflict throughout central Mali and into Burkina Faso. Since 2016, Burkina Faso has seen a substantial surge in terrorist strikes, particularly in its northern and eastern areas. These jihadist groups take advantage of local grievances and ethnic tensions to recruit fighters and increase their influence throughout the Sahel region.

Al-Shabaab, an Al-Qaeda affiliate based in Somalia, has expanded its activities into neighbouring Kenya, focusing on towns close the Somali border and Nairobi, the capital. The gang is known for high-profile attacks, including the 2013 Westgate shopping mall attack and the 2019 DusitD2 complex attack in Nairobi (Onguny, 2020). Al-Shabaab's activities have sparked considerable counterterrorism efforts by the Kenyan government and its allies, but the group's tenacity and ability to carry out assaults remain a severe concern. Tunisia, though geographically remote from Somalia, has also faced threats from Al-Shabaab and other Islamist groups. The 2015 terrorist assaults on the Bardo National Museum and a beach resort in Sousse, which murdered hundreds of foreign visitors, demonstrated Islamist networks' spread throughout North Africa (Corsaro & Djouder, 2021).

Africa demonstrates the practical implications of these theories with groups such as Da'esh, Al-Qaida, Boko Haram and their affiliates exploiting local conflicts and fragilities to suit their own objectives, according to the UN Secretary-General, who has called for the eradication of violent extremism (Nations, 2022b). Boko Haram's spread from its original base in Northeast Nigeria to neighbouring countries like Chad, Niger, and Cameroon exemplifies contagious theory. Their tactics, such as suicide bombings and kidnappings, have spread geographically and influenced other groups in the region (Habila, 2017). Furthermore, Al-Qaeda in the Islamic Maghreb (AQIM) has used social media to broaden its reach across North and West Africa, forming alliances with smaller groups and coordinating attacks like the 2013 In Amenas hostage crisis in Algeria (Torres-Soriano, 2016). These examples show the significance of contagious in explaining the spillover of terrorism from one region to another.

Violence, like diseases, spread through social contagion if people or societies lack the appropriate safeguards to avoid it. Défense can take several forms to protect oneself from the impacts of violence. Access to excellent education, a high socioeconomic status, political engagement, resources, and economic and political power can protect communities against infectious violence. When a community has several defences, it can use its resources to lessen the impact of violence (Tajfel *et al.*, 1979). The previous chapter's significant findings imply that a strong socioeconomic position and political stability can act as a shield against terrorism, perhaps reducing the creation and spread of terrorism.

The spread of terrorism across these regions has prompted various responses from local governments and international partners. For instance, the Accra Initiative and the Multinational Joint Task Force (MNJTF) was established to combat Boko Haram and ISWAP, bringing together troops from Nigeria, Niger, Cameroon, Chad, and Benin. In the Sahel, the G5 Sahel Joint Force, comprising Burkina Faso, Chad, Mali, Mauritania, and Niger, was created to address the growing jihadist threat. International actors, including France through Operation Barkhane, and the United States, have also provided military support and training to local forces.

Tajfel *et al.* (1979)mentioned that when a population's defences are compromised, the spread of violence inside that community becomes even easier. This is the reinforcing aspect of contagious violence: once a community is infected, the spread of violence becomes increasingly difficult to control. A community with strong defences can use its immunity to conduct violence against others, increasing its power.

5.2.4.2   Hypothesis
In this subsection, we outline the hypotheses for this chapter, which explore the dynamics of terrorism spillover between regions with varying levels of terrorist activity. The hypotheses proposed for the investigation are as follows:
- Terrorism may spill over from high to low terror regions.
- Terrorism may not spillover from high to low terror regions.
- Terrorism may spillover from low to high terror regions.
- Terrorism may not spillover from low to high terror regions.

5.2.4.2.1   Terrorism May Spillover from High to Low Terror Region

Countries with High terrorism might increase terrorism in countries with low terrorism activities especially neighbouring countries. The repetitive success or prevalence of terrorist actions in a high terrorized region can serves as a model for low terrorized areas to emulate, especially when the low terror region lacks the defence against terrorism, hence big terrorist organization will see that as an opportunity to expand their reach (Midlarsky *et al.*, 1980).

Boko Haram effectiveness in carrying out attacks and acquiring a reputation served as a template for similar activities in these neighbouring regions. The repeated success of Boko Haram's

operations instilled a sense of potential efficacy and legitimacy in terrorism as a technique, potentially inspiring other groups, or individuals in surrounding low-terrorism areas to replicate their activities.

Boko Haram's methods, techniques, and results serve as a model for other groups. For example, terrorist groups in Mali and Burkina Faso may look to Boko Haram as a model, adapting their techniques to local conditions. This modelling effect is not confined to close Neighbours but can extend to distant regions as information and communication technology aid in the spread of terrorist beliefs and techniques.

According to the theory of Contagious Violence and social learning theory, digital communication, exposure, social reinforcement are among the elements that might cause violence to spread through communities and regions in a way akin to infectious diseases. In Africa, the rise and spread of Boko Haram exemplifies this process.

5.2.4.2.2 Terrorism May Not Spillover from High to Low Terror Region:

The hypothesis suggests that the spread of terrorism from areas with elevated levels of terrorist activity to those with lower levels is evitable. There are numerous factors and circumstances that can prevent or mitigate the spillover of terrorism.

Regions with effective governance, effective law enforcement, better levels of economic development, education, and job prospects are less prone to see spillover terrorism. Governments that maintain order, offer effective public services, and address community issues can reduce terrorist influence. A country with a well-funded and trained police force, intelligence agencies, strong border control, security measures, and judicial system, for example, can promptly respond to and neutralize emerging threats.

5.2.4.2.3 Terrorism May Spillover from Low to High Terror Regions.

When regions with low terrorism are geographically or socially close to high-terrorism areas, they are likely to be exposed to terrorist activities. This exposure can occur through direct contact, such as cross-border attacks or the movement of militants, or indirectly through media coverage and communication networks that disseminate information about terrorist acts.

High-terrorism regions can act as hubs for recruiting individuals from low-terrorism regions. Terrorist organizations often use propaganda and social networks to attract recruits from neighbouring areas, leveraging local grievances or ideological affinities. Once recruited, these individuals may return to their home regions to carry out attacks, thereby increasing terrorism in previously low-terrorism areas.

Also, Low-level operations help to innovate or provide a strategic edge, which is subsequently adopted by groups in high terrorized regions. For example, a less active terrorist cell may devise a new type of attack or propagation method that proves to be highly effective and is then adopted by a more prominent terrorist organization that is operating in a highly terrorized region. This can occur through social networks when individuals from various regions communicate and exchange ideas. The contagious theory supports this by proposing that ideas or tactics, regardless of their origin's terror status, can spread and be adopted elsewhere if they resonate with the motives and goals of other groups.

5.2.4.2.4   Terrorism May Not Spillover from Low to High Terror Regions.

This suggests that regions with low levels of terrorism are unlikely to influence areas with elevated levels of terrorism in a manner that promotes terrorist activity. Essentially, high-terrorism regions are less prone to adopting or mimicking terrorist behaviours from regions where such activities are infrequent or minor.

In high-terrorism areas, terrorist networks often have substantial resources, including funding, weaponry, and trained personnel, making them self-sufficient. These networks do not depend on low-terrorism regions for inspiration or operational techniques, as the infrastructure in these regions is typically insufficient. For instance, established terrorist organizations like Al-Shabaab in Somalia and Boko Haram in Nigeria operate in areas where they have strong footholds and are unlikely to be influenced by smaller, less capable groups in low-terrorism areas.

Terrorist motivations in high-terrorism regions are frequently rooted in unique local or regional challenges, such as ethnic conflicts, political grievances, or historical animosities, which are not present in low-terrorism regions. For example, the ethnic and political struggles fuelling terrorism in the Middle East and Sub-Saharan Africa are often highly contextual. Regions with low

terrorism, where these specific issues are not prevalent, may not provide meaningful models for action or ideology.

Furthermore, low-terrorism regions often have robust counterterrorism measures and security apparatuses, making it difficult for terrorists to thrive and for high-terrorism regions to draw inspiration or techniques from them. In contrast, high-terrorism regions may have weaker governmental structures and less effective security measures, allowing terrorism to take root and persist. For example, countries with strong governance and effective law enforcement, such as those in Europe or North America, tend to have low levels of terrorism, which have little influence on regions experiencing ongoing, severe terrorist conflicts.

5.3   Data Description and Methodology

This subsection provides a detailed insight into the data and methods employed to address the research objectives. Specifically, this chapter aims to investigate the existence of terrorism spillovers within dataset of this thesis. Employing vector autoregression model and generalized impulse response function for spillover identification, club convergence to group countries with similar terrorism patterns together and principal component analysis to reduce the data set for each group into a single data for a time series analysis, overall achieving these objectives of this chapter.

5.3.1   Data Description

The specific terrorism indicator used in this chapter is casualties across 32 African nations from 1990 to 2021 and 6 Middle East countries which serves as the external influence in this chapter, making a total of 38 countries. The effect of terrorism is quantified by casualties. They are the most immediate and severe impact of terrorism, making the spillover effect easiest to quantify, for example, the 2015 Paris attacks, which killed 130 people and injured hundreds, showed the gravity of the occurrence and its effect on the local and worldwide population. These statistics garnered worldwide attention, prompting Europe to tighten security and combat terrorist threats. The 2008 Mumbai attacks, which killed 166 people, highlighted the necessity for strong counter-terrorism tactics and international collaboration to avoid similar high-casualty occurrences.

Casualties show terrorism severities. To minimize spillovers, high fatality rates might draw worldwide attention and resources to the need for rapid and effective responses. International help

and action have been sought for Nigeria's Boko Haram insurgency, which has killed tens of thousands. The high deaths brought attention to the problem and prompted nations and international organisations to send military, financial, and humanitarian aid to Nigeria and its neighbours. This shows how fatality estimates may mobilise resources and create complete reaction tactics to combat terrorism and its spillover consequences.

Cross-border refugee flows, economic upheaval, and psychological effects frequently affect neighbouring areas after an incident. Thus, deaths may reveal regional terrorist spillover effects. For instance, millions of Syrian refugees have fled to Türkiye, Lebanon, and Jordan due to the Syrian Civil War and terrorist attacks. This enormous exodus has produced economic and social problems in host nations, demonstrating the far-reaching effects of terrorist casualties. The 1998 U.S. embassy bombings in Kenya and Tanzania, which killed 224 people, had major psychological and economic effects on East Africa, showing how terrorist strikes may have global repercussions.

5.3.2 Methodology

This subsection discusses the methods utilized in this chapter. Generalized Impulse Response Function (GIRF) through a Vector Autoregressive (VAR) model enables us to identify the impact of shocks originating in one region on another. The essence of this method lies in its capacity to simulate and comprehend how unforeseen disruptions in one area can impact or "spread" to other areas. It also explains how the fluctuations in one variable (specifically, the level of terrorism activity in a particular region) are connected to the fluctuations in another variable.

To enable more reliable estimations, we first filter the data using the Hodrick Prescott (Naghshpour & Iii) filter to eliminate seasonal fluctuations and preserve the time trend (De Jong & Sakarya, 2016). Then we employ the Club Convergence methodology, as proposed by Phillips and Sul (2007) to identify and group countries exhibiting similar terrorism characteristics. Since our dataset includes 20 countries, the club convergence estimation is crucial because conducting the Generalized Impulse Response Function would involve many matrices, producing 400 impulse response functions. By grouping countries based on shared terrorism characteristics or patterns, the club convergence approach allows for a more manageable analysis. It enables us to identify and focus on the collective behaviour within each group, thus reducing the complexity involved in understanding the interconnectedness and potential spillover effects of terrorism activities among

the countries studied, hence making interpretation difficult, therefore conducting the club convergence seems plausible. Subsequently, to assess the presence of spillover effects.

We conduct Principal Component Analysis (PCA) within each group of countries identified through the club convergence to derive a single terrorism variable that encapsulates the collective behaviour and characteristics of the countries within each specific club, thereby creating time series data for the Generalized Impulse Response Function analysis.

5.3.2.1 Vector Autoregression Model and Generalized Impulse Response Function

Granger and Newbold (1974) were among the first to introduce VAR models to econometrics, emphasising their potential in capturing dynamic interactions between economic variables. Since then, VAR models have been widely used in macroeconomics, finance, and other fields.

VAR models are multivariate time series models that allow for variable interdependency. They capture the dynamic interdependencies between variables by enabling each variable to be impacted by both its own lagged values and the lagged values of all other variables in the system. This implies that each variable's behaviour is described by both its own and other variables' historical values, indicating the data's feedback mechanisms and interconnections (Kilian & Lütkepohl, 2017; Lütkepohl, 2005).

 VAR model may be expressed as:

$$yt = c + A1\,y(t-1) + A2yt - 2 \;\ldots.. + Apyt - p + et \qquad (5.1)$$

where y_t is a vector of endogenous variables at time t, c is a constant vector, A_i are coefficient matrices representing the impact of lagged variables on the current values, p is the lag order indicating how many lagged periods are included in the model, and e_t is a vector of error terms representing unexplained variations in the endogenous variables at time tt.

VAR/GIRFs rely on several important assumptions to ensure the accuracy and reliability of their findings. One important assumption is that the error term has a conditional mean of zero, which implies that the model's error terms (residuals) should have an expected value of zero based on previous variable values. This ensures that the model is correctly specified, and that the errors are completely random and unbiased. Furthermore, the variables in the model must be stationary,

which means that their statistical properties (mean, variance, and autocorrelation) are constant over time. Non-stationary data can produce spurious regression results, rendering the inference unreliable; therefore, stationarity is frequently achieved by differencing or detrending the data prior to applying the VAR model (Lütkepohl, 2005).

Furthermore, the variables should not exhibit perfect multicollinearity. Multicollinearity occurs when one or more independent variables in a model are strongly linearly related. Perfect multicollinearity implies that one variable can be accurately predicted from the others, making it impossible to estimate each variable's unique contribution (Lütkepohl, 2005; Wooldridge, 2009). Thus, the variables in the VAR model should not be perfectly colinear.

In addition to these primary assumptions, VAR models must consider several other factors. Adequate lag length selection is critical; selecting the appropriate lag length ensures that the model captures the necessary dynamics while avoiding unnecessary complexity. Too few lags can obscure important dynamics, while too many can limit degrees of freedom. Several criteria, such as the Akaike Information Criterion (AIC) or the Bayesian Information Criterion (BIC), are frequently used to determine the optimal lag length (Wooldridge, 2009).

Finally, the assumption of homoskedasticity is important, which implies that the error terms have constant variance. Heteroskedasticity, which occurs when the variance of errors changes over time, can result in inefficient estimates and have an impact on hypothesis tests. By adhering to these assumptions, the VAR model and GIRF can provide meaningful insights into the dynamic relationships between the variables in the chapter. Meeting these assumptions is critical to the analysis's robustness and validity (Wooldridge, 2009).

The GIRF is based on a VAR model. Once the VAR model is estimated, the GIRF can be derived which describe how a shock to one of the error factors affects the current and future values of the endogenous variables. It is employed to investigate spillover, that is, if changes in one club's terrorism pattern would spillover other regions. Spillover effects can be observed when the shock in a variable influences other variable in the system. For example, a hike in terrorism in country A can affect other countries just like a hike in interest rate can influence inflation. They demonstrate the immediate and long-term impacts of a one-time shock. If the reaction surges and then diminishes, it indicates a temporary influence. A persistent increase has a long-term effect. A speedy return to normal indicates resilience, but a persistent shift denotes a long-term impact.

Analysing these reactions allows us to better understand the dynamics and long-term ramifications of shocks in your time series data, as well as provide insights into the system's behaviour and influence decision-making (Wooldridge, 2009).

Generally, most studies use traditional methods in investigating spillovers such as Spatial Autoregressive Model, although these approaches possess their own set of benefits and constraints, the selection between them is contingent upon the precise research inquiry and the data accessible for analysis (Dewachter *et al.*, 2012).

Impulse response functions (IRFs) are frequently employed in the field of time series analysis for the purpose of quantifying the dynamic reaction of a given variable to an exogenous shock originating from another variable. Estimating and analysing impulse reaction functions (IRFs) helps researchers figure out how strong and how long an effect lasts after a shock. It is helpful to use impulse response functions (IRFs) to look at dynamic links and instant transfer effects (Boly & Kéré, 2022).

SAR (Spatial Autoregressive) models, on the other hand, clearly consider how data are linked in space. They are often used in spatial econometrics and topography to show the ripple effects that come from being close to something. Spatial autoregressive (SAR) models look at how data close to each other are connected and how they affect each other. This looks at both direct and indirect spatial spillover effects (Evans & Kim, 2014). In the context of analysing the diffusion of terrorism amongst African nations, both IRFs and SAR models can be utilised, since one of the objectives of this chapter is to identify regions with similar terrorism pattern and how they affect each other.

In addition, SAR models and other similar methods explicitly incorporate a weighted spatial matrix that represents the spatial relationships between various locations or units in the analysis. This matrix captures the spatial dependencies and can be used to measure the strength and direction of spatial spillovers. These weights can be based on geographic proximity, distance, or other criteria. The accuracy of the results may depend on the quality and appropriateness of this matrix. If the spatial weights are not accurately specified, it can lead to biased results and misinterpretation of spatial spillovers.

However, IRFs do not require the explicit specification of a weighted spatial matrix. Instead, they rely on time-series data and structural vector autoregression (VAR) models to assess the dynamic

response of a variable to a shock or impulse. IRFs consider the impact of a change in one variable on other variables over time, without explicitly considering spatial relationships. IRFs are more data-driven and do not depend on the precise specification of spatial weights. IRFs are based on time-series data and are more flexible in this regard.

In the event of an increase in terrorist acts in Country A, for instance, IRFs could be used to assess the immediate and long-term effects on Country B. This methodology would evaluate the time-varying patterns of terrorist events and their instantaneous cascading effects (Boly & Kéré, 2022).

The examination of terrorist contagion is a complex endeavour, and both IRFs and SAR models contain inherent limitations. Terrorism incidents are influenced by numerous factors, including social, economic, and political contexts, which might not be fully explained by either approach. In addition, the accessibility and accuracy of data can pose significant challenges to empirical evaluation (Abid & Rault, 2021).

5.3.2.2   Generalized Impulse Response Functions

When examining the dynamic impacts of a shock in a time series model, scholars frequently encounter the decision to utilise either Generalised Impulse Response Functions (GIRFs) or Orthogonal Impulse Response Functions (OIRFs). Although both methodologies offer useful insights, there are several reasons why Generalised Impulse Response Functions (GIRFs) are frequently used.

One notable benefit of employing Generalised Impulse Response Functions (GIRFs) is their ability to catch both direct and indirect effects resulting from a shock. In contrast, Orthogonal Impulse Response Functions (OIRFs) solely record the direct impacts (Abid & Rault, 2021). The reason for this distinction lies in the fact that generalised impulse response functions (GIRFs) are invariant to the arrangement of variables inside the model, but orthogonalized impulse response functions (OIRFs) rely on an orthogonalization procedure that presupposes a predetermined sequence of variables (Bertsche & Braun, 2022). Consequently, Generalised Impulse Response Functions (GIRFs) exhibit greater flexibility and offer a more comprehensive comprehension of the spillover effects.

Moreover, Generalised Impulse Response Functions (GIRF) techniques are valuable in the examination of systems that exhibit feedback effects or endogeneity. The interdependence between

variables in a model can be taken into consideration by incorporating the dynamic effect of shocks on all variables, including themselves (Pesavento & Rossi, 2006). The inherent adaptability of GIRFs renders them well-suited for comprehending intricate and interconnected systems.

In contrast, it is common for researchers to employ OIRFs when their objective is to isolate and examine the rapid reaction of a variable to a perturbation. The authors offer a method to comprehend the concurrent impacts of disturbances by eliminating the concurrent correlations among variables (Bertsche & Braun, 2022).

In certain instances, this may be deemed advantageous, particularly when the emphasis is placed on the immediate and direct consequences of a disturbance. To elucidate the distinction between Generalised Impulse Response Functions (GIRFs) and Orthogonalized Impulse Response Functions (OIRFs), we shall examine their application within the field of macroeconomics.

Assuming our focus lies in examining the impacts of a monetary policy shock on diverse macroeconomic indicators such as output, inflation, and interest rates, Vector Autoregressive (VAR) model can be employed. (Bertsche & Braun, 2022).

Using Generalised Impulse Response Functions (GIRFs), we can estimate the dynamic response of each variable to a monetary policy perturbation. This methodology allows for the accumulation of both short-term and long-term responses, in addition to any feedback effects. Examining the consequences of an initial increase in borrowing costs on output, which subsequently influences inflation and generates an unpredictable course of response, is illustrative (Velasco, 2023).

Alternatively, the utilisation of OIRFs directs our attention towards the isolation and examination of the immediate reaction exhibited by each variable in response to the monetary policy shock. This enables us to comprehend the immediate impacts of the shock, without considering the long-term reciprocal effects among factors (Bertsche & Braun, 2022).

In summary, it can be observed that Generalised Impulse Response Functions (GIRFs) are commonly favoured over Orthogonal Impulse Response Functions. This preference stems from the GIRFs' capacity to encompass both direct and indirect impacts, as well as their capability to consider the interrelationship among variables. Generalised impulse response functions (GIRFs) provide more flexibility and prove to be particularly valuable in the analysis of systems that are dynamic and intricate.

5.3.2.3   Club Convergence

Before analysing the spillover using VAR/GIRF, we utilise club convergence to identify clubs within our dataset using the club cluster algorithm developed by (Phillips & Sul, 2007). According to Apaydin *et al.* (2021), this method helps to identify whether countries are experiencing similar growth patterns or whether there are significant disparities between them by grouping regions or countries together based on their economic similarities or differences, as of the case of this chapter we utilize this method to identify which of these African countries are experiencing similar terrorism patterns and are then grouped into different clubs. For example, one club might consist of countries with high levels of terrorism, while another club might comprise countries with low levels of terrorism or other related features. Among all its advantages, it accommodates heterogeneity and does not require any specific assumptions about trend stationarity or stochastic nonstationary, making it robust regardless of the series stationarity property (Du, 2017).

The Phillip Sul log t-regression test is carried out to identify the overall convergence characteristics of the terrorism causalities of the countries. It achieves this by examining whether terrorism pattern of different units (countries) is drawn from a single distribution or from multiple distributions (convergence clubs) by regressing the growth rates on their initial values. The residuals from this regression represent the unexplained growth rates. Then, the log t statistic is calculated as the log of the t-statistic from a test of the null hypothesis that the mean of the residuals is equal to zero. Phillips and Sul (2007) When estimating the log t test, note that the choice of the initial sample fraction K may have an impact on the regression's outcomes. According to the Monte Carlo trials they conducted, a good result is obtained for K that is [0.2,0.3]. More specifically, it is advised to set K = 0.2 for the large time span greater than or equal to 100 sample and k = 0.3 for the small or moderate time span lesser than or equal to 50 sample. This means that for a time span of 31 years just like this chapter, the initial sample fraction k will be 0.3 which implies omitting the first 11 periods before regression.

If the t statistic from the Phillips-Sul log t test is greater than −1.65 which serve as a critical threshold used in the interpretation of the Philips-Sul log t test the convergence club is obtained for the whole sample. If not, Phillips and Sul (2007) the null hypothesis is rejected suggesting no convergence. According to Du (2017), the existence of convergence in subgroups of the panel cannot be ruled out even if the null hypothesis of convergence for the entire panel is rejected.

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5.3.2.4 Principal Component Analysis

Once the clubs are identified, principal component analysis (PCA) is used to reduce the dimensions of a dataset while retaining most of the variance. It transforms the variables into components, reducing the number of variables into a smaller number of components and yet retaining a significant amount of information about the variances. These components are correlated with the original variables in this chapter's context, they are specifically correlated with each country within a club. They are generated by computing the covariance matrix of the standardized data. The covariance matrix shows how much each pair of variables in the dataset varies together. If standardization is required, the covariance matrix is computed first subtracting the mean and dividing it by the standard deviation for each variable, resulting in data with a mean of zero and a standard deviation of one.

The variables being studied are categorized according to distinct groups from the club convergence. Each group consists of countries that exhibit similar terrorism patterns as previously described. Principal Component Analysis (PCA) is employed to merge the countries within each group into a single terrorism variable that represents each club for a time series analysis (VAR/IRFs). This new variable captures the collective behaviour or characteristics of terrorism casualties of the countries in a particular group.

The PCA process consists of transformation and determining of the number of components to retain and reviewing the eigenvector loadings to see how each country contributes to each component (Naghshpour & Iii, 2018). The Kaiser rules are utilized to determine the number of components to retain. The Kaiser rule suggests keeping only those components whose eigenvalues are greater than 1. An eigenvalue is a number that tells us how much variance is explained by a component. So, if an eigenvalue is above 1, it means that the corresponding component is capturing a significant amount of the total variance in the data (Kaiser, 1958).

When PCA yields more than one component with eigenvalues greater than 1, and only one component is needed for further analysis, we use the variance explained criterion to select the best component. Examining the loading scores can also give comprehensive information on each component.

First, we choose the component that explains the highest variance. Typically, the first principal component (PC1) explains the most variance in the data. For example, if PC1 explains 45% of the variance while subsequent components explain significantly less, it is methodologically sound to choose PC1 for its superior explanatory power. This ensures that the component selected captures the most significant structure in the dataset (Kaiser, 1958).

Additionally, one can analyse the loading scores of each component. These scores reveal the extent to which each original variable contributes to the component, indicating how much each country's terrorism data influences the component. If the first component has a clear and interpretable pattern with high loadings on important variables, it can be chosen for further analysis. For instance, when studying terrorism casualties across different countries, if the data shows a strong loading score on the first principal component (PC1), indicating that PC1 captures the most relevant and significant patterns in the dataset, we should prioritize it. This combination of high variance explained, and strong, interpretable loadings ensures that the selected component provides the most meaningful insights for further analysis (Naghshpour & Iii, 2018)

5.3.2.5 Data Filter

To ensure that our analysis is accurate and prevent being misled by irregularities, we implement the club cluster algorithm in our data filtering process. This method is essential for distinguishing between the long-term trends in terrorism and the cyclical movements that could be caused by specific, isolated events or patterns. For example, the terror attack in northeast Nigeria in June 2018, which resulted in over 30 deaths and numerous injuries due to two suicide bombers during the end of Ramadan celebrations, and the simultaneous incidents in Kenya and Tanzania that led to 224 deaths and 4,500 injuries. These specific events, though significant and impactful, are momentary peaks in the broader landscape of terrorism activity across 20 African countries over a 30-year span. Such incidents, driven by a mix of political, religious, and social dynamics, create spikes in terrorism data that can distort our understanding of overall trends. Without proper contextualization, these isolated events might suggest a different narrative than the long-term data supports. By applying data filtering techniques like the club cluster algorithm, we aim to separate these time-bound fluctuations from the enduring patterns of terrorism activity. This allows us to accurately assess whether terrorism activities are increasing, decreasing, or exhibit patterns of spiking during certain times, such as during major religious or national celebrations.

The Hodrick-Prescott (Naghshpour & Iii) filter was used to filter the terrorism data of each country to eliminate seasonal fluctuations and to retain the time trend by using the "pfilter" command on Stata to generate and store the trend component as a new variable (Hamilton, 2018). Other filters like Christiano-Fitzgerald (CF), and Baxter-Wahhba (BW) methods are widely utilised time series smoothing techniques employed to decompose a series into its constituent trend and cyclical components. Although they have a common goal, they exhibit variations in their approaches to attaining it (Larsson & Gabrielle, 2012).

The Hodrick-Prescott (Naghshpour & Iii) filter apply a symmetric weighted average across the data points, each assigned a specific weight based on the filter's parameters. This method emphasizes the underlying trend by smoothing over short-term fluctuations. Importantly, the HP filter incorporates adjustments at the data sample's beginning and end, addressing the lack of data points on one side, which could potentially skew the trend estimation. These adjustments ensure that the filter accurately captures the long-term movements, even at the sample edges.

For large data samples, the behaviour of the HP filter aligns asymptotically with a specific symmetric weighted average, where the weights become independent of the sample size. This property guarantees the filter's effectiveness in identifying long-term trends, regardless of data volume. Additionally, when applied to diverse types of time series data, including stationary mixing processes, linear deterministic trends, or processes with a unit root, the cyclical component produced by the HP filter exhibits weak dependence. This crucial aspect indicates that the filter effectively isolates and eliminates data components that could obscure the true underlying trend.

The choice of the smoothing parameter (λ) is critical to the HP filter's performance, necessitating different λ values depending on the data's frequency (e.g., monthly, quarterly, annually). Adjusting the smoothing parameter appropriately for the data frequency ensures the extracted trend component meaningfully reflects the data's long-term movements. The mathematical properties of the HP filter, thus, equip macroeconomists with a robust method for trend extraction, balancing the need to smooth short-term fluctuations against accurately capturing long-term trends, making it an indispensable tool in economic analysis.

The Hodrick-Prescott filter is a method used to decompose a time series into two distinct components: the trend and the cyclical component. To do this, the total number of the squared second derivatives of the upward trend component is kept as low as possible (Hamilton, 2018;

Sakarya & de Jong, 2020). The high-pass filter parts in the HP filter make it stand out, and this makes it perfect for breaking out cycle components. One of the best things about the HP filter is that it can avoid end-point problems that can change the ends of the data (De Jong & Sakarya, 2016; Hamilton, 2018; Sakarya & de Jong, 2020).

The end-point problem refers to the issue that arises when you try to smooth or decompose data near the beginning or end of a time series. HP filtering aims to strike a balance between providing a smooth estimate of the underlying trend and fitting the observed data by giving less emphasis to the endpoint data, it reduces the likelihood of the filter being unduly influenced by potentially erratic or noisy observations at the edges of the time series.

Christiano-Fitzgerald (CF) and the Baxter-Wahba (BW) smoothing techniques can produce distortions near the endpoints because they treat all data points equally. In contrast, the HP filter's design minimizes the impact of these artifacts by emphasizing the smoother, more stable trend in the central part of the data. By reducing the influence of endpoint observations, the HP filter is better able to provide a more accurate estimation of the underlying trend that is less affected by transient, short-term fluctuations that might be more prevalent near the endpoints.

5.4   Results and Discussion

In this section, we present our findings and discuss their implications regarding terrorism spillover. We start by discussing the data filtering process and selecting the most suitable filter method for the chapter. This method was used to estimate the club convergence, followed by a principal component analysis (PCA). Before running the VAR model, we tested for stationarity of each new variable since VAR models presuppose stationary time series data, ensuring that model parameters stay constant, and results are reliable and interpretable. Non-stationary data might invalidate the model with false findings. We went further to determine the optimal lags. We then estimated the standard VAR model and performed diagnostic tests, including residual normality and heteroskedasticity tests, before estimating the Generalized Impulse Response Function.

Additionally, the chapter conducts a robustness check using factor analysis for the club convergence and repeated all the procedures mentioned above, both before and after estimating the VAR model. The findings shed light on the mechanisms underlying these patterns and highlight key factors influencing the spread of terrorism.

5.4.1 Data Filter

The chapter compared three common filtering techniques: the Hodrick-Prescott (Naghshpour & Iii) filter, the Christiano-Fitzgerald (CF) filter, and the Baxter-Wahba (BW) filter. Each of these methods has distinct advantages for isolating underlying trends and cycles in time series data. By comparing the performance of these filters, we intend to determine the one that captures the most relevant features of our dataset, ensuring robust and accurate results for further analyses.

Figure 5.1: Comparison of Filters
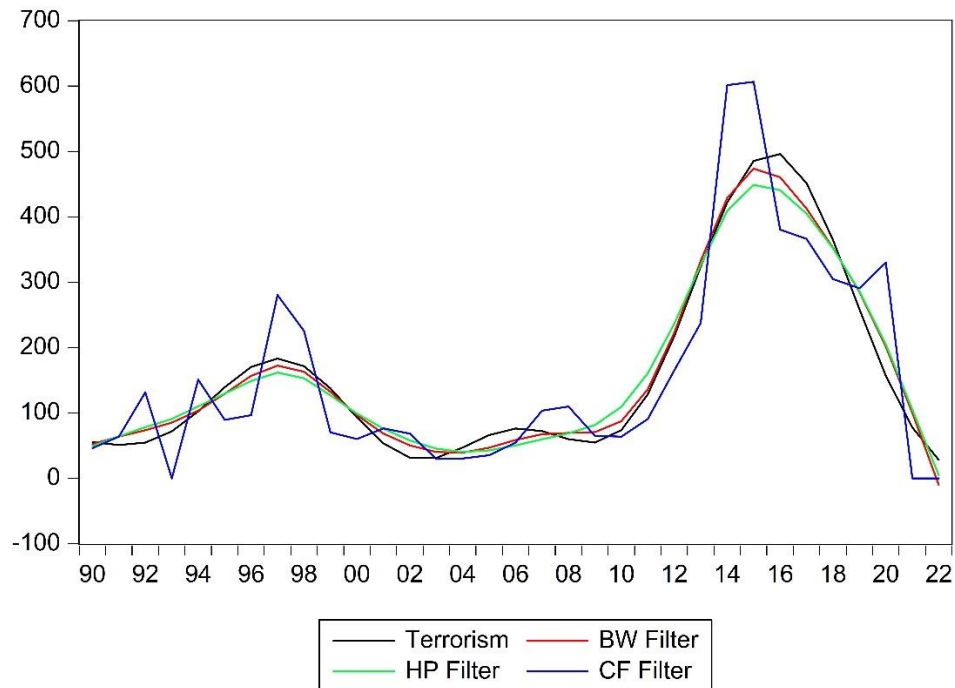
The graph shows how different filters affect the trend lines in the data. In particular, the Christiano-Fitzgerald (CF) filter results in a trend line that is sensitive to short-term fluctuations. This means it separates the data into a more turbulent, oscillating cyclical component and a slower, less volatile trend component. On the other hand, the Hodrick-Prescott and Baxter-Wahba (BW) filters produce a smoother separation, where the cyclical and trend components are refined and more stable, leading to a smoother overall representation of the data. The HP filter effectively captures a larger number of high-frequency components compared to the CF filter (De Jong & Sakarya, 2016).

