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Testing The Validity of Okun's Law Across Five African Countries

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**Submitted in partial fulfilment of the requirements for the Degree of
Bachelor of Business Science in Financial Economics at Strathmore University**

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[November, 2024]

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ABSTRACT

This research aims to focus on the dynamic linkage between economic growth and unemployment in the following African countries: Kenya, Nigeria, the Republic of Congo, Egypt, and South Africa; empirically test the validity of Okun's Law in such contexts. In so doing, this study notes that the applied model, the Panel ARDL model, comes under the consideration of time. However, despite this significant GDP growth, these economies continue to suffer from high unemployment, with relatively high levels of youth unemployment. This has led to questions on the adequacy of high economic growth as a panacea to unemployment. This paper will further examine the effect of Foreign Direct Investment, inflation, and population growth on unemployment. In essence, this paper seeks to inform policy in coming up with more effective ways of reducing unemployment amidst striving for sustained economic growth in these diverse African economies. The study finds limited support for Okun's Law across the selected countries, indicating that GDP growth has minimal impact on reducing unemployment rates. The other independent variables FDI, inflation and population growth illustrate varying effects. In particular, population growth rate significantly impacts unemployment in Egypt, suggesting the need for population management initiatives. Furthermore, FDI has a stronger impact in South Africa and Kenya, highlighting its importance in reducing the unemployment rate. Moreover, inflation impacts unemployment in Nigeria increasing costs for business and the livelihood of Nigerians, while structural challenges on governance and policy inefficiencies make it difficult for both Nigeria and the Republic of Congo to transfer economic growth with job creation. The policy recommendations include enhancing youth employment initiatives, inclusive growth policies, improving governance and region-specific labour strategies to foster an urban-rural landscape.

LIST OF ACRONYMS

ARDL – Auto-Regressive Distributed Lag

ADF – Augmented Dickey-Fuller

ECT – Error Correction Term

ECM – Error Correction Model

FDI – Foreign Direct Investment

GDP – Gross Domestic Product

GNP – Gross National Product

IMF – International Monetary Fund

IPS – Im-Pesaran-Shin

HQ – Hannan Quinn Criterion

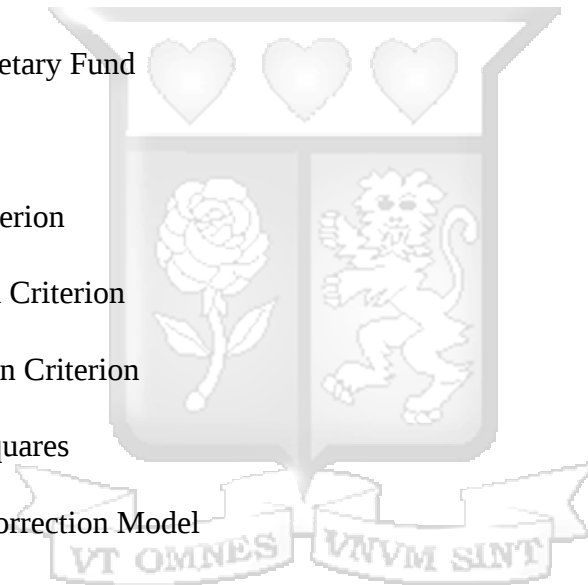
SBC – Schwarz Bayesian Criterion

AIC – Akaike Information Criterion

OLS – Ordinary Least Squares

VECM – Vector Error Correction Model

HP – Hodrick Prescott



CHAPTER ONE: INTRODUCTION

1.1 Background of the study

Unemployment is one of the socioeconomic challenges that different countries face around the world. The main goal that nations have is to reduce unemployment by increasing their economic output (GDP). However, it is a common debate regarding whether unemployment falls when GDP levels rise and whether a nation should only focus on increasing its GDP to reduce unemployment. The unemployment rate is the percentage of the labour force that is jobless and actively seeking for employment.

Gross Domestic Product (GDP) measures the increase or decrease in a country's economic output. It is a crucial indicator of economic health significantly impacting unemployment rates. Foreign Direct Investment (FDI) are the investments made by foreign entities in a domestic economy. The role of FDI in any country cannot be downplayed because it has the power to provide employment, bring new technology into the country, and also spur its growth. Moreover, inflation measures the rate at which the general price levels of goods and services rise, high inflation erodes purchasing power and savings which can affect the economy raising costs for businesses and individuals and leading to unemployment.

