The Impact of Foreign Aid and Agriculture, Forestry and Fishing on Economic Growth: The case of D. R. Congo

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ABSTRACT

This thesis investigates the impact of foreign aid and agriculture, forestry and fishing (AFF) on economic growth in the Democratic Republic of the Congo using data from the World Bank for the timespan 1972 to 2021. To underline the importance of the chosen macroeconomic variables in strengthening economic growth, the impact of the consumer price index; Exports of goods and services; foreign direct investment on the economic growth is also present. The probe utilized the Augmented Dickey-Fuller and Phillips-Perron unit root tests to assess data stationarity through first differencing, at 10% significance level. Long-term relationships between variables were examined using Johansen's cointegration test, while short-term and long-term relationships were assessed using the Vector Error Correction Model (VECM). The causal directionality between macroeconomic indicators and economic growth through Granger causality test was explored lastly.

The outcomes of the VECM analysis underscore several key trends in the D. R. Congo's economic landscape. The findings reveal an adverse long-term correlation betwixt CPI, EXPO, and GDP; indicate a favorable enduring connection among AID, AFF, and GDP. Lastly, the analysis establishes the absence of a statistically substantial relationship between FDI and GDP in the country. It concluded that AID and AFF have been prominent for economic growth. The findings offer valuable insights for policymakers, to make informed decisions that enhance the nation's economy through the positive interplay of AID, AFF and economic growth.

Keywords: Foreign Aid; AFF; Economic Growth; D. R. Congo.

ÖZ

Bu tez, 1972 ile 2021 yılları arasındaki dönem için Dünya Bankası verilerini kullanarak Demokratik Kongo Cumhuriyeti'nde dış yardım ve tarım, ormancılık ve balıkçılığın (TOB) ekonomik büyüme üzerindeki etkisini incelemektedir. Ekonomik büyümeyi güçlendirmekte seçilen makroekonomik değişkenlerin önemini vurgulamak için, tüketici fiyat endeksi; mal ve hizmetlerin ihracatı; doğrudan yabancı yatırımın ekonomik büyüme üzerindeki etkisi de bulunmaktadır. İnceleme, verilerin ilk fark alma yöntemiyle veri durağanlığını değerlendirmek için Augmented Dickey-Fuller ve Phillips-Perron birim kök testlerini kullanmış ve %10 anlamlılık düzeyinde uygulamıştır. Değişkenler arasındaki uzun vadeli ilişkiler Johansen'ın eşbütünleşme testi kullanılarak incelenirken, kısa vadeli ve uzun vadeli ilişkileri değerlendirmek için Vektör Hata Düzeltme Modeli (VECM) kullanılmıştır. Son olarak, makroekonomik göstergeler ile ekonomik büyüme arasındaki nedensellik yönlendirilmesi Granger nedensellik testi ile araştırılmıştır.

VECM analizi sonuçları, D. R. Kongo'nun ekonomik peyzajında birkaç önemli trendi vurgulamaktadır. Bulgular, CPI, EXPO ve GDP arasında olumsuz bir uzun vadeli ilişkiyi gösterirken, AID, AFF ve GDP arasında olumlu bir kalıcı bağlantıyı işaret etmektedir. Son olarak, ülkede FDI ile GDP arasında istatistiksel olarak anlamlı bir ilişkinin olmadığını ortaya koymaktadır. Sonuçlar, AID ve AFF'nin ekonomik büyüme için önemli olduğunu belirlemiştir. Bu bulgular, politika yapıcılarına, AID, AFF ve ekonomik büyüme arasındaki olumlu etkileşim yoluyla ülkenin ekonomisini güçlendiren bilinçli kararlar alabilmeleri için değerli görüşler sunmaktadır.

Anahtar Kelimeler: Dış yardım; AFF; Ekonomik büyüme; D. R. Kongo.

DEDICATION

To my family;

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LIST OF ABREVIATIONS

ADF	Augmented Dickey- Fuller Test
AFF	Agriculture, Forestry and Fishing
AGRI	Agriculture, Forestry and Fishing
AIC	Akaike Information Criteria
AID	Net Official Development Assistance (ODA) and Official Aid Received
CPI	Consumer Price Index
D.R.C	The Democratic Republic of The Congo
FDI	Foreign Direct Investment
FPE	Final Prediction Error
GDP	Gross Domestic Product
HQ	Hannan Quinn Information Criteria
LR	Likelihood-Ratio Test
PP	Phillips Perron Test
SC	Schwarz Information Criterion
VAR	Vector Autoregression
VECM	Vector Error Correction Model

Chapter 1

INTRODUCTION

The Democratic Republic of the Congo (DRC), situated in Central African is a country that has had severe economic problems in the past couple of decades (Tshinu, 2022). Despite being rich in natural resources with a vast reserve of minerals, including copper, cobalt, diamonds, hydropower potential, significant arable land, the world second largest rainforest and immense biodiversity (Tshinu, 2022). The nation has faced challenges in attaining enduring economic progress while enhancing the quality of life for its people. The objective was to establish a robust economic expansion that could be maintained over time, accompanied by measures to elevate the overall living conditions of the populace.

In the decades spanning the 1970s and 1980s, the D.R.C. has had a period of relative economic stability and growth. However, following the end of the Mobutu regime in 1997, the country faced a protracted period of conflict and civil war, which severely hampered its economic development; these years were characterized by political instability, widespread violence, and a significant decline in economic output (Reyntjens, 2001). The early 2000s saw some improvements as the country emerged from the civil war, but the economic recovery remained slow. A combination of weak governance, corruption, and infrastructure challenges hindered the ability of the country to capitalize on its vast natural resources and translate them into a sustained economic growth (Okpara,2011).

In the recent times, indications of potential advancement on the economic front have become evident. The D.R. Congo has witnessed a gradual increase in foreign investment, particularly in the mining sector, this investment, coupled with rising commodity prices for key exports such as copper and cobalt, has contributed to periods of positive economic growth (Bagula et al., 2022). However, it is important to acknowledge that challenges persist. The Democratic Republic of Congo (D.R.C.) remains entangled with challenges such as poor infrastructure, political instability, corruption, and lack of proficient workforce. These factors have limited the country's ability to diversify its economy beyond the extractive industries and address key social issues such as poverty and inequality (Kalumendo, 2022).

In economics literature, economic growth can be defined as the progression of enhancing an economy's ability to produce, leading to a rise in output, income, and employment opportunities. It involves improvements in productivity, technological advancements, and capital accumulation; it refers to the consistent rise in real GDP or national income within a defined timeframe (Iballi et al., 2022). The examination of economic growth extends beyond developed nations to also include developing economies that strive to enhance their economic well-being and reduce poverty (Adebayo et al., 2022).

In the past few years, there has been little research conducted empirically that very clearly examines the factors which influence growth in developing economies (Furlan et al., 2014). Considering growth is a constantly changing process, studies based on conditions from hundreds of years ago might no longer be as applicable today. The advances in technology in recent years have influenced the way countries strengthen their economic systems (Furlan et al., 2014).

Developing countries, like D. R. Congo, face unique challenges and opportunities on their growth trajectories, making the examination of economic growth particularly relevant and pertinent. Understanding the factors influencing economic growth in these contexts is essential for formulating effective policies and strategies that can propel the Congolese economy forward and reduce the poverty level of the country.

Although so many extensive research has been conducted on this particular topic, not so many investigations have been undertaken regarding the combination of Consumer Price Index (CPI), Exports, net official development assistance (ODA) and official aid received; agriculture, forestry, and fishing value added and Foreign Direct Investment (FDI) and economic growth, and also to determine the unique relationship that exist among these variables. Compared to its neighbors in Central Africa, the DRC has generally had a lower economic growth rate in recent years. Some of its neighboring countries, such as Rwanda, Uganda, and Tanzania, have shown more rapid economic growth.

This thesis aim is to analyze how different macroeconomic factors influence economic growth within the context of the DRC. The research specifically focuses on six variables: Gross Domestic Product (GDP), Consumer Price Index (CPI), Exports, net official development assistance (ODA) and official aid received; agriculture, forestry, and fishing value added and Foreign Direct Investment (FDI) inflows. Through an examination of the connections between these variables and economic growth, this thesis aims to offer insights into the factors that have shaped the developments of the DRC's economic performance over the past few decades.

The objective of this thesis is to investigate the patterns, drivers, and implications of economic growth in D.R. Congo by delving into the economic dynamics of the

country, this fact-finding seeks to add to the current collection of literature concerning economic growth and provide valuable insights into the growth experiences of developing countries. Moreover, this thesis aims to identify policy recommendations and interventions that can foster sustainable and inclusive economic growth in D.R. Congo. Identifying how much the selected macroeconomic variables of D.R. Congo have an impact on economic growth for policy formulation, poverty reduction, managing external relations, forecasting and risk assessment, attracting investments and international comparisons. The valuable findings of this research will allow policymakers, economists, and development practitioners interested in the economic development of the DRC to design targeted policies and interventions to foster sustainable and inclusive economic development.

Moreover, this research is an additional asset to the prevailing literature on the factors influencing economic growth existing literature, particularly in the context of resource-rich but economically challenged countries. The impact of the investigation on policy formulation is explained by the fact that macroeconomic variables, such as GDP growth, inflation, fiscal policy, monetary policy, exchange rates, and investment, play a crucial role (Samuel & Matey, 2022). Attracting investments because both domestic and international investors often rely on macroeconomic indicators to assess the potential profitability and risks associated with investing in a particular country.

Poverty reduction, despite the fact that D.R.C is facing high level of poverty at the moment, analyzing the effects of fiscal policy on the distribution of income or the relationship between monetary policy and employment can help take measures that promote equitable economic development Managing external relations because

macro-economic variables have a crucial role in the DRC's engagement with international institutions, donors and creditors; understanding this will facilitate the negotiations and discussions on issues such as debt sustainability, aid effectiveness, trade policies which would strengthen the country's position in international economic relations (Ignatov et al., 2019). Forecasting and risk assessment will allow the development of models and frameworks for forecasting future economic trends which will make policymakers and businesses implement proactive measures to mitigate adverse effects and enhance economic resilience (Ameyaw et al., 2020). International comparison is about comparing the macroeconomic performance of the DRC with other countries, especially its neighbors or countries with similar characteristics, can provide insights into areas where the DRC can learn from successful experiences or identify potential challenges, such comparisons can help policymakers benchmark their efforts, identify best practices, and adapt policies that have proven effective in fostering economic growth (Bryceson & Geenen, 2016).