5.4.2 Club Convergence

Table 5:1: Log (t) Test Result

Full Panel	Coeff	T-stat	SE
Log (t)	-0.7458	−10.43	0.0715

The number of individuals is 32, the number of time periods is 31. The first 11 periods are discarded before regression.

Table 1 shows that the *t* statistic for the log *t* test's is −10.43, which is significantly less than −1.65. As a result, the null hypothesis of convergence would be rejected, which means that terrorism casualties' levels in 32 African countries did not converge.

As previously stated, the rejection of the null hypothesis of convergence for the entire panel cannot rule out the possibility of convergence in subgroups of the panel because rejection of convergence with all countries does not mean divergence (Bai *et al.*, 2021; Tian *et al.*, 2016). After the log t-test was carried out, the "special" code on Stata was applied to produce the club grouping. The club classification result follows estimating the log t-test, as seen in the table below. [4]

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[4] *After conducting the Phillips-Sul club convergence analysis, which resulted in the identification of three distinct clubs, the chapter proceeds by using Principal Component Analysis (PCA) to create new variables representing each club. This approach is followed by an analysis of the Generalized Impulse Response Functions (GIRFs), which enabled the development of time series for the GIRFs. Additionally, several statistical tests were performed, and their results are summarized in Appendix B1 - B2, such as, unit Root Test, Optimal Lags Determination, VAR Lag Order Selection Criteria, and VAR Residual Normality and Heteroskedasticity Tests. According to the unit root test findings, all clubs were stationary at both levels and the first difference, confirmed by the Augmented Dickey-Fuller test, was consistent with the main results. Optimal lag selection identified Lag 2 as the best choice, as it was statistically significant at the 5% level across most criteria FPE, SC, HQ, and AIC with FPE showing the lowest figure. Further diagnostics confirmed that the VAR model's residuals met the normality and homoskedasticity assumptions. Normality tests for individual components and joint tests indicated no significant deviations from normality, while the heteroskedasticity test showed no significant heteroskedasticity in the residuals. Moreover, the VAR Residual Serial Correlation LM Tests demonstrated no significant serial correlation in the residuals for the tested lags.*

Table 5:2 Club Classification Result

Clubs	Countries	Club Name
Club 1 (11)	Nigeria, Somalia, Sudan, Mali, Mozambique, Niger, Burkina Faso, Cameroon, Libya, Republic of the Congo, Egypt	High Terrorized Region (HTR)
Club 2 (10)	Algeria, Chad, Ethiopia, Kenya, Morocco, Rwanda, Sierra Leone, Tunisia, Uganda, Zimbabwe	Moderate Terrorized Region (MTR)
Club 3 (11)	Benin, Angola, Central African Republic, Ghana, Liberia, South Africa, Madagascar, Senegal, Zambia, Tanzania, Togo	Low Terrorized Region (LTR)

The number of individuals is 20, the number of time periods is 31. The first 11 periods are discarded before regression.

The first club called High Terrorized Region (HTR) comprises eleven nations: Nigeria, Somalia, Sudan, Mali, Mozambique, Niger, Burkina Faso, Cameroon, Libya, Republic of the Congo, Egypt, see figure 5.1 below for map visualization.

These countries are characterized by the presence of active extremist organizations such as Boko Haram and ISIS-West Africa in Nigeria, Al-Shabaab in Somalia, and various Sahelian militant groups like Jama'at Nasr al-Islam wal Muslimin (JNIM) and ISIS-Sahel in Mali, Niger, and Burkina Faso. The proliferation of such groups is often linked to fragile governance, historical marginalization, and porous borders, which facilitate the movement of arms and fighters across regions. Somalia's long-standing instability, Nigeria's insurgency in the northeast, and Libya's post-2011 chaos exemplifies how weak state structures exacerbate terrorism threats. The northern region of Mozambique, especially Cabo Delgado province, has seen an increase in terrorist activities by an Islamist group known locally as Al-Shabaab. reports of attacks from ISIS-SP at outpost near Rafah and East Qantara in Egypt. All these terrorist organization are religion motivated. These countries share the commonality of persistent, high-impact terrorist activity,

often resulting in mass casualties, displacement, and humanitarian crises, as reported by recent global terrorism indices and conflict monitoring reports.

The second club called Moderate Terrorized Region (MTR) consists of Algeria, Chad, Ethiopia, Kenya, Morocco, Rwanda, Sierra Leone, Tunisia, Uganda, Zimbabwe, see figure 5.1 below for map visualization. These countries exhibit moderate levels of terrorist threats often linked to historical conflicts, localized radicalization, and spillover effects from neighbouring regions. While Algeria and Tunisia have significantly reduced terrorism threats compared to the 1990s through enhanced state control and counterterrorism efforts, Kenya and Uganda have experienced periodic attacks, notably from Al-Shabaab, due to their involvement in regional counterinsurgency operations in Somalia. Ethiopia's internal ethnic tensions and sporadic extremist threats further align it with this group, as does Chad's vulnerability to spillover attacks from Boko Haram in the Lake Chad Basin. These countries experience fewer large-scale terrorist attacks but remain vulnerable to sporadic incidents and regional spillover, underscoring the impact of regional instability on their classification within the MTR framework.

Club 3, designated as the Low Terrorized Region (LTR), comprises Benin, Angola, Central African Republic, Ghana, Liberia, South Africa, Madagascar, Senegal, Zambia, Tanzania, and Togo, and shares a relative absence of consistent and high-profile terrorist threats. These countries demonstrate stronger state capacity, lower levels of ideological radicalization, and more stable political institutions, which contribute to their lower exposure to terrorism. Although isolated incidents have occurred, such as concerns about extremist activity spilling over into northern Benin and Togo from the Sahel, they remain peripheral compared to the persistent threats in Clubs 1 and 2.

The countries in this group are interconnected through various regional and international counterterrorism initiatives aimed at maintaining security and preventing extremist infiltration. The African Union's Peace and Security Council facilitates collaboration among member states to respond to cross-border threats, while the Trans-Sahara Counterterrorism Partnership, involving Algeria and Senegal, enhances intelligence sharing and capacity building. Additionally, countries such as South Africa and Senegal actively engage in the United Nations Counter-Terrorism Committee, contributing to global security strategies. South Africa employs a comprehensive counterterrorism approach combining advanced intelligence gathering, regional cooperation, and

stringent legal frameworks, while Senegal has implemented preventive measures through community engagement and regional cooperation. Collectively, these initiatives help ensure a more secure environment across the continent, reinforcing the countries' positions as low terrorized regions.

Table 5:3 Log (t) Test Result

Log (t)	HTR	MTR	LTR
Coeff	-0.45	0.11	0.32
T-stat	-0.63	0.12	0.56

The number of individuals is 20, the number of time periods is 31. The first 11 periods are discarded before regression.

Table 3 shows that the *t* statistic for the log *t* tests for each club (HTR, MTR and LTR) is –0.45, 0.11 and 0.32 respectively, which are greater than −1.65. As a result, the null hypothesis of convergence would not be rejected, which means that terrorism casualties' levels for each of the clubs converge.

Figure 5:2 Map Visualization of Country Grouping
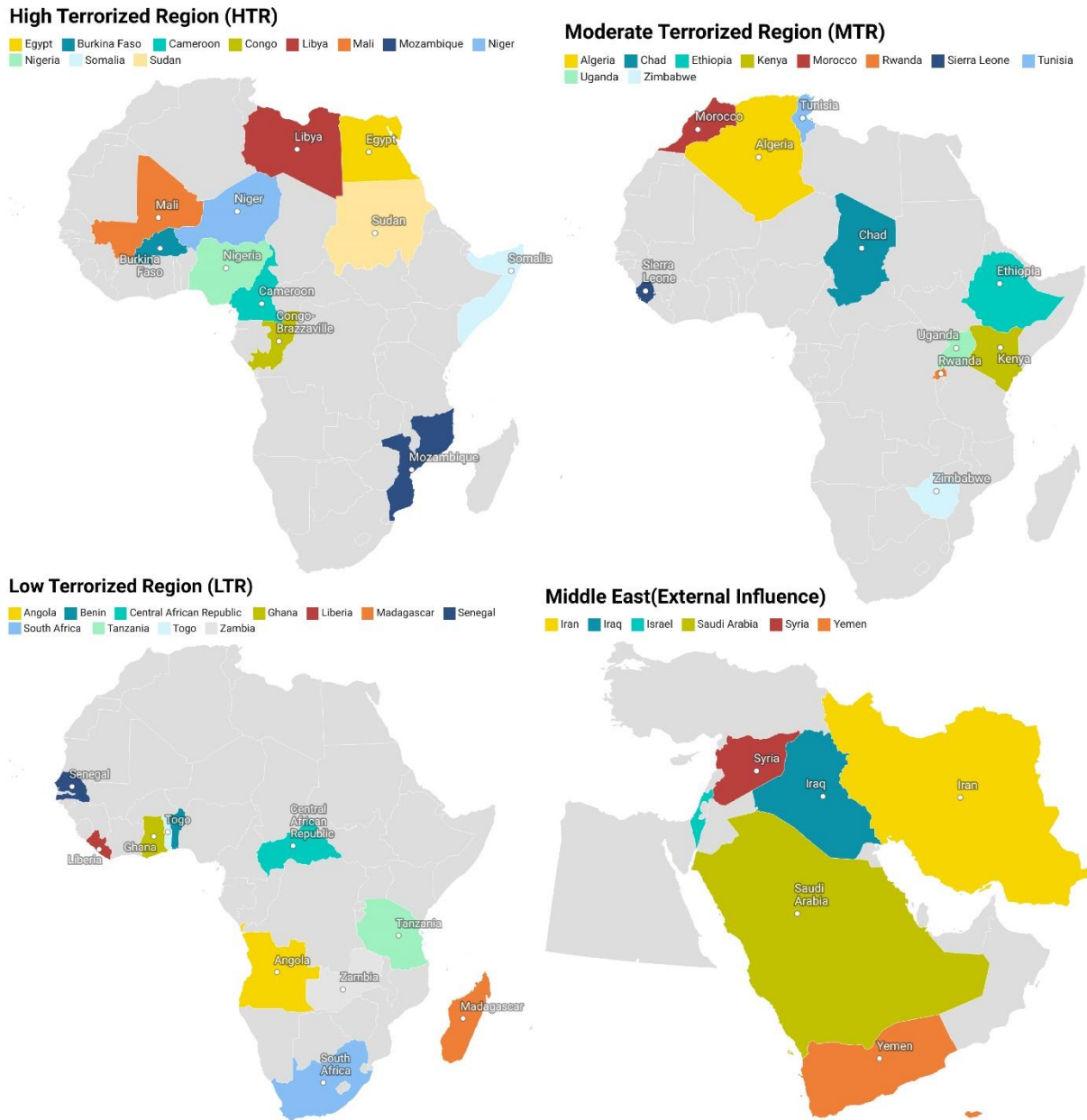
The Middle Eastern nations of Iran, Iraq, Yemen, Saudi Arabia, Syria, and Israel are significantly impact terrorist dynamics in Africa owing to historical, ideological, and geopolitical considerations. This can be seen in the spread of terrorism and conflict dynamics between Libya and neighbouring countries such as Egypt, Sudan, and Chad, as well as its connections to Middle Eastern nations like Syria and Iraq. After the fall of Muammar Gaddafi in 2011 who was a Libyan revolutionary, politician, and political theorist. Libya experienced significant political instability,

which created a power vacuum and allowed extremist groups like ISIS to establish a presence. Fighters and weapons from Libya subsequently spread across the Sahel region, contributing to instability in Mali, Niger, and Burkina Faso. At the same time, radicalization and conflict dynamics in Syria and Iraq, where ISIS had established strongholds, influenced Libyan extremist groups through shared ideology and logistical support.

This cross-regional spillover of terrorism was not solely due to geographical proximity but also historical and political connections. The spread of extremist ideologies, migration of foreign fighters, and the shared impact of global jihadist networks highlight how shocks in the Middle East directly influenced African security dynamics. This example emphasizes the importance of including both geographical and historical connections when examining spillover effects.

These states have historically been significant in worldwide wars and extremist ideologies, often acting as both direct and indirect sources of radicalisation, financing, and logistical assistance for terrorist acts. Iran is commonly believed to fund non-state entities and proxy militias, such as Hezbollah, who have extended their ideological influence and operational methods outside the Middle East. Likewise, Iraq and Syria, having seen the emergence of ISIS, have served as focal points for disseminating extremist doctrines and jihadist methodologies worldwide. The disintegration of governmental authority and enduring civil strife in these nations have fostered conditions conducive to the proliferation of extremist networks, attracting foreign combatants and enabling the transcontinental dissemination of radicalism.

Yemen and Saudi Arabia exemplify the external impact of terrorism on Africa, chiefly via the intellectual dissemination and financial networks associated with Wahhabism and Salafist beliefs. Saudi Arabia has been linked to the propagation of traditional Islamic doctrines, some of which have been appropriated by extremist factions attempting to rationalise violence. Yemen has emerged as a focal point for Al-Qaeda in the Arabian Peninsula (AQAP), which has longstanding connections with African organisations like Al-Shabaab in Somalia. These ideological connections and networks of radicalisation often surpass geographical boundaries, facilitating the dissemination of extremist narratives across susceptible African nations. The financial backing and recruiting initiatives from these areas have strengthened organisations like as Boko Haram and

ISIS-West Africa, illustrating a common doctrinal foundation influenced by tales originating from the Middle East.

Moreover, geopolitical crises and state instability in these Middle Eastern nations provide an environment conducive to the proliferation and expansion of global terrorist networks into Africa. The civil conflicts in Syria and Yemen have enabled extremist organisations to capitalise on power vacuums, reflecting trends seen in regions of North and West Africa. Arms trafficking, training networks, and common jihadist doctrines have progressively connected Middle Eastern wars with African instability. The destabilisation of Libya during the 2011 NATO intervention was intensified by soldiers and weapons from the Syrian war, facilitating the proliferation of terrorism in the Sahel and Lake Chad Basin. This connection highlights how instability in the Middle East perpetuates terrorism in African areas, rendering these nations crucial external influences in defining Africa's terrorist scene.

5.4.3 Generalized Impulse Response Function

The principal component analysis (PCA) conducted in the appendix generated three new variables related to terrorism, each representing the clubs identified from the Philip Sul club convergence results above. These variables were then used to define a time series model for the VAR/GIRFs analysis. The figure below shows the generalized impulse response functions (GIRFs) of a vector autoregression (VAR) model. The GIRFs indicate the effect of a one-unit shock of terrorism in a club on the other clubs in the system over time, holding all else constant. The graph below shows nine GIRFs. The first three GIRFs look at how the High Terrorized Region (HTR) responds to a one-standard deviation shock of terrorism coming from within the HTR, as well as from the Moderate Terrorized Region (MTR) and the Low Terrorized Region (LTR). The second set of three GIRFs examines how the MTR responds to a similar shock from the HTR, within the MTR, and from the LTR.

The final set of three GIRFs evaluates LTR responses to terrorism shocks caused by HTR, MTR, and LTR itself, respectively. Each of the GIRFs consist of four lines; Mean (black) Line, GIRFs (blue) line and the two red lines which are the upper bound and lower bound confidence interval. The mean line represents the expected path or average response of a variable to a shock over time. Specifically, it illustrates how the variable of interest is expected to evolve in response to a one-

time shock to another variable (or itself) within the model, assuming all other conditions remain constant. The GIRFs line shows the response of stock, the upper and lower bound confidence interval helps to assess the statistical significance of the impulse responses, showing the reliability of the estimated responses to a shock; where the upper bound suggests the maximum possible response of the variable to the shock and the lower bound suggests the minimum possible response of the variable to the shock.

Figure 5:3 Generalized Impulse Response Function

Response to Generalized One S.D. Innovations ± 2 S.E Club

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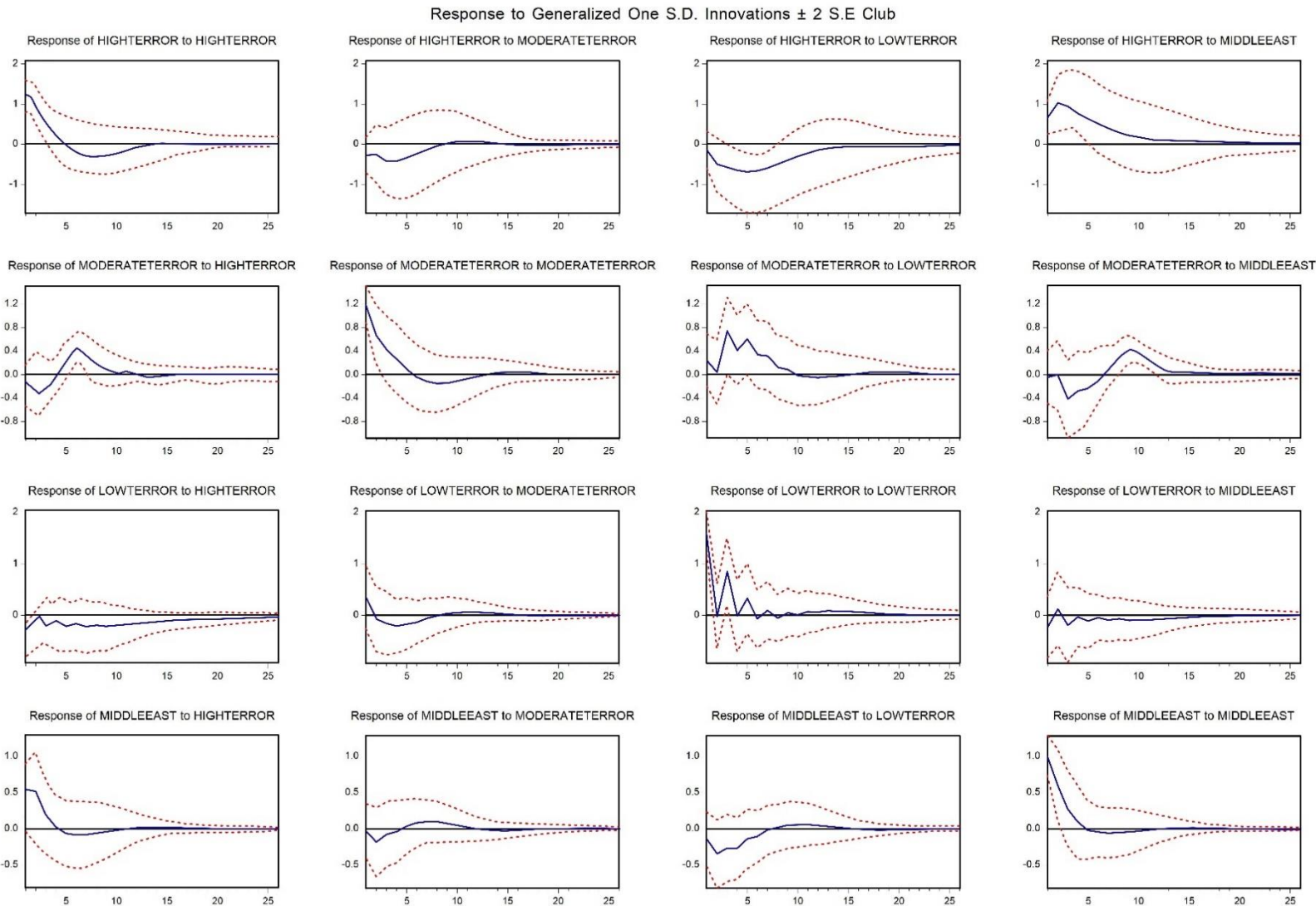
5.4.3.1 Response of High Terrorized Region on Spillover

The use of the Generalized Impulse Response Function (GIRF) helps to capture temporal spillovers by analysing how shocks propagate across regions over time. However, it does not explicitly account for geospatial dynamics, focusing on time-series relationships rather than direct physical proximity between countries. While physical proximity to the source of terrorism is indeed an important channel for spillover, it is equally critical to acknowledge that terrorism can spread across regions even when there is no close physical proximity. This is a point emphasized in the literature review of this chapter, which highlights that terrorism can also spread due to shared cultural or religious beliefs, as well as similarities in political and institutional structures.

For instance, Boko Haram's influence extended beyond West Africa to Mozambique, despite the two countries being over 3,500 km apart. This was due to its connection with ISIS, which also supported Mozambique's Ansar al-Sunna insurgency. Boko Haram fighters travelled to Mozambique to join the conflict, while arms smuggling routes facilitated the movement of weapons from West Africa to Southern Africa (ADF 2023; Neethling 2023).

By 2019, ADF (2023) report suggested Boko Haram-trained fighters were active in Mozambique. In 2021, the Mozambican government confirmed the presence of foreign jihadists, including those linked to Boko Haram. In 2022, Nigerian authorities arrested individuals suspected of ties to both Boko Haram and the Mozambique insurgency, proving coordination across vast distances.

Unlike typical terrorism spillover caused by proximity, this spread was driven by shared ideology, recruitment networks, and ISIS's role in fostering transnational terrorism. Mozambique sought military assistance from Rwanda and SADC, while Nigeria intensified counterterrorism efforts.

These examples lay a foundation to understanding the findings of this chapter and illustrate that spillovers can operate through non-physical pathways, such as shared governance challenges and ideological linkages. Therefore, while GIRF cannot fully capture geospatial dynamics, the results provide meaningful insights into temporal spillover patterns across countries with comparable structural vulnerabilities.

Examining the first graph (GIRFs) from the figure above, the internal dynamics of HTR shown, indicates a positive impact within High Terrorized Region at the first period, from period 1 to 5, but becomes negative significantly in the long run. A one standard deviation increase in terrorism

within HTR leads to an increase in terrorism in the short run but begins to decrease in the long run. This result could be attributed to high terrorist activity or a growing network within these countries, resulting in a self-perpetuating cycle of terrorism. A spike in terrorism within this group of countries in HTR will increase terrorism significantly, but not for long, terrorism activities start declining as seen in the GIRFs. HTR countries include Nigeria, Mali, Burkina Faso, Niger, Congo, and Cameroon, which are very close to each other, whereas countries like Mozambique and Egypt may be far away but interconnected through other means such as high religion, similar economic conditions, or family ties within these countries, which can create fertile ground for terrorism to grow and spread, making terrorist networks easier to recruit and operate. Also, many of these countries face threats from the same terrorist organizations, such as Boko Haram and its splinter group ISWAP, ISIS, jihadist groups and Al-Shabaab.

The incident that best illustrates this result is the Chibok schoolgirls' kidnapping by Boko Haram in April 2014. In this attack, Boko Haram militants abducted 276 schoolgirls from the Government Secondary School in Chibok, Borno State. The incident shocked the world, drawing widespread condemnation and sparking the viral "*#BringBackOurGirls*" campaign. The kidnapping's success emboldened Boko Haram, leading to intensified operations in subsequent years. The group increased its acts of terror, including large-scale abductions, bombings, and attacks on villages. Between 2015 and 2017, similar incidents occurred, such as the Dapchi school kidnapping, as Boko Haram continued to target educational institutions to spread fear and assert control (International, 2023; Osasumwen *et al.*, 2017). This escalation of violence demonstrated how a significant act of terrorism can trigger more terrorism in subsequent years, creating a cycle of instability and insecurity in the region.

Following the Chibok attack, internal divisions in Boko Haram led to the formation of a splinter faction, Islamic State West Africa Province (ISWAP), which sought to outdo Boko Haram through its own violent campaigns. This rivalry contributed to an increase in terrorist activity across Nigeria's northeastern region. As the Nigerian government and military launched counter-insurgency efforts, both Boko Haram and ISWAP retaliated with more frequent and brutal attacks. This cycle of violence escalated insecurity in the region, affecting neighbouring countries like Niger, Chad, and Cameroon, and increasing the overall incidence of terrorism year after year (Osasumwen *et al.*, 2017).

Regarding HTR reaction to terrorism shock from MTR in the second GIRFs, demonstrates a negative but insignificant spillover effect throughout the observed period. There is no sustained impact on high terror regions from moderate terror shocks.

However, terrorism shock from LTR (Low terrorized region) to HTR shows that a shock from low terror regions has an initially insignificant negative spillover from period 1- 3 and becomes significant from period 4 – 7 indicating minimal negative spillover effect on high terror regions. A one standard deviation increase in terrorism within LTR leads to a decrease in terrorism in HTR. The result can be justified based on the dynamics of regional terrorism and security collaborations. Terrorism shocks originating from low terrorized regions (LTR), such as Benin, Ghana, Tanzania, and Senegal, tend to have minimal immediate spillover effects on high terrorized regions (HTR), including Nigeria, Somalia, Mali, and Sudan, from periods 1 to 3. This could be due to the lower frequency and intensity of terrorism in LTR, limiting their ability to influence terrorism patterns in more volatile regions through direct incidents alone.

However, from periods 4 to 7, the spillover effect becomes significant, indicating that indirect effects such as strengthened regional security collaborations and cross-border counterterrorism measures take time to materialize. For example, initiatives like the G5 Sahel Joint Force and Trans-Sahara Counterterrorism Partnership demonstrate that coordinated efforts between regions help reduce terrorism through improved security infrastructure, intelligence sharing, and patrols.

The observation that a one standard deviation increase in terrorism in LTR eventually leads to a decrease in terrorism in HTR supports the notion that these regional measures reduce the operational capabilities of terrorist groups across borders. This outcome may arise from the heightened response of security forces and neighbouring countries after an incident in LTR. The reduced spillover effect indicates that low-terror regions typically do not escalate broader instability; instead, they may motivate regional actors to tighten counterterrorism strategies, helping to decrease terrorist activities in high-risk regions over time.

The response of high-terror regions in Africa to Middle Eastern terrorism is initially significant and positive, with the peak effect occurring around period 2. However, after period 7, the effect becomes insignificant, indicating a temporary spillover from the Middle East. This means that, a spike in terrorism in the middle east will increase terrorism significantly in the HTR, but not for long, terrorism activities start declining as seen in the GIRFs. This can be explained by the rapid

spread of extremist influence from Middle Eastern groups such as Al-Qaeda and ISIS. In regions like Nigeria and Somalia, terrorist organizations like Boko Haram and Al-Shabaab experienced a surge in activity due to funding, training, and ideological guidance from these global jihadist networks (Agbiboa, 2015; Botha, 2016). For instance, Boko Haram escalated its violence after aligning with ISIS in 2015, while Al-Shabaab pledged allegiance to Al-Qaeda in 2012 and intensified its attacks across East Africa (Agbiboa, 2015; Walker, 2012). These connections caused an immediate spike in terrorism, reflecting the observed early peak in significance.

However, after period 7, the effect of Middle Eastern terrorism on these regions becomes insignificant, indicating that the spillover was temporary. Over time, African terrorist groups began to operate more independently, driven by localized conflicts and socio-economic grievances. Boko Haram, for example, experienced internal divisions, splitting into factions (Boko Haram and ISWAP) while Al-Shabaab shifted its focus to regional issues such as the Somali civil war and border conflicts (Walker, 2012). As these groups adapted to their local contexts, the direct influence of Middle Eastern terrorism waned. This explains the declining significance of the spillover effect over time, consistent with the observed results in your analysis.

5.4.3.2 Response of Moderate Terrorized Region on Spillover

The internal dynamics of MTR shown, indicates a positive spillover effect within High Terrorized Region at the first period. The effect peaks around period 2, after which it gradually declines but remains mostly within the confidence bounds, showing some ongoing significance and the effect dies off after period 6. A one standard deviation increase in terrorism within MTR leads to an increase in terrorism in the short run resulting in a self-perpetuating cycle of terrorism but begins to decrease in the long run, this means that a spike in terrorism within this group of countries in MTR will increase terrorism significantly, but not for long, terrorism activities start declining as seen in the GIRFs.

An example is the rise of terrorism in East Africa, particularly involving Al-Shabaab, a Somali-based terrorist group that has significantly influenced regional security. In 2013, Al-Shabaab carried out the Westgate Mall attack in Nairobi, Kenya, killing 67 people. This attack was in retaliation for Kenya's military intervention in Somalia to combat Al-Shabaab in 2011 (Botha 2016). This event marked a significant escalation in Al-Shabaab's targeting of neighbouring countries.

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Spilling over into Uganda, prior to Westgate incidence, Al-Shabaab had already expanded its operations to Uganda. In July 2010, the group carried out twin bombings in Kampala, Uganda, killing 74 people who were watching the FIFA World Cup final. The attack was linked to Uganda's involvement in the African Union Mission in Somalia (AMISOM), where Ugandan troops played a leading role in counter-terrorism efforts against Al-Shabaab. Al-Shabaab's attacks in Kenya continued after the Westgate attack, including the Garissa University attack in 2015, which killed 148 people (Botha, 2016). These attacks have led to increased security cooperation and counter-terrorism efforts between East African nations but have also heightened fears and responses to terrorism in both Uganda and Kenya, demonstrating a cross-border impact.

In the case of MTR response to high terror (second row, first column) shows an initial negative and insignificant spillover effect, but this effect becomes positive and significant after period 5 and dies off the 7th period. This indicates that high terror shocks may have a short-term suppressing effect on terrorism in moderate terror regions. This means that an increase in terrorism within the HTR leads to an increase in the MTR within a short time. Following the previous example of the Al-Shabaab, a Somali-based terrorist (Somalia being part of the HTR countries) carried out the Westgate Mall attack in Kenya. These group also have ties with Boko Haram sharing training techniques, ideology, and sometimes recruitment efforts. This resulted in increased attacks by Al-Shabaab in Kenya (Botha, 2016).

Also, as Boko Haram's attacks intensified in Nigeria, the group began launching incursions into the Lake Chad Basin, including attacks in Chad's border regions. In 2015, Chad's capital, N'Djamena, was attacked by Boko Haram, prompting Chad to increase military operations against the group. This led to further retaliatory terrorist activities. Boko Haram expanded operations into Niger's Diffa region, causing multiple massacres and destruction. Niger's military involvement in joint operations (as part of the Multinational Joint Task Force) led to an uptick in terrorist activities within the country (Group, 2019).

Regarding MTR reaction to terrorism shock from LTR, demonstrates a positive but insignificant spillover effect throughout the observed period. There is little to no measurable impact on moderate terror regions from low terror shocks.

The response of MTR to Middle Eastern terrorism (second row, fourth column) shows an initial negative and insignificant spillover effect, but this effect becomes positive and significant in the

7th period and later dies off after the 13th period. This indicates that terrorism shock from the middle east may have a short-term suppressing effect on terrorism in moderate terror regions.

One key factor is the cross-border flow of arms and fighters. Following the Libyan Civil War and the downfall of Gaddafi in 2011, large caches of weapons fell into the hands of extremist groups like Al-Qaeda in the Islamic Maghreb (AQIM). These groups, influenced and supported by Middle Eastern terrorist networks, intensified attacks in Algeria and Tunisia. For instance, the 2013 Amenas gas plant attack in Algeria and the 2015 Bardo Museum attack in Tunisia occurred soon after escalations of violence and instability in Libya and across the Middle East (Marsh, 2017). These events demonstrate how terrorism in the Middle East can quickly spill over and raise terrorism rates in neighbouring countries.

In Chad, regional destabilization and the formation of terrorist alliances further explain the rapid effect of Middle Eastern terrorism on local incidents. Chad's proximity to conflict zones in the Sahel and its role in counter-terrorism operations have made it a target for terrorist groups like Boko Haram. Originally cantered in Nigeria, Boko Haram grew stronger after receiving ideological and logistical support from Middle Eastern terrorist groups. This led to a wave of attacks across the Lake Chad Basin. A notable increase in terrorism was observed after 2014, when ISIS declared its caliphate in Syria and Iraq, which energized global jihadist movements and encouraged local extremists to launch more attacks Action (2024).

Another crucial factor is the rapid spread of jihadist ideology and recruitment efforts. Middle Eastern terrorist groups, such as ISIS and Al-Qaeda, have influenced and mobilized terrorist cells and sympathizers across North Africa. In Algeria and Tunisia, returning fighters from Middle Eastern conflicts brought both experience and extremist ideology, leading to more attacks and recruitment activities. For example, after the rise of ISIS in 2014, both countries experienced a spike in terrorist incidents linked to regional extremist networks inspired by events in Iraq and Syria (Action, 2024).