Various economic theories have been developed in an attempt to answer the question. Classical economic theory, at its core states that the labour market is in equilibrium when real wage and full employment are achieved by having the labour demand and supply curve at equilibrium and that prices and wages are flexible Smith (1776) and Ricardo (1817).

The determinant of labour demand relies on the marginal productivity of labour, while the supply of labour relies on the ability of labourers to utilise a part of their leisure time and commit to their work hours. Therefore, unemployment occurs when wages are above the equilibrium wage rate, this reduces the demand for labour as firms find it costly to hire labourers, while on the supply side labourers are willing to work and supply more labour Mankiw (2018) given the high wages.

In addition to this, classical theory believes in self-regulation, where any imbalance between labour supply and demand is expected to be temporary. In the long run, wages are expected to adjust downwards to clear the labour market ensuring full employment. According to Say's Law "Supply creates its own demand" Brown (2011). The production of goods and services generates income

for the workers, which in turn shall create demand for those goods and services, which shall ensure full employment.

Keynesian economic theory, John Maynard Keynes criticized the classical economic theory highlighting its limitations and providing solutions to them. Keynesian theory highlighted the importance of aggregate demand that labour is derived from demand, where when aggregate demand rises the production of goods and services rises leading to firms demanding more labourers, while in an economic downturn, firms shall demand fewer labourers raising unemployment levels. Involuntary unemployment, according to Keynes (1963), we can have a situation where workers are willing to work at the market wage or just below but cannot find employment due to insufficient aggregate demand.

In Kenya, research papers have shown that economic growth has not led to a significant decrease in unemployment rates, especially among the youth, Were (2019). Indicating that despite significant GDP growth, unemployment remains a challenge given the mismatch between skills and labour market needs. In addition to this, the economy has shown robust growth averaging 4% from 2010 to 2022, however, youth unemployment has been 12.15% World Bank (2022). Recent studies have found that the mismatch between education and labour market needs contributes to the persistent unemployment problem Njeru (2020).

Nigeria's economy relies heavily on oil exports. The country's GDP growth has been volatile due to fluctuations in global oil prices, averaging 3.5% from 1992 to 2022. Unemployment rates have surged recently, reaching 33.3% in 2020 National Bureau of Statistics (2021) Nigeria Afolabi (2020) highlighted that while GDP growth has been significant, the impact it has had on unemployment does not reflect GDP growth, this was attributed to the dominance of the oil sector and lack of diversification in job creation.

Moreover, in the Republic of Congo, Nzotta (2019) pointed out the volatility in GDP growth due to reliance on oil exports, which has not translated into sustainable job creation with a GDP growth rate averaging 2.8% from 1992 to 2022. In Egypt, a study by El-Said (2021) emphasized the importance of economic reforms in reducing unemployment, especially post-Arab Spring. In South Africa, Seekings (2020) discussed the persistent high unemployment rate of 25% Statistics South Africa (2021) despite economic growth, citing structural issues and inequality as major factors.

In the context of Africa, understanding what drives unemployment and economic growth dynamics becomes very important in formulating effective macroeconomic policies for the African continent. The countries that will be reviewed in the present research are five in number, including Kenya, Nigeria, the Republic of Congo, Egypt, and South Africa. These countries represent various economies and employ the panel autoregressive distributed lag model as proposed by M. Hashem Pesaran (2001), to examine the relationship between unemployment and economic growth, with other additional variables such as Foreign Direct Investment, Inflation, and Population.

1.2 Problem Statement

In an economy according to Okun (1962), economic growth should lead to a reduction in unemployment rates, due to increased demand for goods and services that leads to a higher labour demand. This framework suggests that as economies grow, businesses expand, and new firms are formed thus job creation reducing unemployment and improving standards of living.

However, many African countries deviate from the ideal scenario despite significant economic growth the countries face high levels of unemployment. An example is Kenya and Nigeria which have seen considerable GDP growth over the past decades but still have high unemployment rates, especially among the youth. Suggesting that economic growth on its own may not be sufficient to reduce unemployment. Factors such as economic structure, labour market inefficiencies, lack of diversification, political instability, and inadequate educational systems contribute to this.