To accomplish the stated objective, the analysis draws upon data from the World Development Indicators for the years 1972 to 2021. The investigation begins by assessing the stationarity of the variables using two statistical tests: the Augmented Dickey-Fuller (ADF) test introduced in 1979 and the Phillips-Perron (PP) test introduced in 1988. Subsequently, the thesis employs the Johansen cointegration test to unveil the existence of long-term relationships among the variables such as agriculture, aid received, inflation, foreign direct investment, export, and economic growth. This test is instrumental in demonstrating how these factors interact over extended periods. To delve deeper into the dynamics, the analysis employs the Vector Error Correction Model (VECM). This model holds significant importance in the evaluation of relationships amidst the variables, encompassing both the extended-

duration and immediate timeframes. By utilizing the VECM, the thesis not only uncovers the coefficients associated with these relationships but also gauges the speed at which the system adjusts in the short run to reach equilibrium. Lastly, to establish the causal relationships between the variables, the Granger causality test is implemented. This test effectively determines the directional connections and influences that exist among the various factors under consideration. The comprehensive methodology outlined above ensures a thorough examination of the relationships and dynamics among agriculture, aid received, inflation, foreign direct investment, export, and economic growth while maintaining the integrity of the analysis.

In the forthcoming sections of this thesis, an extensive exploration will be conducted. In Chapter 2, an in-depth examination of pertinent literature will be undertaken, delving into the intricate connections that exist between the chosen macroeconomic variables and the trajectory of economic growth. Moving forward, Chapter 3 will unveil the intricacies of the data along with the meticulous methodology employed for the purpose of data analysis. Transitioning to Chapter 4, a comprehensive discussion will unravel the outcomes that have emerged from the analysis. This chapter will encompass a thorough exploration and interpretation of the findings, providing an insightful perspective on the subject matter. Finally, Chapter 5 will serve as the culmination of this thesis, presenting a concise overview of the findings, along with implications for policy-making derived from the research outcomes. Furthermore, this chapter will extend suggestions for potential avenues of future exploration in this domain. The intended result is a holistic comprehension of the intricate interrelations among macroeconomic variables and their influence on

economic growth, thereby contributing to the body of knowledge and facilitating informed policy decisions.

Chapter 2

LITERATURE REVIEW

In the ensuing chapter, an extensive retrospective analysis will be undertaken, revisiting the annals of relevant literature. This retrospective exploration will encompass a comprehensive survey of studies conducted by diverse researchers, focusing on the intricate interplay between specific variables. Specifically, the exploration will delve into the multifaceted relationships betwixt Consumer Price Index (CPI); Exports; net official development assistance (ODA) and official aid received; agriculture, forestry, and fishing value added; as well as Foreign Direct Investment (FDI) inflows and their collective influence on the trajectory of economic growth.

The studies under scrutiny present a rich tapestry of findings, showcasing an array of distinct relationships between these variables. The objective of this retrospective scrutiny is to extract insights from the collective body of research, shedding light on the nuanced dynamics that have been observed across various investigations. Through this comprehensive analysis, a deeper understanding of the intricate web of interactions between these vital economic indicators and their ramifications on economic growth will be elucidated. The amalgamation of these insights is poised to contribute to the advancement of knowledge and to offer valuable perspectives for future policy considerations and empirical inquiries in this domain.

2.1 Agriculture, Forestry, and Fishing and Economic Growth

Natural resources are vital to the procedure of improving of the economic situation of most nations worldwide (Cronin and Pandya, 2009). There are interlinkages and synergies among agriculture, forestry, and fishing sectors in the DRC, which have the potential to enhance economic growth. Integrated approaches such as agroforestry and aquaculture can promote sustainable practices, improve resource management, and diversify income streams for rural communities.

There has not been any evolving economy that ever attained sustainable growth without using natural resources because only human, capital and technological are not enough, they help countries get hard currencies during trades, exports, which is good for the balance of payment of developing countries, to name a few: oil, timber and other agrarian products, especially cereals and tubers. Ergo, countries with so many natural resources are meant to perform better than those that are not rich in natural resources. With everything that is ongoing in the world we can say that resource-rich economies can easily accumulate economic infrastructure and human resources but they don’t use this advantage to its full potential (Idumah and Awe 2017).

Nevertheless, when scrutinizing empirical investigations concerning the intricate relationship between natural resources and economic growth, a prevailing consensus emerges. Studies consistently demonstrate that nations endowed with abundant resources often exhibit subpar economic performance, while their resource-deprived counterparts tend to fare significantly better (Njimanted & Aquilas, 2015). Among the unfortunate victims of this phenomenon, colloquially known as the "resource

curse," are noteworthy countries, including the Democratic Republic of Congo (D.R. Congo), Nigeria, Angola, Bolivia, Sierra Leone, and Venezuela (Arezki & Ploeg, 2010).

Spanning the period from 1965 to 1998, a comprehensive analysis of gross national product (GNP) per capita growth rates reveals divergent trajectories among various nations. This intricate pattern of outcomes underscores a profound paradox in the interplay between resource endowments and economic progress. The observation of resource-rich countries struggling in comparison to their resource-scarce counterparts triggers a nuanced exploration into the underlying factors driving these dynamics. By recognizing these intricate dynamics, researchers and policymakers alike gain valuable insights to inform strategies aimed at mitigating the disadvantageous effects of the resource curse and nurturing sustainable growth (Gylfason, 2001). Iran and Venezuela fell by 1% per year, Libya by 2%, Iraq and Kuwait by 3%, and Qatar by a substantial 6% between 1970 and 1995. OPEC countries as a whole experienced an average decrease in GNP per capita per capita was 1.3% year-on-year, while low- and middle-income countries recorded growth of 2.2%. Notably, only a few resource-rich countries, such as Botswana, Indonesia, Malaysia and Thailand, maintained long-term investment in excess of 25% of their gross domestic product (GDP) between 1970 and 1998, when the economy is industrialized resource poor nation is prosperous (Gylfason, 2001).

The nexus within the agricultural sector and the trajectory of economic growth holds immense significance, particularly within the context of sub-Saharan Africa. The Millennium Development Goals (MDGs), stablished in 2000, serve as an outline of policy to achieving development (Tolulope & Chinonso, 2013). In the African

context, 70% of the population targeted for development reside in area that is located outside towns and cities and the agricultural sector assumes a multifaceted role, acting as a source of not only nourishment but also income generation and cultural significance (Tolulope & Chinonso,2013). A study found that improvements in agricultural productivity can lead to increased income and poverty reduction. Factors such as access to credit, technology adoption, infrastructure development, and institutional support have been identified as crucial for enhancing agricultural productivity and its subsequent impact on the upswing of the economic DRC (Andrianarison et al., 2021). Ingram et al. (2016) emphasized the importance of strengthening governance and implementing sustainable forest management strategies to ensure long-term economic growth in the forestry sector.

Forestry and aquaculture are highly significant sectors for humankind, as they serve to guarantee necessities such as food security and nourishment, socio-economic progress, activities taking place by the sea, maritime traffic, mining, energy generation, and the supply of critical ecosystem services. These services involve essential activities like the capture and storage of carbon, the purification of water, the control of atmospheric elements and temperatures, along with providing safeguards against erosion and adverse weather occurrences (Ackefors & Enell, 1994).

The DRC is rich in water resources, including rivers, lakes, and wetlands, which support diverse fish populations. Allison et al. (2009) highlighted the importance of value chain development and institutional frameworks in maximizing the sector's contributions. However, overfishing and inadequate infrastructure pose significant challenges to sustainable fishing and related economic advantages. Activities of

forestry sectors industry offers many job opportunities. The workforce in the forestry sector is diverse and plenteous, although not all are properly documented. The different stages of the operation such as logging, round timber transportation and sawing require a lot of manual effort, creating employment opportunities, especially in rural areas (Suman et al., 2021). The DRC possesses one of the world's largest tropical rainforests, offering immense opportunities for sustainable forestry practices; the forestry sector contributes to the DRC's export earnings (Majambu et al., 2021).

In the 1960s, Johnson and Mellor published a paper titled "The Role of Agriculture in Economic Development" In their study they analyzed how agriculture contributed to economic expansion, they discovered that agriculture plays a multifaceted role; in addition to providing food and employing unskilled labor, agriculture also provides resources such as capital and labor for other industries. Furthermore, it serves as a potential market for the advancement of industrial innovation. Upon conducting a thorough analysis of the impacts stemming from agricultural growth and development on a nation's comprehensive well-being, scholars have pinpointed a significant recurring pattern. The sector has a significant and growing influence on poverty reduction, particularly during the initial phases of economic progress. In other words, the growth of the agricultural sector significantly contributes to reducing poverty, particularly pronounced as the agricultural sector expands in the early stages of an economy’s journey towards advancement (Christiaensen et all., 2011). Since low-income households play an important role in contributing to agriculture, improvements in this sector lead to more poverty reduction than in non-agricultural sectors (Bezuneh & Yiheyis, 2020).

According to a study by Majambu et al. (2021), the forestry sector in the DRC has experienced a complex relationship with economic development due to illegal logging and weak governance. The study emphasizes the need for sustainable forest management practices, effective law enforcement, and community involvement to ensure the long-term economic benefits of the forestry sector. Research by Gbetibouo and Ringler (2009) highlights the potential for agriculture to drive economic growth through increased productivity and enhanced market access. They emphasize the importance of investment in agricultural research, rural infrastructure, and farmer education to promote sustainable growth in the sector.