The significance of the MTR effect becoming apparent in the 7th period suggests that although terrorist activities escalate quickly, there is often a lag before measurable spillover effects are observed. Initially, an increase in Middle Eastern terrorism may lead to covert activities such as arms trafficking, recruitment, and training. By the 7th period, these activities begin to materialize as an increase in terrorist attacks in countries like Algeria, Tunisia, and Chad.

In conclusion, the rapid and significant increase in MTR following Middle Eastern terrorism is supported by historical events where instability and extremist networks in the Middle East triggered widespread terrorist activities in Algeria, Tunisia, and Chad. Factors such as the cross-border movement of weapons, terrorist alliances, and ideological influence explain why the impact becomes evident within a relatively short time frame.

5.4.3.3 Response of Low Terrorized Region on Spillover

The impulse response results indicate that terrorism shocks from high terror, moderate terror, and even Middle Eastern regions do not have a sustained or significant influence on low terror regions. The spillover effects in these cases remain largely insignificant, as the blue line in the corresponding graphs stays within the confidence bounds throughout the observation period.

However, the graph showing the response of low terror regions to shocks from within their own group (third row, third column) reveals a brief, significant positive effect from period 1 to 2. This effect suggests that an internal terrorism shock within low terror regions may temporarily increase terrorism activity. Yet, this increase is short-lived, as the spillover effect becomes insignificant and eventually fades after period 2. This pattern indicates that low terror regions do not exhibit strong self-reinforcing terrorism dynamics, meaning any increase in terrorism within these areas is unlikely to sustain itself over time.

In countries such as Benin, Angola, the Central African Republic, Ghana, Liberia, South Africa, Madagascar, Senegal, Zambia, Tanzania, and Togo, terrorism incidents are few or non-existent. Several factors contribute to this low prevalence, making it difficult for terrorism to sustain itself within these nations over time.

One key reason is that many of these countries have not experienced the same level of conflict, political instability, or extremist infiltration seen in regions like the Sahel or North Africa. Countries like Ghana, Senegal, and Tanzania maintain stable political systems and strong social cohesion, which helps limit the spread of extremist ideologies. In these nations, governments have been proactive in addressing potential threats through regional cooperation, intelligence-sharing, and community engagement programs (Buchanan-Clarke & Lekalake, 2016).

Additionally, many of these countries do not have significant historical connections to global jihadist networks. Unlike nations that have experienced returning fighters or spillovers from

Middle Eastern or Sahel conflicts, countries such as Madagascar, Zambia, and Liberia have not served as recruitment hubs or operational bases for terrorist groups (Nations, 2022a). This lack of a direct connection to international extremist organizations reduces the risk of sustained terrorist activities within their borders.

Furthermore, socio-economic, and geographic factors play a role. Countries like Benin, Togo, and Zambia are not located near major terrorist hotspots or conflict zones, which decreases the likelihood of cross-border terrorism. For example, although the Lake Chad Basin region faces ongoing threats from Boko Haram, its influence has not significantly extended into Benin. Similarly, Tanzania, despite its large size and regional significance, has remained largely insulated from the instability affecting parts of East Africa, such as Somalia and Kenya (Vergun, 2023).

Countries like South Africa, while more economically developed and urbanized, also face limited terrorism threats due to a strong security infrastructure and the absence of major extremist networks. Although isolated incidents have occurred, such as occasional extremist threats or criminal violence, these are typically unrelated to the sustained, ideologically driven terrorism seen in other regions.

Lastly, the social and cultural environment in many of these countries fosters an atmosphere that is less conducive to extremism. Countries such as Ghana, Senegal, and Liberia emphasize religious and ethnic tolerance, which undermines the divisive narratives often used by extremist groups to recruit followers (ACCORD, 2023). As a result, these societies are more resilient against terrorism attempts.

In summary, the low incidence of terrorism in Benin, Angola, the Central African Republic, Ghana, Liberia, South Africa, Madagascar, Senegal, Zambia, Tanzania, and Togo can be attributed to stable governance, geographic insulation, weak links to global extremist networks, and strong social cohesion. These factors collectively hinder the ability of terrorist groups to establish a sustained presence or carry out regular attacks in these countries.

5.4.3.4 Response of Middle Eastern Terrorized Region on Spillover

The spillover effects from high, moderate, and low terror regions to the Middle East display an insignificant response that remains subdued throughout the entire observation period. Indicating

that terrorism shocks from these regions have no meaningful or sustained impact on terrorism levels in the Middle East.

In contrast, the spillover effect of Middle Eastern terrorism on itself, shown in the graph in the fourth row and fourth column, demonstrates a significant initial positive response. Following a one standard deviation shock, terrorism within the Middle East rises, peaking around period 3. However, this impact gradually declines and becomes insignificant after period 10. This indicates that while terrorism shocks within the Middle East can initially amplify terrorism in the short term, this effect is not maintained in the long term.

An example to illustrate this spillover within the Middle East countries is the U.S. invasion of Iraq in 2003 and the subsequent removal of Saddam Hussein which created a power vacuum that allowed terrorist organizations to thrive. In the aftermath, Abu Musab al-Zarqawi established Al-Qaeda in Iraq (AQI), which launched a series of deadly attacks. One of the most significant incidents occurred in 2004 when AQI bombed the Shiite Golden Mosque in Samarra, Iraq. This attack heightened Sunni-Shia tensions and triggered widespread retaliatory violence. Shia militias, many backed by Iran, carried out revenge attacks against Sunni communities, creating a vicious cycle of sectarian terrorism (Israeli, 2023). This cycle led to thousands of deaths and deepened the country's instability, providing fertile ground for the expansion of extremist groups.

As Iraq's security situation deteriorated, the conflict spilled over into neighbouring Syria, which was engulfed in its own civil war starting in 2011. Many fighters from AQI crossed into Syria and rebranded themselves as the Islamic State of Iraq and Syria (ISIS). In 2014, ISIS captured Mosul, Iraq's second-largest city, after a series of coordinated terrorist and military assaults. Shortly after, ISIS declared a "caliphate," controlling vast areas of both Iraq and Syria. The group became notorious for its brutality, including mass executions, suicide bombings, and the destruction of cultural heritage (Byman, 2015; Stansfield, 2016). These actions not only destabilized Iraq and Syria but also drew international attention and further deepened regional instability.

The rise of ISIS had a ripple effect across the Middle East, as the group inspired or directly orchestrated terrorist attacks in several countries. In Jordan, ISIS-affiliated militants attacked a police training centre in Amman in 2016, resulting in multiple fatalities. In Lebanon, ISIS carried out a bombing in a Shiite neighbourhood of Beirut in 2015, killing over 40 people. Similarly, Turkey suffered from numerous ISIS attacks, including the devastating 2016 bombing at Atatürk

Airport in Istanbul, which claimed the lives of 45 people (Stansfield, 2016). These incidents underscored how terrorism spread beyond Iraq and Syria, impacting the entire region.

The emergence of ISIS also triggered competition among other extremist groups. Al-Qaeda affiliates such as Jabhat al-Nusra sought to assert dominance, leading to further acts of terrorism and inter-group warfare. Meanwhile, various Syrian rebel factions, some backed by regional powers, contributed to the violence by engaging in terrorist tactics. This proliferation of armed groups and terrorist networks created a complex and volatile security environment, making it difficult for any single faction to maintain control (Byman, 2015).

The long-term impact of this chain of events has been profound. Prolonged terrorism and armed conflict have displaced millions of people, creating a refugee crisis that destabilized neighbouring countries like Jordan, Lebanon, and Türkiye. The instability also drew international intervention, with military involvement from the U.S., Russia, and Iran. These interventions, however, often fuelled local resentment and radicalization, further perpetuating the cycle of violence and terrorism across the Middle East.

This interconnected series of events demonstrates how a single event the 2003 invasion of Iraq can spark a cascade of terrorism and conflict that spreads across an entire region. The legacy of these conflicts continues to shape the security and political landscape of the Middle East today.

5.4.4 Robustness Check for Club Convergence

This subsection investigates the use of factor models for club clustering as a method of grouping African countries based on common terrorism characteristics. First using Bai and Ng (2002) method to determine the number of factors in factor model after which the factor model is used to group these countries, providing a more nuanced perspective on terrorism dynamics across the continent.

5.4.4.1 Number of Common Factors in Factor Models

The Bai and Ng (2002) method, implemented in Stata via the "xtnumfac" command, is a method of determining the optimal number of latent factors in a dataset, especially effective in time series and panel data models. This method entails a comprehensive statistical procedure in which a certain type of function, known as a "loss function," is penalised based on the size of the dataset (represented by the number of cross-sections N and time periods T). The goal of this penalty is to

avoid selecting too many factors, which could complicate the model without adding any useful information.

The loss function is a measure of the difference between actual data points and predicted values by a model based on specified criteria. It measures the squared discrepancies (errors) between observed data points (entities and time) and model estimations, impacted by factor loadings and common factors. The loss function is based on factor loading estimates, which are critical for understanding how each factor contributes to data variation. The loss function evaluates how well a model with a specific number of components fits the data. A lower loss function value suggests a better fit, which means the model's predictions are more closely related to the actual data points. However, Bai and Ng's technique includes a penalty term in this loss function to avoid selecting a model that is excessively complex (with too many elements), which aids in accurately estimating the 'actual' number of underlying factors. This balance helps to avoid overfitting and guarantees that the model is generalised and relevant beyond the sample data (Ditzen & Reese, 2023).

In practical terms, Bai and Ng (2002) propose two major types of criteria: Panel Criterion (PC) and the Information Criterion (IC). These criteria produce a set of statistical results (PCp1, PCp2, PCp3, ICp1, ICp2, and ICp3) based on various modifications and penalties. In essence, the method entails calculating these values for a variety of possible factor counts (from one to a maximum user-defined value, k-max). According to Bai and Ng (2002) technique, the 'optimal' number of components is that which minimises (Ditzen & Reese, 2023).

Table 5:4 Number of Common Factors in Factor Models

IC	factor	IC	# factors
PC_(p1)	4	IC_(p1)	4
PC_(p2)	4	IC_(p2)	4
PC_(p3)	4	IC_(p3)	4
ER	1	GR	0
GOS	9	ED	4

8 factors maximally considered. (PC) _p1 and IC_(pa) from Bai and Ng (2002) - ER, GR from Ahn and Horenstein (2013) - ED from Onatski (2010) GOS from Gagliardini et al. (2019).

The results of the Bai and Ng (2002) method, as applied to the table you provided, show consistency in the estimation of the number of factors across different criteria specifically designed by Bai and Ng: PC_p1 (Panel Criterion) and IC_p1 (Information Criterion). The table shows that, based on these criteria, the optimal number of factors to consider is 3. This consistency across PC_p1-p3 and IC_p1-p3 provides strong evidence that the dataset's true underlying structure is best represented by Three factors. The Panel Criterion and Information Criterion are intended to balance the model's fit to the data and its complexity, penalising models with too many factors to prevent overfitting, as evidenced by their unanimous decision on the eight factors.

The ED (Energy Distance) criterion, developed by Onatski (2010) is consistent with the findings of Bai and Ng (2002) criteria, reinforcing the conclusion that three factors are optimal. This consistency across methodologies demonstrates a strong underlying factor structure within the data set. Other criteria, such as ER (Eigenvalue Ratio), GR (Gap Ratio), and GOS from Gagliardini *et al.* (2019), suggest fewer factors (1 and 2 respectively), which may indicate different perspectives on data dimensionality depending on their specific methodologies. However, in the context of Bai and Ng's approach, the three-factor model is still regarded as the most informative and balanced representation of the data's underlying structure, highlighting the importance of a comprehensive approach to factor analysis in complex datasets.

5.4.4.2   Factor Model Analysis

DeCoster (1998) explained that the Factor Model is a statistical framework for decomposing the variability of observed variables into common and idiosyncratic components. It is assumed that the observed variables are linear combinations of a smaller number of unobserved latent factors and individual-specific error terms. The factor model has a variety of applications, including simplify complex data and data grouping. In this application, the factor model is used to identify groups or clusters of individuals or entities with similar patterns of behaviour, or characteristics based on observed variables.

In this application, we estimate factor loadings, which are the correlations between each observed variable and each latent factor. Factor loadings quantify the strength and direction of the relationship between variables and factors. Based on factor loadings, we group variables that exhibit similar patterns or are strongly related to the same latent factors. Variables with high

loadings on the same factor are more likely to be grouped together because they share similar underlying characteristics or dimensions captured by that factor.

Club convergence analysis investigates whether distinct groups of countries are moving towards or away from one another in specific characteristics, such as terrorism trends. Using factor models as a robustness check improves the validity of this analysis by providing an independent mechanism for grouping countries. This ensures that the observed convergence or divergence is not caused by noise or redundant information but rather reflects genuine underlying trends.

Delgado-Rodríguez *et al.* (2021) chose dynamic factor analysis over convergence club analysis to calculate short-term changes in the Ecological Footprint (EFP) of European Union countries. This approach was chosen because the EFPs in these countries do not tend to align or converge uniformly. They determined the significance of various "loading factors," which help understand how closely these countries' environmental impacts are related in the short term. To make the analysis clearer and more accessible, the European countries were ranked by the strength of these loading factors, from highest to lowest. These loading factors play a significant role in determining which countries have similar short-term environmental patterns.

Table 5:5 Factor Loadings

Variable	Factor1	Factor2	Factor3	Uniqueness	Club
Algeria	-0.142	0.015	0.198	0.718	*F3*
Angola	-0.063	-0.036	0.089	0.916	*F3*
Benin	0.009	0.037	0.330	0.551	*F3*
Burkina Faso	0.174	0.280	-0.250	0.246	*F2*
Cameroon	0.317	-0.015	0.101	0.124	*F1*
Central African Republic	0.255	-0.070	0.099	0.406	
Chad	-0.090	-0.086	0.046	0.931	*F1*
Egypt	0.133	0.069	-0.089	0.810	*F1*
Ethiopia	0.080	-0.277	0.206	0.207	*F2*
Ghana	0.113	-0.164	0.328	0.378	*F3*
Kenya	0.066	0.029	0.403	0.299	*F3*
Liberia	0.016	-0.059	0.233	0.829	*F3*
Libya	-0.337	0.295	0.075	0.272	*F1*
Madagascar	0.140	-0.291	0.207	0.086	*F2*
Mali	0.182	0.027	0.093	0.830	*F1*

Morocco	0.196	0.274	-0.104	0.181	*F2*
Mozambique	-0.057	-0.132	-0.060	0.909	*F2*
Niger	0225	0.325	-0.124	0.297	*F1*
Nigeria	0.278	0.143	-0.037	0.264	*F1*
Republic of the Congo	0.307	-0.079	0.132	0.134	*F1*
Rwanda	-0.042	-0.090	0.086	0.931	*F2*
Senegal	-0.102	0.376	0.243	0.268	*F2*
Sierra Leone	-0.114	0.059	0.117	0.834	*F3*
Somalia	-0.362	0.163	0.110	0.416	*F1*
South Africa	0.017	-0.027	0.305	0.215	*F3*
Sudan	-0.287	0.088	0.263	0.403	*F1*
Togo	0.038	-0.136	0.220	0.515	*F3*
Tanzania	0.109	-0.070	0.204	0.760	*F3*
Tunisia	0.272	-0.123	0.172	0.234	*F1*
Uganda	-0.151	-0.102	0.072	0.751	*F1*
Zambia	-0.063	0.012	-0.064	0.954	*F3*
Zimbabwe	-0.014	0.047	0.044	0.984	*F2*

8 factors were retained from the analysis, but only the first 3 was retained for the grouping owing to the Bai and Ng, 2002 method estimated previously.

The table above shows the factor loading of the terrorism data for 32 African countries. The grouping of this countries is done by selecting the countries with the highest loading (absolute value) on a particular factor as one group. As seen above countries like Nigeria, Congo, Mali, Burkina Faso, Mozambique, Niger, Cameroon, Egypt, and Tunisia have high loadings on the first factor, which are all included in Club 1. Ghana, South Africa, Benin, Zambia, Togo, Tanzania, Kenya, Uganda, Algeria, Senegal, Morocco are classified as club 2 because of their high loadings on factor 2. This suggests a significant link with the qualities or dynamics indicated by Factor 2, which may differ from those in Factor 1.

Table 5:6 Club Classification Result based on Factor Loading

Clubs	Countries	Clubs Name
Club 1 (12)	Nigeria Somalia Sudan Mali Niger Cameroon Libya Republic of the Congo Egypt Chad Tunisia Uganda	High Terrorized Region (HTR)
Club 2 (8)	Ethiopia Morocco Rwanda Zimbabwe Burkina Faso Mozambique Madagascar Senegal	Moderate Terrorized Region (MTR)
Club 3 (12)	Algeria Angola Benin Kenya Ghana SierraLeone Central African Republic South Africa Zambia Tanzania Togo Liberia	Low Terrorized Region (LTR)

The table above shows the classification of the clubs based on the factor loading discussed previously. Comparing the groups from the Philip Sul club convergence to the factor model as a robustness check, we see certain commonalities that confirms the classification of nations based on their terrorist characteristics:

Nigeria, Congo, Mail, Burkina Faso, Niger, Cameroon, and Egypt are included in club 1 in both the Philip Sul club convergence and factor model analyses. This shows a common feature of higher levels of terrorism among the countries in the clubs from both methods. This consistency across both grouping approaches emphasises the commonality in their terrorist-related attributes, while Tunisia is introduced into the club1 of the factor analysis.

Only Kenya, Tanzania, Ghana, Benin, Zambia, and Togo are included in club 2 in the Philip Sul club convergence and were considered moderate terrorized regions and Uganda, Algeria, South Africa, Senegal, Morocco were included in club 3 in the Philip Sul club convergence. The factor model club 2 consists of the combination of Philip Sul club convergence club 2 and club 3 aside from Tunisia suggesting a moderate-low terrorized region. This average consistency across both

clustering approaches emphasises the commonality in their terrorist-related attributes, resulting in a reduced terrorism profile.

5.4.4.3 Generalized Impulse Response Function

The impulse response functions demonstrate the impact of terrorism within and between two groups of countries. The first set, Club 1, contains countries with high terrorism rates, and the IRF shows how a shock within this group affects itself. The second set, Club 2, is made up of countries with low terrorism rates, demonstrating both the internal impact of a shock and how a shock from Club 1 influences Club 2.

Figure 5:4 Generalized Impulse Response Function for Robustness Check
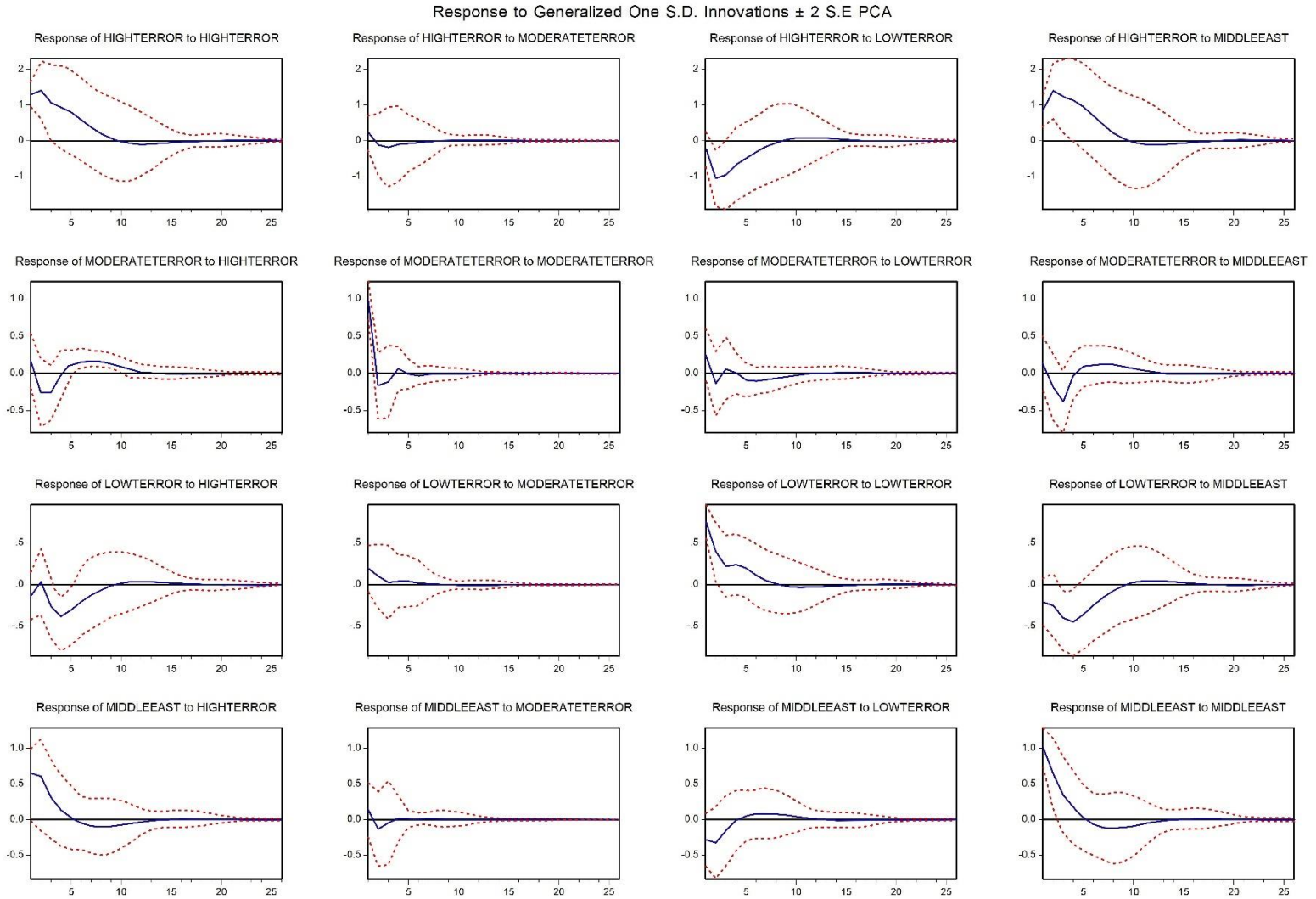
As a robustness check, another impulse response function (IRF) analysis was conducted using a factor model to group countries. This approach produced the same groupings as the High Terror Region (HTR), Low Terror Region (LTR) and Moderate Terror Region (MTR) with only few countries moved around.

The results from this factor model GIRFs confirm the findings of the club convergence grouping GIRFs. It indicates that a one standard deviation increases in terrorism within the HTR, MTR,

LTR, and Middle East leads to a significant rise in terrorism within these regions in the short run. However, this effect diminishes over time, eventually becoming insignificant in the long run.

The factor model GIRFs also corroborates that a terrorism shock originating in the Middle East can significantly increase terrorism in the HTR in the short term. However, this effect is short-lived, with terrorism activities starting to decline over time, consistent with the GIRF results from the club convergence grouping.

In contrast, other IRFs within the factor model groupings remain largely insignificant, reinforcing the conclusion that cross-regional spillover effects are limited and do not sustain over time.

5.5 Conclusion and Recommendations

This section provides a comprehensive discussion of the conclusions drawn from the chapter, offering a brief overview of the research objectives, key findings, and theoretical insights. It also presents detailed policy recommendations based on the analysis's results, aimed at mitigating the spillover effects of terrorism and enhancing regional security.

5.5.1 Conclusion

The primary objective of this chapter was to investigate the immediate spillover effects of terrorism across different regions in Africa, particularly examining how terrorism in one region can influence the levels of terrorism in neighbouring regions. The scarcity of literature addressing the direct spillover of terrorism between regions highlighted a significant gap in understanding the broader impacts of terrorism beyond individual countries. Existing studies predominantly focus on the macroeconomic effects of terrorism, such as impacts on trade, income, and military spending, rather than the direct transmission of terrorist activities. This chapter aimed to fill this gap by exploring the dynamics of terrorism spillover between high, moderate, and low terrorized regions in Africa.

The theoretical foundation of the chapter was based on the Theory of Contagious Violence, which parallels the spread of violence to the spread of contagious diseases. This theory posits that exposure to violence increases the likelihood of individuals participating in violent activities themselves, much like how diseases spread through contact. The concept of social contagion was crucial, as it explained how extremist ideologies and violent behaviours can propagate through media, social networks, and community interactions, inspired by groups in different regions. The

chapter also integrated Albert Bandura's Social Learning Theory, which suggests that people learn behaviours through observation, further elucidating how terrorist tactics and strategies are adopted by distinct groups.

The chapter formulated several hypotheses to explore the spillover dynamics of terrorism. These hypotheses posited that terrorism might spill over from high to low terror regions and vice versa, or it might not spill over at all. These propositions were essential in examining the direction and magnitude of terrorism spillover across regions with distinct levels of terrorist activity. To test these hypotheses, the chapter employed Vector Autoregression Analysis (VAR) and the Impulse Response Function (IRF). This methodological framework allowed for a detailed analysis of the temporal effects of terrorism shocks from one region on another, providing a comprehensive understanding of the spillover dynamics.

The results from the VAR/GIRF analysis revealed that in high-terrorized regions (HTR), such as Nigeria, Mali, and Cameroon, exhibits an initial surge following a shock but declines over time, suggesting a short-term cycle of intensified violence. These regions are highly interconnected through networks of terrorist groups like Boko Haram, ISWAP, and Al-Shabaab, which contribute to self-perpetuating cycles of violence. External influences, such as support and ideological alignment with Middle Eastern terrorist groups (e.g., ISIS and Al-Qaeda), temporarily escalate terrorist activities but become less significant as local conflicts, governance issues, and socio-economic pressures drive long-term dynamics. In moderate-terrorized regions (MTR), terrorism similarly increases following shocks but gradually stabilizes as cross-border counter-terrorism efforts and regional security collaborations take effect. In contrast, low-terrorized regions (LTR) experience minimal and short-lived impacts from both internal and external terrorism shocks, owing to stronger governance, regional stability, and weaker ties to global extremist networks. These patterns highlight the varying degrees of spillover and resilience among regions based on their socio-political and institutional contexts.

To ensure the robustness of the findings, the chapter conducted a robustness check using factor analysis to validate the club grouping of countries, with only minor adjustments in country classification. The robustness check confirmed the initial groupings, showing similar spillover dynamics. The factor model GIRFs confirmed the findings from the club convergence analysis, showing that a one standard deviation increase in terrorism within each region leads to a significant

rise in terrorism in the short term, followed by a decline over time. Additionally, the analysis validated that terrorism shocks from the Middle East temporarily escalate terrorism in the HTR but eventually lose significance in the long term. Cross-regional spillover effects remained largely insignificant, reinforcing the conclusion that regional terrorism dynamics are predominantly localized and not sustained across regions over time. The chapter's comprehensive approach to examining the spillover effects of terrorism offers valuable insights for policymakers, emphasizing the need for regional cooperation and strategic interventions to counter the spread of terrorism.

5.5.2 Recommendation

Based on an in-depth analysis of terrorism spillover effects across various African regions, several policy proposals arise to reduce terrorism's expansion while improving regional security and stability. The findings show that, while terrorism tends to increase in the short run because of internal and external shocks, solid socioeconomic conditions and political stability can serve as effective barriers to its spread. As a result, policies should focus on strengthening these sectors to mitigate the long-term effects of terrorism.

Governments and international organizations should priorities investments in socioeconomic development to address the core causes of terrorism. Initiatives should focus on expanding access to excellent education, healthcare, and economic opportunities in vulnerable areas. Creating jobs and increasing local economies might lessen the attraction of terrorist organizations, who frequently use economic issues to recruit members. Furthermore, improving political stability through excellent administration, anti-corruption measures, and inclusive political processes can increase faith in government institutions and minimize the chance of people turning to violence.

Improving Regional Cooperation and Intelligence Sharing: Given the global character of terrorism, regional cooperation is critical. African countries should reinforce existing collaborative mechanisms, such as the African Union's Peace and Security Council, to improve communication and cooperation in the fight against terrorism. This includes increasing international intelligence cooperation to identify and counter terrorist groups' movements. Joint military training exercises and coordinated operations can help national security forces respond quickly and effectively to terrorist threats.

Using Technology and social media for Counterterrorism: The chapter focuses on how terrorist organizations such as ISIS have successfully used social media to propagate their ideology and

methods. Governments should devise counterterrorism methods that use technology to monitor and disrupt these conversations. This includes working with social media firms to identify and remove extremist information, as well as creating counter-narrative efforts that promote peace while undermining the attraction of terrorist propaganda. Digital literacy programs can also assist communities in detecting and combating online radicalization activities.

Community Engagement and Local Resilience: Involving local communities in counter-terrorism measures is critical. Policies should support community-based programs that promote resilience against extremist ideology. This entails collaborating with local leaders, religious figures, and civil society organizations to foster social cohesion and solve issues that terrorists may exploit. Establishing early warning systems and community policing efforts can help communities notice and report suspicious activity, preventing terrorism from spreading.

Addressing Cross-Border Issues and Improving Border Security: Because terrorist organizations frequently operate across countries, improved border security is critical. This includes investing in modern surveillance technologies, increasing border police capability, and conducting frequent cross-border security assessments. Collaborative efforts with neighbouring nations to manage and safeguard borders can help to prevent terrorist mobility and the smuggling of weapons and supplies that fuel terrorist activity.

By implementing these policy recommendations, African countries may build a more resilient environment that reduces the spread of terrorism and supports long-term peace and stability. These measures' effectiveness depends on a comprehensive strategy that includes socioeconomic development, regional cooperation, technology innovation, community engagement, and improved border security.

Chapter Six

6.0   Economic Resilience and Terrorism in Africa: Does Institutional Quality matter?

6.1   Introduction

This chapter further investigates the interaction between the economy and terrorism, particularly the concept of economic resilience which refers to an economy's ability to withstand or recover from external shocks, such as terrorism. As discussed in the introductory chapter (Chapter 1) of this thesis, the act of mindless violent terrorism poses a grave threat to humanity, undermining the collective knowledge and progress achieved by human civilization over centuries and millennia. They strike at the very essence of our humanity. While social and behavioural scientists have presented various interpretations and definitions of terrorism, a common element across these perspectives is the presence of a political message intertwined within these acts of violence, whether overt or covert. The ultimate aim is to achieve social or political objectives by instilling fear among a broader target audience beyond the immediate victims of the violence (Brandt & Sandler 2012). This intimidation can be accomplished through actual violent acts or even mere threats of violence, without necessarily being motivated by monetary gains or the confiscation of assets by the perpetrators.

Over time, terrorism has been analysed from various perspectives, including historical, sociological, psychological, political, and geopolitical lenses. However, its impact can extend to substantial economic repercussions. Major terrorist incidents in Africa such as the Boko Haram Insurgency in Nigeria, Al-Shabaab Insurgency in Somalia, Al-Qaeda in the Islamic Maghreb among others, can lead to a decline in business and consumer confidence, which in turn hampers investment and consumption, negatively affecting the overall macroeconomic performance. Attacks targeting critical infrastructure such as oil pipelines or rail and road network can cause significant disruptions in transportation, communication, and the economy (Estrada, et al. 2015). Some terrorist actions are specifically designed to inflict economic harm on the targeted country,

nevertheless, it has been argued that terrorism not only produces economic consequences but can also be rooted in economic causes.

Although, the root causes of terrorism have been established to be multifaceted and encompass a wide range of factors, including religious extremism, feelings of alienation from society, and anger towards perceived geopolitical injustices, within this complex framework, economic factors play a role in explaining the emergence of terrorism (Estrada et al. 2015). Economic stagnation can restrict employment opportunities and diminish economic prospects for the youth, which When combined with other social and political elements, the delay in economic resilience becomes a potent driver of terrorism. This issue is particularly acute in countries with a relatively young population and a substantial number of young individuals. In such cases, a large and growing segment of disillusioned youth, grappling with hopelessness and uncertainty about their future, provides fertile ground for recruitment by terrorist organizations. Despite the significant economic causes and consequences of terrorism, there has been a notable absence of formal economic models specifically addressing the economics of terrorism. To this end, a key question this paper seeks to answer is, does any causal relationship exist between terrorism and economic resilience in Africa?

Deficiencies in institutions have had negative repercussions on Africa's economic progress which has in return spiked terrorism, and it is crucial not to neglect counter-terrorism e orts as essential governmental duties. Hence, our first pivotal contribution of this paper lies in the integration of institutional quality as a crucial moderating factor within our proposed econo-metric model, significantly enriching the analysis of economic resilience and terrorism in the context of Africa. While previous studies have independently investigated the impacts of economic resilience and terrorism on African nations, for example, (Asongu & Biekpe 2018). The intricate role of institutional quality has remained largely unexplored in this multifaceted relationship. By introducing institutional quality as a component variable into our model, we aim to uncover the nuanced ways in which the effectiveness and stability of institutions within a country mediate the resilience-building e orts in the face of terrorism.