The following research paper shall use the Panel Auto-Regressive Distributed Lag (ARDL) model to analyse the relationship between economic growth and unemployment in Kenya, Nigeria, the Republic of Congo, Egypt, and South Africa. The Panel ARDL model is chosen for its robustness in handling variables with different integration orders and its ability to provide short-run and long-run estimates. The approach allows for a comprehensive analysis of how GDP growth, FDI, inflation and population influence economic growth. The findings in this paper can inform policymakers on how to design more effective strategies when it comes to combatting unemployment and ensuring economic growth.

1.3 Research Objectives

1.3.1 General Research Objective

The objective of this research is to empirically test the Okun Law in Kenya, Nigeria, the Republic of Congo, Egypt, and South Africa using the Panel ARDL model.

1.3.2 Specific Research Objective

Examine the relationship between GDP growth and unemployment rates in Kenya, Nigeria, the Republic of Congo, Egypt, and South Africa using the Panel ARDL model.

1.4 Research Hypotheses

Examine the relationship between the unemployment rate and economic growth, of the selected African countries, with the following hypothesis being tested.

H_0 : There is no significant relationship between economic growth and the unemployment rate.

H_a : There is a significant relationship between economic growth and the unemployment rate.

1.5 Scope of the Study

To identify the relationship between unemployment rate and economic growth in the five African countries: Kenya, Nigeria, the Republic of Congo, Egypt, and South Africa. The study shall employ the Panel ARDL model to analyse the relationship over a given time frame 1992-2022, incorporating variables such as Foreign Direct Investments, inflation, and population.

1.6 Significance of the Study

The study will help contribute to the broader discourse on economic policy and labour market dynamics in Africa. Examining the relationship between unemployment and economic growth shall provide insights into the applicability of Okun's Law in Africa and whether policymakers need to develop different robust models to tackle the challenges of unemployment in Africa.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

The next section has two major subsections: The theoretical literature review, which would give background to Okun's law, and the empirical literature review focusing on various studies done in developing and developed countries.

2.2 Theoretical Review on Okun's Law

Okun's law is a fundamental concept in economics formulated by Arthur Okun in 1962. The theory investigates a relationship between the change in unemployment and the growth rate of a country's economy (Okun, 1962). The law states that there is a negative relationship between unemployment and economic growth, Okun used real gross national product (GNP) as a measure of economic growth. At the time Okun used quarterly data from the United States spanning from 1947: Q2 to 1960: Q4, Okun's goal was to show that when economic growth in a country declines the rate of unemployment tends to increase above the given natural rate.

$$\Delta U_t = \alpha + \beta \Delta y_t + \varepsilon_t \dots (i)$$

Where ΔU_t represents the changes in unemployment from the current time and previous periods; Δy_t is the growth rate GNP between current and previous periods; α known as the intercept term, while β is known as the Okun coefficient and the error term ε_t absorbs the effect of other variables that affect unemployment but are not included in the model.

The first difference model according to Okun's sample period, was found that $\alpha = 0.3$ and $\beta = -0.3$, these findings led to a conclusion that a 1-percentage drop in the real GNP growth rate was linked to a 0.3 percentage point increase in the unemployment rate, while a 1-percentage-point increase in the unemployment rate is linked with a 3 percentage point decrease in real output growth. (Keynes, 1963).

$$\Delta U_t = \alpha + \beta \Delta y_t + \varepsilon_t \dots (ii)$$

Output gap model, Okun developed an estimation version of the first difference model with a sample size from 1953: Q1 to 1960: Q4.

$$U_t - U_t^d = \beta(y_t - y_t^d) + \varepsilon_t \dots (iii)$$

Where U_t represents the actual unemployment rate, while U^d_t denotes the natural rate of unemployment, y_t is the actual rate of real GNP and y^d_t represents the potential rate of real GNP. Okun's model proposes a simplified relationship between an economy's output and its unemployment rate. It assumes that when an economy is at its full potential, the unemployment rate is at its natural level of 4% (Okun, 1962). The difference between actual and potential output is the output gap, which indicates the economy's performance. A positive output gap suggests an overheated economy with high demand and potential inflation, while a negative output gap signifies underperformance and possibly higher unemployment. However, the model has limitations, particularly in accurately measuring potential GDP and its reliance on Okun's specific assumptions, which might not always reflect real-world economic complexities.