2.2 Gross Domestic Product (GDP) and Economic Growth

Various methodologies exist for gauging economic advancement within a nation, with Gross Domestic Product (GDP) frequently serving as a prominent yardstick. GDP functions as a pivotal indicator of economic progress, quantifying the aggregate worth of commodities and services manufactured within a country's territorial confines over a designated span. Extensive scholarly investigations have delved into the intricate correlation between GDP and the trajectory of economic growth, highlighting the positive association between the two variables. Higher GDP growth rates are often associated with increased employment opportunities, rising incomes, and improved living standards. However, the specific factors that drive GDP growth vary across countries and contexts.

In their comprehensive study conducted in 2004, Barro and Sala-i-Martin unearthed a significant correlation. They observed that elevated GDP per capita aligns with amplified rates of economic growth, a trend observed across both advanced and emerging economies. This intriguing insight highlights the overarching influence of

GDP on the broader trajectory of economic development. However, amidst the widespread utilization of GDP as a pivotal metric, its inherent limitations come under scrutiny. Chief among the criticisms leveled against GDP is its inherent incompleteness as a gauge of economic activity. While GDP diligently captures market-based production within its scope, it falls short in encapsulating a myriad of non-market activities that significantly contribute to a nation's well-being. Non-market activities, such as the often-overlooked domain of household work, volunteer endeavors, and the sprawling informal economy, remain outside the purview of GDP's traditional measurement framework. This exclusion paints an incomplete picture of a nation's economic vibrancy, failing to reflect the comprehensive spectrum of contributions made by its populace. As societies evolve and diversify, recognizing and rectifying this gap becomes increasingly crucial to ensure that policy decisions and resource allocations accurately reflect the multifaceted dimensions of economic activity and progress. This exclusion can result in an underestimation of the overall economic activity and fails to provide a comprehensive picture of the true economic well-being of a nation (Daly and Cobb, 1989).

The Solow-Swan model can help you examine the relationship between GDP (constant 2015 US$) and economic growth in the DRC. Within this conceptual framework, Gross Domestic Product (GDP) serves as a tangible manifestation of the economy's production output. The model, meticulously constructed, unveils the intricate facets that dictate the trajectory of economic growth. This intricate framework takes into account a spectrum of pivotal determinants, including but not limited to accrual of resources, the march of innovation evolution, the enlargement of employee base. The process involves a meticulous estimation of the model's parameters, ensuing a meticulous interpretation of the resultant coefficients. This

analytical journey culminates in the ability to meticulously assess the individual contributions of these determinant factors to the overarching phenomenon of economic growth specifically within the Democratic Republic of Congo (DRC). Rooted in the pioneering work of Swan in 1956, this approach seeks to distill a nuanced comprehension of how capital, technology, and human resources synergistically shape the economic landscape of the DRC, thus informing strategic policy decisions and fostering informed pathways toward sustainable growth.

2.3 Consumer Price Index (CPI) and Economic Growth

The Consumer Price Index (CPI) serves as a yardstick to gauge fluctuations in the mean costs of goods and services that households consume across varying periods. A key concept closely intertwined with the CPI is inflation, a phenomenon characterized by an upward surge in the overall worth of commodities and services within an area during a designated timeframe (U.S. Bureau of Labor Statistics, 2016). This inflationary trend, inherently mirrored by changes in the CPI, wields a substantial influence on the intricate tapestry of economic growth. The impact of inflation on economic dynamics is profound and multi-dimensional. As inflation rates escalate, the purchasing power held by consumers undergoes a steady erosion. This, in turn, reverberates across the economic landscape as it diminishes how consumers take possession of goods and services at the same scale as before. Additionally, the repercussions extend to investment and consumption behaviors. High inflation rates often create an environment of uncertainty, prompting individuals and businesses to reconsider their investment decisions. Similarly, the reduced purchasing power of consumers tends to depress their consumption tendencies, hindering the broader cycle of demand and supply that sustains economic vitality.

In essence, the nexus between the CPI and inflation holds a critical position in understanding the intricate interplay of economic dynamics. Recognizing the cascading effects of inflation on consumer behaviors, investment trends, and overall economic vigor underscores its significance as a variable that necessitates careful consideration in economic policymaking and analysis.

Conversely, low and stable inflation rates can foster a conducive environment for economic growth by promoting investment and maintaining price stability; among the array of macroeconomic indicators, inflation and growth velocity in the economical realm emerge as the most pivotal and meticulously monitored variables (Ding & Asare Vitenu-Sackey, 2021). The symbiotic relationship between these variables stands as a cornerstone in comprehending a nation's economic landscape. Notably, the occurrence of elevated inflation rates resonates as a prevailing occurrence, particularly within the realm of developing nations—a category that encompasses the Democratic Republic of Congo (D.R. Congo). This phenomenon, acknowledged as a global trend, often presents unique challenges and considerations within these contexts.

A study delved into the connection between economic growth and inflation, utilizing data samples from a total of 140 countries for the timeframe 1960 to 1998, including industrialized and developing. The study's outcomes elucidated that when the inflation rate surpasses a specific level, it wields a noteworthy and opposite with economic growth (Khan & Senhadji, 2001).

The research findings imply that the point at which inflation should be halted differs between nations at varying stages of development. To provide a specific illustration,

for developing countries, this threshold falls spans from 7% to 11%, while for developed countries, it's situated between 1% and 3% (Khan & Senhadji, 2001). This indicates that the suitable level of inflation varies depending on how developed a country is. It shows that the negative impact of inflation on economic growth can be quite different (Khan & Senhadji, 2001).

The existing body of research groups the correlation amidst inflation and economic growth into three categories: “1) No impact of inflation on economic growth, 2) Inflation affecting economic growth, and 3) No clear connection between inflation and economic growth” (Wai et al., 1959). Within this framework, a study has shown that inflation doesn't directly affect economic growth, stipulating that other economic element hold a substantial role in balancing the economic blossom of a state (Wai et al., 1959). Additionally, researchers Attari, Irfan and Javed (2013) engaged in a discussion about the link between inflation and economic betterment, they proposed the perspective that there isn't an immediate or short-term interrelation involving inflation and economic growth; this perspective underscores the notion that the interconnection of these two factors might not be immediately evident within a brief timeframe.

2.4 Exports and Economic Growth

Exports has a paramount role in fostering economic growth using several means, including generating foreign exchange earnings, creating job opportunities, and facilitating the transfer of technology. Research studies have underscored the constructive connection amidst exports and economic growth particularly in undeveloped nations. Export-oriented strategies can lead to increased productivity,

technological advancements, and diversification of the economy, contributing to sustained economic growth.

The neoclassical group of economists proposes that exports is substantial in driving economic growth (Anwer & Sampath, 2000). Typically, there are four main justifications presented to support this notion: « Favorable Specialization » this refers to the idea that by Concentrating on the creation of commodities in areas where a country possesses a relative edge, it becomes possible to benefit from efficient production methods and cost-effectiveness; « Utilizing Full Capacity » when domestic demand doesn`t reach maximum production capacity, exporting can ensure that factories operate at their full potential, contributing to increased efficiency and economic growth; « Economies of Scale »: by accessing larger markets through exports, businesses can leverage economies of scale, which means producing larger quantities becomes more cost-efficient, further supporting economic growth; « Accelerating Investment and technological advancements" as companies strive to remain competitive in global markets. This drive for innovation can lead to enhanced economic growth (Hansen et al., 2021).

According to the neoclassical economists, exports play a significant role in driving economic growth (Anwer & Sampath, 2000). There are typically four reasons cited to support this idea: "a) Beneficial specialization enables leveraging comparative advantages, b) Utilizing full factory capacity when domestic demand falls short of maximum production capacity, c) Capitalizing on economies of scale due to larger markets, d) Accelerating investment and technological advancements" (Hansen et al., 2021).

Among economists, there exists a division of opinion regarding the benefits of exports for fostering economic growth. While some economists tend to concur that exporting is beneficial for economic expansion, there are also those who haven't discovered substantial backing for the hypothesis of export-led economic growth (Karahan, 2020). The research arena presents a variety of outcomes: some studies reveal that economic growth causes an uptick in exports (Granger causality), while other research unveils a reciprocal connection, suggesting that both economic growth and exports impact each other (bidirectional relationship) (Karahan, 2020). This indicates the link isn't uniform across the board. Instead, it's subject to variation based on contextual factors in different situations.

Concerning the cause-and-effect relationship of exports and economic growth, given that exports form an integral constituent of GDP, the direction of influence can flow both from exports to growth and vice versa (Samad, 2011). Multiple real-world investigations have yielded inconclusive results when attempting to establish a direct cause-and-effect connecting exports and GDP growth. These empirical studies encompass a range of underdeveloped economies, such as Hong Kong, South Korea, Mexico, Singapore, and Taiwan. Despite their efforts, these studies have not been able to provide compelling evidence supporting a clear causal relationship between exports and the growth of a country's Gross Domestic Product (Hsiao & Hsiao, 2006). A scholarly study posits that even when an augmented export activity positively influences the advancement of production, this favorable impact can be constrained and counteracted by elevated levels of imports, which supplant domestic production (Ruiz-Napoles, 2001).

An inspection of the liaison amidst export sector and the process of economic advancement in the context of Malaysia was conducted, revealing a departure from the "export-driven growth" strategy. Instead, the researcher suggested that there is a mutually reinforcing connection betwixt Malaysia's exports and its long-term GDP, indicated a short-term one-way causal link from GDP to exports, but not the other way around. This implies that Malaysia's increased exports tend to be an outcome of the country's production expansion, rather than the cause (Furuoka, 2007). Numerous studies reviewed and affirmed the significance of exports for economic growth in non-industrialized nations (Sermcheep, 2019).

2.5 Net Official Development Assistance and Official Aid Received and Economic Growth

ODA, which stands for Official Development Assistance, pertains to the assistance extended by governments to less developed countries, with the intention of promoting their economic progress and enhancing their overall well-being. It's important to note that loans and credits extended for military purposes are not included in this definition of foreign assistance (Zwitter & Boisse-Despiaux, 2018). Aid can come in two forms: bilateral assistance, wherein the contributor directly offers aid to the receiver, or via a multilateral development institution such as the United Nations or the World Bank (Zwitter & Boisse-Despiaux, 2018). Aid takes on different shapes like grants, "soft" loans, and support in technical way. Subsidized loans are those that have a subsidy factor of 25% or higher. When measuring Official Development Assistance (ODA), the approach is generally net, meaning that loan repayments are subtracted from the total aid flows (Shitile & Sule, 2019).