The second integral and pioneering facet of this study lies in its methodological refinement that entails a rigorous dynamic panel data estimation horse-race. While previous studies have indeed deployed various estimation techniques including the Generalized Method of Moments (GMM) (Asongu & Biekpe 2018). Feasible Generalized Least Square (FGLS), (Polyxeni & Theodore

2019) Fixed Effect (FE) OLS and first stage GMM (Blomberg & Broussard et al. 2011) among others, in examining the economic impact of terrorism in Africa, the comprehensive exploration of the multifaceted interactions of economic resilience, terrorism, and institutional quality through a systematic model comparison selection process has remained conspicuously absent from the academic discourse.

Evidence from our study, investigating the multifaceted relationship between terrorism, economic resilience, and institutional quality in Africa, demonstrate that terrorist activities inflict both direct and indirect economic damage through infrastructure destruction, diminished investor confidence, and the disruption of core economic functions (Abadie & Gardeazabal 2003; Asongu & Tchamyou et al. 2017; Blomberg et al. 2011). Our empirical evidence indicates that the financial toll of terrorism has increased markedly across the continent, with Nigeria enduring a disproportionate share of these losses (Okoli & Lenshie 2022). Nonetheless, economies with robust governance structures, encompassing transparent regulatory frameworks, political stability, and effective anti-corruption measures, are found to weather terrorist shocks more effectively. In these contexts, institutions act as a stabilizing force, allowing for quicker recovery from disruptions and reducing the long-term economic repercussions of terrorism (Acemoglu & Johnson et al. 2001; Mehlum, Moene et al. 2006; North 1990).

Furthermore, methodologically, our research employs rigorous panel-data techniques to capture both short- and long-run dynamics. By comparing First-Difference Generalized Method of Moments (FD-GMM), System GMM (SYSGMM), and Corrected Least Squares Dummy Variable (CLSDV) estimators, our study identifies CLSDV as the most robust method for capturing the interplay between terrorism, institutional quality, and economic resilience (Blundell & Bond 1998; Bruno 2005). Our findings further underscore the positive influence of foreign direct investment (FDI) and financial development on economic stability, provided that governance institutions are sufficiently (Levine 2005). Additionally, government expenditure is revealed to play a pivotal role in offsetting the destabilizing effects of terrorism, particularly when channelled into infrastructure, security, and human capital improvements (Alesina & Ardagna 2010).

Our results emphasize the necessity for policymakers to implement institutional reforms that bolster good governance and transparency, thereby enhancing the region s capacity to absorb and rebound from terrorism-induced shocks. Such reforms, coupled with policies aimed at attracting

FDI and stimulating financial sector growth, can reinforce economic resilience across African nations (Acemoglu & Robinson 2012; Easterly & Easterly 2006; Rodrik 2000). By fostering inclusive economic strategies and strengthening governance systems, governments can curb the adverse impacts of terrorism on long-term growth, paving the way for sustained stability and prosperity on the continent.

The structure of the remaining sections of this chapter is as follows: Section 6.2 offers an insight into the stylized facts related to terrorism, Institutional Quality, and economic resilience in Africa. Section 6.3 provides the theoretical foundation of our research, while Section 6.3.1 presents empirical literature. Section 6.4 details our approach to dynamic panel data estimation, with Sections 6.4.1 through 6.4.2 elaborating on the modelling of First Difference GMM, System GMM, and Corrected Least Square Dummy Variable estimation methods. Section 6.5 discusses the data and methodology while sections 6.5.1 and 6.5.2 present the variable definition and econometric method selection rationale, respectively. Section 6.6 presents our empirical findings and their discussion. Finally, Section 6.7 concludes the chapter and outlines its policy implications.

6.2   Stylized Facts: Terrorism, Institutional Quality, and Economic Resilience in Africa

After a prolonged period of conflicts, social turmoil, and political instability, Africa has demonstrated significant progress in terms of democracy, economic expansion, and overall development during the past decade. Despite these positive advancements, there is a growing concern about the emergence of terrorism and its detrimental impact on peace, security, and development within the region. The escalation in both frequency and severity of attacks in certain African countries in recent years highlights the increasing sophistication of terrorist groups in this part of the continent. Although specific data for individual countries is not provided, the United States' 2011 Country Report on Terrorism indicated that Africa witnessed a total of 978 attacks in 2011, representing an 11.5% rise compared to 2010. Much of this increase can be attributed to the more frequent attacks carried out by the Nigeria-based terrorist organization, Boko Haram, which conducted 136 attacks in 2011, a significant surge from the 31 attacks reported in 2010. Furthermore, in 2012, Boko Haram escalated their activities, launching 364 terrorist attacks that resulted in the tragic loss of 1,132 lives (Tanchum, 2012).

Terrorism has had a profound and multifaceted impact on the economic landscape of Africa. The continent has experienced a significant increase in terrorist activities over the past decade, with profound implications for institutional quality and economic resilience. The Institute for Economics and Peace (2022) reported that Sub-Saharan Africa accounted for seven of the ten countries with the largest increases in terrorism-related deaths from 2018 to 2019, highlighting the escalating threat of terrorism in the region (Institute for Economics and Peace, 2022). Nigeria, Somalia, and Mali have been severely affected by terrorism, with Nigeria alone experiencing 1,245 deaths in 2019 attributed to Boko Haram and other militant groups. The economic ramifications of terrorism in Africa are substantial, encompassing both direct and indirect impacts. Direct impacts include the destruction of infrastructure and assets, while indirect impacts manifest through reduced investor confidence, lower foreign direct investment (FDI), and disrupted economic activities. For instance, a study by Abadie and Gardeazabal (2003) demonstrated that terrorism significantly reduces GDP per capita by diminishing economic activities and deterring investments. According to the Institute for Economics and Peace (2022), Boko Haram's insurgency has cost the Nigerian economy approximately $9 billion annually, illustrating the severe economic toll of terrorism.

Based on research conducted by The Institute for Economics & Peace (IEP), the economic toll of terrorism in Africa reached US$15.5 billion in 2016. This represents a drastic increase of more than ten-fold from the estimated economic cost of US$1.54 billion in 2007. In terms of proportion, Africa's share of the global economic impact of terrorism surged from 4.2% in 2007 to 20.3% in 2016. Over the ten-year span from 2007 to 2016, the financial impact of terrorism on the African continent amounted to at least US$119 billion, with this figure likely to be considerably higher when factoring in GDP losses, informal economic activity, increased security expenses, and costs related to refugees and internally displaced persons (IDPs). Among the 20 focus countries of interest in this chapter, Nigeria endured the most severe economic repercussions of terrorism, accounting for a staggering 89% of the total US$109 billion cost over the decade. Nigeria's economic impact was remarkably higher, reaching US$97 billion, compared to Burkina Faso, which experienced the lowest absolute economic impact among the 18 focus countries. This difference was also notable in comparison to Libya, which had the second-highest cost of terrorism during the ten-year period but was nearly 19 times smaller than Nigeria's impact (Okoli & Lenshie, 2022).

In terms of security expenditure, the African continent has generally allocated relatively limited resources to securitization. From 2007 to 2016, the estimated total security spending for the continent was about US$838 billion. While this amount is substantial, it equates to around US$84 billion per year or is roughly equivalent to immunizing 117 low and lower-middle-income countries for approximately ten years. Of this total, the 20 focus countries accounted for over 30%, with at least US$259 billion allocated to securitization. Given the substantial terrorist activities occurring in Nigeria, it is unsurprising that the country has invested the most in security during the ten-year period up to 2016, amounting to US$78.4 billion. The evidence illustrates the correlation between security spending by country and the levels of terrorist activity throughout the decade from 2007 to 2016. The Central African Republic allocated the least amount in absolute terms during this period, with US$614 million, while Morocco and Sudan, both categorized as "at risk" focus countries, ranked second and third in terms of highest securitization spending since 2007, with expenditures of US$43 billion and US$32 billion, respectively (Yayla & Yahaya, 2023).

Evidence from the study of Brück (2007) indicates that violence has detrimental effects on various aspects of the economy, leading to reduced investment in capital-intensive sectors, lower productivity, and decreased returns. Businesses tend to divert their investments towards conflict-related goods rather than focusing on the production of consumption and exportable goods. Investors also shift their preferences from high-risk, high-return, long-term projects to low-risk, low-return, short-term endeavours. The presence of violence creates significant risks, resulting in a decline in foreign direct investment due to increased crime-related costs and perceived dangers associated with violence. In cases of intense conflict, capital tends to flow out of the country, further aggravating the economic situation. These adverse consequences create a vicious cycle of economic effects, including slower economic growth, higher volatility, heightened uncertainty, and increased unemployment. The negative impact on economic growth and development caused by violent extremism can exacerbate existing drivers and grievances, leading to a dangerous cycle. This decline in economic performance, combined with social and political fragmentation in vulnerable contexts, contributes to the deterioration of peace within the affected regions.

According to Ishaku *et al.* (2021), while violent extremism has significant economic implications, it is challenging to precisely attribute specific changes in the economy solely to this factor. Economies are complex, interconnected systems where numerous factors mutually influence one

another. In 2018, research by the IEP estimated that over the past 70 years, countries with high levels of peace experienced three times higher GDP growth (around 2.8 per cent per annum) compared to countries with low peace levels, such as the focus countries in the study. The inflation rate was approximately three times higher and ten times more volatile in low-peace countries compared to high-peace countries, while foreign direct investment was estimated to be twice as high in high-peace countries. This disparity in economic growth and performance between countries with high and low peace levels contributes to a concerning trend of increasing divergence in economic prosperity, further heightening the potential for a vicious cycle of poverty and conflict. Nations experiencing heightened levels of violent extremism have exhibited lower rates of economic expansion compared to countries with less extremism. Among the set of focus countries, there exists a significant 64% variation in GDP growth between those with high and low terrorism levels. Over the period from 2002 to 2016, on average, countries categorized as" at risk" achieved a GDP per capita increase of 47%, while" spill-over" countries saw a growth of 36%. In sharp contrast, countries designated as" epicentres" experienced an average decline of 17% in GDP per capita (Naor, 2015).

Institutional quality plays a critical role in mediating the economic impacts of terrorism. High-quality institutions, characterized by governance effectiveness, regulatory quality, rule of law, and control of corruption, enhance a country's ability to withstand and recover from terrorist attacks. Acemoglu *et al.* (2001) argued that institutions fundamentally influence economic outcomes by shaping incentives and reducing uncertainty. Countries with robust institutions, such as Botswana, have demonstrated greater economic stability despite external shocks, including terrorist activities (Acemoglu & Robinson, 2010). Conversely, weak institutions exacerbate the adverse effects of terrorism by fostering environments where corruption, inefficiency, and political instability thrive. For example, countries with pervasive corruption and poor governance, such as Somalia, struggle to maintain economic stability amid terrorist threats. Transparency International's Corruption Perceptions Index (CPI) consistently ranks many African countries among the most corrupt globally, correlating with higher vulnerability to terrorism (International, 2020). Somalia, which ranks at the bottom of the CPI, faces significant challenges in establishing effective governance and reducing terrorist activities.

Economic resilience, defined as the capacity of an economy to absorb and recover from shocks, varies significantly across African countries. Nations with diversified economies and robust institutions tend to exhibit greater resilience. For instance, South Africa, with its diversified economic base and relatively strong institutional framework, has demonstrated a higher capacity to withstand economic shocks from terrorism compared to less diversified economies like Chad (Mehlum *et al.*, 2006). South Africa's GDP growth, despite facing terrorist threats, averaged 1.4% between 2010 and 2019, showing its relative resilience. However, many African countries face institutional weaknesses that undermine their economic resilience. The prevalence of corruption, political instability, and weak governance structures creates a challenging environment for economic stability. According to the World Bank's Worldwide Governance Indicators (WGI), many African nations score poorly on governance metrics, which correlates with higher economic vulnerability to terrorism (World Bank, 2020). For instance, the WGI scores for Nigeria and Somalia in 2019 were-1.05 and-2.25, respectively, on a scale from -2.5 to 2.5, indicating significant governance challenges.

Data indicates that countries with stronger institutional frameworks are better equipped to manage the economic impacts of terrorism. For instance, Rwanda's post-genocide governance reforms have led to improved institutional quality and economic resilience, enabling the country to attract significant FDI despite regional security challenges (Ansoms & Rostagno, 2012). Rwanda's FDI inflows increased from $119 million in 2009 to $398 million in 2019, reflecting investor confidence in the country's governance reforms. Further data from the GTI reveals that Nigeria, Somalia, and Egypt have been particularly affected by terrorism, with Nigeria alone experiencing 1,245 deaths in 2019 attributed to Boko Haram and other militant groups (Institute for Economics and Peace, 2022). In comparison, countries with higher institutional quality, like Mauritius, have remained relatively insulated from such extreme impacts, emphasizing the protective role of robust institutions. Mauritius, with a WGI score of 1.0 in 2019, has managed to maintain economic stability and growth despite regional security issues.

The correlation between institutional quality and economic resilience is also evident in investment trends. According to the United Nations Conference on Trade and Development (UNCTAD), FDI flows to Africa were estimated at $45 billion in 2019, with countries exhibiting higher institutional quality, such as South Africa and Egypt, attracting the majority of investments (United Nations

Development Programme, 2020). Conversely, countries plagued by terrorism and weak institutions, like Libya and Somalia, saw minimal FDI inflows, reflecting investor aversion to risk-laden environments. Libya, with its ongoing conflict and weak institutions, saw FDI inflows of only $374 million in 2019, compared to South Africa's $4.6 billion.

6.3   Theoretical Motivation

Several scholars have examined various typologies of terrorism disaster impacts (see, for example, Cochrane (2004); Lindell and Prater (2003); Pelling *et al.* (2002); Rose and Krausmann (2013)). These typologies typically delineate between direct and indirect losses. Direct losses denote the immediate repercussions of the terrorism disaster's physical manifestations, such as damage to buildings, infrastructure, injuries, and fatalities caused to humans and live stocks.

Direct losses are commonly categorized into direct market losses, encompassing tangible goods like properties and businesses, and direct non-market losses, which pertain to intangible entities such as human lives and ecosystems. On the other hand, indirect losses, also referred to as" higher-order losses" according to Rose and Krausmann (2013), encompass all impacts not directly caused by the terrorist attacks itself but by its aftermath. These losses unfold over an extended period beyond immediate event, often affecting broader geographical areas or different economic sectors. However, for the purpose of this chapter, we use alternative terminology such as asset losses (that include the reduction in assets stocks) and output losses (that include the disruption of businesses and supply chain, production losses, and macroeconomic feedback including long-term effect on economic growth).

With the illustration presented above, it becomes easy to draw the connecting line from asset losses to output losses which defines the economic ability to return to its initial state of operation. Therefore, the impairment of assets renders them incapable of productive use: for instance, a factory suffering damage cannot manufacture cars, a damaged road becomes impassable, and a compromised house cannot be inhabited. The initial phase of evaluating output losses involves quantifying the extent of output reduction resulting from these direct asset impairments. A clear demonstration of the significance of these output losses lies in contrasting terrorism scenarios characterized by different rates of reconstruction. From a welfare perspective, considerable disparity exists between a scenario where all direct losses are swiftly rectified within a few months

due to an effective reconstruction process and another scenario where reconstruction efforts are sluggish, spanning over several years.

Following from economic theory, it is posited that, at the state of economic equilibrium and subject to specific circumstances, the worth of an asset corresponds to the net present value of its anticipated future production (Brealey *et al.*, 2014). Consequently, the annual reduction in output can be expressed as the product of the lost capital's value and the marginal productivity of capital, which is equivalent to the interest rate augmented by the depreciation rate (Pindyck *et al.*, 2013). However, under the assumption that this equality always holds true, attributing the output loss solely to capital loss would essentially amount to equating it with the value of the impaired asset, resulting in a form of double counting (Varian, 2014). Figure 1 elucidates this concept in a scenario devoid of reconstruction efforts: in such instances, the production lost due to terrorism disaster aligns with the value of the impaired assets. In assessments of terrorism repercussions, the term" asset loss" typically denotes the replacement value of capital. Achieving parity between asset loss and output loss necessitates verifying a dual equality: firstly, ensuring that the replacement value equals the market value, and secondly, confirming that the market value aligns with the net present value of anticipated output.

Figure 6.1: Production as a function of Time
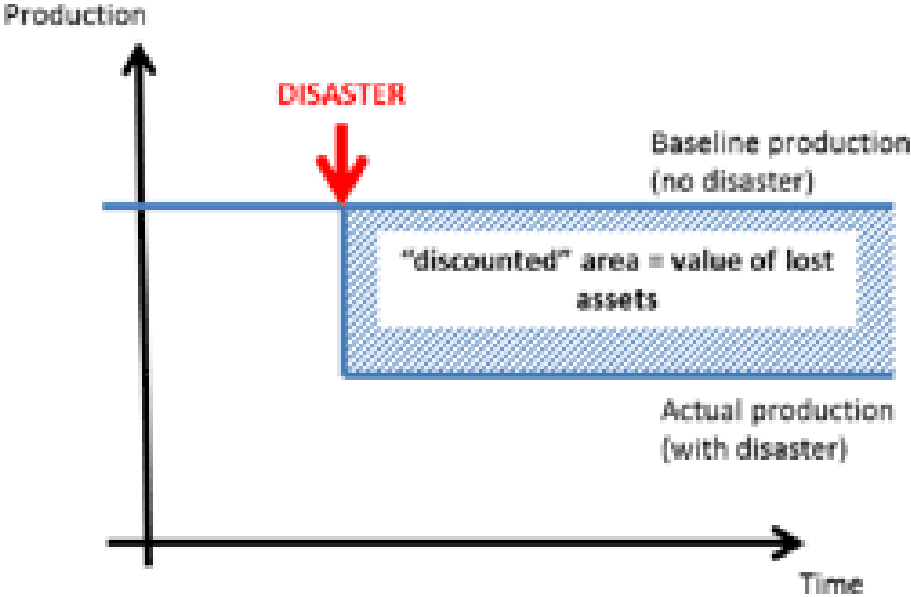
Source: Hallegatte (2014)

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6.4 Empirical Literature

Institutional quality is a critical determinant of economic resilience in Africa. High-quality institutions, characterized by effective governance, rule of law, and control of corruption, are essential for fostering a stable economic environment that can withstand and recover from shocks, including terrorism. Ouedraogo *et al.* (2022) highlights that government effectiveness, political stability, and the absence of violence, including terrorism, significantly enhance human capital development, which in turn bolsters economic resilience. Cassimon *et al.* (2022) emphasize the importance of good governance in achieving food and nutrition security in Sub-Saharan Africa. Their study shows that institutional quality, measured through governance indicators, significantly influences the effectiveness of capital flows in improving food security outcomes, thereby contributing to economic resilience. Similarly, the United Nations Development Programme (2020) underscores the role of institutional frameworks in mitigating the economic costs of terrorism, suggesting that countries with robust institutions are better equipped to manage and recover from terrorist activities.

Terrorism has a profound impact on economic activities in Africa, affecting both formal and informal sectors. Kohnert (2022) examines the impact of Islamist terrorism on the informal economy in Kenya, Ghana, and Senegal, revealing that terrorist activities disrupt informal trade networks and exacerbate poverty and economic instability. The study by Sekrafi *et al.* (2021) further corroborates these findings, showing that terrorism negatively affects both formal and informal economies in African countries, leading to reduced economic growth and increased vulnerability. The economic costs of terrorism are substantial. United Nations Development Programme (2020) reports that the economic impact of terrorism in Africa's focus countries rose dramatically from $753 million in 2007 to $14 billion in 2016, with the epicentre countries such as Nigeria, Mali, Somalia, and Libya enduring the most of these costs. This significant economic burden underscores the need for effective institutional mechanisms to mitigate the adverse effects of terrorism.

Numerous studies have examined the detrimental effects of terrorism on economic resilience. For instance, Abadie and Gardeazabal (2008) highlighted that terrorism negatively affects GDP growth by increasing uncertainty and discouraging investment. This finding aligns with the work of Gaibulloev and Sandler (2011), who showed that terrorism significantly reduces economic growth,

particularly in developing countries, where institutional weaknesses exacerbate the impact. Blomberg *et al.* (2004) provided evidence that terrorism disrupts economic activity by damaging infrastructure, increasing security costs, and diverting resources from productive uses to defensive measures.

Similarly, Nasir *et al.* (2011) argued that terrorism-induced uncertainty leads to capital flight and reduced foreign direct investment (FDI), which are critical for economic resilience in African economies. Further empirical research by Drakos and Kutan (2003) indicated that terrorism adversely affects tourism, a major economic sector in many African countries. They found that frequent terrorist attacks lead to a significant decline in tourist arrivals, which in turn hampers economic growth. This is supported by the findings of Raza and Jawaid (2013), who showed that terrorism significantly reduces tourism revenues, thereby affecting overall economic stability.

Recent studies have reinforced these findings. For example, Asongu and Nwachukwu (2017) examined the impact of terrorism on economic growth in Africa and found that terrorism significantly reduces economic growth, with more severe impacts in countries with weaker institutions.

Similarly, Bandyopadhyay *et al.* (2014) demonstrated that terrorism reduces economic growth by disrupting trade and investment flows. Furthermore, Shahbaz *et al.* (2013) conducted a study on the economic impact of terrorism in Pakistan and found that terrorism leads to a significant decline in investment, which is crucial for economic growth. They argued that the adverse effects of terrorism on investment are more pronounced in countries with weaker institutions, highlighting the importance of institutional quality in mitigating the economic impacts of terrorism.

Kinyanjui (2014) explored the impact of terrorism on economic resilience in Kenya and found that terrorism significantly reduces economic growth by increasing uncertainty and discouraging investment. The chapter also highlighted the role of strong institutions in mitigating the adverse economic impacts of terrorism, with countries with better governance structures experiencing less economic disruption.

6.5 Institutional Quality and Economic Resilience in the Context of Terrorism

Institutional quality plays a crucial role in moderating the adverse economic effects of terrorism. According to North (1990), strong institutions provide a framework for economic stability and resilience by ensuring property rights, enforcing contracts, and reducing transaction costs. In the context of terrorism, institutions that effectively enforce laws and maintain order can mitigate the economic disruptions caused by terrorist activities. Studies by Mehlum *et al.* (2006) emphasized that good governance and strong institutions can shield economies from the full brunt of terrorism. They found that countries with high-quality institutions experience less economic damage from terrorism compared to those with weaker institutional frameworks. Similarly, the early research by Alesina and Perotti (1996) showed that political stability, a component of institutional quality, is crucial for maintaining economic growth in the face of terrorism.

Karolyi and Martell (2010) demonstrated that countries with effective regulatory institutions are better able to manage the economic fallout from terrorist attacks. Their findings suggest that institutional quality not only mitigates immediate economic losses but also facilitates quicker recovery and adaptation. This is further corroborated by the work of Noy (2009), who found that institutional strength is a key determinant of economic resilience in the aftermath of terrorism. Additionally, empirical studies by Bandyopadhyay *et al.* (2014) highlighted the role of financial institutions in cushioning economies against the shocks of terrorism. They argued that well-developed financial systems can provide the necessary liquidity and credit to support recovery efforts, thereby enhancing economic resilience.

Recent research by Kim and Sandler (2020); Mehmood and Mehmood (2016) has extended these findings by showing that institutional quality significantly influences the effectiveness of counter-terrorism measures. Their study found that countries with strong institutions are better able to implement effective counter-terrorism policies, which in turn mitigates the economic impacts of terrorism. This highlights the importance of good governance and effective institutions in enhancing economic resilience to terrorism. Furthermore, studies by Aisen and Veiga (2013) have shown that political stability, a key aspect of institutional quality, is crucial for economic resilience. They found that politically stable countries experience less economic disruption from terrorism, as political stability provides a conducive environment for economic growth and

investment. This finding is supported by the work of Haggard and Tiede (2011), who showed that political stability enhances economic resilience by reducing uncertainty and promoting investor confidence.

The dynamic interplay between institutional quality and economic resilience in the face of terrorism has been a focal point of recent research. Acemoglu *et al.* (2001) posited that inclusive institutions, which promote economic participation and opportunity, are essential for building economic resilience. Their study highlighted that countries with inclusive institutions are better equipped to withstand and recover from terrorist attacks. Rodrik (2000) provided empirical evidence that institutional quality significantly enhances economic resilience by fostering social cohesion and collective action. In the context of Africa, where ethnic and political fragmentation is prevalent, strong institutions can promote unity and coordinated responses to terrorism. This view is consistent with the early findings of Easterly and Levine (1997), who showed that ethnically diverse societies with strong institutions experience less economic volatility and are more resilient to shocks, including terrorism. Recent research by Berman *et al.* (2011) explored the role of institutional quality in facilitating economic diversification, a key component of resilience. They found that countries with robust institutions are more likely to develop diverse economies that are less susceptible to the negative impacts of terrorism. This diversification provides alternative sources of income and employment, reducing the overall economic vulnerability to terrorist attacks. Further empirical evidence by Collier and Hoeffler (2004) suggested that institutional quality influences the effectiveness of government responses to terrorism. Their study showed that countries with transparent and accountable institutions are more likely to implement effective counterterrorism policies that minimize economic disruption. Conversely, countries with corrupt and inefficient institutions often struggle to respond effectively, exacerbating the economic impacts of terrorism.

In the African context, empirical studies by Ncube *et al.* (2014) highlighted the critical role of regional institutions in enhancing economic resilience. They argued that regional cooperation and integration, facilitated by strong institutional frameworks, can provide collective security and economic stability in the face of terrorism. Their findings suggest that regional institutions can play a pivotal role in mitigating the cross-border impacts of terrorism and promoting economic resilience.

6.6 Dynamic Panel Data Estimation

This section outlines the methods used in the chapter, beginning with the application of the First-differenced Generalized Method of Moments (GMM). Differencing is a commonly employed technique in dynamic panel data analysis to mitigate problems like endogeneity and omitted variable bias. Although this method is useful, it has limitations in terms of efficiency, especially when the instruments are weak or when there is a substantial amount of persistence in the data. To improve efficiency and reliability, the chapter progresses to the System GMM, which improves the estimation process by including additional moment conditions from the level equations. This makes it more resilient, particularly in situations with persistent time series data.

The methodology concludes by employing the Corrected Least Squares Dummy Variable (LSDV) estimator, known for its exceptional efficacy in addressing biases inherent in fixed effects models and the inefficiencies of GMM methods. The Corrected LSDV estimator improves the consistency and efficiency of parameter estimations, especially in limited sample sizes, by utilizing bias correcting techniques. This thorough methodology ensures that the study's econometric analysis is rigorous and dependable, utilising the strengths of each method to achieve accurate and informative results.

6.6.1 Modelling First differenced GMM.

The First-Differenced Generalized Method of Moments (FD-GMM) estimator, developed by Arellano and Bond (1991), is designed to handle endogeneity by transforming the model to eliminate unobserved individual effects. The primary equation in a dynamic panel context is given by:

$$y_{it} = \alpha y_{it-1} + \beta X_{it} + \mu_i + \varepsilon_{it} \tag{6.1}$$

where y_{it} represents the dependent variable (economic resilience), X_{it} is a vector of explanatory variables (terrorism incidence, institutional quality, control variables), μ_i is the unobserved individual effect, and ε_{it} is the idiosyncratic error term.

First differencing the equation removes the individual effects:

$$\Delta yit = \alpha\Delta yit - 1 + \beta\Delta Xit + \Delta\varepsilon it \qquad (6.2)$$

To address the endogeneity of Δy_{it-1} and ΔX_{it}, lagged levels of the dependent and independent variables are used as instruments. The GMM estimation employs these instruments to provide consistent parameter estimates. The moment conditions for FD-GMM are:

$$E[yit - s\Delta\varepsilon it] = 0 \text{ for } s \geq 2 \ (3)E[Xit - s\Delta\varepsilon it] = 0 \text{ for } s \geq 2 \qquad (6.3)$$

The FD-GMM estimator is particularly useful in contexts where the variables exhibit strong persistence, and the panel is relatively short (Blundell & Bond, 1998). Recent applications of FD-GMM have shown its effectiveness in various economic studies. For instance, an analysis by Wandeda *et al.* (2021) employed FD-GMM to investigate the relationship between institutional quality and economic growth in African countries, demonstrating the estimator's robustness in dealing with endogeneity.

6.6.2 Modelling System GMM

The System Generalized Method of Moments (System GMM) estimator, proposed by Arellano and Bover (1995) and further developed by Blundell and Bond (1998), addresses some limitations of the FD-GMM estimator by combining equations in first differences with equations in levels, using lagged differences as instruments for the level equations. The dynamic model in levels is specified as:

$$yit = \alpha yit - 1 + \beta Xit + \mu i + \varepsilon it \qquad (6.4)$$

The System GMM estimator utilizes both the difference and level equations, with appropriate instruments for each:

$$\Delta yit = \alpha\Delta yit - 1 + \beta\Delta Xit + \Delta\varepsilon it \qquad (6.5)$$

$$yit = \alpha yit - 1 + \beta Xit + \mu i + \varepsilon it \qquad (6.6)$$

The moment conditions for the System GMM estimator are:

$$E[\Delta yit - s\varepsilon it] = 0 \; for \; s \geq 2 \tag{6.7}$$

$$E[\Delta Xit - s\varepsilon it] = 0 \; for \; s \geq 2 \tag{6.8}$$

$$E\left[\mu i(\Delta yit - s - yit - s)\right] = 0 \; for \; s \geq 2 \tag{6.9}$$

The advantages of System GMM include its ability to control unobserved heterogeneity, correct for the endogeneity of all regressors, and address measurement errors. By incorporating both levels and first differences, the System GMM estimator improves efficiency and provides more reliable estimates, particularly in samples with a large cross-sectional dimension and a relatively short time series. Empirical studies have increasingly adopted System GMM due to its advantages. For instance, a study by Roodman (2009) highlighted the application of System GMM in examining the impact of institutional quality on economic performance in developing countries, underscoring the method's efficacy in handling endogeneity and measurement errors. Additionally, System GMM is advantageous in contexts where variables exhibit persistence, allowing for the effective use of internal instruments to correct for potential biases arising from omitted variable bias and reverse causality. The method's flexibility and robustness make it a preferred choice for dynamic panel data analysis, especially in the context of developing economies where data limitations and endogeneity concerns are prevalent.

6.6.3 Modelling Corrected Least Squares Dummy Variable (CLSDV)

The Corrected Least Square Dummy Variable (CLSDV) estimator, developed by Kiviet (1995), offers a correction to the bias present in the Least Square Dummy Variable (LSDV) estimator when the time dimension (T) is small relative to the cross-sectional dimension (N). The dynamic panel model is specified as:

$$yit = \alpha yit - 1 + \beta Xit + \mu i + \varepsilon it \tag{6.10}$$

The LSDV estimator introduces individual-specific dummy variables to control unobserved heterogeneity. However, it is biased in small samples due to the correlation between the lagged dependent variable and the error term. Kiviet's correction involves an analytical bias correction that adjusts the LSDV estimates:

$$\hat{\alpha} CLSDV = \hat{\alpha} LSDV - Bias(\hat{\alpha} LSDV) \tag{6.11}$$

The bias term is derived from the asymptotic expansion of the LSDV estimator and depends on the variance of the errors and the number of time periods. The CLSDV method, proposed by Bruno (2005), addresses the bias inherent in the Least Square Dummy Variable (LSDV) estimator in dynamic panel data models. The bias term is derived from the LSDV estimator's asymptotic expansion and depends on the variance of the errors and the number of time periods. Monte Carlo simulations suggest that the CLSDV estimator provides reliable parameter estimates even in panels with a small-time dimension.

In comparison to System GMM, CLSDV has certain advantages. While System GMM is powerful in dealing with endogeneity and unobserved heterogeneity, it requires the assumption of no serial correlation in the error terms and valid instrument selection, which can sometimes be challenging. In contrast, CLSDV does not rely heavily on the validity of instruments and provides more straightforward interpretations of the coefficients (Bruno, 2005). Studies such as Kiviet (1995) have shown that CLSDV can outperform GMM estimators in terms of bias and root mean square error, particularly when the number of time periods is small. Recent empirical applications have utilized CLSDV to address biases in dynamic panel data models. For example, a study by Campos and Kinoshita (2008) employed CLSDV to investigate the effects of institutional reforms on economic performance in transition economies, demonstrating the estimator's effectiveness in small samples.

6.7   Data and Methodology

The data utilized in this chapter are defined and sourced to comprehensively analyse economic resilience, terrorism, and institutional quality across 32 African nations from 1990 to 2021. The dependent variable in this chapter is the Economic Resilience Index (ERI), constructed using methodologies established by (Briguglio *et al.* (2014; Koo 2015). This index integrates two core components: macroeconomic stability, microeconomic market efficiency, good governance, and social development. We also employed Growth rate as a single measure for Economic resilience. Table 1 shows the description of variables used to construct each component.

6.7.1   Measure for Economic Resilience

This chapter utilizes a measure of economic resilience motivated by (Briguglio *et al.* 2014; Koo 2015). These authors combine different variables into a composite index that provides a

quantitative measure of economic resilience. The Higher the score on this index, the more resilient an economy is. Briguglio et al. developed the resilience index, influenced by previous research in the field, namely studies aimed at measuring economic vulnerability and resilience. Their approach is based on the recognition that economic resilience encompasses not only the ability to endure shocks, but also the speed and effectiveness of the recovery process. The index is intended to be all-encompassing, encompassing many aspects of an economy that contribute to its overall stability and possibility for recovery.