Fitted trend and elasticity, Okun developed this method as a way to derive the output-unemployment coefficient from data without assuming any trend, it makes the following assumptions. Constant elasticity relationship with the ratio of actual (A) to potential (P) output and employment rate ($N = 100 - U$) as a fraction of its potential level (N_f) :

$$\frac{N}{N_f} = \left(\frac{A}{P}\right)^a$$

$$P_t = P_o e^{rt}$$

Where a constant growth rate r of potential output starting from the level P_o at any time t , by substitution the various terms from the above equations we get:

$$N_t = \frac{A^a_t * N_f}{P^a_o * e^{art}}$$

Introducing logarithm:

$$\log(N_t) = \log\left(\frac{N_f}{P^a_o}\right) + a \log(A_t) - (ar) t \dots (iv)$$

A regression is fitted to $\log(N_t)$ and $\log(A_t)$ and $(ar) t$ are the independent variables.

The underlying theory assumes that unemployment fluctuations occur due to changes in business cycles and not long-term trends, implying that changes in economic activity are the primary driver of changes in unemployment (Zidong An, 2021). Moreover, Okun assumed that the natural rate of

unemployment was 4%, based on it being a reasonable target under the labour market conditions in 1960 (Keynes, 1963). According to Okun, potential GNP differs from actual GNP based on the assumptions made “that aggregate demand is exactly at the level that yields a rate of unemployment equal to 4% of the civilian labour force”. Moreover, the fitted trend and elasticity yielded a growth rate of 3.9% however this was not uniform throughout the sample period, hence the uniformity that was made was the approximate 3-to-1 link between output and unemployment providing the following (Okun, 1962)

$$P = A [1 + 0.032(U - 4)] \dots (v)$$

Where if the unemployment rate is 4%, then the potential GNP is equal to the actual GNP. The strength of Okun's law is its ability to be consistent across most countries mainly developed countries and various periods, making it a robust empirical regularity in macroeconomics Laurence M. Ball (2013). Moreover, Okun's law is a relatively straightforward model as it establishes a clear relationship between economic growth and unemployment, with a negative relationship between the two variables Okun (1962).

According to Okun, the general conclusion concerning Okun's Law was that an inverse relationship exists between changes in unemployment and changes in real GDP. Okun's law found out that during times of economic growth, unemployment is likely to decrease whereas when the economy is contracting unemployment rises as indicated by Okun (1962). Furthermore, Okun was able to quantify the relationship of changes in unemployment to changes in GDP through the creation of Okun's Coefficient.

2.3 Empirical Studies on Okun's Law

2.3.1 Developing Countries

Mumba (2022) tested Okun's law in countries in the Southern African region; that remains the rationale for the selected 16 Southern African countries between the years 1995 and 2019. The research applied the autoregressive distributed lag model, where the model had the pooled mean group and the mean group estimators for the countries in the Southern African region. The results indicated a weak negative relationship between the unemployment rate and the GDP, Pearson correlation coefficient of -0.105. Nevertheless, the result shows that GDP growth does not have a significant impact on unemployment in the long run and, hence, implies no long-run cointegration relationship between the two variables. This implies that the southern African countries should

adopt the two approaches to economic policy: structural changes in labour-intensive sectors, for instance, agriculture and manufacturing, and demand-side policies in low-income nations.

In the attempt to test Okun's law among the BRIC countries Aminu (2022) that is they also added the country of Nigeria. They estimated a Panel ARDL model for using a sample from 1993–2020 observations to examine what level of output and unemployment are related. Data was sourced from the World Bank database, and then three main models were specified: one capturing the GDP-potential GDP-output gap relationship and the other capturing the relationship between unemployment and the above.

The models were tested for goodness of fit using the statistical validation method: unit root tests and correlation analysis. The results confirm Okun's law in BRICS and in Nigeria, where an increase in GDP growth and closing of the output gap significantly contributes to a decrease in unemployment. For example, as GDP goes up by 1%, there will be a 3.2% drop in short-term unemployment and an 0.8% drop in long-term unemployment. Likewise, for every 1% fall in the output gap, there is a fall in short- and long-term unemployment of -0.003% and -0.004% , respectively.

Moreover, Pizzo (2019), estimated Okun's law based on empirical literature within the Latin American and Caribbean context. This study was performed with a detailed analysis using 49 studies relating to Okun's law, adopting the literature review methodology. The study estimated various empirical works measuring Okun's coefficient for nations belonging to the Latin American and Caribbean region.