Extensive deliberations have been ignited by the ascendancy of overseas aid on the trajectory of economic growth; some suggest a favorable impact, suggesting that ODA has the potential to bolster economic growth by offering extra financial means, aiding in building infrastructure, and improving human resources. However, contrasting research suggests that foreign aid might lead to issues like aid dependence, inefficiency, and skewed incentives, ultimately impeding sustainable long-term economic growth (Appiah-Otoo et al., 2022).

Numerous notable research endeavors have successfully identified a direct correlative link between foreign aid and economic growth. An investigation concluded that ODA enhances economic expansion when accompanied by effective fiscal policies. These favorable policies encompass measures such as maintaining modest budget deficits, managing inflation levels, and embracing global trade opportunities.

In essence, the presence of these "good" fiscal policies acts as a catalyst, facilitating the positive impact of foreign aid on economic growth (Burnside &Dollar, 1997). Durbary and colleagues (1998) similarly observed between the two variables a constructive correlation. Their findings aligned with the conclusions drawn by Burnside and Dollar regarding the significance of sound economic policies. However, Durbary's study also revealed that the magnitude of aid's influence on Gross Domestic Product (GDP) is heavily contingent on additional factors such as geographical location and income levels. In essence, while positive connections between foreign aid and economic growth were evident, the extent of this impact varied based on a combination of geographical and income-related dynamics.

Papanek (1973), in an analysis that spanned 34 countries through cross-country regression, examined foreign aid, foreign investment, additional capital flows, and domestic savings as explanatory factors. His findings led to the conclusion that foreign aid carries a more substantial influence on growth compared to other variables. Papanek emphasized that aid is deliberately structured to foster growth, particularly in nations with constrained balance of payments. Furthermore, he detected a significant negative relationship between foreign aid and domestic savings, a factor he considered influential in shaping growth outcomes (Papanek, 1973). Chenery and Carter (1973) adopted the two-difference derivative model introduced by Chenery and Strout (1966). Their study, which involved data from 50 countries spanning 1960 to 1970, disclosed that the influence of Official Development Assistance (ODA) on development outcomes varied within specific country groupings. For instance, foreign aid spurred economic growth in Taiwan, South Korea, Iran, Thailand, and Kenya, while in India, Colombia, Ghana, Tunisia, Sri Lanka, and Chile, it conversely hindered growth (Barrett & Whyte, 1982). In a correlated investigation, Singh (1985) explored the period between 1960-1970 and 1970-1980 in less developed countries. His study affirmed that foreign aid exerted a beneficial effect on economic growth. However, he pointed out that this association was more likely to hold when excluding the variable of state intervention. Interestingly, when the regression model incorporated the variable of state intervention, the statistical potency of foreign aid's effect weakened (Wamboye et al., 2014).

In 1993, Snyder conducted an analysis that accounted for the size of countries, revealing a noteworthy and positive association between foreign aid and economic growth. He emphasized that previous econometric studies overlooked a crucial

factor: the faster growth rate observed in larger countries despite their receipt of comparatively less aid. Snyder also asserted that donors tend to favor smaller countries for several reasons. Drawing inspiration from the framework that Papanek (1972, 1973) initially formulated, Mosley (1980) and Mosley et al. (1987) subsequently extended, Snyder embarked on an inquiry into the relationship allying incoming foreign aid and the growth rate of gross domestic product (GDP) across 69 undeveloped nations, spanning three discrete timeframes: 1960s, 1970s, and 1980-1987. In his analysis, the dimension of country size introduction, gauged through GDP, into the equation. Snyder posited that excluding country size, the impact of aid might appear trivial and inconsequential. However, upon the integration of this factor, the coefficient representing aid transforms into a positive and significant value (Chand & Bowman, 2007).

In parallel, Fayissa and El-Kaissy (1999) reached a similar conclusion to that of Chenery and Strout (1966). Their research encompassated 77 countries during three specific timeframes: 1971-1980, 1981-1990, and 1971-1990. The outcomes definitively validated the notion that foreign aid is pivotal in bolstering economic growth through the generation of local capital. This alignment with established economic theories of foreign aid lent further credibility to their findings. Their investigation notably highlighted that overseas assistance, along with private savings, human capital, and exports, consistently displayed positive associations with economic growth across the examined countries (Tang & Bundhoo, 2017).

Foreign aid is commonly associated with a positive repercussion on economic growth for several reasons. To begin with, it amplifies levels of investment, fortifies the ability to bring in capital goods and technology, and importantly, it refrains from

exerting any detrimental influence on investment and saving behaviors. Additionally, foreign aid contributes to increased capital productivity, thus fostering endogenous technical advancements (Morrissey, 2001). Despite this positive narrative, Pedersen (1996) offered a contrasting perspective in a related study. He argued that definitively attributing a favorable impact of aid on growth is still not feasible. Employing game theory, Pedersen highlighted the challenge originating from the aid system's intrinsic incentives (Pedersen, 1996). Specifically, he demonstrated that aid conditions might fall short when recipient nations fail to honor their commitments, leading to insufficient consequences. Furthermore, the existing incentives for aid organizations to maximize aid distribution can inadvertently hinder the motivation of aid recipients and reinforce their reliance on aid, thereby distorting their developmental trajectory (Reinsberg, 2018).

2.6 Foreign Direct Investment (FDI) and Economic Growth

Foreign direct investment (FDI) entails a prolonged engagement of one country (Country A) in the affairs of another country (Country B). This engagement frequently encompasses managerial participation, collaborative ventures, and the exchange of technological knowledge and specialized skills (Antwi et al., 2013). Foreign Direct Investment (FDI) injects capital, technological advancements, managerial acumen, and avenues to untapped markets. These elements collectively have the potential to ignite productivity enhancements, foster innovation, and fuel the creation of employment opportunities. The inflow of Foreign Direct Investment (FDI) has gained widespread acknowledgment as a pivotal catalyst for economic growth, notably within developing nations. A multitude of research endeavors have unveiled a favorable correlation between FDI inflows and economic growth, underscoring the significance of creating an environment conducive to investment

and implementing effective policies. This approach aims to attract FDI and optimize the advantages derived from it.

Applying the Generalized Momentum Method (GMM) estimators to a dataset covering 22 sub-Saharan African nations from 1980 to 2011 yielded a notable outcome: Foreign Direct Investment (FDI) was found not to wield an autonomous impact on economic growth (Adams & Opoku, 2015). Further exploration by Agbloyor et al. (2014) brought forth results suggesting a detrimental influence of FDI on economic growth across 14 African countries, as discerned via GMM estimators. Frimpong et al. (2006) conducted an additional study, scrutinizing the nexus between FDI inflows and economic growth in Ghana, unearthing a lack of a direct causal link between FDI and economic growth spanning the 1970-2002 duration. However, it did unveil a noteworthy revelation: FDI does contribute to GDP growth in the post-Structural Adjustment Program (SAP) era (Driffield, 2006).

The parameter "Foreign direct investment, net inflows (% of GDP)" represents the share of Foreign Direct Investment (FDI) entering the Democratic Republic of Congo (DRC) in comparison to its Gross Domestic Product (GDP). The core tenet of FDI theory revolves around how foreign investments influence the enhancement of economic growth. Employing a regression model, an analytical method assists in unraveling the intricate interplay of FDI and economic growth specifically in the DRC. This analytical method assists in unraveling the intricate dynamics that shape the relationship between FDI and the trajectory of economic growth within the unique context of the DRC.

2.7 Agriculture, Forestry and Fishing; Foreign Aid and Economic Growth

The Democratic Republic of Congo (DRC) is characterized by intricate interconnections within its economic landscape. In this context, agriculture occupies a central position, playing a pivotal role by providing employment opportunities for a substantial segment of the population and making a significant contribution to the nation's Gross Domestic Product (GDP). Nonetheless, the agricultural sector grapples with a multitude of obstacles. These encompass issues such as diminished productivity, insufficient infrastructure, restricted entry to credit and markets, as well as susceptibility to the impacts of climate change.

Foreign aid has been a powerful supporter for the agriculture, forestry and fishing sector in the DRC. Global institutions and countries offering aid have extended financial support, technical know-how, and initiatives aimed at capacity-building. These efforts aim to elevate agricultural output, upgrade infrastructure, and advocate for the adoption of eco-friendly farming methods.

Foreign aid has been directed towards addressing food security issues, promoting value chain development, and strengthening agricultural institutions. While aid inflows can contribute to agricultural development and stimulate economic growth, the effectiveness of aid programs can be hampered by challenges such as corruption, weak governance, and limited absorptive capacity. Additionally, aid dependency can create challenges for long-term sustainable development, as it may discourage domestic investment and hinder the development of local markets. For optimal

effectiveness, it's essential to place emphasis on strategic investments in critical domains to bolster economic growth.

2.8 Theoretical Framework and Hypotheses Development

Drawing upon the synthesized body of literature, this thesis opts for an endogenous growth framework to scrutinize the intricate interplay involving several factors. These factors encompass the Consumer Price Index (CPI), Exports, net official development assistance (ODA), official aid received, and activities within agriculture, forestry, and fishing, and Foreign Direct Investment (FDI) inflows.

The theoretical foundation posits that these variables exert an influence on the overarching economic growth measure, which in this context is the Gross Domestic Product (GDP). In the subsequent sections of this thesis, fresh perspectives will be added to the current body of knowledge by exploring how these selected macroeconomic factors distinctly influence the trajectory of economic growth within the Democratic Republic of the Congo (DRC).