In the work authored by Koo (2015) entitled "Economic Resiliency and the Measurement of the Risk of Social Conflict," the authors define economic resilience as the capacity of an economy to rapidly recover from disturbances while preserving stability. The authors implement economic resilience by utilizing a composite index that integrates multiple significant economic variables. The selection of these indicators is based on their pertinence to macroeconomic stability and microeconomic market efficiency. The resilience index comprises indicators such as GDP per capita, population, and inflation rates to assess macroeconomic stability. Trade openness, Literacy rate or educational attainment, and Life expectancy for microeconomic markets efficiency. The authors contend that these measures, when taken together, offer a strong assessment of an economy's ability to assimilate and rebound from external disturbances.

The resilience index developed by Briguglio *et al.* (2006, 2014) is similar to the work of Koo (2015). Briguglio *et al.* (2006, 2014) measure was influenced by previous research in the field, namely studies that aimed to measure economic vulnerability and resilience. Their approach is based on the recognition that economic resilience includes the ability to endure shocks and the recovery process's promptness and effectiveness. The index is intended to be all-encompassing, encompassing many aspects of an economy that contribute to its overall stability and possibility for recovery which comprises meticulously chosen components that accurately represent the diverse aspects of resilience. Macroeconomic stability is essential as it guarantees the regular functioning of the economy, especially in challenging circumstances. For instance, maintaining low inflation and manageable levels of debt helps to mitigate economic disruptions that might worsen the impact of external shocks.

Macroeconomic stability, which includes elements like inflation, population growth, and GDP growth, is intrinsically connected to economic resilience. It serves as the basis for an economy to effectively endure and bounce back from external disruptions. Low inflation is essential as it safeguards the buying power of consumers and ensures stable costs for businesses, hence decreasing economic uncertainty in times of crisis. A population increase that is constant and sustainable is crucial for maintaining economic momentum as it assures a consistent labour force and balanced demand for products and services. The consistent increase in GDP demonstrates the general well-being and efficiency of an economy, highlighting its ability to efficiently produce resources that can be readily utilised in times of economic disturbances.

Microeconomic market efficiency, which encompasses factors such as trade openness, literacy rates, and life expectancy, plays a crucial role in strengthening economic resilience. It ensures that the economy is flexible and able to effectively react to changes. Trade openness enables an economy to expand its market reach and access a variety of goods or raw materials from many sources. This reduces reliance on a particular industry or partner, thereby mitigating the effects of local or global disruptions. Increased literacy rates foster a highly educated and proficient labour force, enhancing their ability to innovate and adapt to changing economic circumstances. This, in turn, promotes long-term economic stability and growth. Life expectancy, commonly employed as a measure of general health and social welfare, reflects the efficiency of a nation's healthcare systems. These systems play a vital role in sustaining a productive workforce and mitigating long-term economic disruptions resulting from health emergencies. The combination of these macroeconomic and microeconomic components results in a robust economic framework that is more equipped to withstand disturbances and bounce back effectively. Also, the resilience indicators in these studies are derived from robust, globally recognized data sources like the World Bank and IMF. This makes them reliable tools for empirical studies across a wide range of countries and contexts. For example, measures like GDP growth rate or inflation can be easily obtained and applied in different countries to assess resilience levels.

A robustness check is conducted in this chapter by utilising growth rate as an additional indicator of economic resilience. Growth rates are frequently used as measures of economic resilience, particularly when analysing how countries respond to and recover from significant shocks. An economy's resilience includes both its capacity to endure shocks and its ability to bounce back

quickly and effectively and adapt to changing conditions. Scholars such as He and Sheng (2024); Lee *et al.* (2022); Zhang and Tian (2024). Growth rate is a direct indicator of an economy's overall health and ability to sustain or regain strength in the wake of shocks. It is calculated as the percentage change in GDP from one year to the next, adjusted for inflation to reflect real changes in the economy. It is simply comprehensible and quantifiable.

Empirical research provided ample evidence for growth rates as a criterion in evaluating economic resilience. Growth rates are used in the chapter "Measurement and Influencing Factors of Regional Economic Resilience in China" by Zhang and Tian (2024), they assess how well China's different provinces can withstand and recover from economic shocks. The study found that regions with steady or rising growth rates following a shock exhibit stronger economic resilience.

Additionally, a study by Lee *et al.* (2022) titled "Economic Resilience in the Early Stage of the COVID-19 Pandemic: An Across-Economy Comparison" evaluates 52 economies' resilience in the early phases of the pandemic using growth rates. The authors were able to determine which economies exhibited higher resilience as indicated by their ability to stabilise or improve their growth trajectories during the crisis by use growth rates to explicitly evaluate how different economies handled the economic effects of the epidemic. He and Sheng (2024) employed growth rates to assess the effects of local policies implemented in reaction to the pandemic-induced economic downturn.

6.7.2 Variable Definition

All the data used for this chapter were collected from secondary sources, including the World Bank, Global Terrorism Database (GTD), PWT/WD Penn World Table, World Bank Development Indicators (WDI), the Institute of Statistics, United Nations Development Programme, World Bank Governance Indicators (WGI) and International Labor Organization, ILOSTAT database. These sources provided comprehensive and reliable datasets that are essential for analysing various aspects of terrorism and its correlates in the selected countries.

In this Chapter, Economic Resilience is the dependent variable. The data spans the period from 1990 to 2021 and encompasses 46 African countries. The selection of these countries, detailed in

Chapter 3.1 was guided by specific criteria to ensure a representative sample. See Figure 3.1 which provides a map illustrating the selected countries used in this chapter.

The definitions and sources of the variables used, along with the presentation of data properties (descriptive statistics), are outlined in Tables 6.1, 6.2, and 6.3, respectively. Table 6.1 defines each variable and its source, ensuring clarity on the data's origin and meaning. Table 6.2 presents the descriptive statistics, offering a summary of the central tendencies and dispersions of the variables. Table 6.3 presents the unit root test for the panel and individual and further breaks down these statistics to provide detailed insights into the dataset's characteristics.

Table 6.1 Variable Definition and Sources

Dependent Variables	Descriptions	Sources	Expected Results
Economics Resilience	Macroeconomic stability and Microeconomic market efficiency (Koo, 2015)	The World Bank	Positive Relationship
Macroeconomic Stability Components	(Koo, 2015)		
Growth Rate	Rate of change in the value of Gross domestic product per capital	The World Bank Data - TCData360	Positive Relationship
Population	Total population is based on the de facto definition of population, which counts all residents regardless of legal status or citizenship.	The World Bank Data	NIl
Inflation	The Consumer Price Index (CPI) reflects the annual percentage change in the cost of goods and services for the average consumer.	The World Bank Data	NIl
Microeconomic Market Efficiency Components	(Koo, 2015)		
Trade Openness	The sum of exports and imports per total GDP. (Kis-Katos *et al.*, 2014)	PWT/WD Penn World Table	NIl

Schooling Enrolment	Number of children of any age group who are enrolled in secondary education expressed as a percentage of the total population of the official secondary school age.	UNESCO Institute of statistics	
Life Expectancy	This reflects the health dimension. It is a measure of how long, on average, people in a country can expect to live.	United Nations Development Programme	NIL
Independent Variables			
Institutional Quality	The Index of Government Effectiveness, Regulatory Quality, Voice and Accountability, Political Stability and Absence of Violence/Terrorism, Rule of Law, and Control of Corruption.	Worldwide Governance Indicators	Positive Relationship
Terrorism	Numbers of terrorism Incidence, deaths, and injuries	Global Terrorism Database (GTD)	Negative Relationship
FDI	Cross-border investments where a resident of one country influences the management of a business in another country. Data are in U.S. dollars.	The World Bank Data	Positive Relationship
Unemployment	Labour force without work but available for work and seeking employment.	International Labor Organization, ILOSTAT database - World Bank	Negative Relationship
Financial Development	Private Domestic Credit	The World Bank Data	Positive Relationship
Government Expenditure	Government expenditure, percent of GDP (% of GDP)	The World Bank Data	Positive Relationship

6.7.3 Descriptive Statistics

Descriptive statistics provide an essential description of the data collection, offering details about the variability, central tendency, and distribution of the observed variables. Table 6.2 displays the descriptive statistics for each variable in the chapter, including the number of observations, mean, standard deviation, lowest and maximum values, and skewness. The standard deviation measures the extent to which a value differs from the mean, while the mean represents the average value. The data range is determined by the lowest and highest values, while the skewness of the distribution is measured. This statistical summary enables the comprehension of the essential characteristics and hidden patterns in the dataset, facilitating more informed and precise interpretations in subsequent research.

Table 6.2: Descriptive Statistics

Variables	Obs	Std. Dev.	Mean	Min	Max	Skewness
Life Expectancy	992	57.37	8.617	14.098	76.474	0.066
Government Expenditure	830	15.71	5.734	5.705	52.666	2.079
Financial Development	814	25.798	27.702	0.498	142.422	1.937

Source: Stata (2025) - Author's Compilation

The provided descriptive statistics offer knowledge about every variable within the dataset. Presented below is a detailed explanation of each variable. Not all the independent variables are discussed here as they have been discussed in discussed and illustrated in Table 3.1 for terrorism variables, in Table 4.2 for other variables; Unemployment, Population, trade openness, Literacy Rate, Institutional Quality, FDI, Inflation.

- **Life Expectancy:** The mean life expectancy in the dataset is 57.37 years, with a standard deviation of 8.617 years. This suggests that, on average, people in the regions represented can expect to live a little over 57 years, though there is variability. The minimum value observed is 14.098 years, and the maximum is 76.474 years. The distribution is slightly

positively skewed with a skewness value of 0.066, indicating a slight skew towards higher life expectancy values. In Europe, Monaco has the highest life expectancy, around 89.4 years, while Ukraine has one of the lowest at approximately 72.5 years. In Africa, Algeria has one of the highest life expectancies, around 76.8 years, while Chad has one of the lowest at about 54 years. The mean life expectancy in the dataset (57.37 years) is closer to the lower end seen in some African countries, indicating significant disparities in life expectancy between regions.

- **Government Expenditure:** This variable measures the percentage of GDP spent by the government. The mean government expenditure is 15.71% with a standard deviation of 5.734%. The minimum and maximum values observed are 5.705% and 52.666%, respectively. The distribution is slightly positively skewed with a skewness value of 2.079, indicating a tendency towards higher government expenditure. In Europe, Finland has one of the highest government expenditures, around 56% of GDP, while Ireland's government expenditure is relatively lower, around 26% of GDP. In Africa, Lesotho has a high government expenditure, approximately 41% of GDP, while the Democratic Republic of Congo (DRC) has one of the lowest, around 14.5% of GDP.

- **Financial Development:** This variable represents the level of financial development in the economy, which could include factors such as the size of financial institutions and markets. The mean value is 25.798 with a standard deviation of 27.702. The minimum observed value is 0.498, while the maximum is 142.422. The distribution is positively skewed with a skewness value of 1.937, indicating a strong skew towards higher levels of financial development. In Europe, the United Kingdom has an extremely high level of financial development, with an index score of around 93.57, while Albania is on the lower end with a score around 30. In Africa, South Africa is among the most financially developed, with an index score around 45.27, while many countries like Chad and the Central African Republic have scores below 10.

6.7.8 Econometric Model

To estimate the impact of terrorism and institutional quality on economic resilience in Africa, this chapter employs four models to capture different dimensions of Economic Resilience: Growth Rate, overall Economic Resilience, Macroeconomic Stability, and Microeconomic Market Efficiency. The model specification approach is closely aligned with the methodology used by Arezki and Gylfason (2013), who examined the impact of natural resources on economic growth and institutional quality in Sub-Saharan Africa. Their rigorous approach provides a robust framework for understanding complex economic relationships and the effects of external shocks, making it highly relevant for this chapter.

Economic Resilience, the model is specified as.

$$Resilience_{it} = \beta 0 + \beta 1 Resilience_{it-1} + \beta 1 Casualties_{it-1} + \beta 2 INSTQ_{it-1}$$
$$+ \beta 3\, InstQxCas_{it-1} + \beta 4 GOVEXP_{it-1} + \beta 5 FDI_{it-1} + \beta 6 UNEM_{it-1}$$
$$+ \beta 7 FINDEV_{it-1} + \mu i + \lambda t + \varepsilon_{it} \qquad (6.12)$$

Where:

Resilience$_{it}$: This represents two forms for the dependent variable (Economic Resilience) measure, namely, Economic Resilience Index (ECR) and Growth Rate for country i at time t.

Resilience$_{it-1}$: Lagged dependent variable for both (Economic Resilience Index and Growth Rate)

Casualties$_{it-1}$: Terrorism casualties for country i at time t

INSTQ$_{it-1}$: Institutional Quality Index for country i at time t

InstQxCas$_{-1}$: Interaction Term for country i at time t

FinDev$_{it-1}$: Financial Development for country i at time t

FDI$_{it-1}$: Foreign Direct Investment inflow for country i at time t

GOVEXP$_{it-1}$: Government Expenditure for country i at time t

μ$_i$: Country Fixed Effects

λ_t: Time Fixed Effects

ϵ_{it}: Error term

Finally, this chapter analysed both the short-run and long-run effects of the specified model. The long-run multiplier (LRM) quantifies the total effect of a one-unit change in an explanatory variable on the dependent variable after all adjustments have occurred. For instance, the LRM can be calculated using the formula:

$$\text{LRM} = \frac{\beta X}{1 - \beta X} \tag{6.13}$$

Where βX refers to the estimated short-run coefficient of individual variables captured in the model. The denominator adjusts for the persistence of the regressed variable over time. This formula is used to compute the cumulative effect of a one-unit change in the regressor on the regressed variable after accounting for the lagged effects. Specifically, the short-run effect (_b[regressor]) is divided by the adjustment term (1 - _b[regressor]) to give the total impact once all dynamics of the system have played out.

The short-run coefficient (βX) quantifies the immediate effect of a one-unit change in an independent variable on the dependent variable, observed before the system fully adjusts. In contrast, the long-run multiplier reflects the cumulative impact after all adjustments have occurred, capturing the equilibrium response of the dependent variable to a permanent change in the explanatory variable.

Long-run estimation is fundamental in economic analysis, as it reveals the equilibrium relationships between variables over time. Unlike short-run estimates, which focus on immediate responses, long-run estimates account for the cumulative effects of changes in explanatory variables, providing a more comprehensive understanding of economic dynamics. It helps assess the sustainability of economic relationships and the potential long-term impacts of policy interventions. Interpreting the long-run multiplier involves recognizing that a higher value indicates a more substantial long-term effect, suggesting that the dependent variable is more sensitive to changes in the explanatory variable over time.

6.8   Empirical Result and Discussion

This section presents the methodological exercise among FDGMM, SYSGMM, and CLSDV, highlighting the nuanced differences in handling dynamic panel data. The FDGMM, while useful, often shows less robustness in the presence of lagged variables due to potential weak instrument problems. In contrast, SYSGMM provides a more efficient estimation by leveraging both levels and differences, thereby mitigating some of the limitations seen in FDGMM. However, the CLSDV model stands out in accounting for dynamic biases, especially when interaction terms are considered, offering the most robust evidence of the impact of terrorism and institutional quality on economic resilience in Africa.

The empirical results presented in Tables 6.3 and 6.4 provide a detailed analysis of the factors influencing economic resilience (ECR) within the framework of macroeconomic stability. These tables examine both short-term and long-term effects across; FDGMM, SYSGMM, and CLSDV. Each table contains six models. Models 1 to 3 (FDGMM, SYSGMM, and CLSDV) explore the dynamic interactions among institutional quality, foreign direct investment, financial development, unemployment, and government expenditure, while also assessing the negative impact of terrorism. Models 4 to 6 (FDGMM, SYSGMM, and CLSDV) extend this analysis by incorporating an interaction term between casualties and institutional quality.

Table 6.3 Dynamic Panel Economic Resilience Short-run Estimation

	(1)	(2)	(3)	(4)	(5)	(6)
Variables	FDGMM	SYSGMM	CLSDV	FDGMM	SYSGMM	CLSDV
ECR_1	0.031	0.229***	0.098**	0.003	0.150***	0.120**
	(0.05)	(0.07)	(0.05)	(0.04)	(0.05)	(0.06)
Casualties	-0.017*	-0.001	-0.019*	$-2.45e-05$	-6.78e-07	-0.018*
	(0.01)	(0.00)	(0.01)	(0.00)	(0.00)	(0.01)
InstQ	0.033	0.045***	0.008	0.173	0.185***	0.003
	(0.03)	(0.01)	(0.03)	(0.27)	(0.06)	(0.03)
InstQxCas	-	-	-	2.03e-05	3.48e-06	0.030***
				(0.00)	(0.00)	(0.01)
FDI	0.031***	0.003	0.007***	0.007**	0.002	0.046***
	(0.01)	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)
FINDEV	0.002	0.001*	0.008**	0.001	0.003***	0.007**
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)

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	(1)	(2)	(3)	(4)	(5)	(6)
UNEMP	-0.013	-0.006***	-0.020**	0.011	-0.014***	-0.018*
	(0.01)	(0.00)	(0.01)	(0.01)	(0.00)	(0.01)
GOVEXP	0.011**	0.010*	0.010**	-0.004	-0.002	0.010**
	(0.01)	(0.01)	(0.00)	(0.0)	(0.01)	(0.00)
Year Dummy	YES	YES	YES	YES	YES	YES
Observation	476	505	505	476	505	505
Residual Test	0.01	0.01	0.01	0.01	0.01	0.01
Sargan Test	0.05	0.42	-	0.03	0.56	-
AB test AR (1) (pvalue)	0.065	0.006	-	0.075	0.00	-
AB test AR (pvalue)	0.647	0.271	-	0.636	0.054	-

Note: Estimation results in columns (1) to (3) present the short-run estimation for Economic Resilience Index, where columns (1) to (3) represent First Difference (Safdar) GMM, System (SYS) GMM, and the corrected Least Square Dummy Variable (CLSDV) estimation respectively without the interaction term (Terrorism x Institutional Quality).. Column (4) to (6) represents the same estimations but with the interaction term. Our specifications take account of time effects to control for common cross-country shocks. *** p<0.01, ** p<0.05, * p<0.1; values in brackets () are the coefficient standard errors.

Table 6.4 Dynamic Panel Economic Resilience Long-run Estimation

	(7)	(8)	(9)	(10)	(11)	(12)
Variables	FDGMM	SYSGMM	CLSDV	FDGMM	SYSGMM	CLSDV
ECR_1	0.011	1.450***	0.194**	0.004	0.380***	0.150**
	(0.05)	(0.40)	(0.06)	(0.05)	(0.09)	(0.07)
Casualties	-0.001*	-0.001	-0.002*	-2.45e-05	-6.78e-07	-0.002*
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
InstQ	0.032	0.054***	0.102*	0.039	0.117***	0.034*
	(0.03)	(0.02)	(0.06)	(0.03)	(0.01)	(0.02)
InstQxCas	-	-	-	2.03e-05	3.48e-06	0.003**
				(0.00)	(0.00)	(0.00)
FDI	0.011***	0.002	0.059**	0.008**	0.002	0.046**
	(0.00)	(0.00)	(0.03)	(0.00)	(0.00)	(0.02)
FINDEV	0.002	0.001*	0.039**	6.221e-04	0.003***	0.002**
	(0.00)	(0.00)	(0.02)	(0.00)	(0.00)	(0.01)
UNEMP	-0.002	-0.010***	-0.020**	-0.013	-0.0141***	-0.021**
	(0.01)	(0.00)	(0.01)	(0.01)	(0.00)	(0.01)
GOVEXP	0.020**	0.010*	0.010**	0.011**	0.004	0.011**
	(0.01)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Year Dummy	YES	YES	YES	YES	YES	YES
Observation	476	505	505	476	505	505
Residual Test	0.01	0.01	0.01	0.01	0.01	0.01
Sargan Test	0.05	0.42	-	0.03	0.56	-

AB test AR (1) (pvalue)	0.065	0.006	-	0.075	0.00	-
AB test AR (pvalue)	0.647	0.271	-	0.636	0.054	-

Note: Estimation results in columns (7) to (12) present the long-run estimation for Economic Resilience Index, where columns (7) to (9) represent First Difference (Safdar) GMM, System (SYS) GMM, and the corrected Least Square Dummy Variable (CLSDV) estimation respectively without the interaction term. Column (10) to (12) represents the same estimations but with the interaction term. Our specifications take account of time effects to control for common cross-country shocks. *** p<0.01, ** p<0.05, * p<0.1; values in brackets () are the coefficient standard errors.

As demonstrated in the table above, the results are consistent and robust whether the interaction term (InstQxCas) between institutional quality and casualties is included. This robustness is observed in both the short run and the long run. The key difference lies in the significance levels and the size of the coefficients, rather than in the overall direction or impact of the results. This suggests that while the inclusion of the interaction term may slightly alter the statistical significance and magnitude of the effects, the fundamental relationships between the variables remain stable across different time horizons.

The persistence of economic resilience, represented by the autoregressive term (ECR 1), emphasizes the critical role that strong historical macroeconomic fundamentals play in sustaining stability over time. The short-run coefficients, such as 22.9% in the SYSGMM model and 9.8% in the CLSDV model, demonstrate how past resilience influences future periods, reflecting a notable path dependency in resilience outcomes. Additionally, the interaction term model is significant in both the SYSGMM and CLSDV models which further supports the robustness of the model, especially in the context where institutional quality and external shocks, like terrorism, interact to influence economic resilience. In the long run, the persistence of resilience becomes even more apparent, with SYSGMM showing a coefficient of 145%, underscoring how economies that have accumulated resilience through sound policy and institutional development continue to benefit over time. This aligns with the cumulative resilience theory, which suggests that economies with a strong institutional foundation and stable macroeconomic environments can more effectively withstand and recover from shocks. Solow (1956) also underscores this with his growth model, emphasizing the role of capital accumulation and technological advancement in long-term growth and stability. The cumulative resilience theory further posits that past economic indicators, such as investment in infrastructure, human capital, and financial markets, play a crucial role in strengthening a country's resilience over time. These indicators create a foundation that allows economies to adapt and recover more swiftly from future shocks. For instance, countries with a

history of stable investment in education and healthcare tend to have more adaptable workforces, while those with robust financial systems are better equipped to absorb external financial shocks. Moreover, economies that have previously experienced and effectively managed crises are likely to have developed more sophisticated institutional mechanisms and policy frameworks, which enhance their ability to buffer and recover from future disturbances. In this sense, resilience is not merely reactive but cumulative, as past successes and lessons contribute to a more robust capacity to handle unforeseen challenges.

However, resilience does not immunize economies from external shocks, especially in the case of terrorism, which emerges as a significant disruptor of macroeconomic stability. The negative coefficients for casualties ranging from 1.7% in FDGMM to 1.9% in CLSDV, reflect the immediate adverse effects of terrorist activities. Terrorism disrupts economic activity by increasing uncertainty, damaging infrastructure, and diverting public resources from productive investments to security-related expenses. Blomberg *et al.* (2004) underscore this, arguing that terrorism leads to both short- and long-term economic instability by deterring investment and slowing down productivity growth. These detrimental effects are particularly profound in the long run, where casualties continue to have a negative impact of around 0.1% to 0.2%, demonstrating how persistent the economic scars of terrorism can be. Abadie and Gardeazabal (2008) further suggest that terrorism exacerbates economic fragility, especially in countries with weaker institutional frameworks, by undermining investor confidence and fostering economic uncertainty.

The long-term effects of terrorism on economic stability are compounded by the erosion of investor confidence and the increased cost of doing business in affected regions. As Abadie and Gardeazabal (2008) argue, the disruption caused by terrorism can lead to capital flight and a reluctance to invest in sectors that are critical for economic growth, such as manufacturing and infrastructure development. Additionally, the psychological impact on both local businesses and foreign investors creates an environment of heightened risk, making economic recovery more challenging. As security costs rise, governments often reallocate resources from essential public services, such as education, healthcare, and infrastructure, towards counter-terrorism measures, further limiting the potential for long-term growth. In countries with already fragile institutional frameworks, the inability to effectively address the underlying causes of terrorism such as political instability or social unrest can result in a prolonged period of economic stagnation. This vicious

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cycle not only affects the immediate economy but also impedes future development prospects, leading to a sustained period of instability and economic vulnerability.

Despite the damaging effects of terrorism, the results reveal that strong institutions can mitigate some of the adverse impacts. Institutional quality (InstQ), although modest in its standalone effect in the short run (4.5% in SYSGMM), plays a crucial buffering role when interacted with terrorism. The interaction term (InsQxCas) shows that economies with strong institutions experience a 0.3% mitigation in the negative impact of terrorism, as reflected in the CLSDV model. This finding is supported by the work of Acemoglu *et al.* (2001), who emphasize that inclusive institutions are critical in promoting resilience by providing a stable environment for investment, facilitating law enforcement, and securing property rights. This buffering effect becomes more pronounced in the long run, where institutional quality shows a more significant impact on resilience, with coefficients increasing to 5.4% in SYSGMM and 10.2% in CLSDV. These results align with the institutional economics framework proposed by North (1990), which posits that institutions are essential for long-term economic stability, as they provide the rules and frameworks necessary for economic agents to operate efficiently and foster growth, even amidst shocks like terrorism.

Well-established institutions can facilitate the swift implementation of recovery measures, manage resources efficiently, and mitigate the destabilizing effects of terrorism by reassuring both domestic and foreign investors. Economies with strong institutions experience a reduction in the negative impact of terrorism, with institutions playing a leading role in promoting resilience and securing the conditions for recovery. On the other hand, weak or ineffective institutions tend to exacerbate the impact of shocks, as they struggle to maintain order and implement necessary reforms. This dynamic highlight that countries with robust institutions are more likely to recover from disruptions like terrorism, as their institutional frameworks not only support resilience in the face of such challenges but also lay the groundwork for long-term economic prosperity.

Foreign direct investment (FDI) also plays a vital role in enhancing resilience, contributing positively to macroeconomic stability across both short-run and long-run periods. In the short run, the coefficients for FDI, such as 3.1% in FDGMM and 0.7% in CLSDV, highlight the immediate benefits of foreign capital inflows. FDI brings not only financial resources but also technology and managerial expertise that boost productivity, stimulate innovation, and promote overall economic

growth. (Dunning, 1992) The OLI framework supports these findings, positing that FDI contributes significantly to host economies by transferring resources, enhancing efficiency, and fostering economic diversification. In the long run, these positive effects persist, with coefficients of 1.1% in FDGMM and 5.9% in CLSDV, suggesting that sustained FDI inflows contribute to building more resilient economies capable of withstanding external shocks. The findings are in line with Alfaro *et al.* (2010), who argue that FDI's impact on economic growth is contingent upon the quality of domestic financial markets and Borensztein *et al.* (1998) emphasize that economies with well-developed financial systems are better positioned to absorb and maximize the benefits of FDI.

An increase in foreign direct investment (FDI) can significantly promote economic resilience, particularly when accompanied by the development of strong financial systems. Well-developed financial markets provide the necessary infrastructure to effectively channel and utilize FDI, enabling economies to absorb external shocks more efficiently. With a robust financial system in place, countries can better allocate resources, manage risks, and diversify investments, all of which are critical for maintaining stability during times of uncertainty and helps mitigate the negative impacts of specific shocks. Thus, an increase in FDI not only boosts immediate growth but also contributes to long-term resilience by enhancing the economy's ability to weather and bounce back from external disturbances. This underscores the importance of fostering an environment that attracts and maximizes the benefits of FDI to build a more resilient and stable economy.

In addition to the positive effects of increased FDI, the development of financial markets plays a crucial role in promoting economic resilience. A well-developed financial system enhances the ability to absorb and effectively utilize FDI, but it also strengthens the economy's overall capacity to withstand and recover from shocks. By improving access to credit, facilitating investment, and enabling risk management, financial development provides the necessary foundation for economies to adapt to changing circumstances and remain stable in the face of disruptions. The role of financial development (FINDEV) in promoting resilience is similarly highlighted across the models, although with varying magnitudes. In the short run, the CLSDV model shows a coefficient of 0.8% (significant at the 5% level), indicating that financial development enhances resilience by improving access to capital, fostering financial intermediation, and reducing transaction costs. These findings are consistent with Levine (2005), who argues that well-

developed financial systems are crucial for economic growth and resilience, as they provide liquidity, manage risks, and facilitate more efficient resource allocation. A well-functioning financial market, and the expansion of financial services further strengthens an economy's ability to adapt to and recover from disruptions. It enhances the capacity of businesses and households to manage risks, smooth consumption, and invest in growth, even during challenging times. By improving the efficiency of resource allocation and providing a buffer against economic shocks, financial development supports the overall stability of the economy. Thus, both increased FDI and financial development are vital drivers of economic resilience, ensuring that economies recover from crises. In the long-run, financial development continues to exert a positive influence, with the CLSDV model showing a coefficient of 3.9%, reflecting its sustained role in promoting stability. However, the SYSGMM model indicates a smaller coefficient of 0.1%, suggesting that the impact of financial development may depend on the broader institutional environment and the effectiveness of financial governance. Rajan and Zingales (2004) echo this sentiment, highlighting that financial development is most effective when supported by strong regulatory frameworks and complementary institutions.

Labour market dynamics, particularly unemployment (UNEMP), present a contrasting narrative, as higher unemployment consistently detracts from economic resilience. Across the short-run and long-run results, the negative impact of unemployment is evident, with short run coefficients of -2.0% in CLSDV and -0.6% in SYSGMM. These results suggest that high unemployment rates signal underutilization of labour resources, reduced productivity, and lower aggregate demand, all of which erode macroeconomic stability. This aligns with Okun's Law, which posits an inverse relationship between unemployment and GDP growth. Furthermore, Blanchard and Summers (1986) emphasize that prolonged unemployment can have even more detrimental long-term effects by reducing labour force participation and eroding skills, leading to lower potential output. The long-run results, with coefficients of -2.0% in CLSDV and -1.0% in SYSGMM, reinforce the notion that high unemployment poses a sustained threat to resilience, as economies that fail to address structural unemployment are less equipped to recover from external shocks. Blanchard *et al.* (2015) argue that persistent high unemployment can create a vicious cycle of economic stagnation, as reduced income and consumption further depress demand, perpetuating the downward spiral.

In times of crises, such as those caused by terrorism, high unemployment becomes an even more significant challenge, acting as a driver of further instability and economic decline. As discussed earlier in this thesis page 99, unemployment is often linked to the rise of terrorism, as individuals facing limited economic opportunities may become more susceptible to extremist ideologies and violence. This relationship between unemployment and terrorism creates a dangerous feedback loop, where the economic and social impacts of terrorism exacerbate existing unemployment issues, further undermining economic stability.

The effects of prolonged unemployment during times of crisis extend far beyond the immediate disruption to GDP growth. As high unemployment persists, the economy faces a reduction in labour force participation and the erosion of skills, which limits the ability of workers to transition into new industries or roles, especially in the aftermath of terrorist attacks. This skill degradation reduces overall productivity, making it harder for the economy to recover quickly and return to its potential output. In addition, the reduced income and consumption resulting from high unemployment further depress demand, contributing to the deepening of the economic crisis and limiting the capacity for recovery.

In these circumstances, the government's ability to respond is also compromised. Prolonged high unemployment increases the demand for social support programs, further straining public finances that are already under pressure due to the costs of terrorism-related damage and security expenditures. This reduces the government's ability to invest in critical areas such as infrastructure, education, and innovation, all of which are vital for long-term growth and economic resilience. The connection between unemployment and terrorism, coupled with the structural challenges faced during crises, leads to a vicious cycle where economic stagnation and insecurity reinforce each other. High unemployment not only limits immediate recovery but also undermines the economy's capacity to bounce back from future shocks, making it harder to break free from a cycle of decline. Thus, addressing unemployment during times of crisis is essential to minimizing the economic scars caused by terrorism and ensuring that the economy can regain stability and grow over time.

The problem of unemployment during times of crisis, such as terrorism, highlights the need for effective government intervention to stimulate economic recovery. In such circumstances, targeted government spending can play a crucial role in promoting economic resilience. By investing in public infrastructure, job creation programs, and social support systems, the government can help reduce unemployment, restore consumer confidence, and stimulate demand. These measures not only provide immediate relief but also lay the groundwork for long-term stability, enabling the economy to recover more swiftly and build resilience against future shocks.

Government expenditure (GOVEXP), from table 6.3 and 6.4 consistently shows a positive contribution to resilience, indicating its critical role in stabilizing economies. In the short run, the coefficient for government expenditure is 1.1% in FDGMM and 1.0% in CLSDV, highlighting the importance of public investment in infrastructure, education, and social services. These results are consistent with Keynesian economics, which advocates increased government spending during economic downturns to stimulate demand and foster recovery. The long-run results, with government expenditure contributing 1.0% to resilience in CLSDV, further reinforce the argument that government spending plays a vital role in sustaining economic stability. Alesina and Ardagna (2010) suggest that productive government spending, particularly in infrastructure and human capital, has long-lasting benefits that strengthen the economy's ability to absorb and recover from shocks. Additionally, Davide (2013) emphasize that fiscal multipliers are significantly larger during periods of economic downturns, further highlighting the importance of timely and well-targeted government expenditure in promoting macroeconomic stability.