Various estimation techniques used in the studies are also highlighted, these include Ordinary Least Squares (OLS), Vector Error Correction Models (VECM) and Hodrick-Prescott (HP) filters. The results indicate significant variation in the estimated Okun's coefficients across Latin America and Caribbean countries and that Okun's coefficient has a lower magnitude for those countries in comparison to developed economies. The coefficients typically range from -0.10 to -0.20 , consistent with the values obtained in developing economies. Country-specific findings reveal significant heterogeneity; for instance, Colombia and Chile show higher Okun coefficients, indicating a stronger relationship between GDP growth and unemployment reduction, while countries like Bolivia and Ecuador display much weaker relationships.

Pasipanodya (2020) conducted a study to validate Okun's Law in Zimbabwe, from 1991 to 2018. The research aimed to determine if unemployment's responsiveness differs during economic expansions and contractions. The study employed a two-state Markov Regime Switching Model to capture the asymmetric nature of Okun's Law. This approach allowed for the estimation of Okun's coefficients using both the first-difference and gap approaches. The empirical findings indicated a clear asymmetry in Okun's Law within the Zimbabwean context.

Conclusions are that Okun coefficients are negative and significant for all the models considered: the HP and Butterworth filters and the first difference approach at all times of economic expansion. However, the relationship turns out to be insignificant at times of economic contraction; it turns positive and insignificant. The large informal sector in Zimbabwe absorbs labour that is displaced from the formal sector during economic contraction, thereby negating increases in the unemployment rate.

El Aynaoui Karim (2016) examined the applicability of Okun's Law on several African countries testing its validity and measuring its intensity. The researcher focused on the structural-demographic and economic elements that could explain Okun's coefficient variability in Africa. The study sourced data from the World Bank and the International Labour Office covering from 1991 to 2015. The methodology used in the study is the first-difference model, the growth rate model and two output gap models using the Hodrick-Prescott (HP) filter. The researcher then analysed the determinants of Okun's coefficient by regressing the estimated coefficients on variables such as demographic factors, economic structure, labour market efficiency and the rule of law.

The results indicated that Okun's law is weak or non-existent in most African countries. For example, in North Africa, the coefficients are more significant and negative in Egypt and Tunisia compared to Algeria and Morocco. In Southern Africa, Okun's law is valid only in South Africa when using filter-based models, while in Central Africa, the coefficients are generally weak. In West and East Africa, Okun's law is valid in only a few countries and the coefficients are generally low.

2.3.2 Developed countries

J. Paul Elhorst (2022) investigated the validity and nuances of Okun's Law in the Netherlands. Utilizing a system of two dynamic spatial panel data model equations, the researcher examined the interdependencies between GDP and changes in unemployment across twelve Dutch provinces from 1974 to 2018. Using maximum likelihood methods for robust analysis, the findings suggest that Okun's Law mainly picks up an output growth–unemployment relationship, but at a rather low cost of local unemployment in terms of forgone output. This research also established that growth in one region may suck the growth of neighbouring regions.

Moreover, Sangheon Lee (2020) sought to analyse the variations in Okun's coefficients across regions and levels of income using data from the International Labour Organization (ILO). By examining how sectoral changes impact the responsiveness of unemployment to business cycles. Employing Panel Data Analysis, to estimate the coefficients in both gap and difference versions of Okun's Law in a wide range of countries. The results obtained had overwhelming regional and income-level variations. The findings put forward that Okun's Law is more applicable in developed countries with higher and more significant coefficients as compared to developing countries.

In addition, Utku Altunöz (2019) managed to explore the link between economic growth and unemployment within the Eurozone with the help of Okun's Law. Hereby, the research adopted a panel dataset from 2000-2012 and employed both panel error correction and panel cointegration methods to investigate the connection between unemployment and growth rate. Stationarity of the data was checked using various panel unit root tests: LLC and IPS. The long-run association of variables was tested using several panel cointegration tests, one of which is Pedroni's test. The results revealed validity of Okun's Law in the Eurozone, but the cointegration coefficient turned out to be lower than Okun's coefficient calculated for the United States and other developed countries.