Chapter 3

DATA COLLECTION AND METHODOLOGY

3.1 Data Collection

The collection and scrutiny of time-series data on macroeconomic variables that are crucial indicators of economic growth, have significant policy implications on the economy of the D. R. Congo. The span under consideration is from 1972 to 2021, providing a comprehensive overview of the DRC's economic performance over several decades. On the bases of the evidences from the time-series plots and correlation analysis, the following research hypotheses are set:

H1: AGRI has a positive impact on GDP

H2: AID has a positive impact on GDP

The dataset for this thesis was from the World Development Indicators. The table provided illustrates the utilized variables

Table 1: Table of variables

Indicator Name	Abbreviation used	Data source
GDP (constant 2015 US$)	GDP	The World Bank
Net official development assistance and official aid received (constant 2020 US$)	AID	The World Bank
Agriculture, forestry, and fishing, value added (constant 2015 US$)	AGRI	The World Bank
Exports of goods and services (constant 2015 US$)	EXPO	The World Bank
Foreign direct investment, net inflows (% of GDP)	FDI	The World Bank
Consumer price index (2010 = 100)	CPI	The World Bank

3.2 Methodology

The model below explores how macroeconomic factors cause economic growth in D.R. Congo

$GDP = f(AGRI_t, AID_t, INFL_t, EXPO_t, FDI_t)$

Where GDP is the function of agriculture (AGR), foreign aid (AID), inflation (INF), export (EXPO) and foreign direct investment (FDI).

The model is being expressed in the logarithmic form below:

$$\ln GDP_t = \beta_0 + \beta_1 \ln AGRI_t + \beta_2 \ln AID_t + \beta_3 \ln INFL_t + \beta_4 \ln EXPO_t + \beta_5 \ln FDI_t + \varepsilon_t$$

In this context, the variable "$\ln GDP_t$" signifies the logarithm of Gross Domestic Product. Similarly, "$\ln AGRI_t$" denotes logarithm of the agriculture sector, "$\ln AID_t$" refers to the natural logarithm of foreign aid, "$\ln INFL_t$" corresponds to the logarithm of inflation rates utilizing the consumer price index (with the base year 2010 set to 100), "$\ln EXPO_t$" represents logarithm of exports, and "$\ln FDI_t$" stands for logarithm of foreign direct investment. Additionally, "ε_t" encapsulates the disturbance factor within the model.

3.3 Data Analysis Techniques

This thesis employed various econometric techniques to explore the influence of the chosen macroeconomic variables on economic growth within the Democratic Republic of Congo (DRC). Initially, unit root tests—specifically the Augmented Dickey-Fuller (ADF) and Phillips-Peron (PP) tests—were used to evaluate the stationarity of various variables: agriculture, foreign aid, inflation, exports, foreign direct investment, and economic development. Once the stationarity of these variables was confirmed, the dissect moved on to perform cointegration analysis through Johansen's Cointegration Test.

This facilitated the identification of the long-term relationships existing among the variables. Subsequently, in order to appropriately capture the intricate variable dynamics, The VAR lag order selection criteria examination was employed to ascertain the most suitable number of lags for inclusion in the Vector Error Correction Model (VECM) specification. Lastly, to ascertain the direction of the relationships, the research employed the Granger Causality Test. This comprehensive approach enables a thorough examination of the intricate dynamics between the variables and their impact on economic growth in the DRC.

3.3.1 Unit Root Test

The initial phase of this analysis encompasses the execution of unit root tests to ascertain the stationarity attributes of the variables. Two specific tests, namely ADF and PP, were conducted for detecting the presence of unit roots within the variables. These tests entail distinct null hypotheses, postulating the existence of a unit root within the sequence, while the alternative hypothesis posits the absence of a unit root within the sequence (Kwiatkowski et al., 1992).

When examining the stationarity of a series, its behavior at different levels is crucial. A series is categorized as integrated of order zero I(0) when it remains stationary at the initial level, whereas it becomes integrated of order one I(1) when it achieves stability through first differencing. The Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests encompass various model configurations, including those incorporating trends and intercepts, only intercepts, or neither. In the ADF test, lagged values of the dependent variable are employed to ensure the serial lack of correlation in the error term. Conversely, the PP test employs non-parametric statistical methods to assess serial correlation in the error term without involving

lagged differences (Sephton, 2021). The model exploited for the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests is represented as follows:

$\Delta Y_t = \alpha + \beta Y_{t-1} + \gamma \Delta Y_{t-1} + \delta 1 \Delta Y_{t-2} + ... + \delta p \Delta Y_{t-p} + \varepsilon_t$

Where Yt is The dependent variable represents the time series variable under consideration; Δ represents the first difference operator ($\Delta Y_t = Y_t - Y_{t-1}$), indicating the change in the variable from one period to the next; α is the intercept term; β is the coefficient of the lagged level variable (Y_{t-1}) which tests for the presence of a unit root; γ is the coefficient of the lagged first difference variable (ΔY_{t-1}) which accounts for any serial correlation; δ_1, ..., δ_p represent the coefficients of the lagged first difference variables (ΔY_{t-2}, ..., ΔY_{t-p}) up to the desired order p and εt is the error term. The database is stationary at the first difference since the test results indicate significance at the 10% level.

3.3.2 Co-integration Test

Given the equivalence in the integration order of the variables, the approach of cointegration is harnessed to uncover the enduring relationship among these variables via the Vector Error Correction Model (VECM). For this purpose, Johansen's (1988) cointegration test was chosen due to its methodical nature and definitive outcomes. The null hypothesis posits a lack of cointegration within the series, while the alternative hypothesis suggests the existence of cointegration within the series (Shahriar & Habiballah, 2017).

Thus, the non-rejection of the null hypothesis signifies the presence of cointegration and consequently, a sustained, long-term interconnection among the variables (Moutinho et al., 2020). In this testing framework, the null hypothesis can be invalidated not only through statistically significant values but also by considering supplementary statistics. If the trace statistic surpasses the critical threshold, the null

hypothesis persists unchallenged, indicating the presence of cointegration among the variables, as outlined by Moutinho et al. (2020).

The contributions of Johansen (1988) lie in revealing cointegration vectors among variables, circumventing issues linked to Engel and Granger (1987).

The Johansen's cointegration equation is expressed as follows:

$Xt= \Pi_1 X_{t-1} +\ldots.+ \Pi_k K_{t-k} + \mu + e_t$

Within this equation, X_t and X_{t-1} symbolize the vectors represented in their level form and lagged in the first difference form, respectively. Coefficient matrices Π_1, Π_k play a role in this equation, while μ serves as a binary variable. Additionally, the term et signifies the stochastic error component, as elucidated by Katircioglu et al. (2007).

3.3.3 Vector Error Correction Model

Thereupon the presence of a lasting correlation is certified, the Vector Error Correction Model (VECM) is employed to deduce both the short-term and long-term coefficients of these variables. The selection of lags is based on Akaike and Hannan-Quinn criteria, recognized as prominent standards in this context. Within this framework, the long-run connection is derived through the application of cointegration coefficients, denoted as « Y », present within the error correction term embedded within the equation. The term, often referred to as the rate of adjustment towards equilibrium, assumes a negative value and attains statistical significance, affirming the presence of a prolonged interrelationship among the variables (Abbas et al., 2017).

The ensuing equations represent the Vector Error Correction Equations:

$\Delta \ln(GDP) = \alpha_0 + \alpha_1 \Delta \ln(AGRI)_t + \alpha_2 \Delta \ln(AID)_t + \alpha_3 \Delta \ln(INFL)_t + \alpha_4 \Delta \ln(EXPO)_t + \alpha_5 \Delta \ln(FDI)_t + \beta_1 (ECM_{t-1}) + \varepsilon_t$

In the model Δ represents the change of variables; Δln(GDP) is the first difference of the natural logarithm of GDP representing the short-run change in economic growth; Δln(CPI) is the first-order difference of the natural logarithm of the CPI reflecting short-run changes in the consumer price index; Δln(INFL) is the first difference of the natural logarithm of the inflation rate representing the short-run change in inflation; Δln(EXPO) is the outcome achieved by calculating the initial variation in the natural logarithm of exports representing the short-run change in the level of exports; Δln(AID) is the First Difference of the natural logarithm of foreign aid representing the short-run change in foreign aid inflows; Δln(AGRI) is the first difference of the natural logarithm of the agricultural sector representing the short-term fluctuations of the agricultural sector; β_1 is the coefficient of the error correction term (ECT) representing the speed of adjustment towards the long-run equilibrium relationship; ECM_{t-1} is the lagged error correction term representing deviations from the long-run equilibrium relationship in the previous period, and εt is the error term representing random disturbances in the model.

3.3.4 Granger Causality Test

Once the long-term interconnection betwixt variables has been established, an exploration of the causal relationships among them is undertaken through the application of the Granger Causality Test (1988). This test serves to determine whether prior values of one variable can effectively forecast the future values of another variable. By conducting the Granger causality test, valuable insights are gleaned regarding the nature, direction, and potency of the causal relationships uniting Gross Domestic Product (GDP) and the selected macroeconomic variables.

The relationships amid variables can be categorized as unilateral, where a one-sided relationship exists; bilateral, signifying independent causality in both directions; or

non-existent, implying a lack of causal association between the variables (Viswanathan & Kumaran, 2013).The Vector Error Correction Model (VECM) being the frame of reference, the equations for Granger causality tests can be formulated as follows: null hypothesis « Variable A does not Granger cause Variable B » and alternative Hypothesis: « Variable A Granger causes Variable B ».

Here are the Granger causal equations utilizing the vector error correction model to ascertain if variable A Granger causes variable B.

This assessment involves comparing two distinct models.

Restricted Model:

$$\Delta B = \beta_1 \Delta B_{(t-1)} + \beta_2 \Delta B_{(t-2)} + ... + \beta_p \Delta B_{(t-p)} + \varepsilon_1$$

This model includes only the lagged differences of Variable B as predictors.

Unrestricted Model:

$$\Delta B = \alpha_0 + \alpha_1 \Delta B_{(t-1)} + \alpha_2 \Delta B_{(t-2)} + ... + \alpha p \Delta B_{(t-p)} + \gamma_1 \Delta A_{(t-1)} + \gamma_2 \Delta A_{(t-2)} + ... + \gamma q \Delta A_{(t-q)} + \varepsilon_2$$

This model includes the lagged differences of both Variable B and Variable A as predictors.