6.9   Robustness Check

A robustness check is essential in empirical research to verify the dependability and consistency of results across various models and estimating techniques. In quantifying economic resilience, the robustness check verifies that the results are not contingent upon assumptions or estimating methods. Utilising growth rate as a principal indicator of economic resilience necessitates the verification that the correlations shown between growth and resilience are consistent across diverse econometric models and varying contexts.

This subsection does a robustness assessment employing three distinct estimating techniques: the First Difference Generalised Method of Moments System, Generalised Method of Moments, and

the Corrected Least Squares Dummy Variable (CLSDV) model, utilised for both long-term and short-term analyses. The incorporation of both long-term and short-term estimations enhances robustness, confirming that the correlation between growth rate and economic resilience is valid across various periods, where table 6.9 shows the short run and table 6.10 shows the long tun estimation, respectively.

Table 6.5 Dynamic Panel Growth Rate Short-run Estimation

	(1)	2	(3)	(4)	(5)	(6)
Variables	FDGMM	SYSGMM	CLSDV	FDGMM	SYSGMM	CLSDV
GDPG	0.021	0.102*	0.085*	0.284***	0.063	0.084*
	(0.04)	(0.06)	(0.05)	(0.11)	(0.45)	(0.05)
Casualties	-0.001	-0.001**	-0.005***	-1.117e-04	-3.749e-04	-0.005***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
InstQ	0.510*	0.124	0.573	0.936*	0.263	0.611*
	(0.31)	(0.08)	(0.37)	(0.50)	(0.15)	(0.37)
InstQCas	-	-	-	3.567e-04	6.93e-05	0.002
				(0.00)	(0.00)	(0.00)
FDI	0.145**	0.076**	0.056*	0.162***	0.076***	0.055*
	(0.07)	(0.03)	(0.03)	(0.06)	(0.28)	(0.03)
FINDEV	0.085**	0.009	0.118**	0.887	0.003	0.101**
	(0.03)	(0.01)	(0.05)	(0.15)	(0.01)	(0.05)
UNEMP	-0.130	-0.131***	-0.316**	-0.435	-0.697***	-0.340**
	(0.18)	(0.04)	(0.17)	(0.15)	(0.27)	(0.17)
GOVEXP	0.213***	0.007	0.148**	0.221	0.481	0.148**
	(0.08)	(0.06)	(0.07)	(0.14)	(0.04)	(0.07)
Year Dummy	YES	YES	YES	YES	YES	YES
Observation	474	526	526	474	526	526
Residual Test	0.01	0.01	0.01	0.01	0.01	0.01
Sargan Test	0.07	0.90	-	0.05	0.65	-
AB test AR (1) (pvalue)	0.070	0.022	-	0.069	0.00	-
AB test AR (pvalue)	0.709	0.267	-	0.786	0.729	-

Note: Estimation results in columns (1) to (3) present the short-run estimation for growth rate as a measure for Economic Resilience, where columns (1) to (3) represent First Difference (Safdar) GMM, System (SYS) GMM, and the corrected Least Square Dummy Variable (CLSDV) estimation respectively without the interaction term (Terrorism x Institutional Quality).. Column (4) to (6) represents the same estimations but with the interaction term. Our specifications take account of time effects to control for common cross-country shocks. *** p<0.01, ** p<0.05, * p<0.1; values in brackets () are the coefficient standard errors.

Table 6.6 Dynamic Panel Growth Rate Long-run Estimation

	(7)	(8)	(9)	(10)	(11)	(12)
Variables	FDGMM	SYSGMM	CLSDV	FDMM	SYSMM	CLSDV
GDPG	0.021	0.117*	0.069**	0.134**	0.068	0.059**
	(0.04)	(0.07)	(0.03)	(0.06)	(0.05)	(0.03)
Casualties	-0.001	-0.001**	-0.006***	-1117e-04	-3.748e-04	-0.006***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
InstQ	1.041	0.142	1.785*	14.659	0.358	1.854*
	(1.30)	(0.11)	(1.05)	(123.4)	(0.27)	(1.11)
InstQCas	-	-	-	3.568e-04	6.93e-05	0.003*
				(0.00)	(0.00)	(0.00)
FDI	0.170*	0.082**	0.045*	0.193**	0.090***	0.045*
	(0.09)	(0.04)	(0.03)	(0.09)	(0.03)	(0.03)
FINDEV	0.072**	0.009	0.092**	0.097	0.003	0.084**
	(0.03)	(0.01)	(0.04)	(0.18)	(0.01)	(0.04)
UNEMP	-0.115	-0.116***	-0.235**	-0.042	-0.116***	-0.235**
	(0.14)	(0.03)	(0.10)	(0.14)	(0.02)	(0.10)
GOVEXP	0.270**	0.007	0.176**	0.284	0.051	0.175**
	(0.12)	(0.06)	(0.05)	(0.24)	(0.04)	(0.05)
Year Dummy	YES	YES	YES	YES	YES	YES
Observation	474	526	526	474	526	526
Residual Test	0.01	0.01	0.01	0.01	0.01	0.01
Sargan Test	0.07	0.90	-	0.05	0.65	-
AB test AR (1) (pvalue)	0.070	0.022	-	0.069	0.00	-
AB test AR (pvalue)	0.709	0.267	-	0.786	0.729	-

Note: Estimation results in columns (7) to (12) present the long-run estimation for growth rate as Economic Resilience, where columns (7) to (9) represent First Difference GMM, System (SYS) GMM, and the corrected Least Square Dummy Variable (CLSDV) estimation respectively without the interaction term. Column (10) to (12) represents the same estimations but with the interaction term. Our specifications take account of time effects to control for common cross-country shocks. *** p<0.01, ** p<0.05, * p<0.1; values in brackets () are the coefficient standard errors.

The robustness checks presented in Table 6.5 and 6.6 reflect the re-estimation where economic resilience is measured as GDP growth, and evidence shows the reinforcement of the key findings from Table 2, illustrating the consistency of the results across different models and specifications. The positive impact of lagged GDP growth on economic resilience remains strong, with the CLSDV model showing 8.5% increase in resilience in the short-run and 6.9% in the long run, both statistically significant. These findings support the theory of economic persistence, as suggested by Solow (1956) and Acemoglu and Robinson (2012), who argue that previous economic performance significantly influences current capabilities. The larger long-run effect 20 highlights

that economies with strong historical growth trajectories tend to accumulate resilience over time, making them better equipped to absorb and recover from shocks. This aligns with and Jones (2016), who suggest that robust past growth lays a solid foundation for future economic stability. The consistency of these results across Tables 6.5 and 6.6 demonstrates that economic history plays a crucial role in current resilience, emphasizing the need for policies that ensure stable growth patterns over time.

Terrorism, represented by casualties, continues to show a significantly negative relationship with GDP growth, corroborating the findings in Table 6.5. In the CLSDV model from Table 3, terrorism reduces growth by 0.5% in the short-run and 0.6% in the long-run, confirming the persistent and detrimental impact of terrorism on economic resilience. This is consistent with Alesina and Perotti (1996), who argue that terrorism creates economic uncertainty, discourages investment, and redirects resources toward security-related expenditures rather than growth enhancing activities. Blomberg *et al.* (2004) similarly point out that terrorism disrupts both domestic and international markets, further compounding its long-term economic damage. The greater negative effect observed in the long-run highlights how terrorism exacerbates vulnerabilities over time, particularly in economies with weaker institutional frameworks. This view is further supported by more recent studies, such as Gaibulloev and Sandler (2011), who find that the long-term effects of terrorism on economic growth are more severe in developing regions like Africa, where governance structures are often insufficient to mitigate these impacts. The results across both tables underline the importance of building strong institutional frameworks that can mitigate the persistent economic damage caused by terrorism.

Institutional quality continues to emerge as a cornerstone of economic resilience in both short and long-term contexts. In Table 6.6, institutional quality is associated with a 51.0% increase in growth in the short-run (FDGMM) and a 178.5% increase in the long-run (CLSDV), which aligns closely with the results from Table 6.3 The significance of these coefficients supports North (1990) institutional theory, which posits that institutions set the rules of economic engagement and thus play a crucial role in shaping long-term economic outcomes. This also echoes Rodrik *et al.* (2004) and Acemoglu and Robinson (2012), who argue that inclusive and transparent institutions are key drivers of economic growth and resilience, particularly in economies subject to external shocks such as terrorism. Easterly and Easterly (2006) further reinforces this idea by illustrating how

countries with stronger institutions tend to grow faster and are more capable of recovering from crises. The larger coefficients in the long-run CLSDV model suggest that correcting for dynamic biases reveals an even more pronounced role for institutions in fostering long-term resilience. This underscores the importance of institutional reforms that prioritize transparency, rule of law, and the protection of property rights, as countries with strong institutions are better positioned to withstand economic disruptions and promote sustained growth.

Foreign direct investment, financial development, and government expenditure are also reaffirmed as critical contributors to economic resilience across both tables, with their impacts remaining positive and significant. In Table 6.6, FDI contributes 8.5% (FDGMM) and 11.8% (CLSDV) to GDP growth in the short-run and 17.0% (FDGMM) 8.2% (SYSGMM)and 4.5% (CLSDV) in the long-run, consistent with Table 2's results. This confirms the role of FDI as a catalyst for economic development, as highlighted by Dunning (1992) OLI framework, which emphasizes the importance of FDI in transferring technology, capital, and expertise to host economies. Recent studies, such as those by Alfaro *et al.* (2010) and Herzer (2012), further validate this relationship, noting that FDI's positive impact is particularly strong in countries with well-developed financial systems and institutional frameworks. Financial development, meanwhile, shows a significant positive impact, contributing 11.8% to growth in the short-run and 9.2% in the long-run in the CLSDV model. This finding is in line with Levine (2005), who argues that financial systems that provide efficient credit allocation and risk management enhance economic resilience by fostering investment and reducing transaction costs. Government expenditure also plays a crucial role, with the CLSDV model showing a 14.8% short-run and 17.6% long-run contribution to GDP growth. These findings align with Keynesian economic principles, which advocate for increased government spending during economic downturns to stimulate demand and foster long-term growth. Recent studies by Alesina and Ardagna (2010) and Davide (2013) reinforce the idea that well-targeted public investment in infrastructure and human capital is essential for sustaining economic resilience in the long term.

6.10 Conclusion and Policy Implication

Does institutional quality play a crucial role in mitigating the economic consequences of terrorism in Africa? Can robust institutions, alongside effective financial systems, and foreign direct investment, truly protect economies from the destabilizing effects of violence and instability? This study aimed to answer these pressing questions, and the findings provide compelling evidence that institutional quality is indeed central to economic resilience. Economies with strong governance structures, characterized by transparent regulatory frameworks, the rule of law, and mechanisms to reduce corruption, are better equipped to withstand external shocks like terrorism. The results suggest that institutional quality fosters not only short-term recovery but also contributes to long-term stability and growth, reinforcing the notion that resilient economies must be built on a foundation of robust institutions. As African countries face persistent threats from terrorism, strengthening governance systems is an essential policy priority that will ensure they are more capable of managing both current and future economic challenges.

The persistent negative impact of terrorism on economic growth, as shown in our findings, demonstrates that terrorism has both immediate and lasting consequences. However, these effects are notably mitigated in environments where institutional quality is high. Strong institutions help reduce the economic damage inflicted by terrorism, offering a buffer that promotes quicker recovery and restores investor confidence. Still, addressing the economic ramifications of terrorism requires more than institutional reform alone. Policymakers must adopt a comprehensive approach that addresses the structural vulnerabilities which fuel terrorism such as poverty, unemployment, and inequality. By fostering inclusive economic growth, expanding access to education, and creating employment opportunities, governments can reduce the socio-economic drivers of terrorism. Long-term strategies that emphasize social cohesion and trust between governments and citizens are also crucial, as they create the conditions necessary for both economic and political stability. Inclusive growth ensures that all segments of society benefit from development, further reducing the appeal of extremism and instability.

Foreign direct investment and financial development also emerge as critical contributors to economic resilience, but their effectiveness is contingent upon the presence of strong institutional frameworks. In environments where governance is transparent and regulatory systems are robust,

African nations can attract and retain foreign investment that brings capital, technology, and expertise to drive productivity and growth. However, as the long-term results of this study indicate, the benefits of FDI can be maximized only when financial markets are well-regulated, inclusive, and transparent. Financial development plays a key role in facilitating the efficient allocation of resources, providing businesses with access to credit, and supporting investment. Policymakers must create a conducive environment for financial development by improving governance in the financial sector, ensuring regulatory oversight, and promoting financial inclusion. This will enable both FDI and financial development to work in tandem to enhance economic resilience, reduce vulnerabilities, and foster sustained growth in African economies.

Government expenditure plays an equally vital role in promoting economic resilience, particularly in periods of external shocks. The results of this study show that strategic public spending, especially in infrastructure, education, and social services can have a significant positive effect on economic resilience. In times of crisis, such as when economies are threatened by terrorism, well-targeted government expenditure acts as a stabilizing force, boosting demand and restoring economic activity. However, the efficiency and composition of government spending are crucial to its success. Policymakers must ensure that public funds are allocated to sectors that generate long-term benefits, such as education, healthcare, and critical infrastructure, rather than focusing solely on short-term consumption. Furthermore, addressing unemployment through active labour market policies is essential for fostering resilience. High unemployment rates, as demonstrated by this study, erode economic resilience by reducing aggregate demand and underutilizing labour resources. By investing in job creation programs, education, and skills development, governments can lower unemployment rates and strengthen their economies' capacity to recover from shocks.

However, the question as to how regional cooperation among African countries can help mitigate the economic impacts of terrorism remains unknown. Could collaboration through regional organizations like the African Union or regional economic communities offer an additional layer of resilience against terrorism's far-reaching effects? This study has not deeply explored the role of regional cooperation, and future research should investigate whether collective regional action can strengthen economic resilience across Africa. Terrorism often transcends national borders, creating regional instability. Therefore, future research should explore whether regional initiatives, such as joint security frameworks or coordinated economic policies, could provide more robust

responses to shared threats. Such collaboration could provide a more holistic and sustainable solution to fostering resilience in the face of persistent threats. Investigating the role of regional cooperation could offer critical insights into how African economies can jointly navigate the complex challenges of terrorism and economic growth, opening the door for more coordinated, region-wide strategies.

Chapter 7

7.0 Conclusion

7.1 Conclusion

The introduction of this thesis set the stage by highlighting the global and regional significance of terrorism, emphasizing its devastating impact on societies and economies across the world. It outlined the need for a comprehensive understanding of terrorism's drivers, its regional dynamics, and the economic resilience required to withstand its effects. The introduction also posed critical questions that guided the research, such as the factors driving terrorism in Africa, the regional spillover of terrorist activities, and the role of institutional quality in economic resilience. Each chapter provides critical insights into distinct aspects of terrorism, contributing to a holistic understanding of how terrorism emerges, spreads, and impacts economies in Africa. Below, the key aims and findings from each chapter are discussed, followed by policy recommendations.

The first key Chapter identifies and analyse the determinants of terrorism across 46 African countries, focusing on macroeconomic, socio-economic, political, and institutional variables. The chapter aimed to understand the interaction of these factors in shaping the likelihood of terrorist activities, while examining the determinants of various terrorist ideologies in Africa. It sought to determine whether the aggregate nature yields distinct factors contributing to terrorism compared to a breakdown of terrorism into ideologies, thereby offering a thorough and comprehensive analysis of the determinants of terrorism in the region.

The analysis revealed that economic factors such as growth rate, trade openness, and unemployment play significant roles in determining the incidence of terrorism. Higher levels of economic development and better trade openness were associated with lower terrorism rates, while higher unemployment and inequality were linked to increased terrorist activities. The study also found that political stability and democratic governance significantly reduce the likelihood of terrorism, emphasizing the role of robust institutions in maintaining peace and security. Additionally, high levels of corruption were found to increase the probability of terrorism, highlighting the importance of transparent and effective governance. Furthermore, the analysis

reveals that the aggregate nature and ideologies of terrorism in Africa are not significantly different in terms of their determinants than those in other nations.

The second key chapter explores the spillover effects of terrorism across different regions in Africa. The chapter focused on understanding how terrorism in one region can influence the levels of terrorism in neighbouring regions, thereby addressing a significant gap in the literature on the regional dynamics of terrorism. The study employed Vector Autoregression (VAR) and Impulse Response Function (IRF) analyses to examine the temporal effects of terrorism shocks across regions and utilized Phillips and Sul (2007) club convergence method to classify these countries into groups based on similar terrorism characteristics. The results revealed three clubs in which each member country in a particular club share similar terrorism characteristics, namely High, Moderate and Low Terrorized Region. The results further show that terrorism in highly terrorized regions initially increases in response to internal shocks but decreases over time. Conversely, terrorism shocks from moderately terrorized regions caused a short-term rise in terrorism in highly terrorized regions, which also diminished over time. Interestingly, shocks from low terrorized regions were found to reduce terrorism in highly terrorized regions. These findings underscore the complex nature of terrorism spillover and the importance of regional stability and socioeconomic conditions in mitigating its spread.

The Last key chapter examines how well Africa can recover from terrorism and the role of institutional quality in mitigating the economic consequences of terrorism in Africa. The chapter aimed to determine whether robust institutions could enhance economic resilience and support recovery in the aftermath of terrorist attacks. The study found that strong institutional quality, characterized by effective governance, regulatory frameworks, and the rule of law, is crucial for economic resilience in the face of terrorism. Economies with robust institutions were better able to withstand and recover from the economic shocks caused by terrorism, while those with weak institutions experienced more severe and prolonged economic downturns. The research also highlighted the importance of foreign direct investment (FDI) and financial development in supporting economic resilience, noting that their effectiveness is contingent on the presence of strong institutional frameworks.

Finally, the focus of this thesis is on terrorism incidents at the local level, specifically within the African context, as opposed to the global context. This focus distinguishes my research from

studies such as Kis-Katos *et al.* (2014), which examined terrorism on a broader, global scale. My contribution to the literature lies in providing an in-depth analysis of terrorism in Africa. Nonetheless, the findings of this thesis can offer valuable insights that may be relevant to other developed and developing countries worldwide, however, the generalizability of these results may be limited due to differences in socio-economic, political, and institutional contexts between developing and developed nations. While some factors driving terrorism such as governance quality, socio-economic inequalities, and population pressures are universally relevant, the specific dynamics may vary depending on the level of development, political systems, and regional factors.

Research on terrorism in developed countries highlights the role of political inclusion, governance, and social cohesion in mitigating the risk of terrorism. For example, studies on terrorism in Europe and North America often focus on homegrown extremism, which is sometimes driven by social exclusion, discrimination, and a lack of integration among immigrant and minority communities. Piazza (2011) found that although developed democracies generally experience fewer terrorist attacks, social and economic marginalization of certain groups can increase vulnerability to radicalization. This is consistent with findings in developing countries where marginalized populations often feel disenfranchised by governance systems and turn to extremism as a means of protest.

In global studies, Krieger and Meierrieks (2011) emphasize that while poverty and low education levels are more strongly associated with terrorism in developing countries, other factors such as political grievances and the perceived legitimacy of institutions play a more significant role in developed countries. For example, the 2015 attacks in France and Belgium highlighted how terrorist groups exploit feelings of alienation and discrimination among second-generation immigrants. While these issues are distinct from the challenges of poverty and underdevelopment in Africa or South Asia, they share a common root in socio-economic inequality and weak integration into the broader social and political structure.

Additionally, the analysis on institutional quality, corruption, and governance applies globally but manifests differently across regions. In developed nations, institutional strength is generally higher, but issues like police misconduct, surveillance abuses, or political polarization can undermine trust in government, potentially leading to violent extremism. For example, global

studies by Freytag *et al.* (2011) have shown that countries with robust institutions, even in the face of inequality, are better able to prevent terrorism through efficient law enforcement, intelligence cooperation, and judicial systems. In contrast, weak governance in many developing countries hampers counter-terrorism efforts by allowing extremist groups to exploit corruption and security gaps.

Economic factors also differ significantly across contexts. While high unemployment and lack of opportunities are crucial drivers of terrorism in developing regions, in developed countries, terrorist motivations often stem from ideological or political factors rather than purely economic conditions. For instance, radicalized individuals in Europe may be driven by global narratives of religious extremism rather than immediate economic deprivation. However, studies by Li and Schaub (2004) have found that economic globalization and inequality can still contribute to the spread of transnational terrorism, affecting both developed and developing regions.

In conclusion, while the findings of this dissertation are primarily drawn from developing countries, they offer useful frameworks for understanding terrorism incidents in developed nations. Both contexts share common themes of inequality, governance, and social exclusion, though the specific drivers and solutions may differ. Future research should continue to explore these cross-regional dynamics, ensuring that policies to prevent terrorism are both evidence-based and context-specific.

7.2   Policy Recommendation

Terrorism in Africa presents a complex challenge that is deeply intertwined with the continent's economic, political, and social dynamics. Analysis across various chapters of this thesis has revealed that combating terrorism requires a comprehensive approach that addresses its multifaceted nature. This essay synthesizes the insights gained from the study and proposes a set of policy recommendations aimed at reducing terrorism and fostering long-term stability and development in Africa.

Economic instability has been recognized as a major factor contributing to terrorism in Africa. The research suggests that nations with higher GDP per capita, greater trade openness, and lower unemployment and inequality rates are less prone to terrorist activities. As a result, the first policy recommendation is to focus on economic development and inclusivity, emphasizing the need to

"get back to the basics" (Word Bank, 2011). This includes job creation programs, such as large-scale community-based public works like those implemented in India and Indonesia, even in marginalized and violence-affected communities. Additionally, simplifying private sector regulations, addressing infrastructure bottlenecks especially electricity, which is the primary constraint for businesses in fragile and violent areas and improving access to finance and investments to connect producers with markets, as seen in Kosovo's and Rwanda's coffee, dairy, and tourism sectors, are crucial steps. By tackling economic disparities and enhancing opportunities for social mobility, governments can diminish the allure of terrorism as a means of expressing grievances.

Secondly, strengthening Institutional Quality is another important and necessary policy. The quality of institutions plays a pivotal role in mitigating the economic consequences of terrorism. This study has demonstrated that robust governance structures, characterized by transparent regulatory frameworks, rule of law, and anti-corruption mechanisms, are crucial for economic resilience. Economies with strong institutions are better equipped to withstand external shocks like terrorism, promoting both short-term recovery and long-term stability.

To effectively combat corruption and build trust in new initiatives, governments should focus on targeted anti-corruption efforts that show these initiatives can be well-managed. One successful approach is to involve the private sector in monitoring areas that are prone to large-scale corruption. For example, in Liberia, private companies were used to inspect the forestry sector, while in Mozambique, they were brought in to oversee customs collections. These efforts were combined with social accountability measures, such as making expenditure reports public and encouraging community and civil society groups to monitor how funds are spent. This approach helps ensure that resources reach their intended goals and are not siphoned off through corruption (Word Bank, 2011).

Strengthening institutional quality is crucial for policymakers. Effective governance not only limits the economic damage caused by terrorism but also builds investor confidence, which is essential for long-term economic growth. Additionally, it is important to implement inclusive growth strategies that promote social cohesion and strengthen trust between governments and their citizens. When all parts of society benefit from development, the allure of extremism and instability decreases, leading to a more stable and resilient society.

Given the transnational nature of terrorism, regional cooperation is indispensable in addressing the threat. The thesis has underscored the importance of enhanced collaboration between African nations through regional bodies such as the African Union's Peace and Security Council. Strengthening existing collaborative mechanisms is crucial for improving communication and coordination in the fight against terrorism such as the Accra initiative (Mensah, 2022). Joint military training exercises, coordinated operations, and enhanced intelligence sharing are necessary for an effective response to terrorist threats. Furthermore, the potential of collective regional action in mitigating the economic impacts of terrorism warrants further exploration. Regional cooperation, through joint security frameworks and coordinated economic policies, could provide a more robust and sustainable solution to the shared threats of terrorism and economic instability.

Moreover, investing in modern surveillance technologies, enhancing the capacity of border security forces, and conducting regular cross-border security assessments are vital measures in preventing the movement of terrorists and the smuggling of weapons. Collaborative efforts with neighbouring countries to manage and secure borders can significantly reduce the operational capabilities of terrorist organizations. By addressing cross-border issues through cooperation and improved border security, African nations can create a more secure and stable environment that limits the spread of terrorism.

Nonetheless, terrorist organizations have increasingly leveraged technology, particularly social media, to propagate their ideologies and recruit members. This thesis highlights the need for governments to develop counterterrorism strategies that utilize technology to monitor and disrupt these activities. Collaborations with social media companies to identify and remove extremist content, coupled with digital literacy programs, can help communities recognize and counter online radicalization. Promoting counter-narratives that advocate for peace and stability, while undermining terrorist propaganda, is crucial in combating the ideological appeal of terrorism. By controlling the narrative online, governments can diminish the influence of extremist ideologies and prevent the spread of radicalization.

Finally, no country or region can afford to overlook areas where violence repeatedly takes hold and where citizens feel disconnected from the state. When people face unemployment, corruption, and social exclusion, the likelihood of violence increases. In contrast, strong and fair institutions,

along with good governance that ensures everyone has a role in the nation's success, act like an immune system that protects against various forms of violence. Ensuring the safety and security of citizens should be a top priority, especially in fragile environments, and this security is built on a foundation of justice and employment opportunities. It is crucial for leaders to act quickly and take advantage of opportunities to address issues before violence escalates or resurfaces.

The policy recommendations outlined in this thesis offer a comprehensive strategy for combating terrorism in Africa. By prioritizing economic development, strengthening institutional quality, enhancing regional cooperation, leveraging technology, engaging communities, and improving border security, African nations can build a more resilient environment that reduces the incidence of terrorism and promotes long-term peace and stability. The success of these measures will depend on a unified approach that addresses the root causes of terrorism while fostering inclusive growth and regional cooperation. As African countries continue to face the persistent threat of terrorism, implementing these strategies will be crucial in ensuring a safer and more prosperous future for the continent.

Bibliography

Abadie, A. (2006). Poverty, political freedom, and the roots of terrorism. *American Economic Review*, *96*Terrorism Act 2000 (), 50-56.

Abadie, A., & Gardeazabal, J. (2003). The economic costs of conflict: A case study of the Basque Country. *American economic review*, *93*(1), 113-132.

Abadie, A., & Gardeazabal, J. (2008). Terrorism and the world economy. *European economic review*, *52*(1), 1-27.

Abid, A., & Rault, C. (2021). On the exchange rates volatility and economic policy uncertainty nexus: A panel VAR approach for emerging markets. *Journal of Quantitative Economics*, *19*, 403-425.

ACCORD. (2023, April 20, 2023). *The risk of violent extremism and terrorism in the coastal states of West Africa – ACCORD*. ACCORD. https://www.accord.org.za/conflict-trends/the-risk-of-violent-extremism-and-terrorism-in-the-coastal-states-of-west-africa/?utm_source=chatgpt.com

Acemoglu, D., Johnson, S., & Robinson, J. A. (2001). The colonial origins of comparative development: An empirical investigation. *American economic review*, *91*(5), 1369-1401.

Acemoglu, D., & Robinson, J. A. (2010). Why is Africa poor? *Economic history of developing regions*, *25*(1), 21-50.

Acemoglu, D., & Robinson, J. A. (2012). *Why Nations Fail: The Origins of Power, Prosperity, and Poverty*. Crown. https://books.google.com.ng/books?id=ErKvvTKBrbYC

Acemoglu, D., & Robinson, J. A. (2013). *Why nations fail: The origins of power, prosperity, and poverty*. Crown Currency.

Action, C. f. P. (2024, February 5, 2025). *Violent extremism in the Sahel | Global Conflict Tracker*. https://www.cfr.org/global-conflict-tracker/conflict/violent-extremism-sahel

Adamson, J. (2021). The scope of political jurisdictions and violence: theory and evidence from Africa. *Public Choice*, *186*(3-4), 467-490.

Adelaja, A., & George, J. (2019). Effects of conflict on agriculture: Evidence from the Boko Haram insurgency. *World Development*, *117*, 184-195.

Ades, A., & Chua, H. B. (1997). Thy neighbor's curse: regional instability and economic growth. *Journal of Economic Growth*, *2*, 279-304.

Adeyemi, A., & Musa, M. (2015). *Terrorism and political violence in West Africa: a global perspective*. Xlibris Corporation.

ADF. (2023). Mozambican terror has echoes of Boko Haram. *Africa Defense Forum* . https://adf-magazine.com/2023/07/mozambican-terror-has-echoes-of-boko-haram/

Agbiboa, D. (2015). Shifting the battleground: the transformation of Al-Shabab and the growing influence of Al-Qaeda in East Africa and the Horn. *Politikon*, *42*Terrorism Act 2000 (), 177-194.

Agu, C., Ogbuabor, J. E., & Onah, B. U. (2024). How Is Institutional Quality Moderating the Effect of Terrorism on International Tourism, Trade, Foreign Aid Inflow and Economic Growth in Sub-Saharan Africa? *Foreign Trade Review*, 00157325231214042.

Aisen, A., & Veiga, F. J. (2013). How does political instability affect economic growth? *European Journal of Political Economy*, *29*, 151-167.

Akcinaroglu, S., & Radziszewski, E. (2013). Private military companies, opportunities, and termination of civil wars in Africa. *Journal of Conflict Resolution*, *57*(5), 795-821.

Akhmat, G., Zaman, K., Shukui, T., & Sajjad, F. (2014). Exploring the root causes of terrorism in South Asia: everybody should be concerned. *Quality & Quantity*, *48*, 3065-3079.

Ako, J. A., & James, P. O. (2018). Education and national development in Nigeria: Implications for counselling. *International Journal of Education and Research*, *6*(1), 77-86.

Alesina, A., & Ardagna, S. (2010). Large changes in fiscal policy: taxes versus spending. *Tax policy and the economy*, *24*(1), 35-68.

Alesina, A., & Perotti, R. (1996). Income distribution, political instability, and investment. *European economic review*, *40*(6), 1203-1228.

Alfaro, L., Chanda, A., Kalemli-Ozcan, S., & Sayek, S. (2010). Does foreign direct investment promote growth? Exploring the role of financial markets on linkages. *Journal of development Economics*, *91*Terrorism Act 2000 (), 242-256.

Allison, P. D., & Waterman, R. P. (2002). Fixed-effects negative binomial regression models. *Sociological methodology*, *32*(1), 247-265.

Aluede, J. A. (2019). The cross-border dimension of intrastate conflicts in Africa: An analysis of the Great Lakes region and Mano River. In *African borders, conflict, regional and continental integration* (pp. 115-135). Routledge.

Alusala, N. (2019). Border fragility and the causes of war and conflict in the Democratic Republic of the Congo. In *African borders, conflict, regional and continental integration* (pp. 89-114). Routledge.

Angerbrandt, H. (2017). *Nigeria and the Lake Chad Region Beyond Boko Haram*. Nordiska Afrikainstitutet.

Ansoms, A., & Rostagno, D. (2012). Rwanda's Vision 2020 halfway through: what the eye does not see. *Review of African Political Economy*, *39*(133), 427-450.

Ansoms, A., & Rostagno, D. (2020). Rwanda's Post-Genocide Economic Policies: High Growth, Low Development? *Third World Quarterly*, *41*(1), 63-79. https://doi.org/https://doi.org/10.1080/01436597.2020.1723075

Antonakakis, N., & Badinger, H. (2016). Economic growth, volatility, and cross-country spillovers: New evidence for the G7 countries. *Economic modelling*, *52*, 352-365.

Anwar, T. (2024). The law and politics of funding armed groups in Syria: how states (fail to) counter terrorism. *European Journal of International Relations*, *30*(1), 104-125.

Apaydin, Ş., Ursavaş, U., & Koç, Ü. (2021). The impact of globalization on the ecological footprint: do convergence clubs matter? *Environmental Science and Pollution Research*, *28*(38), 53379-53393.

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*Terrorism Act 2000 (), 277-297.

Arellano, M., & Bover, O. (1995). Another look at the instrumental variable estimation of error-components models. *Journal of econometrics*, *68*(1), 29-51.

Arezki, R., & Gylfason, T. (2013). Resource Rents, Democracy, Corruption and Conflict: Evidence from Sub-Saharan Africa. *Journal of African Economies*, *22*(4), 552-569. https://doi.org/10.1093/jae/ejs036

Arieff, A., Blanchard, L. P., & Husted, T. F. (2011). The Lord's Resistance Army: The US Response.

Asongu, S., Tchamyou, V., Asongu, N., & Tchamyou, N. (2017). The comparative African economics of inclusive development and military expenditure in fighting terrorism. *Journal of African Development*, *19*Terrorism Act 2000 (), 77-91.

Asongu, S. A., & Biekpe, N. (2018). Globalization and terror in Africa. *International economics*, *156*, 86-97.

Asongu, S. A., & Nwachukwu, J. C. (2017). The impact of terrorism on governance in African countries. *World Development*, *99*, 253-270.

Azam, J.-P., & Thelen, V. (2008). The roles of foreign aid and education in the war on terror. *Public Choice*, *135*, 375-397.