Laurence Ball (2019) estimated the labour market response to output fluctuations across 71 countries—of which there are 29 advanced and 42 developing economies—from 1980 to 2015. In doing this, involved the use of a Hodrick-Prescott filter in the estimation of trend. This therefore allowed for an actual assessment at the cyclical level of how output goes about relating to labour. Results indicate a significant difference in the Okun coefficient between developing and advanced countries. The responsiveness of unemployment to output changes is weaker in developing

countries, -0.2 compared to -0.4 for advanced economies. This suggests that a given increase in output leads to a smaller decrease in unemployment in developing countries.

This concluded that while Okun's Law holds to varying degrees across different economies, labour market outcomes in developing countries are less responsive to cyclical fluctuations compared to advanced economies. This suggests the need for tailored economic policies that address both structural and cyclical factors in labour markets to effectively manage unemployment and output fluctuations.

Laurence M. Ball (2013) along with other researchers Daniel Leigh, and Prakash Loungani, examined the validity and robustness of Okun's Law over fifty years. The paper investigated how much Okun's law accounted for the short-run oscillations of unemployment across the US since 1948 and in twenty advanced economies since 1980. The authors estimated the levels and differences approach that describes unemployment in terms of output employing the Hodrick-Prescott filter to smooth data. The results indicated that for the majority of the countries involved, Okun's Law represents a robust and reliable relationship that even the financial crisis of 2008-2009 maintains; and that gauges the departures from Okun's Law were small and temporary. However, the Okun coefficients that captured the impact of a one per cent change in output on the rate of unemployment varied dramatically from one country to another. For example, -0.15 is the coefficient in Japan, -0.45 in the United States, while in Spain, it stands at -0.85, which reflects in part certain special characteristics of national labor markets.

2.4 Research Gap

Despite the extensive empirical literature on Okun's Law, there are some gaps and areas that need further investigation, especially in developing countries in Africa. Empirical evidence resulting from this, therefore, implies the variability in intensity and validity across different regions and under different economic conditions. This inconsistency, therefore, opens up a broad research gap in fully understanding the dynamics of unemployment and economic growth in developing countries, where structural issues, informal economies, and diversified economic policies play key roles.

Hence, the Panel ARDL model is appropriate for a number of reasons for the case in point. First, the model allows for variables that are integrated—of different orders; thus, a model which is robust in nature to analyse data sets where almost all variables are not uniformly stationary helps

in developing countries where economic data mostly exhibit mixed orders of integration. The Panel ARDL approach can estimate short-run and long-run dynamics simultaneously, therefore taking due cognizance of the volatile environments in Africa in capturing these dynamics to understand the immediate and continued effect of economic growth on unemployment.

In addition, the Panel ARDL model works best in cases where the sample size is small—the data for most African countries is often insufficient—thus assuring the reliability of results obtained from relatively sparse datasets. The feature of bounds testing under the Panel ARDL framework provides a direct way of testing for the presence of a long-run relationship between unemployment and economic growth. This is crucial in confirming the validity of Okun's law.

It is, therefore, important to understand the relationship between the two, as this subsequently could help the policymakers develop better economic policies: whether GDP growth contributes to significant reductions in unemployment in the short run and can guide immediate policy actions; knowing the relationship, in the long run, can help strategic policy planning and actions for reforms in structures.

In conclusion, using the Panel ARDL model for an analysis of the relationship between unemployment and economic growth in African countries would fill the research gap by avoiding variability and inconsistency usually found in existing empirical studies. The approach of this study is to capitalize on the strengths of the Panel ARDL method, if possible, in order to furnish more robust and nuanced insights into the applicability of Okun's Law within developing economies, thereby contributing to the wider discourses of economic policy and labour market dynamics within these regions.

2.5 Conceptual Framework

In the following paper, the variables used to explore the relationship between unemployment and economic growth, with a particular focus on the five African countries being studied include Unemployment rate, GDP, FDI, Inflation and Population. The framework integrates the Panel ARDL model which is suitable for this research paper due to its ability to handle variables of different integration orders. This is a common scenario with data from developing countries, allowing us to understand how our variables of interest interact with each other over time.

2.5.1 Unemployment

In this paper unemployment rate is the dependent variable, representing the percentage of the labour force actively seeking but unable to find employment, which is the key focus. To ensure consistency and comparability across nations, the unemployment rate data for each country was obtained from the World Bank, a trusted and authoritative source.