ΔB represents the first differences of Variable B; ΔA represents the first differences of Variable A; ε_1 and ε_2 are error terms. To test for Granger causality, we examine whether the additional lagged differences of Variable A (ΔA) in the unrestricted model (second equation) significantly improve the prediction of Variable B compared to the restricted model (first equation). e_1 and e_2 show the disturbance term in the models. By performing statistical tests, such as F-statistic or likelihood ratio tests, we can determine whether the inclusion of the lagged differences of Variable A improves the model's ability to predict Variable B. If the test shows statistical

significance, we can conclude that Variable A Granger causes Variable B. The error correction coefficient is checked using t-test.

3.4 Data Analysis Software

The data analysis and statistical calculations were conducted using the EVIEWS statistical software since it packages provide robust tools for conducting econometric analyses and generates meaningful results.

3.5 Limitations

It holds significance to recognize the constraints and boundaries inherent in this research. First, the analysis relies on secondary data obtained from World bank Databank, which may be subject to measurement errors or inconsistencies. Second, the thesis assumes that the selected macroeconomic variables capture the major stimulus of economic growth in the DRC, but there may be other unobserved factors that could influence the results. Finally, the thesis's findings may be influenced by external factors or events that are beyond the scope of this research.

In the following chapters, the collected data will be analyzed using statistical techniques mentioned above. The obtained results will be carefully analyzed and deliberated upon in the context of the predefined research objectives and hypotheses.

Chapter 4

DATA ANALYSIS AND EMPIRICAL RESULTS

This chapter encapsulates the experimental outcomes stemming from diverse analytical techniques deployed within this thesis. Specifically, unit root tests, encompassing the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests, to assess the stationarity aspect. Subsequently, Johansen's cointegration test was utilized to ascertain the presence of a prolonged connection between the selected macroeconomic factors and economic growth. Thereupon, the Vector Error Correction Model (VECM) was utilized to uncover and reveal the interrelations existing in both the immediate and extended timeframes among the coefficients. As the final step, the Granger causality test was employed to shed light on the directional implications of the variables.

4.1 Preliminary Evidence

A comprehensive exploration of the unique attributes of the data is undertaken in this section. Moreover, initial insights into the interrelationships among the variables are garnered through a meticulous examination of the time-series plots associated with these variables, along with a meticulous assessment of their correlations.

4.1.1 Descriptive Statistics

Upon conducting a comprehensive examination of the descriptive statistics, it becomes evident that Consumer Price Index (CPI) boasts the highest mean value, while Foreign Aid (AID) registers the lowest mean value. Furthermore, it is notable that CPI showcases the most substantial standard deviation, indicating that its

individual data points are the farthest from their calculated mean. On the other end of the spectrum, Agriculture (AGRI) exhibits the lowest standard deviation, reflecting the minimal average variability within its values. Regarding skewness, GDP, AGRI, Foreign Aid (AID), CPI, Foreign Direct Investment (FDI) and Exports (EXPO) all demonstrate a positive skew, implying a longer tail towards the higher values. Among these variables, FDI exhibits the most pronounced skewness, whereas AGRI showcases the least skewness.

Except for GDP, AID, EXPO and FDI, which exhibits significant leptokurtosis (positive excess kurtosis) implying a longer tail towards the higher values, all other variables exhibit platykurtosis (with kurtosis values less than 3), suggesting relatively flatter distributions compared to a normal distribution. Notably, based on the outcomes of the Jarque-Bera normality test, it emerges that all variables adhere to a normal distribution, except for AID, CPI, EXPO, and FDI. These variables deviate from normality, as indicated by the rejection of the null hypothesis of normality at a 5% level of significance.

Table 2: Descriptive Statistics

	GDP	AID	AGRI	CPI	EXPO	FDI
Mean	2.76E+10	1.56E+09	5.05E+09	43.98769	4.33E+09	1.942285
Maximum	4.81E+10	7.08E+09	8.04E+09	176.1	1.52E+10	12.71601
Minimum	1.62E+10	1.82E+08	3.20E+09	1.60E-13	1.19E+09	-1.75157
Std. Dev.	7.84E+09	1.37E+09	1.31E+09	58.77679	3.89E+09	3.088988
Skewness	0.709053	1.807583	0.61398	0.877392	1.39393	1.849817
Kurtosis	3.113558	7.251896	2.587562	2.176101	3.74088	6.147725
Jarque-Bera	4.216499	64.89176***	3.495813	7.82933**	17.33555***	49.15723***
Observations	50	50	50	50	50	50

NOTE: *, **, and *** represent the rejection of the null hypothesis at the 10%, 5%, and 1% level of significance, respectively

4.1.2 Time-Series Plots (Graphs)

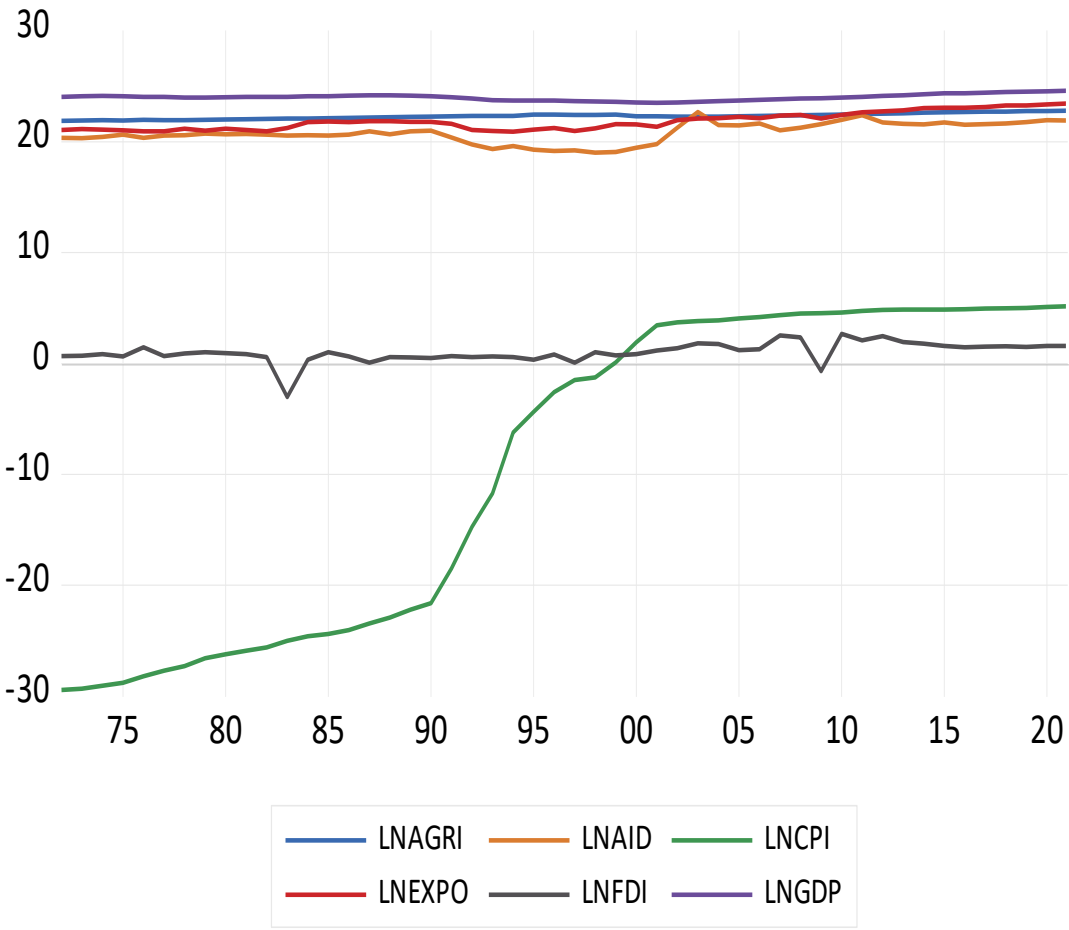

Figure 1: Time-Series Plots (Graphs)
Source: Eviews Software

From 1972 right up till about 1990, GDP was roughly constant. From 1990 till about 2000, it had an average downward trend, after which the trend became positive on average. The positive trend persisted for the longest period, compared to the constant and negative trends. Thus, it is fair to conclude that the GDP variable had an overall average upward (positive) trend during the study period. AGRI, CPI, and EXPO had average upward trends during the study period. Hence, the preliminary evidence from the graph points to average positive relationships between each of these variables (AGRI, CPI, EXPO) and GDP. The relationships between AID and FDI

and GDP are difficult to call from the graphs, as there are lots of fluctuations in the variables. However, but for a few outliers, the AID and FDI variables seem to have constant trends, particularly the FDI variable.

4.1.3 Correlation Analysis

Table 3: Correlation Analysis

	LNGDP	LNAID	LNAGRI	LNCPI	LNEXPO	LNFDI
LNGDP	1.000000					
LNAID	0.509182	1.000000				
LNAGRI	0.308658	0.357486	1.000000			
LNCPI	-0.108602	0.363214	0.857191	1.000000		
LNEXPO	0.570759	0.761186	0.811230	0.690005	1.000000	
LNFDI	0.108091	0.459103	0.403238	0.507920	0.527569	1.000000

NOTE: GDP represents Gross Domestic Credit, FDI is the foreign direct investment, CPI represents Inflation (Consumer price index), AID represents foreign aid, AGRI represents Agriculture, forestry, and fishing and EXPO represent export. They variables are all in logarithmic form.

With sole exception, the linear connection between Gross Domestic Product (GDP) and the Consumer Price Index (CPI), which manifests a negative correlation, all other pairs of variables exhibit positive linear associations. AID, AGRI, and EXPO each have medium positive linear relationships with the dependent variable, GDP, while CPI (negative) and FDI (positive) each have weak linear relationships with GDP. None of the linear associations between pairs of the independent variables are weak – they are either medium positive or strong positive linear relationships. Even though there are a few strong positive linear relationships between the independent variables, none of such relationships is powerful enough to be indicative of multicollinearity.