Azam, J. P., & Delacroix, A. (2006). Aid and the delegated fight against terrorism. *Review of Development Economics*, *10*Terrorism Act 2000 (), 330-344.

Baah-Boateng, W. (2016). The youth unemployment challenge in Africa: What are the drivers? *The Economic and Labour Relations Review*, *27*(4), 413-431.

Bach, D. C. (2015). *Regionalism in Africa: Genealogies, institutions and trans-state networks*. Routledge.

Bagchi, A., & Paul, J. A. (2018). Youth unemployment and terrorism in the MENAP (Middle East, North Africa, Afghanistan, and Pakistan) region. *Socio-Economic Planning Sciences*, *64*, 9-20.

Bah, A. B. (2020). The State and Conflict in Mali. *African Security Review*, *29*(1), 3-18. https://doi.org/https://doi.org/10.1080/10246029.2020.1742201

Bai, C., Yan, H., Yin, S., Feng, C., & Wei, Q. (2021). Exploring the development trend of internet finance in China: Perspective from club convergence. *The North American Journal of Economics and Finance*, *58*, 101505.

Bai, J., & Ng, S. (2002). Determining the number of factors in approximate factor models. *Econometrica*, *70*(1), 191-221.

Bandyopadhyay, S., Sandler, T., & Younas, J. (2011). Foreign aid as counterterrorism policy. *Oxford Economic Papers*, *63*(3), 423-447.

Bandyopadhyay, S., Sandler, T., & Younas, J. (2014). Foreign direct investment, aid, and terrorism. *Oxford Economic Papers*, *66*(1), 25-50.

Bank, W. (2011). *World Development Report 2011: Conflict, Security, and Development*. The World Bank. https://openknowledge.worldbank.org/handle/10986/4389

Bank, W. (2011). World development report 2012: Gender equality and development. *The World Bank*, *15*.

Barkindo, A. (2023). Boko Haram-ISWAP and the Growing Footprint of Islamic State (IS) in Africa. *Counter Terrorist Trends and Analyses*, *15*Terrorism Act 2000 (), 12-17.

Barros, C. P., Faria, J. R., & Gil-Alana, L. A. (2008). Terrorism against American citizens in Africa: Related to poverty? *Journal of Policy Modeling*, *30*(1), 55-69.

Becker, G. S., & Murphy, K. M. (1988). A theory of rational addiction. *Journal of political Economy*, *96*(4), 675-700.

Bergen, P. L. (2006). *The Osama bin Laden I know: An oral history of al Qaeda's leader*. Simon and Schuster.

Berk, R., & MacDonald, J. M. (2008). Overdispersion and Poisson regression. *Journal of Quantitative Criminology*, *24*, 269-284.

Berlet, C., & Sunshine, S. (2019). Rural rage: the roots of right-wing populism in the United States. *The Journal of Peasant Studies*, *46*(3), 480-513.

Berlie, J. A. (2008). The Burmanization of Myanmar's Muslims. In: White Lotus Press.

Berman, E., Callen, M., Felter, J. H., & Shapiro, J. N. (2011). Do working men rebel? Insurgency and unemployment in Afghanistan, Iraq, and the Philippines. *Journal of Conflict Resolution*, *55*(4), 496-528.

Berman, I. (2019). Technology is Making Terrorists More Effective–And Harder to Thwart. *The National Interest. URL: https://nationalinterest. org/feature/technologymaking-terrorists-more-effective% E2*, *80*.

Berrebi, C. (2007). Evidence about the link between education, poverty and terrorism among Palestinians. *Peace economics, peace science and public policy*, *13*(1), 18-53.

Bertsche, D., & Braun, R. (2022). Identification of structural vector autoregressions by stochastic volatility. *Journal of Business & Economic Statistics*, *40*(1), 328-341.

Bird, G., Blomberg, S. B., & Hess, G. D. (2008). International terrorism: Causes, consequences and cures. *World Economy*, *31*Terrorism Act 2000 (), 255-274.

Bjørgo, T. (2004). *Root causes of terrorism: Myths, reality and ways forward*. Routledge.

Blanchard, C. M. (2007). *Al Qaeda: Statements and Evolving Ideology*. Library of congress washington dc congressional research Service. https://books.google.com.ng/books?id=WoujDAEACAAJ

Blanchard, O., Cerutti, E., & Summers, L. (2015). *Inflation and activity–two explorations and their monetary policy implications*.

Blanchard, O. J., & Summers, L. H. (1986). Hysteresis and the European unemployment problem. *NBER macroeconomics annual*, *1*, 15-78.

Blench, R. (2010). Conflict between pastoralists and cultivators in Nigeria. *Review paper. Department for International Development, UK. www. rogerblench. info/[accessed 20 March 2015].*

Blomberg, S. B., Broussard, N. H., & Hess, G. D. (2011). New wine in old wineskins? Growth, terrorism and the resource curse in sub-Saharan Africa. *European Journal of Political Economy*, *27*, S50-S63.

Blomberg, S. B., & Hess, G. D. (2006). From (no) butter to guns? Understanding the economic role in transnational terrorism. *Understanding the economic role in transnational terrorism*.

Blomberg, S. B., & Hess, G. D. (2009). Estimating the macroeconomic consequence of 9/11. *Peace Economics, Peace Science and Public Policy*, *15*Terrorism Act 2000 (), 307-330.

Blomberg, S. B., Hess, G. D., & Orphanides, A. (2004). The macroeconomic consequences of terrorism. *Journal of monetary economics*, *51*(5), 1007-1032.

Blomberg, S. B., Hess, G. D., & Weerapana, A. (2007). Economic conditions and terrorism. In *The economic analysis of terrorism* (pp. 45-62). Routledge.

Bloom, M. (2005). *Dying to kill: The allure of suicide terror*. Columbia University Press.

Blundell, R., & Bond, S. (1998). Initial conditions and moment restrictions in dynamic panel data models. *Journal of econometrics*, *87*(1), 115-143.

Boas, M., & Torheim, L. E. (2013). The Trouble in Mali—corruption, collusion, resistance. *Third World Quarterly*, *34*(7), 1279-1292.

Boly, A., & Kéré, E. N. (2022). Terrorism and Military Expenditure in Africa: An Analysis of Spillover Effects. *Available at SSRN 4304796*.

Borensztein, E., De Gregorio, J., & Lee, J.-W. (1998). How does foreign direct investment affect economic growth? *Journal of international Economics*, *45*(1), 115-135.

Botha, A. (2016). *Terrorism in Kenya and Uganda: radicalization from a political socialization perspective*. Lexington Books.

Braithwaite, A. (2017). The Role of Fear in Terrorism. In *Hostile Intent and Counter-Terrorism* (pp. 17-26). CRC Press.

Brambilla, C., & Jones, R. (2020). Rethinking borders, violence, and conflict: From sovereign power to borderscapes as sites of struggles. *Environment and Planning D: Society and Space*, *38*Terrorism Act 2000 (), 287-305.

Brandt, P. T., & Sandler, T. (2012). A Bayesian Poisson vector autoregression model. *Political Analysis*, *20*(3), 292-315.

Brandt, P. T., & Sandler, T. (2010). What do transnational terrorists target? Has it changed? Are we safer? *Journal of Conflict Resolution*, *54*Terrorism Act 2000 (), 214-236.

Brealey, R. A., Myers, S. C., & Allen, F. (2014). *Principles of corporate finance*. McGraw-hill.

Briguglio, L., Cordina, G., Farrugia, N., & Vella, S. (2006). Conceptualizing and measuring economic resilience. *Building the economic resilience of small states, Malta: Islands and Small States Institute of the University of Malta and London: Commonwealth Secretariat*, 265-288.

Briguglio, L., Cordina, G., Farrugia, N., & Vella, S. (2014). Economic vulnerability and resilience: concepts and measurements. In *Measuring Vulnerability in Developing Countries* (pp. 47-65). Routledge.

Brockhoff, S., Krieger, T., & Meierrieks, D. (2015). Great expectations and hard times: The (nontrivial) impact of education on domestic terrorism. *Journal of Conflict Resolution*, *59*(7), 1186-1215.

Brownlee, J., Masoud, T. E., & Reynolds, A. (2015). *The Arab Spring: Pathways of repression and reform*. Oxford University Press.

Brück, T. (2007). An economic analysis of security policies. In *The economic analysis of terrorism* (pp. 278-298). Routledge.

Bruno, G. S. (2005). Estimation and inference in dynamic unbalanced panel-data models with a small number of individuals. *The Stata Journal*, *5*(4), 473-500.

Buchanan-Clarke, S., & Lekalake, R. (2016). *Violent extremism in Africa: Public opinion from the Sahel, Lake Chad, and the Horn*. Afrobarometer.

Buhaug, H., & Gleditsch, K. S. (2008). Contagion or confusion? Why conflicts cluster in space. *International studies quarterly*, *52*Terrorism Act 2000 (), 215-233.

Butler, T. (2015). What causes terrorism. *Retrieved May*, *18*, 2017.

Byler, D. (2019, Retrieved February 5, 2025). *China's Algorithms of Repression: Reverse Engineering a Xinjiang Police Mass Surveillance App*. Human Rights Watch.

Byman, D. (2018). ISIS's Next Move. *The National Interest*(153), 25-33.

Byman, D. (2019). Terrorism and the Threat to Democracy. *Brookings Policy Brief, February*.

Byman, D. L. (2015). Comparing Al Qaeda and ISIS: Different goals, different targets. *Brookings Institution*, *29*.

Cameron, R. (2017). Globalization and Terrorism. In A. Farazmand (Ed.), *Global Encyclopedia of Public Administration, Public Policy, and Governance* (pp. 1-12). Springer International Publishing. https://doi.org/10.1007/978-3-319-31816-5_1309-1

Campos, N. F., & Kinoshita, Y. (2008). Foreign direct investment and structural reforms: Evidence from Eastern Europe and Latin America.

Caplan, B. (2006). Terrorism: The relevance of the rational choice model. *Public Choice*, *128*, 91-107.

Caruso, R., & Gavrilova, E. (2012). Youth unemployment, terrorism and political violence, evidence from the Israeli/Palestinian conflict. *Peace economics, peace science and public policy*, *18*Terrorism Act 2000 ().

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), e0275345.

Centola, D. (2010). The spread of behavior in an online social network experiment. *science*, *329*(5996), 1194-1197.

Chakma, A. (2022). Does state repression stimulate terrorism? A panel data analysis on South Asia. *Journal of Policing, Intelligence and Counter Terrorism*, *17*Terrorism Act 2000 (), 200-217.

Chomsky, N. (2003). *Hegemony or survival: America's quest for global dominance*. Macmillan.

Clapham, C. S. (2003). Sierra Leone: The political economy of internal conflict.

Cochrane, H. (2004). Economic loss: myth and measurement. *Disaster Prevention and Management: An International Journal*, *13*(4), 290-296.

Collier, P., & Gunning, J. W. (1999). Explaining African economic performance. *Journal of economic literature*, *37*(1), 64-111.

Collier, P., & Hoeffler, A. (2004). Greed and grievance in civil war. *Oxford Economic Papers*, *56*(4), 563-595.

Corsaro, A., & Djouder, D. (2021). Sousse Attacks: A New Perspective on Soft Target Defense and Modern-Day Terrorism Threat. *From Territorial Defeat to Global ISIS: Lessons Learned*, *151*, 250.

Crenshaw, M. (1981). The causes of terrorism. *Comparative politics*, *13*(4), 379-399.

Crenshaw, M. Terrorism Act 2000 (). The psychology of terrorism: An agenda for the 21st century. *Political psychology*, *21*Terrorism Act 2000 (), 405-420.

Crenshaw, M. (2011). *Explaining Terrorism: Causes, Processes, and Consequences*. Routledge. https://books.google.com.ng/books?id=GRQEQgAACAAJ

Cristiani, D., & Fabiani, R. (2011). *Al Qaeda in the Islamic Maghreb (AQIM): Implications for Algeria's Regional and International Relations* (Vol. 11). JSTOR.

Cruz Lugovskyy, J. (2014). THE ECONOMIC DETERMINANTS OF TERRORISM. *International Journal of the Academic Business World*, *8*Terrorism Act 2000 ().

Davide, F. A., Zdzienicka. (2013). The Euro Area Crisis: Need for a Supranational Fiscal Risk Sharing Mechanism? . *International Monetary Fund, Working Paper*.

De Jong, R. M., & Sakarya, N. (2016). The econometrics of the Hodrick-Prescott filter. *Review of Economics and Statistics*, *98*Terrorism Act 2000 (), 310-317.

De Sousa, J., Mirza, D., & Verdier, T. (2009). Trade and the spillovers of transnational terrorism. *Swiss Journal of Economics and Statistics*, *145*(4), 453-461.

Debrah, R. (2021). *An Assessment of The Socio-Economic Effects of Terrorism in the Sahel Region of West Africa* University Of Ghana Legon].

DeCoster, J. (1998). Overview of factor analysis.

Delgado-Rodríguez, M. J., Lucas-Santos, S. d., & Cabezas-Ares, A. (2021). Short-Run Links in Ecological Footprint: A Dynamic Factor Analysis for the EU. *Land*, *10*(12), 1372.

Des Forges, A. (1999). Leave none to tell the story. *New York: Human Rights Watch*.

Detreux, K. M. (2008). *Contemporary Counterinsurgency (COIN) Insights from the French-Algerian War (1954-1962)*. US Army War College.

Dewachter, H., Houssa, R., & Toffano, P. (2012). Spatial propagation of macroeconomic shocks in Europe. *Review of World Economics*, *148*, 377-402.

Ditzen, J., & Reese, S. (2023). xtnumfac: A battery of estimators for the number of common factors in time series and panel-data models. *The Stata Journal*, *23*Terrorism Act 2000 (), 438-454.

Dollar, D. (2019). Understanding China's Belt and Road infrastructure projects in Africa. *Brookings Institution*.

Dollard, J., Miller, N. E., Doob, L. W., Mowrer, O., & Sears, R. R. (1939). Frustration and aggression.

Dowd, C. (2017). Nigeria's Boko Haram: local, national and transnational dynamics. In *African Border Disorders* (pp. 115-135). Routledge.

Drakos, K., & Kutan, A. M. (2003). Regional effects of terrorism on tourism in three Mediterranean countries. *Journal of Conflict Resolution*, *47*(5), 621-641.

Du, K. (2017). Econometric convergence test and club clustering using Stata. *The Stata Journal*, *17*(4), 882-900.

Dunning, J. H. (1992). *Multinational Enterprises and the Global Economy*. Addison-Wesley. https://books.google.com.ng/books?id=LAS1AAAAIAAJ

Duta, P. (2016). Boko Haram and the instability in West Africa. International Scientific Conference" Strategies XXI",

Easterly, W. (2001). *Can institutions resolve ethnic conflict? Economic Development and Cultural Change*, *49*(4), 687-706

Easterly, W., & Easterly, W. R. (2006). *The White Man's Burden: Why the West's Efforts to Aid the Rest Have Done So Much Ill and So Little Good*. Penguin Press. https://books.google.com.ng/books?id=5Iw5IZCTh-kC

Easterly, W., & Levine, R. (1997). Africa's growth tragedy: policies and ethnic divisions. *The quarterly journal of economics*, 1203-1250.

Easterly, W., & Levine, R. (1998). Troubles with the neighbours: Africa's problem, Africa's opportunity. *Journal of African economies*, *7*(1), 120-142.

Economic Partnerships. (2025, January 13, 2025). Trade and Economic Security. https://policy.trade.ec.europa.eu/development-and-sustainability/economic-partnerships_en

Enders, W., Sachsida, A., & Sandler, T. (2006). The Impact of Transnational Terrorism on US Foreign Direct Investment. *Political Research Quarterly*, *59*(4), 517-531.

Enders, W., & Sandler, T. (1993). The effectiveness of antiterrorism policies: A vector-autoregression-intervention analysis. *American Political Science Review*, *87*(4), 829-844.

Enders, W., & Sandler, T. (2006). Distribution of transnational terrorism among countries by income class and geography after 9/11. *International Studies Quarterly*, *50*Terrorism Act 2000 (), 367-393.

Enders, W., Sandler, T., & Parise, G. F. (1992). An econometric analysis of the impact of terrorism on tourism. *Kyklos*, *45*(4), 531-554.

English, R. (2008). *Armed struggle: The history of the IRA*. Pan Macmillan.

Estrada, M. A. R., Park, D., et al. (2015). The economic impact of terrorism: a new model and its application to Pakistan. *Journal of Policy Modeling*, *37*(6), 1065-1080.

Evans, P., & Kim, J. U. (2014). The spatial dynamics of growth and convergence in Korean regional incomes. *Applied Economics Letters*, *21*(16), 1139-1143.

Ewi, M., & Aning, K. (2006). Assessing the role of the African Union in preventing and combating terrorism in Africa. *African Security Review*, *15*(3), 32-46.

Fahmy, N. (2006). Terrorism is the World's Problem. *Duke J. Comp. & Int'l L.*, *16*, 157.

Fajnzylber, P., Lederman, D., & Loayza, N. (2002). Inequality and violent crime. *The journal of Law and Economics*, *45*(1), 1-39.

Fearon, J. D., & Laitin, D. D. (2003). Ethnicity, insurgency, and civil war. *American political science review*, *97*(1), 75-90.

Feinstein, J. S., & Kaplan, E. H. (2010). Analysis of a strategic terror organization. *Journal of Conflict Resolution*, *54*Terrorism Act 2000 (), 281-302.

Feridun, M., & Sezgin, S. (2008). Regional underdevelopment and terrorism: the case of south eastern Turkey. *Defence and Peace Economics*, *19*(3), 225-233.

Feridun, M., & Shahbaz, M. (2010). Fighting terrorism: are military measures effective? Empirical evidence from Turkey. *Defence and Peace Economics*, *21*Terrorism Act 2000 (), 193-205.

Fighel, J. (2014). The Mombassa attacks of November 28, 2002. In *The Evolution of the Global Terrorist Threat: From 9/11 to Osama bin Laden's Death* (pp. 415-435). Columbia University Press.

Fletcher, G. P. (2006). The indefinable concept of terrorism. *Journal of international criminal justice*, *4*(5), 894-911.

Forbes, K. J., & Rigobon, R. (2002). No contagion, only interdependence: measuring stock market comovements. *The journal of Finance*, *57*(5), 2223-2261.

Forum, W. E. (2020). *Global Risks Report 2020*. World Economic Forum. https://www.weforum.org/reports/the-global-risks-report-2020/

Freytag, A., Krüger, J. J., Meierrieks, D., & Schneider, F. (2011). The origins of terrorism: Cross-country estimates of socio-economic determinants of terrorism. *European Journal of Political Economy*, *27*, S5-S16.

Gagliardini, P., Ossola, E., & Scaillet, O. (2019). A diagnostic criterion for approximate factor structure. *Journal of Econometrics*, *212*Terrorism Act 2000 (), 503-521.

Gaibulloev, K., & Sandler, T. (2008). Growth consequences of terrorism in Western Europe. *Kyklos*, *61*(3), 411-424.

Gaibulloev, K., & Sandler, T. (2011). The adverse effect of transnational and domestic terrorism on growth in Africa. *Journal of Peace Research*, *48*(3), 355-371.

Gartenstein-Ross, D., Moreng, B., & Soucy, K. (2022). *Raising the Stakes: Ansar Al-Sharia in Tunisia's Shift to Jihad*. JSTOR.

Gassebner, M., & Luechinger, S. (2011). Lock, stock, and barrel: A comprehensive assessment of the determinants of terror. *Public Choice*, *149*, 235-261.

Gentry, B. (2020). Regional and global impacts of post-Gaddafi Libya. In *Political and economic foundations in global studies* (pp. 120-132). Routledge.

George, J., Adelaja, A., & Weatherspoon, D. (2020). Armed conflicts and food insecurity: evidence from Boko Haram's attacks. *American Journal of Agricultural Economics*, *102*(1), 114-131.

Gong, X., Shi, R., Xu, J., & Lin, B. (2021). Analyzing spillover effects between carbon and fossil energy markets from a time-varying perspective. *Applied Energy*, *285*, 116384.

Granger, C. W., & Newbold, P. (1974). Spurious regressions in econometrics. *Journal of econometrics*, *2*Terrorism Act 2000 (), 111-120.

Greene, W. (2008). Functional forms for the negative binomial model for count data. *Economics Letters*, *99*(3), 585-590.

Group, I. C. (2019). *What Role for the Multinational Joint Task Force in Fighting Boko Haram?* (Africa Report No. 291). I. C. Group. https://www.crisisgroup.org/africa/west-africa/291-what-role-multinational-joint-task-force-fighting-boko-haram

Guiffard, J. (2023). *Anti-french Sentiment in West Africa - A Reflection of the Authoritarian Confrontation With the "Collective West".* https://www.institutmontaigne.org/en/expressions/anti-french-sentiment-west-africa-reflection-authoritarian-confrontation-collective-west

Gunaratna, R. (2013). Current and emerging threat of terrorism in South Asia. *Pakistan Journal of Criminology*, *5*Terrorism Act 2000 (), 115.

Gürer, C. (2017). Presenting a Strategic Model to Understand Spillover Effects of ISIS Terrorism. *Connections: The Quarterly Journal*, *16*Terrorism Act 2000 (), 41-57.

Gurr, T. R. (2015). *Why men rebel*. Routledge.

Habila, H. (2017). *The Chibok Girls: The Boko Haram Kidnappings & Islamic Militancy in Nigeria*. Penguin UK.

Haggard, S., & Tiede, L. (2011). The rule of law and economic growth: where are we? *World development*, *39*(5), 673-685.

Hamilton, J. D. (2018). Why you should never use the Hodrick-Prescott filter. *Review of Economics and Statistics*, *100*(5), 831-843.

Hansen, S. J. (2013). *Al-Shabaab in Somalia: The history and ideology of a militant Islamist group*. Oxford University Press.

Harrison, S. (2018). Evolving tech, evolving terror. *CSIS, March*.

Hausman, J. A., Hall, B. H., & Griliches, Z. (1984). Econometric models for count data with an application to the patents-R&D relationship. In: National bureau of economic research Cambridge, Mass., USA.

He, C., & Sheng, H. (2024). Governance capacity, related variety and regional economic resilience under the COVID-19 epidemic: evidence from China. *The Annals of Regional Science*, 1-31.

Herzer, D. (2012). How does foreign direct investment really affect developing countries' growth? *Review of International Economics*, *20*Terrorism Act 2000 (), 396-414.

Hilbe, J. M. (2011). *Negative Binomial Regression*. Cambridge University Press.

Hoffman, B. (2006). *Inside Terrorism*. Columbia University Press. https://books.google.com.ng/books?id=O6QTfAkk22AC

Hoffman, B. (2017). *Inside terrorism*. Columbia university press.

Hoffman, P. (2004). Human rights and terrorism. *Human rights quarterly*, *26*(4), 932-955.

Hogg, M. A., Meehan, C., & Farquharson, J. (2010). The solace of radicalism: Self-uncertainty and group identification in the face of threat. *Journal of Experimental Social Psychology*, *46*(6), 1061-1066.

Holloway, D. (2008). *9/11 and the War on Terror*. Edinburgh University Press.

Hrg, S. (2016). *ISIS online: Countering terrorist radicalization and recruitment on the internet and social media*.

Huidrom, R., Ayhan Kose, M., Matsuoka, H., & Ohnsorge, F. L. (2020). How important are spillovers from major emerging markets? *International Finance*, *23*(1), 47-63.

Ibrahim, A. (2014). *The resurgence of al-Qaeda in Syria and Iraq*. Strategic Studies Institute and US Army War College Press.

Iheonu, C. (2023). How Effective is Military Expenditure in the Terrorism and Tourism Nexus? Insights from Africa. *The Journal of Developing Areas*, *57*(4), 77-90.

Institute for Economics and Peace. (2022). *Global Terrorism Index, Measuring the Impact of Terrorism*.

International, A. (2023, April 18). *Nigeria: Nine years after Chibok girls' abducted, authorities failing to protect children*. https://www.amnesty.org/en/latest/news/2023/04/nine-years-after-chibok-girls-abducted/?utm_source=chatgpt.com

International, T. (2020). Corruption Perceptions Index 2020. *Transparency International: the global coalition against corruption*.

Iocchi, A. (2020). The margins at the core: Boko Haram's impact on hybrid governance on Lake Chad. In *Limited Statehood and Informal Governance in the Middle East and Africa* (pp. 123-140). Routledge.

Ishaku, B., Aksit, S., & Maza, K. D. (2021). The role of faith-based organizations in counter-radicalization in Nigeria: The case of Boko Haram. *Religions*, *12*(11), 1003.

Israeli, O. (2023). US Invasion of Iraq, 2003: Indirect Link of ISIS Rising. *Contemporary Review of the Middle East*, *10*Terrorism Act 2000 (), 188-201.

Jenkins, B. M. (2001). Terrorism and beyond: a 21st century perspective. *Studies in Conflict and Terrorism*, *24*(5), 321-327.

Jetter, M., Mahmood, R., & Stadelmann, D. (2024). Income and terrorism: Insights from subnational data. *Journal of Conflict Resolution*, *68*(2-3), 509-533.

Jones, C. I. (2016). The facts of economic growth. In *Handbook of macroeconomics* (Vol. 2, pp. 3-69). Elsevier.

Juergensmeyer, M. (2017). *Terror in the mind of God: The global rise of religious violence* (Vol. 13). Univ of California Press.

Kaiser, H. F. (1958). The varimax criterion for analytic rotation in factor analysis. *Psychometrika*, *23*(3), 187-200.

Kalyvas, S. N. (2004). The paradox of terrorism in civil war. *The Journal of Ethics*, *8*, 97-138.

Kalyvas, S. N. (2006). *The Logic of Violence in Civil War*. Cambridge University Press.

Karolyi, G. A., & Martell, R. (2010). Terrorism and the stock market. *International Review of Applied Financial Issues and Economics*, *2*Terrorism Act 2000 (), 285.

Katzman, K. (2009). *Iraq: Post-Saddam governance and security*. Diane Publishing.

Keefer, P., & Loayza, N. (2008). *Terrorism, economic development, and political openness*.

Khan, A., & Estrada, M. A. R. (2016). Globalization and terrorism: an overview. *Quality & Quantity*, *4*(51), 1811-1819.

Kilian, L., & Lütkepohl, H. (2017). *Structural vector autoregressive analysis*. Cambridge University Press.

Kim, W., & Sandler, T. (2020). Middle East and North Africa: terrorism and conflicts. *Global Policy*, *11*(4), 424-438.

Kinyanjui, S. (2014). The impact of terrorism on foreign direct investment in Kenya. *International Journal of Business Administration*, *5*(3), 148.

Kis-Katos, K., Liebert, H., & Schulze, G. G. (2011). On the origin of domestic and international terrorism. *European Journal of Political Economy*, *27*, S17-S36.

Kis-Katos, K., Liebert, H., & Schulze, G. G. (2014). On the heterogeneity of terror. *European Economic Review*, *68*, 116-136.

Kiviet, J. F. (1995). On bias, inconsistency, and efficiency of various estimators in dynamic panel data models. *Journal of econometrics*, *68*(1), 53-78.

Knight, M., Loayza, N., & Villanueva, D. (1995). WP/95/53 INTERNATIONAL MONETARY FUND.

Knight, M., Loayza, N., & Villanueva, D. (1996). The peace dividend: military spending cuts and economic growth. *Staff papers*, *43*(1), 1-37.

Knight, W. A., & Narozhna, T. (2005). Social contagion and the female face of terror: New trends in the culture of political violence. *Canadian Foreign Policy Journal*, *12*(1), 141-166.

Kohnert, D. (2022). The impact of Islamist terrorism on Africa's informal economy: Kenya, compared with Ghana and Senegal. *Compared with Ghana and Senegal (June 24, 2022)*.

Koo, G. R. (2015). *Economic Resiliency and the Measurement of the Risk of Social Conflict*

Krieger, T., & Meierrieks, D. (2011). What causes terrorism? *Public Choice*, *147*(1), 3-27. https://doi.org/10.1007/s11127-010-9601-1

Krieger, T., & Meierrieks, D. (2019). Income inequality, redistribution and domestic terrorism. *World Development*, *116*, 125-136.

Krueger, A. B., & Laitin, D. D. (2008). Kto kogo?: A cross-country study of the origins and targets of terrorism. *Terrorism, economic development, and political openness*, *5*, 148-173.

Krueger, A. B., & Maleckova, J. (2003). Education, Poverty and Terrorism: Is There a Causal Connection? *Journal of Economic Perspectives*, *17*(4), 119-119.

Krueger, A. B., & Pischke, J.-S. (1997). A statistical analysis of crime against foreigners in unified Germany. *Journal of Human Resources*, 182-209.

Kurrild-Klitgaard, P., Justesen, M. K., & Klemmensen, R. (2006). The political economy of freedom, democracy and transnational terrorism. *Public Choice*, *128*, 289-315.

Kutner, M. H., Nachtsheim, C. J., Neter, J., & Li, W. (2005). *Applied linear statistical models*. McGraw-hill.

LaFree, G., & Freilich, J. D. (2016). *The handbook of the criminology of terrorism*. John Wiley & Sons.

Lai, B. (2007). "Draining the swamp": an empirical examination of the production of international terrorism, 1968–1998. *Conflict Management and Peace Science*, *24*(4), 297-310.

Lambert, L. (2017). Weather Underground. *Encyclopedia Britannica*.

Landes, W. M. (1978). An economic study of US aircraft hijacking, 1961-1976. *the Journal of Law and Economics*, *21*(1), 1-31.

Laqueur, W. (1987). *The Age of Terrorism*. Little, Brown. https://books.google.com.ng/books?id=KmW1GwAACAAJ

Laqueur, W. (1999). *The new terrorism: Fanaticism and the arms of mass destruction*. Oxford University Press.

Laqueur, W. (2003). *No end to war: Terrorism in the twenty-first century*. Bloomsbury Publishing.

Laqueur, W. (2017). *A history of terrorism*. Routledge.

Larsson, V., & Gabrielle, T. (2012). Comparison of Dettrending Methods. In.

Lassoued, T., Hamida, A., & Hadhek, Z. (2018). Terrorism and economic growth. *International Journal of Economics and Financial Issues*, *8*(1), 175.

Lee, C.-T., Hu, J.-L., & Kung, M.-H. (2022). Economic resilience in the early stage of the COVID-19 pandemic: An across-economy comparison. *Sustainability*, *14*(8), 4609.

Levin, A., Lin, C.-F., & Chu, C.-S. J. (2002). Unit root tests in panel data: asymptotic and finite-sample properties. *Journal of econometrics*, *108*(1), 1-24.

Levine, R. (2005). Finance and Growth: Theory and Evidence. *Handbook of Economic Growth*, *1*.

Lewis, A. (2013). Unpacking Terrorism, Revolution and Insurgency in Yemen: Real and Imagined Threats to Regional Security. *Perspectives on Terrorism*, *7*(5), 77-92.

Li, Q., & Schaub, D. (2004). Economic Globalization and Transnational Terrorism: A Pooled Time-Series Analysis. *Journal of Conflict Resolution*, *48*Terrorism Act 2000 (), 230-258.

Lindell, M. K., & Prater, C. S. (2003). Assessing community impacts of natural disasters. *Natural hazards review*, *4*(4), 176-185.

Locatelli, A. (2014). What is terrorism? Concepts, definitions and classifications. In *Understanding Terrorism* (pp. 1-23). Emerald Group Publishing Limited.

Lütkepohl, H. (2005). *New introduction to multiple time series analysis*. Springer Science & Business Media.

MacDonald, R., & Taylor, M. P. (1993). Regional house prices in Britain: long-run relationships and short-run dynamics. *Scottish Journal of Political Economy*, *40*(1), 43-55.

Makkonen, A., Oksanen, A., Gadarian, S. K., Herreros, F., Winsvold, M. S., Solheim, Ø. B., Enjolras, B., & Steen-Johnsen, K. (2020). Fear-triggering effects of terrorism threats: Cross-country comparison in a terrorism news scenario experiment. *Personality and individual differences*, *161*, 109992.

Makkonen, T., & Williams, A. M. (2016). Border region studies: The structure of an 'offbeat' field of regional studies. *Regional Studies, Regional Science*, *3*(1), 355-367.

Marchal, R. (2009). A tentative assessment of the Somali Harakat Al-Shabaab. *Journal of Eastern African Studies*, *3*(3), 381-404.

Marie, T., Walther, O., & Radil, S. (2021). *Conflict Networks in North and West Africa*. Organisation for Economic Co-operation and Development. https://doi.org/doi:https://doi.org/10.1787/896e3eca-en

Marks, M. (2019). Tunisia's path after the Arab Spring: Progress and challenges in its democratic transition. *Journal of Democracy*, *30*Terrorism Act 2000 (), 102-116. https://doi.org/https://doi.org/10.1353/jod.2019.0027

Marsh, N. (2017). Brothers came back with weapons: the effects of arms proliferation from Libya. *Prism*, *6*(4), 78-97.

Mauro, P. (1994). *Essays on country risk, asset markets and growth*. Harvard University.

McCarthy, M. T. (2002). USA patriot act. In: HeinOnline.

McLeod, S. (2011). Albert Bandura's social learning theory. *Simply Psychology. London*.