2.5.2 Gross Domestic Product (GDP)

GDP is an independent variable; it is an important variable which is used in Okun's law. It is the total value of goods and services produced within a country. Ideally, economic theory states that if a country's GDP increases unemployment is expected to decrease. The data was obtained from the World Bank for each country.

2.5.3 Foreign Direct Investment (FDI)

FDI is included as an independent variable that will be used to examine its impact on unemployment. FDI is the investments made by foreign entities and multinational companies in the domestic economy, this can be in the form of capital, machinery and technology. FDI would mean the setup of businesses that in turn would employ labourers essentially reducing unemployment in a country. Data on FDI was obtained from the World Bank.

2.5.4 Inflation

Inflation is the rate at which the general level of prices for goods and services is rising, eroding purchasing power. This variable is important as it affects both GDP and unemployment. Inflation can cause economic growth and a reduction in unemployment if it is maintained within its benchmark for a given country. Inflation data was obtained from the World Bank.

2.5.5 Population

Population is the number of people in a given country. It is included to control for demographic changes that could impact the labour market and economic growth. Data was obtained from the World Bank.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter outlines the methodological approach employed in the research to investigate the relationship between unemployment and economic growth in Kenya, Nigeria, the Republic of Congo, Egypt, and South Africa. The Panel Auto-Regressive Distributed Lag (PARDL) model was utilised to analyse the data, which gave information on the research design, population and sample, data collection methods, data analysis techniques, ethical considerations, and limitations within the chapter.

3.2 Research Design

This study applied a quantitative research approach to relate unemployment to economic growth across the five African countries. A quantitative approach is sufficient given its ability to quantify data and generalize results from the sample data, allowing us to understand the relationships between our chosen variables.

3.3 Population and Sampling

These countries were chosen to represent the diverse economic environments within Africa, with each facing different challenges. Kenya is located in East Africa, with a diverse economy that includes agriculture, manufacturing, services and tourism. Despite having experienced significant economic growth in the past decade, the country continues to face high unemployment rates among the youth 9.3% Kenya National Bureau of Statistics (2023)

Nigeria, the most populous country in Africa, has an economy heavily reliant on oil exports. Despite Nigeria's economy being one of the largest on the continent, Nigeria faces substantial challenges with unemployment and economic diversification. The country's GDP growth has been volatile, largely due to fluctuations in global oil prices. Between 1992 and 2022, Nigeria's GDP growth rate averaged 3.5%, while the unemployment rate surged, particularly in recent years, reaching 33.3% in 2020 with youth unemployment at 7.2% National Bureau of Statistics (2023).

The Republic of Congo, situated in Central Africa, also relies significantly on oil exports. The country's economic performance has been influenced by oil price volatility, leading to periods of economic boom and bust. From 1992 to 2022, the Republic of Congo experienced a GDP growth rate of 2.8%, with the unemployment rate fluctuating due to economic instability and political factors International Monetary Fund (2021).

Egypt has implemented various economic reforms aimed at stimulating growth and reducing unemployment. The GDP growth rate in Egypt averaged 4.3% from 1992 to 2022, while the unemployment rate has seen fluctuations, partly due to the political upheavals during the Arab Spring, Central Agency for Public Mobilization and Statistics (2021).

In addition, South Africa has the most industrialized economy on the continent, but it happens to be diversified as well. Some of the sectors deemed notable are mining, manufacturing, services, and agriculture. Despite this, the country faces a plight that involves one of the highest rates of unemployment on the African continent, at 25%. It further worsened to 32.4% for the first quarter of 2024. Department of Statistics South Africa (2024)

Data from 1992 to 2022 for each country was used, within the data includes GDP, unemployment rate, FDI, inflation and population figures. These economic indicators are crucial to understanding the relationship between economic growth and unemployment. The countries were selected because they are economically diverse and availability of data. Such a method is effective since it ensures that the selected countries provide a comprehensive view of their respective region's economic dynamics Etikan (2016).

3.4 Data and Variable Description

The study obtained data from the World Bank, with consistency across all countries on the values of the variables of interest. The key economic indicators are:

The unemployment rate refers to that percentage of the workforce, able and willing to work but actively seeking a job but can't get employed. It is something that a country should strive to reduce.

GDP is the total of goods and services produced within a country; it is a measure of the growth rate of an economy. Economic theory provides that, ideally, there should be a decrease in unemployment in any country whose GDP is increasing.