4.2 Empirical Findings

4.2.1 Unit Root Testing

The period under consideration spans from 1972 to 2021, with time series data sourced of the Democratic Republic of the Congo. To assess the stationarity properties of the variables, two distinct methodologies were employed. The Augmented Dickey-Fuller (ADF) test was applied, guided by the Schwarz information criteria. Additionally, the Phillips-Peron (PP) test was employed, utilizing the Andrews Bartlett kernel for each individual variable. The examined variables demonstrated non-stationarity at the original level, but they exhibited stationarity after undergoing differentiation for the first time. These variables underwent testing for differentiation at 10% significance level, and the outcomes are elaborated in the subsequent table:

Table 4: ADF and PP tests of Unit Root Results

UNIT ROOT TEST TABLE (PP)							
First Difference		**d(LNGDP)**	**d(LNAID)**	**d(LNAGRI)**	**d(LNCPI)**	**d(LNEXPO)**	**d(LNFDI)**
With Constant	t-Statistic	-2.7235	-5.9352	-6.1147	-2.6875	-6.4906	-28.2049
	Prob.	***0.0775*** *	***0.0000*** ***	***0.0000*** ***	***0.0836*** *	***0.0000*** ***	***0.0001*** ***
With Constant & Trend	t-Statistic	-3.4284	-5.8844	-6.1072	-2.7854	-6.5890	-28.7846
	Prob.	***0.0595*** *	***0.0001*** ***	***0.0000*** ***	***0.2095*** n0	***0.0000*** ***	***0.0000*** ***
Without Constant & Trend	t-Statistic	-2.7039	-5.9663	-5.0399	-2.1403	-6.2516	-24.4958
	Prob.	***0.0079*** ***	***0.0000*** ***	***0.0000*** ***	***0.0324*** **	***0.0000*** ***	***0.0000*** ***
UNIT ROOT TEST TABLE (ADF)							
First Difference		**d(LNGDP)**	**d(LNAID)**	**d(LNAGRI)**	**d(LNCPI)**	**d(LNEXPO)**	**d(LNFDI)**
With Constant	t-Statistic	-2.6092	-5.9248	-5.8702	-2.6769	-6.5040	-7.1807
	Prob.	***0.0981*** *	***0.0000*** ***	***0.0000*** ***	***0.0854*** *	***0.0000*** ***	***0.0000*** ***
With Constant & Trend	t-Statistic	-3.3298	-5.8737	-5.8690	-2.7953	-6.5876	-7.1009
	Prob.	***0.0737*** *	***0.0001*** ***	***0.0001*** ***	***0.2061*** n0	***0.0000*** ***	***0.0000*** ***
Without Constant & Trend	t-Statistic	-2.5981	-5.9564	-2.6886	-2.2172	-6.2569	-7.2434
	Prob.	***0.0104*** **	***0.0000*** ***	***0.0082*** ***	***0.0270*** **	***0.0000*** ***	***0.0000*** ***

Notes: (*) Significant at the 10%; (**) Significant at the 5%; (***) Significant at the 1%. and (no) Not Significant *MacKinnon (1996) one-sided p-values.

4.2.2 Lag Length Selection

The Johansen cointegration test's outcomes can be significantly influenced by the selection of lag length. Hence, it is necessary to ensure that the lag length is selected optimally. An unrestricted standard vector Autoregression (VAR) model was computed, followed by the identification of the optimal lag length. This selection was determined by evaluating multiple informational criteria.

Table 5: Lags length selection

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-205.5470	NA	0.000398	9.197696	9.436214	9.287046
1	111.8525	538.1991	1.96e-09	-3.037064	-1.367435*	-2.411611
2	156.9255	64.67005	1.43e-09	-3.431545	-0.330805	-2.269989
3	211.3069	63.83897*	8.03e-10*	-4.230734	0.301116	-2.533076*
4	254.6201	39.54686	9.37e-10	-4.548701*	1.414261	-2.314940

* Indicates lag order selected by the criterion
LR: sequential modified LR test statistic (each test at 5% level); FPE: Final prediction error; AIC: Akaike information criterion; SC: Schwarz information criterion; HQ: Hannan-Quinn information criterion

Based on the LR test statistic, the ultimate forecast error, and the Hannan-Quinn information criterion, the most suitable lag order is determined to be 3. Conversely, the Akaike information criterion suggests an optimal lag order of 4, while the Schwarz information criterion indicates an optimal lag order of 1. Thus, the selected optimal lag length for the data used in this thesis is 3, since it is selected the greatest number of times by the different criteria. Hence, the Johansen cointegration test is estimated using a lag length of 3.

4.2.3 Johansen Cointegration Test

Since there are six variables used in this thesis, the six different sets of hypotheses for the Johansen cointegration test using the trace test statistic are as follows:

H0: There is no cointegrating equation

H1: There is at least one cointegrating equation

H0: There is at most one cointegrating equation

H1: There are at least two cointegrating equations

H0: There are at most two cointegrating equations

H1: There are at least three cointegrating equations

H0: There are at most three cointegrating equations

H1: There are at least four cointegrating equations

H0: There are at most four cointegrating equations

H1: There are at least five cointegrating equations

H0: There are at most five cointegrating equations

H1: There are at least six cointegrating equations

Table 6: Johansen cointegration test

Hypothesized	**Eigen Value**	**Trace Statistic**	**Critical Value (5 %)**	**Critical Value (1 %)**
None **	0.545822	137.6403	102.14	111.01
At most 1 **	0.487870	99.75552	76.07	84.45
At most 2 **	0.420456	67.63505	53.12	60.16
At most 3 **	0.350899	41.45038	34.91	41.07
At most 4 *	0.242997	20.70640	19.96	24.60
At most 5	0.141866	7.343762	9.24	12.97

NOTE: *(**) denotes rejection of the hypothesis at the 5% (1%) level
Trace test indicates 4 cointegrating equation(s) at the 1% level
Trace test indicates 5 cointegrating equation(s) at the 5% level

In relation to the initial set of hypotheses, the null hypothesis indicating the absence of cointegration vectors ("none") is dismissed. The alternate hypothesis, which posits the presence of at least one cointegration equation, is validated at the 5% significance level. This conclusion is drawn from the observation that the trace test statistic exceeds the critical value established at the 5% critical value. Consequently, the identification of a minimum of one cointegrating equation lends empirical support to the existence of a sustained equilibrium relationship betwixt the considered variables.

To accurately ascertain the precise number of cointegrating equations, a sequential testing of different null hypotheses is performed. At a significance level of 5%, the null hypotheses concerning no cointegrating vector, at most one cointegrating vector, at most two cointegrating vectors, at most three cointegrating vectors, and at most four cointegrating vectors are progressively rejected. However, the null hypothesis associated with at most five cointegrating vectors remains unchallenged at the 5%

significance level. This observation implies the presence of five cointegrating equations. Given the confirmation of cointegration among the variables, the determination of long-run coefficients is achieved by estimating the Vector Error-Correction Model (VECM).

4.2.4 Vector Error-Correction Model (VECM)

Table 7: VECM Long Run Coefficients

	Speed of adjustment	**standard error**	**t-statistic**
Cointegrating Eq:	**CointEq1**		
LNGDP (-1)	1.000000		
LNFDI (-1)	- 0.043445	(0.12434)	0.34939
LNCPI (-1)	-0.069520	(0.01064)	6.53128
LNAID (-1)	1.675087	(0.18785)	-8.91713
LNAGRI (-1)	6.152922	(1.06080)	-5.80025
LNEXPO (-1)	- 1.843452	(0.36153)	5.09907
C	-108.2478	(19.3825)	5.58481

Due to the error-correction mechanism, the coefficient's signs are reversed while interpreting the long-run coefficients of the VECM. The influence of Foreign Direct Investment (FDI) on Gross Domestic Product (GDP) over the long term is not deemed statistically significant, as evidenced by the absolute value of the t-statistic being less than 2. Conversely, the long-term effects of Consumer Price Index (CPI) (negative), Aid (AID) (positive), Agriculture (AGRI) (positive), and Exports (EXPO) (negative) on GDP are all statistically significant. In particular, if the effects of the other independent variables are held constant, then a 1% increase in CPI (AID) (AGRI) (EXPO) will cause GDP to decrease (increase) (increase) (decrease) by about 0.07% (1.68%) (6.15%) (1.84%) on average in the long-run.

Table 8: VECM Short Run Coefficients

	Speed of adjustment	standard error	t-statistic
Error Correction:	**D(LNGDP)**		
CointEq1	-0.03554	(0.01602)	-2.21850*
D (LNGDP (-1))	0.816328	(0.17217)	4.74139*
D (LNGDP (-2))	0.089179	(0.26252)	0.33970
D (LNGDP (-3))	0.496087	(0.22601)	2.19500*
D (LNFDI (-1))	-0.00314	(0.00635)	-0.49418
D (LNFDI (-2))	0.007295	(0.00731)	0.99804
D (LNFDI (-3))	-0.001769	(0.00632)	-0.28010
D (LNCPI (-1))	0.006248	(0.00900)	0.69411
D (LNCPI (-2))	0.010480	(0.01034)	1.01384
D (LNCPI (-3))	0.010749	(0.00806)	1.33438
D (LNAID (-1))	-0.047045	(0.02529)	-1.86007
D (LNAID (-2))	-0.019227	(0.02030)	-0.94712
D (LNAID (-3))	-0.040791	(0.01722)	-2.36915*
D (LNAGRI (-1))	-0.685456	(0.29507)	-2.32300*
D (LNAGRI (-2))	-0.817189	(0.27769)	-2.94284*
D (LNAGRI (-3))	-0.196802	(0.23150)	-0.85012
D (LNEXPO (-1))	0.096914	(0.04338)	2.23405*
D (LNEXPO (-2))	0.006159	(0.03635)	0.16944
D (LNEXPO (-3))	0.030690	(0.03863)	0.79441
R squared:	0.772058		
Adj. R-Squared:	0.0620097		
S.E equation	0.033448		
F statistic:	5.080629		
Akaike AIC:	-3.664367		
Schwarz criterion:	1.64090		
S.D dependent	0.054267		

Note: * indicates the statistically significant value

Within the framework of the Vector Error-Correction Model (VECM), a comprehensive array of insights is afforded, including the elucidation of short-term coefficients, long-term coefficients, and the coefficient characterizing the error-correction term (ECT). The error-correction term represents the velocity at which Gross Domestic Product (GDP) adjusts towards its equilibrium value in the long run, following the occurrence of a short-term shock. Examining the short-term context, it is established that Aid (AID) (lagged three periods) exercises a statistically-significant negative impact on GDP. Additionally, Agriculture (AGRI) (at both lags

1 and 2) demonstrates statistically-significant negative influences on GDP. Conversely, Exports (EXPO) (at lag 1) exhibits a statistically-significant positive influence on GDP. Nevertheless, the short-term effects of the remaining variables on GDP do not achieve statistical significance, as evidenced by the t-statistics falling below an absolute value of 2 (in accordance with the rule of thumb, where the critical t-value is 2 in absolute terms). Nonetheless, it is pivotal to underscore that the central focus resides in the long-term relationships, which hold significant relevance for policy implications.