Meagher, K. (2014). Smuggling ideologies: From criminalization to hybrid governance in African clandestine economies. *African Affairs*, *113*(453), 497-517.

Mehlum, H., Moene, K., & Torvik, R. (2006). Institutions and the resource curse. *The economic journal*, *116*(508), 1-20.

Mehmood, S., & Mehmood, B. (2016). Terrorism as a deterrent to political stability in south asian countries: Empirical evidence. *Science International*, *28*(5), 4917-4919.

Mensah, K. (2022). West African Countries Meet Over Spillover of Terrorism From Sahel Region https://www.voanews.com/a/west-african-countries-meet-over-spillover-of-terrorism-from-sahel-region-/6838835.html

Michael, G. (2013). The new media and the rise of exhortatory terrorism. *Strategic Studies Quarterly*, *7*(1), 40-68.

Midlarsky, M. I., Crenshaw, M., & Yoshida, F. (1980). Why violence spreads: The contagion of international terrorism. *International Studies Quarterly*, *24*Terrorism Act 2000 (), 262-298.

Mkutu, K. (2021). Development, Marginalization, and Conflict in Northern Kenya. *African Studies Review*, *64*(3), 451-470. https://doi.org/https://doi.org/10.1017/asr.2021.25

Moghaddam, F. M. (2005). The staircase to terrorism: a psychological exploration. *American psychologist*, *60*Terrorism Act 2000 (), 161.

Montagnoli, A., & Nagayasu, J. (2015). UK house price convergence clubs and spillovers. *Journal of Housing Economics*, *30*, 50-58.

Montalvo, J. G., & Reynal-Querol, M. (2005). Ethnic polarization, potential conflict, and civil wars. *American economic review*, *95*(3), 796-816.

Moyo, I., & Nshimbi, C. C. (2019). *African borders, conflict, regional and continental integration*. Routledge.

Mudde, C. (2019). *The far right today*. John Wiley & Sons.

Nacos, B. L. (2009). Revisiting the contagion hypothesis: Terrorism, news coverage, and copycat attacks. *Perspectives on Terrorism*, *3*(3), 3-13.

Naghshpour, S., & Iii, H. L. D. (2018). The impact of commercial banking development on economic growth: a principal component analysis of association between banking industry and economic growth in Eastern Europe. *International Journal of Monetary Economics and Finance*, *11*(6), 525-542.

Naor, Z. (2015). Why a small probability of terror generates a large macroeconomic impact. *Defence and Peace Economics*, *26*(6), 583-599.

Napoleoni, L. (2017). *ISIS: the terror nation*. Seven Stories Press.

Nasir, M., Ali, A., & Rehman, F. U. (2011). Determinants of terrorism: a panel data analysis of selected South Asian countries. *The Singapore Economic Review*, *56*(02), 175-187.

Nations, U. (2022a). *GLOBAL SOUTH INITIATIVES TO COUNTER TERRORISM AND PREVENT VIOLENT EXTREMISM Handbook*. United Nations. https://www.un.org/counterterrorism/sites/www.un.org.counterterrorism/files/2114743-global_south_initiatives_en.pdf?utm_source=chatgpt.com

Nations, U. (2022b). *Terrorism intensifying across Africa, exploiting instability and conflict* United Nations News, Global perspective Human stories. https://news.un.org/en/story/2022/11/1130432

Ncube, M., Anyanwu, J. C., & Hausken, K. (2014). Inequality, economic growth and poverty in the Middle East and North Africa (MENA). *African Development Review*, *26*(3), 435-453.

Neethling, T. (2023). Boko Haram and Ansar al-Sunna:: A Comparative Analysis of Insurgency Dynamics and Governance Failures. *Journal of Central and Eastern European African Studies*, *3*(1), 145-169.

Nesbitt, C. (2023). *Terror in West Germany, 1972: How a Mysterious Voice Stopped Me from Killing a Suspected Red Army Faction Bomber*. The Veterans Breakfast Club.

Neumayer, E., & Plümper, T. (2016). Spatial spill-overs from terrorism on tourism: Western victims in Islamic destination countries. *Public Choice*, *169*(3-4), 195-206.

Newman, E. (2006). Exploring the "root causes" of terrorism. *Studies in Conflict & Terrorism*, *29*(8), 749-772.

Nielsen, H., & Spenceley, A. (2010). *The success of tourism in Rwanda: Gorillas and more*. World Bank Washington, DC, USA.

Nissimi, H. (2006). Mau Mau and the decolonisation of Kenya. *Journal of Military and Strategic Studies*, *8*(3).

North, D. C. (1990). *Institutions, institutional change and economic performance* (Vol. 332). Cambridge university press.

Noy, I. (2009). The macroeconomic consequences of disasters. *Journal of Development economics*, *88*Terrorism Act 2000 (), 221-231.

Nwankpa, M. (2015). Boko Haram: Whose Islamic State. *Baker Institute for Public Policy, Houston*.

Nwogugu, E. I. (2014). *Family Law in Nigeria*. Hebn Publishers.

Oando, S., & Achieng', S. (2021). An indigenous African framework for counterterrorism: decolonising Kenya's approach to countering "Al-Shabaab-ism". *Critical Studies on Terrorism*, *14*(3), 354-377.

Obilade, A. (1985). The Nigerian Legal System Ibadan. In: Spectrum Law Publishing, Ibadan.

Okafor, G., & Piesse, J. (2018). Empirical investigation into the determinants of terrorism: Evidence from fragile states. *Defence and Peace Economics*, *29*(6), 697-711.

Okoli, A. C., & Lenshie, N. E. (2022). 'Beyond military might': Boko Haram and the asymmetries of counter-insurgency in Nigeria. *Security Journal*, *35*(3), 676-693.

Omenma, J. T., Hendricks, C., & Ajaebili, N. C. (2020). al-Shabaab and Boko Haram: Recruitment Strategies. *Peace and Conflict Studies*, *27*(1), 2.

Onatski, A. (2010). Determining the number of factors from empirical distribution of eigenvalues. *The Review of Economics and Statistics*, *92*(4), 1004-1016.

Onguny, P. (2020). Framing the fight against terrorism in Kenya: perspectives on the attacks at Westgate Mall and Garissa University. *African Journal of Terrorism and Insurgency Research*, *1*(1), 77-101.

Onuoha, F. C. (2012). Boko Haram: Nigeria's Extremist Islamic Sect. *Al Jazeera Centre for Studies*, *29*Terrorism Act 2000 (), 1-6.

Onuoha, F. C. (2014). *Why do youth join Boko Haram?* (Vol. 5). JSTOR.

Ordu, G. E.-O. (2017). Trends and patterns of Boko Haram terrorist and militants' aggression in Nigeria. *Aggression and violent behavior*, *37*, 35-41.

OAU Convention on the Prevention and Combating of Terrorism, (1999).

Osasumwen, O. F., Adekunle, O., Roland, L. E., & Segun, J. (2017). Implications of the release of Chibok girls on Nigeria's war on terrorism. *Covenant University Journal of Politics and International Affairs*, *5*(1), 40-59.

Ouedraogo, I., Tabi, H. N., Ondoa, H. A., & Jiya, A. N. (2022). Institutional quality and human capital development in Africa. *Economic Systems*, *46*(1), 100937.

Pape, R. (2005). *Dying to Win: The Strategic Logic of Suicide Terrorism*. Random House.

Pelling, M., Özerdem, A., & Barakat, S. (2002). The macro-economic impact of disasters. *Progress in Development Studies*, *2*(4), 283-305.

Pesavento, E., & Rossi, B. (2006). Small-sample confidence intervals for multivariate impulse response functions at long horizons. *Journal of Applied Econometrics*, *21*(8), 1135-1155.

Pham, C. S., & Doucouliagos, C. (2017). *An Injury to one is an injury to all: Terrorism's Spillover Effects on bilateral Trade*.

Phillips, P. C., & Sul, D. (2007). Transition modeling and econometric convergence tests. *Econometrica*, *75*(6), 1771-1855.

Piazza, J. A. (2006). Rooted in poverty?: Terrorism, poor economic development, and social cleavages. *Terrorism and political Violence*, *18*(1), 159-177.

Piazza, J. A. (2008). Incubators of terror: Do failed and failing states promote transnational terrorism? *International Studies Quarterly*, *52*(3), 469-488.

Piazza, J. A. (2009). Economic development, poorly managed political conflict and terrorism in India. *Studies in Conflict & Terrorism*, *32*(5), 406-419.

Piazza, J. A. (2011). Poverty, minority economic discrimination, and domestic terrorism. *Journal of Peace Research*, *48*(3), 339-353.

Pieri, Z., & Zenn, J. (2016). The Boko Haram Paradox: Ethnicity, Religion, and Historical Memory in Pursuit of a Caliphate. African Security, 9 (1): 66-88. In.

Pindyck, R. S., Synnestvedt, T., & Rubinfeld, D. L. (2013). *Introduksjon til mikroøkonomi*. Pearson.

Polyxeni, K., & Theodore, M. (2019). An empirical investigation of FDI inflows in developing economies: Terrorism as a determinant factor. *The Journal of Economic Asymmetries*, *20*, e00125.

Powell, R. (2007). Defending against terrorist attacks with limited resources. *American Political Science Review*, *101*(3), 527-541.

Radil, S. M., Castan Pinos, J., & Ptak, T. (2021). Borders resurgent: towards a post-Covid-19 global border regime? *Space and Polity*, *25*(1), 132-140.

Radil, S. M., Irmischer, I., & Walther, O. J. (2021). Contextualizing the relationship between borderlands and political violence: a dynamic space-time analysis in North and West Africa. *Journal of borderlands studies*.

Raineri, L., & Strazzari, F. (2015). State, secession, and Jihad: the micropolitical economy of conflict in Northern Mali. *African Security*, *8*(4), 249-271.

Rajan, R. G., & Zingales, L. (2004). *Saving capitalism from the capitalists: Unleashing the power of financial markets to create wealth and spread opportunity*. Princeton University Press.

Raza, S. A., & Jawaid, S. T. (2013). Terrorism and tourism: A conjunction and ramification in Pakistan. *Economic Modelling*, *33*, 65-70.

Richardson, C. (2011). Relative deprivation theory in terrorism: A study of higher education and unemployment as predictors of terrorism. *Politics Department, New York University*.

Rodrik, D. (2000). Institutions for High-Quality Growth: What They Are and How to Acquire Them. *Studies in comparative international development*, *35*, 3-31.

Rodrik, D., Subramanian, A., & Trebbi, F. (2004). Institutions rule: the primacy of institutions over geography and integration in economic development. *Journal of economic growth*, *9*, 131-165.

Roodman, D. (2009). How to do xtabond2: An introduction to difference and system GMM in Stata. *The stata journal*, *9*(1), 86-136.

Rose, A., & Krausmann, E. (2013). An economic framework for the development of a resilience index for business recovery. *International journal of disaster risk reduction*, *5*, 73-83.

Russell, J. (2007). Chechnya–Russia's 'War on Terror'. In: Routledge.

Safdar, M. (2020). The Impact of Terrorism on Economic Growth in Pakistan: An Empirical Analysis. *Bulletin of Business and Economics (BBE)*, *9*(4), 191-201.

Sageman, M. (2004). *Understanding terror networks*. University of Pennsylvania press.

Sakarya, N., & de Jong, R. M. (2020). A property of the Hodrick–Prescott filter and its application. *Econometric Theory*, *36*(5), 840-870.

Sambanis, N. (2008). Terrorism and civil war. *Terrorism, economic development, and political openness*, 174-206.

Saverio Angió, F. (2018). JIHADIST GROUPS IN THE SAHEL. AN ETYMOLOGICAL ANALYSIS. *Revista UNISCI*(46).

Schinkel, W. (2009). On the concept of terrorism. *Contemporary Political Theory*, *8*, 176-198.

Schmid, A. (2004). Terrorism-the definitional problem. *Case W. Res. J. Int'l L.*, *36*, 375.

Schmid, A. P. (2022). *Defining terrorism*. International Centre for Counter-Terrorism.

Schomerus, M. (2021). *The Lord's Resistance Army: Violence and Peacemaking in Africa*. Cambridge University Press.

Seay, L. (2013). Tim Allen and Koen Vlassenroot, eds. The Lord's Resistance Army: Myth and Reality. London and New York: Zed Books, 2010. xi+ 356 pp. Maps. Photographs. Bibliography. Index.£ 19.99/$35.95. Paper. *African Studies Review*, *56*(1), 184-186.

Sekrafi, H., Abid, M., & Assidi, S. (2021). The impact of terrorism on formal and informal economy in African countries. *International Journal of Finance & Economics*, *26*(1), 1163-1180.

Shahbaz, M. A., Javed, A., Dar, A., & Sattar, T. (2013). Impact of terrorism on foreign direct investment in Pakistan. *Archives of Business Research*, *1*(1).

Shinn, D. (2011). Al Shabaab's foreign threat to Somalia. *Orbis*, *55*Terrorism Act 2000 (), 203-215.

Silberfein, M., & Conteh, A.-H. (2006). Boundaries and conflict in the Mano River region of West Africa. *Conflict Management and peace science*, *23*(4), 343-361.

Skillicorn, D. B., Walther, O., Leuprecht, C., & Zheng, Q. (2021). The diffusion and permeability of political violence in North and West Africa. *Terrorism and political violence*, *33*(5), 1032-1054.

Solow, R. M. (1956). A contribution to the theory of economic growth. *The quarterly journal of economics*, *70*(1), 65-94.

Stansfield, G. (2016). Explaining the aims, rise, and impact of the Islamic State in Iraq and al-Sham. In: JSTOR.

Start. (2001). *Global Terrorism Database*. https://doi.org/https://www.start.umd.edu/research-projects/global-terrorism-database-gtd

Start. (2015). *Global Terrorism Database*. https://doi.org/https://www.start.umd.edu/research-projects/global-terrorism-database-gtd

Stern, J. (2003). Terror in the Name of God.

Straus, S. (2012). Wars do end! Changing patterns of political violence in sub-Saharan Africa. *African affairs*, *111*(443), 179-201.

Strazzari, F. (2015). *Azawad and the rights of passage: the role of illicit trade in the logic of armed group formation in northern Mali*. Norwegian Peacebuilding Resource Centre Oslo.

Sun, C., Abbas, H. S. M., Xu, X., & Abbas, S. (2022). The impact of socio-economic and fractionalization determinants on terrorism in ESNA. *Socio-Economic Planning Sciences*, *79*, 101138.

Tahir, M. (2020). Terrorism and its determinants: panel data evidence from 94 countries. *Applied Research in Quality of Life*, *15*(1), 1-16.

Tahir, M., Ibne Afzal, M. N., Afridi, M. A., Naseem, I., & Bin Saeed, B. (2019). Terrorism and its determinants in the sub-Saharan Africa region: Some new insights. *African Development Review*, *31*(3), 393-406.

Tajfel, H., Turner, J. C., Austin, W. G., & Worchel, S. (1979). An integrative theory of intergroup conflict. *Organizational identity: A reader*, *56*(65), 9780203505984-9780203505916.

Tanchum, M. e. (2012). Al-Qa'ida's West African Advance: Nigeria's Boko Haram, Mali's Touareg, and the Spread of Salafi Jihadism. *Israel Journal of Foreign Affairs*, *6*Terrorism Act 2000 (), 75-90.

Terrorism Act 2000.

Thurston, A. (2018). *Boko Haram: the history of an African jihadist movement*. Princeton University Press.

Thurston, A. (2020). *Jihadists of North Africa and the Sahel: Local politics and rebel groups*. Cambridge University Press.

Tian, X., Zhang, X., Zhou, Y., & Yu, X. (2016). Regional income inequality in China revisited: A perspective from club convergence. *Economic Modelling*, *56*, 50-58.

Tilly, C. (2004). Terror, terrorism, terrorists. *Sociological theory*, *22*(1), 5-13.

Tomal, M. (2020). Spillovers across house price convergence clubs: evidence from the polish housing market. *Real Estate Management and Valuation*, *28*Terrorism Act 2000 (), 13-20.

Torres-Soriano, M. R. (2016). The caliphate is not a tweet away: The social media experience of Al Qaeda in the Islamic Maghreb. *Studies in Conflict & Terrorism*, *39*(11), 968-981.

Turismo, O. M. d. (2017). *UNWTO tourism highlights: 2017 edition*. World Tourism Organization (UNWTO).

UNESCO. (2017). *Preventing Violent Extremism through Education: A Guide for Policy-Makers*. UNESCO. https://unesdoc.unesco.org/ark:/48223/pf0000247764

United Nations Development Programme. (2020). *Measuring the Economic Impact of Violent Extremism Leading to Terrorism in Africa, .*

United Nations Security Council. (2004). *Resolution 1566 (2004) / adopted by the Security Council at its 5053rd meeting, on 8 October 2004*. United Nations.

Terrorist Designations and State Sponsors of Terrorism, Executive Order 13224, (2001).

US Department of State. (2004). Patterns of Global Terrorism 2002.

Van den Boogaard, V., Prichard, W., & Jibao, S. (2021). Norms, networks, power and control: Understanding informal payments and brokerage in cross-border trade in Sierra Leone. *Journal of Borderlands Studies*, *36*(1), 77-97.

Varian, H. R. (2014). *Intermediate microeconomics with calculus: a modern approach*. WW norton & company.

Velasco, C. (2023). Identification and estimation of structural varma models using higher order dynamics. *Journal of Business & Economic Statistics*, *41*(3), 819-832.

Vergun, D. (2023, February 5, 2025). *DOD seeks to quell violent extremism in Africa's Sahel region*. U.S. Department of Defense. https://www.defense.gov/News/News-Stories/Article/Article/3607898/dod-seeks-to-quell-violent-extremism-in-africas-sahel-region/

Walker, A. (2012). *What is boko haram?* (Vol. 17). JSTOR.

Walker, A. (2016). 'Eat the heart of the infidel': the harrowing of Nigeria and the rise of Boko Haram.

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.

Weimann, G. (2006a). *Terror on the Internet: The new arena, the new challenges*. US Institute of Peace Press.

Weimann, G. (2006b). Virtual disputes: The use of the Internet for terrorist debates. *Studies in conflict & terrorism*, *29*(7), 623-639.

Weimann, G. (2008). The psychology of mass-mediated terrorism. *American behavioral scientist*, *52*(1), 69-86.

Weimann, G. (2016). Why do terrorists migrate to social media? In *Violent Extremism Online* (pp. 45-64). Routledge.

White, J. (2022). *Terrorism and the mass media*. Royal United Services Institute (RUSI).

White, J. R. (2006). Terrorism and homeland security. *(No Title)*.

Williams, R. (2007). The psychosocial consequences for children of mass violence, terrorism and disasters. *International Review of Psychiatry*, *19*(3), 263-277.

Wintrobe, R. (2006). Extremism, suicide terror, and authoritarianism. *Public Choice*, *128*, 169-195.

Wolfgang, M. E. (1967). *The culture of youth*. US Department of Health, Education, and Welfare, Welfare Administration ….

Wolfgang, M. E., & Ferracuti, F. (2002). The subculture of violence. *Criminological theories: Bridging the past to the future*, 88-95.

Wolpert, S. A. (1989). *A New History of India*. Oxford University Press. https://books.google.com.ng/books?id=QSZuAAAAMAAJ

Wooldridge, J. M. (2009). Econometrics: Panel Data Methods. In.

Wooldridge, J. M. (2010). *Econometric analysis of cross section and panel data*.

World Bank. (2020). *Worldwide Governance Indicators*. https://doi.org/https://databank.worldbank.org/source/worldwide-governance-indicators

World Bank. (2022). *Current Health Expenditure*. https://data.worldbank.org/indicator/SH.XPD.CHEX.GD.ZS

Yayla, M., & Yahaya, A. (2023). BOKO HARAM AND TERRORISM IN NIGERIA: REFLECTIONS ON THE ORIGINS, IMPACT AND GOVERNMENT RESPONSE. *Uluslararası Ekonomi Siyaset İnsan ve Toplum Bilimleri Dergisi*, *6*Terrorism Act 2000 (), 106-121.

Zhang, X., & Tian, C. (2024). Measurement and Influencing Factors of Regional Economic Resilience in China. *Sustainability*, *16*(8), 3338.

Zoubir, Y. H. (2020). Economic Reforms and Stability in Morocco: The Role of Trade and Investment. *Mediterranean Politics*, *25*Terrorism Act 2000 (), 197-214. https://doi.org/https://doi.org/10.1080/13629395.2019.1673400

Zussman, A., & Zussman, N. (2006). Assassinations: Evaluating the effectiveness of an Israeli counterterrorism policy using stock market data. *Journal of Economic Perspectives*, *20*Terrorism Act 2000 (), 193-206.

Appendix

Appendix A

A.1 Robustness Check for Terrorism Incidence Regression

Table A.1: Estimation at Lag 2

Variables	NBCD (Results in Lag 2)
Growth Rate $_{(t-2)}$	-0.072*
	(0.038)
Trade Openness $_{(t-2)}$	1.035
	(0.829)
Unemployment $_{(t-2)}$	-0.351**
	(0.179)
FDI $_{(t-2)}$	0.005
	(0.018)
Inflation $_{(t-2)}$	0.04*
	(0.022)
Military Expen pc $_{(t-2)}$	-0.037*
	(0.019)
School Enrolment $_{(t-2)}$	2.202
	(1.518)
Inequality $_{(t-2)}$	1.064***
	(0.160)
Health $_{(t-2)}$	-0.009*
	(0.005)
Democracy $_{(t-2)}$	-0.013***
	(0.004)
Regime Durability $_{(t-2)}$	-0.402**
	(0.196)
Corruption $_{(t-2)}$	-0.063
	(0.066)
Institution $_{(t-2)}$	-1.302***
	(0.338)
Urban Population $_{(t-2)}$	0.953***
	(0.262)
Population $_{(t-2)}$	21.068**
	(8.882)
Observation	510
Prob > chi2	0.000
Chi-square	462.852

Note: *** p<.01, ** p<.05, * p<.10 values in bracket () are the robust standard error, although Negative Binomial did not allow for robust standard error.

A.2   Unit Root Test

The table below shows the result of a unit root test using: the Levin, Lin, Chu (LLC) test for common unit roots and the Augmented Dickey-Fuller ADF () test for individual unit roots. These findings help determine whether each variable is stationary at levels or whether differencing is required to achieve stationarity as shown on the table. As seen below all variables are stationary at levels aside Health Expenditure per capital in the individual unit root.

Table A.2: Unit Root Test

Variables	Common Unit Root	Individual Unit Root
Growth Rate	-8.387***	382.433***
Trade Openness[d]	-8.334***	280.154***
Unemployment[d]	-18.418***	252.556***
FDI	-3.670***	155.861***
Inflation	-9.876***	298.774***
Military Expen pc	-6.017***	304.814***
School Enrolment	-6.380***	105.553***
Inequality	-4.354***	172.447***
Health	-3.853***	16.010
Democracy	-15.761***	394.387***
Regime Durability[d]	-38.621***	341.583***
Corruption	-6.165***	73.407
Institution	-1.849**	155.598***
Urban Population	-7.194***	281.995***
Population	-6.905***	263.122***

Source: Eviews (2025) - Author's Compilation

Appendix B

B.1 Pre-Estimations for Generalized Impulse Response Function (Club Convergence)

Table B.1 (Principal Component Analysis) High Terrorized Region (HTR) Eigenvalues

Component	Eigenvalue	Difference	Proportion	Cumulative
Comp1	6.019	3.849	0.547	0.547
Comp2	2.171	1.181	0.197	0.745
Comp3	0.989	0.331	0.090	0.835
Comp4	0.659	0.277	0.060	0.894
Comp5	0.382	0.046	0.035	0.929
Comp6	0.336	0.113	0.030	0.960
Comp7	0.223	0.126	0.020	0.980
Comp8	0.097	0.032	0.009	0.989
Comp9	0.066	0.022	0.006	0.995
Comp10	0.044	0.028	0.004	0.999
Comp11	0.015	.	0.001	1.000

Table B.2 Moderate Terrorized Region (MTR) Eigenvalues

Component	Eigenvalue	Difference	Proportion	Cumulative
Comp1	2.503	0.944	0.250	0.250
Comp2	1.559	0.298	0.156	0.406
Comp3	1.261	0.164	0.126	0.532
Comp4	1.098	0.122	0.110	0.642
Comp5	0.975	0.097	0.098	0.740
Comp6	0.878	0.208	0.088	0.827
Comp7	0.670	0.095	0.067	0.894
Comp8	0.575	0.166	0.058	0.952
Comp9	0.409	0.337	0.041	0.993
Comp10	0.072	.	0.007	1.000

Table B.3 Low Terrorized Region (LTR) Eigenvalues

Component	Eigenvalue	Difference	Proportion	Cumulative
Comp1	2.503	0.944	0.250	0.250
Comp2	1.559	0.298	0.156	0.406

Comp3	1.261	0.164	0.126	0.532
Comp4	1.098	0.122	0.110	0.642
Comp5	0.975	0.097	0.098	0.740
Comp6	0.878	0.208	0.088	0.827
Comp7	0.670	0.095	0.067	0.894
Comp8	0.575	0.166	0.058	0.952
Comp9	0.409	0.337	0.041	0.993
Comp10	0.072	.	0.007	1.000

Table B.4 Middle East (External Influence) Eigenvalues

Component	Eigenvalue	Difference	Proportion	Cumulative
Comp1	3.021	1.761	0.504	0.504
Comp2	1.260	0.380	0.210	0.714
Comp3	0.880	0.236	0.147	0.860
Comp4	0.644	0.470	0.107	0.968
Comp5	0.174	0.155	0.029	0.997
Comp6	0.019	.	0.003	1.000

Table B.5 Unit Root Test Result

Variable	Levels	1st Difference
HTR	-2.000	-4.337***
MTR	-2.401**	-7.141***
LTR	-4.905***	-13.419***
Middle East	-2.694*	-5.927***

Unit root process was estimated using the ADF – Augmented Dickey-Fuller Test

Table B.6 VAR Lag Order Selection Criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-200.7317	NA	26.37200	14.62369	14.81400	14.68187
1	-164.4969	59.52846*	6.311205*	13.17835*	14.12993*	13.46926*
2	-153.8076	14.50694	9.980825	13.55769	15.27052	14.08132

*** Significant at 5% level*

Table B.7 VAR Residual Normality and Heteroskedasticity Test

	VAR Residual	Normality	
Component	Jarque-Bera	df	Prob.
1	1.130	2	0.566
2	0.980	2	0.613
3	0.330	2	0.844
4	3.010	2	0.222
Joint	5.460	8	0.706
	VAR Residual	Heteroskedasticity	
Chi-sq	df	Prob.	
171.832	160	0.247	

The VAR residual normality test shows that the p-values for components 1 (0.953607), 2 (0.544855), and the joint test (0.330055) are well above the 0.05 significance level, suggesting that the residuals are multivariate normal. Component 3 has a marginal p-value of 0.061054, indicating slight non-normality, but not enough to reject the null hypothesis. Overall, the joint test supports multivariate normality. Regarding the VAR residual heteroskedasticity test, the chi-square statistic is 85.225 with 72 degrees of freedom, and the p-value is 0.135. Since this p-value exceeds 0.05, we do not reject the null hypothesis, indicating that the residuals have constant variance (homoscedastic).

B.2 Pre-Estimations for Generalized Impulse Response Function (Factor Analysis)

Table B.8 (Principal Component Analysis) High Terrorised Region Eigenvalues

Component	Eigenvalue	Difference	Proportion	Cumulative
Comp1	6.728	5.354	0.561	0.561
Comp2	1.374	0.413	0.115	0.675
Comp3	0.961	0.084	0.080	0.755
Comp4	0.877	0.088	0.073	0.828
Comp5	0.789	0.325	0.066	0.894
Comp6	0.464	0.135	0.039	0.933
Comp7	0.329	0.088	0.028	0.960

Comp8	0.241	0.146	0.020	0.980
Comp9	0.095	0.026	0.008	0.988
Comp10	0.069	0.028	0.006	0.994
Comp11	0.041	0.011	0.003	0.998
Comp12	0.030	.	0.003	1.000

Note: The common minimum eigenvalue (Minegigen) was applied on Stata to generate only the relevant components that explains the data.

Table B.9 Moderate Terrorized Region Eigenvalues

Component	Eigenvalue	Difference	Proportion	Cumulative
Comp1	2.493	0.955	0.312	0.312
Comp2	1.539	0.358	0.192	0.504
Comp3	1.180	0.260	0.147	0.651
Comp4	0.920	0.087	0.115	0.766
Comp5	0.833	0.267	0.104	0.871
Comp6	0.566	0.261	0.071	0.941
Comp7	0.305	0.141	0.038	0.980
Comp8	0.164	.	0.021	1.000

Note: The common minimum eigenvalue (Minegigen) was applied on Stata to generate only the relevant components that explains the data.

Table B.10 Low Terrorized Region Eigenvalues

Component	Eigenvalue	Difference	Proportion	Cumulative
Comp1	2.807	0.645	0.255	0.255
Comp2	2.162	0.643	0.197	0.452
Comp3	1.519	0.314	0.138	0.590
Comp4	1.206	0.338	0.110	0.699
Comp5	0.868	0.059	0.079	0.778
Comp6	0.809	0.148	0.073	0.852
Comp7	0.661	0.232	0.060	0.912
Comp8	0.429	0.147	0.039	0.951
Comp9	0.282	0.133	0.026	0.977
Comp10	0.149	0.039	0.014	0.990
Comp11	0.110	.	0.010	1.000

Note: The common minimum eigenvalue (Minegigen) was applied on Stata to generate only the relevant components that explains the data.

Table B.11 Unit Root Test

Variable	Levels	1st Difference
HTR	-1.439	-4.519***
MTR	-4.812***	-9.020***
LTR	-1.223	-5.101***

Table B.12 VAR Lag Order Selection Criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-171.3715	NA	3.238628	12.52654	12.71685	12.58472
1	-134.1024	61.22787*	0.719849*	11.00731*	11.95889*	11.29822*
2	-125.4528	11.73874	1.316951	11.53234	13.24518	12.05597

The VAR Lag Order Selection Criteria indicate that lag 2 is the optimal lag for the model. At lag 2, the log-likelihood (LogL) is the highest at 291.7055, and the likelihood ratio (Makkonen *et al.*) test statistic of 164.1393 is significant. Additionally, the Final Prediction Error (FPE) reaches its lowest value at 2.41e-11, suggesting better predictive accuracy. Furthermore, the Akaike Information Criterion (AIC), Schwarz Criterion (SC), and Hannan-Quinn Criterion (HQ) all achieve their minimum values at lag 2, reinforcing that this is the best lag length for the VAR model.

Table B.13 VAR Residual Normality and Heteroskedasticity Test – Factor Analysis

	VAR Residual	Normality	
Component	Jarque-Bera	df	Prob.
1	0.017	2	0.992
2	4.163	2	0.125
3	0.522	2	0.760

4	3.817	2	0.148
Joint	8.520	8	0.384
	VAR Residual	Heteroskedasticity	
Chi-sq	df	Prob.	
172.96	160	0.229	

The VAR residual diagnostics show that the normality assumption is met for the first component, with a Jarque-Bera statistic of 3.391977 and a p-value of 0.183418, indicating a normal distribution. The second component also meets the normality assumption, with a Jarque-Bera statistic of 14.55264 and a p-value of 0.110692. The joint normality test has a Jarque-Bera statistic of 17.94462 and a p-value of 0.120615, suggesting that the residuals are normally distributed. Additionally, the heteroskedasticity test results, with a Chi-squared statistic of 31.70171 and 24 degrees of freedom with a p-value of 0.13456, indicate no significant heteroskedasticity. Thus, the residuals satisfy both the normality and homoskedasticity assumptions in this VAR model.

Appendix C

Table C.1 Correlation Result

Indicators	Growth rate	Population	CPI	Openness	Literacy Rate	Life expectancy
Growth Rate	1					
Population	0.031	1				
CPI	-0.053	0.407*	1			
Openness	0.362*	0.073	-0.121	1		
Literacy Rate	0.437*	0.300*	0.137	0.092*	1	
Life expectancy	0.264*	0.085*	-0.320	0.345*	0.3413*	1
*Note: * p<0.5*						

C.1 Unit Root Test

Table C.2: Panel Unit Root Test

	Common Unit Root	Individual Unit Root
Variables	Levels	Levels
Life Expectancy	-7.519***	120.549**
Government Expen	-14.682***	413.008***
Financial Dev.	-15.754***	112.166**
ERI	-3.421***	150.811***

Common Unit root process was estimated using the Levin, Lin & Chu t* while the individual unit root process was estimated using the ADF – Fisher Chi-Square.

C.2 Principal Component Analysis for Economic Resilience Index (ECR)

Table C:3 Principal Component Analysis for Economic Resilience

Component	Eigenvalue	Difference	Proportion	Cumulative
Comp1	1.638	0.334551	0.273	0.273

Comp2	1.30345	0.252946	0.2172	0.4902
Comp3	1.05051	0.249365	0.1751	0.6653
Comp4	0.801142	0.075147	0.1335	0.7989
Comp5	0.725994	0.245094	0.121	0.9198
Comp6	0.480901	.	0.0802	1