The outcomes presented above hold a commendable level of reliability, given the effective performance of the Vector Error-Correction Model (VECM). This assertion is substantiated by the attributes of the coefficient attributed to the error-correction term (ECT), which manifests as negative (-0.035540), bearing statistical significance (as evidenced by the t-statistic of |-2.21850|, and residing below an absolute value of one. As a result, the suitability of the VECM in establishing enduring equilibrium relationships is underscored.

To be specific, the transient values of Foreign Direct Investment (FDI), Consumer Price Index (CPI), Aid (AID), Agriculture (AGRI), and Exports (EXPO) contribute to the gradual convergence of Gross Domestic Product (GDP) towards its long-term equilibrium threshold. This process transpires at an adjustment pace of approximately 3.5% annually. This aligns harmoniously with the formulated research hypotheses, notably affirming that both AGRI and AID exert statistically-significant positive influences on GDP. This successful interpretation aptly addresses the research inquiry at hand.

4.2.5 Granger Causality Test

The primary goal of the Granger causality tests is to unveil the orientations of both short-term and long-term associations among variables. These tests endeavor to ascertain whether the lagged value of one variable serves as an explanatory factor for the current manifestation of another variable.

For the Granger causality test, these are the assumptions:

H0: There is no Granger causality H1: There is Granger causality

From the results in the table below we can conclude that; in the short-run, at 5% level of significance, there is unidirectional causality running from GDP to CPI, from EXPO to AID, from CPI to AGRI, from AID to AGRI, from GDP to EXPO, from FDI to EXPO, and from AGRI to EXPO. Also, AGRI and GDP Granger-cause each other in the short run (bi-directional causality) at 5% level of significance. In the short run, at 10% level of significance, there is a unidirectional causality running from CPI to GDP, which means that CPI granger causes GDP. In the long run, at 5% level of significance, all the other variables Granger-cause CPI, AGRI, and EXPO. This shows that both AGRI and AID are crucial factors for the economic growth of the Democratic Republic of the Congo.

Table 9: Granger Causality Test Table

Dependent variable						
Independent variable	D(LNGDP)	D(LNFDI)	D(LNCPI)	D(LNAID)	D(LNAGRI)	D(LNEXPO)
D(LNGDP)	-	0.7908	0.0000*	0.9033	0.0001*	0.0000*
D(LNFDI)	0.3430	-	0.5963	0.8230	0.6049	0.0001
D(LNCPI)	0.713**	0.7100	-	0.9886	0.0001	0.0715*
D(LNAID)	0.1079	0.4938	0.9180	-	0.0316*	0.2557
D(LNAGRI)	0.0220*	0.8870	0.5748	0.5310	-	0.0320
D(LNEXPO)	0.1337	0.6303	0.0796*	0.0065*	0.2373	-
ALL	0.2189	0.9146	0.0020*	0.0581	0.0008*	0.000*

* Indicates the rejection of the null hypothesis at 5%

** indicates the rejection of the null hypothesis at 10%

Chapter 5

CONCLUSION AND RECOMMENDATION

This thesis core focus revolves around undertaking the exploration of the labyrinthine linkages that exist among various components: foreign aid, agriculture, forestry, fishing, consumer price index (inflation), goods and services exports, foreign direct investment, and economic growth within the framework of the Democratic Republic of the Congo. This investigation is undertaken by harnessing time series data for the duration 1972 through 2021. The initial phase of this endeavor involved subjecting the variables to rigorous stationarity assessments using both the Augmented Dickey-Fuller (ADF) test and the Phillips-Perron (PP) test. These tests confirmed that the variables achieve stationarity after the application of first-order differences.

Subsequently, an in-depth cointegration analysis was undertaken through the utilization of Johansen's cointegration test. The results revealed the existence of 5 cointegration vectors, underlining a deep-rooted and enduring interconnection between the chosen variables and the broader expansion of the economy. Through this comprehensive analytical pursuit, valuable insights were garnered. Notably, the investigation brought to light a negative correlation between exports (EXPO) and the consumer price index (CPI) concerning economic growth. Conversely, a positive correlation was discerned between foreign aid (AID) and agriculture, forestry, and

fishing (AGRI) concerning long-term economic growth within the context of the Democratic Republic of the Congo.

In the short term, it becomes evident that foreign aid (AID) and activities encompassing agriculture, forestry, and fishing (AGRI) exhibit an adverse influence on economic growth (GDP), whereas the export of goods and services (EXPO) yields a favorable impact on GDP. These dynamics are meticulously established through the utilization of the Vector Error Correction Model (VECM), which consequently reveals intriguing insights. Specifically, the VECM outcomes elucidate that a 1% rise in the Consumer Price Index (CPI), which in this context pertains to exports (EXPO), contributes to a 0.06952% reduction (1.843452% increase) in GDP over the long term.

Furthermore, the indagation unveils a statistically significant correlation between foreign aid (AID) and agriculture, forestry, and fishing (AGRI), indicating that a 1% surge in either AID or AGRI translates into a noteworthy 1.675087% (6.152922%) escalation in GDP over the long term. Additionally, in the context of specific time lags, the short-term outcomes are discerned. In lag 3, a 1% augmentation in foreign aid (AID) results in a 0.040791% dip in GDP. Similarly, when considering lag 1 and lag 2, a rise of 1% in the AGRI variable is associated with a decline in the GDP by approximately 0.685456% and 0.817189%, sequentially.

The Foreign Direct Investment (FDI) statistical insignificance effect on economic growth in D.R. Congo can be explained by the resource curse which is characterized by the corruption; rent-seeking behavior and weak governance that has hindered the effective utilization of the FDI inflow. The infrastructure deficiency is another factor,

the lack of proper infrastructure; for instance, the transport networks, power supply and telecommunication systems; make it difficult for foreign investors to operate efficiently and access the market within the country. The political instability, governance issues and the armed conflicts that have been ongoing for decades contribute to the unpredictable investment climate and discourage foreign investors from committing substantial resources due to the significant risks and uncertainties that deter long-term investment and growth. The absence of clear and consistent policies, inadequate property rights protection and a cumbersome bureaucracy create a challenging business environment.

The country faces notable challenges in terms of human capital development that would facilitate the technology and knowledge transfer from foreign investors to local workers due to limited access to education and specialized training programs. FDI can potentially contribute to economic growth in DRC, the aforementioned factors have combined to limit its impact. To harness the potential benefits of FDI, the country needs to improve governance, strengthen institutions, invest in infrastructure and prioritize human capital development to get skilled workers. A more attractive investment climate can be created which will help to better utilize FDI to drive sustainable economic growth.

Foreign aid has a positive and statistically significant impact on the country's economic growth since it provides funds for the energy grids, telecommunications, water and sanitation systems, healthcare facilities, vocational training center and schools construction, to support the development of transparent and accountable institutions which would combat corruption, promote the rule of law, improve living conditions of the population, foster innovation and productivity growth. The positive

ascendancy of foreign aid over economic growth is contingent on effective utilization, proper governance, and coordination with domestic policies and strategies. The foreign aid should keep on aligning with national development priorities, accompanied by capacity building efforts and implementing a transparent and accountable manner. By leveraging foreign aid to address critical development challenging, the DRC can enhance its economic growth prospects, improve living standards, and move towards sustainable and inclusive development.

The reason behind the evident association marked by a favorable and statistically noteworthy correlation between the agriculture, forestry, and fishing sector and economic growth in the Democratic Republic of the Congo stems from the fact that this sector holds a significant role in terms of employment, especially within rural regions. The improvement in agricultural productivity, diversifying crops and promoting sustainable farming practices; this sector contributes to enhanced nutrition and the overall well-being of the population leading to better health outcomes and increased opportunity in other sectors of the economy. The agriculture and forestry resources including coffee, cocoa and palm oil are commodities that serve as important sources of the export earning, contributing to foreign exchange reserve and economic growth which stimulate economic activities in sectors such as transportation, logistics, and processing industry. This sector helps the value chain development, rural development and environmental sustainability.

In order to fully harness the potential beneficial influence of the agriculture, forestry, and fishing sector on the country's economic advancement, it is imperative to confront obstacles such as the restricted availability of financial resources, inadequate infrastructure, fragmented land tenure systems, and weak institutional

capacity. By investing in agriculture research and development, improving rural infrastructure, promoting sustainable land management, and providing targeted support to small-scale farmers and fisherfolk, the DRC can harness the sector's potential for economic growth, poverty reduction and sustainable development.

Policy makers should make sure that they strengthen institutional capacity which will facilitate effective policy implementations, coordination, and monitoring, leading to improved sector performances and economic growth; promote sustainable practices, improve access to finance, enhance market linkages, and invest in research and development. Future studies can focus on assessing the impact of climate change, studying the value chain dynamics, evaluating the role of technology, studying the social and gender dimensions of the foreign aid; agriculture, forestry and fishing sectors on the economic growth of the Democratic Republic of the Congo.

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