FDI is an investment made by foreign entities and international companies in the domestic economy in the form of capital, machinery, and technology. Inflation is the quantity used in measuring the rate at which the general level of prices for goods and services is rising and consequently causing a reduction in purchasing power.

Population refers to the number of people living within a given country. This is included as a control variable for the demographic changes which could influence the level of the labour market and economic growth.

3.4.1 Data Collection

The study obtained data from the World Bank database, this was due to the World Bank's reliable data collection techniques on various economic indicators for various countries. This made it a reliable source for the following research project.

3.4.2 Variable Definition and Measurement

The unemployment rate is the percentage of the labour force that is actively seeking employment but is unable to receive employment. Gross Domestic Product (GDP) is the total output of an economy in a given year. Foreign Direct Investments (FDI) is the net inflow of investments by foreign firms to conduct business in an economy.

While inflation is the annual percentage change in price levels of goods and services in a country, population is the total number of people living in a country.

Table 3.1 is a pictorial summary of the variables and their characteristics.

Table 3.1 Variable Definitions and Descriptions

Variable	Representation	Definition	Source
Dependent Variable			
Unemployment	Unemployment	Population of Unemployed	World Bank
Independent Variable			
Gross Domestic Product	GDP	Total Output of a Country	World Bank
Foreign Domestic Investment	FDI	Total amount of foreign inflows in a country	World Bank
Inflation	Inflation	Percentage change in price levels of goods and services	World Bank
Population	Population	Total Number of people in a country	World Bank

3.5 Model Specification

The data collected was secondary data from reliable sources mainly the World Bank, World Bank (2020). Data for the unemployment rate, GDP, FDI, Inflation and population was collected for the period 1992-2022 indicating that this is time series data. With the data being sourced from the World Bank it further implies and indicates the validity and reliability of the data collected which enhanced the credibility of the findings observed in this study.

3.5.1 Justification of the use of Panel ARDL model

This paper employed the Panel Auto-Regressive Distributed Lag to analyse the relationship between the selected variables. On the other hand, the ARDL model of M. Hashem Pesaran (2001) accommodates the mixture of zero and first difference variables in the process of attaining stationarity, hence long-run information that can be lost in differencing is preserved. This is one important feature when dealing with economic data from developing countries where there seem to be mixed orders of integration.

The Panel ARDL model demonstrated its robustness in small sample sizes, which is particularly important considering that in many African countries, there exists limited availability of long-term data. Therefore, this allowed for reliable and valid inferences to be made from relatively small data samples. Additionally, the ARDL approach is estimated simultaneously both in the short run and in the long run; providing a general view of how the variables relate to one another.

The current research aimed to find insights into the relation of unemployment with economic growth in Kenya, Nigeria, the Republic of Congo, Egypt, and South Africa through the estimation of a Panel ARDL model. The fact that the model has different integration orders made it capable of handling small samples with ease and being able to estimate short-run and long-run relationships, which are the most preferred in a study like this.

3.5.2 Data Analysis Techniques

Given that the data is panel form the Panel ARDL model was used to analyse the short-run and long-run relationships between the variables; therefore, the method has comprehensively provided a clear explanation of the temporal relationships between variables M. Hashem Pesaran (2001). The Panel ARDL method has demonstrated flexibility and reliability in various empirical research.

Panel ARDL model was specified as show in equation (i)

$$Y_{it} = \alpha_i + \sum_{p=1}^p \beta_{ip} Y_{it-p} + \sum_{q=0}^q \gamma_{iq} X_{it-q} + \varepsilon_{it} \dots \dots (i)$$

Where:

Y_{it} is the dependent variable for the country i at time t in this case, this is the unemployment rate.

X_{it} are the independent variables for the country i at time t .

α_i entity specific effort

β_{ip} and γ_{iq} are the coefficients for the lagged terms of the dependent and independent variables.

ε_{it} the error term.

3.5.3 Panel Unit Root Test

All variables must be stationary, due to it being panel data Fisher ADF test and Panel Unit Root test Pesaran, M. H., & Shin (2003). The Fisher ADF test combines p-values from individual ADF tests for each cross-section and calculates a test statistic. This brings more flexibility in handling heterogeneity across the panels.

The panel unit root test Pesaran, M. H., & Shin (2003) augments the ADF regressions with cross-sectional averages of lagged levels and first differences. It accounted for cross-sectional dependence and provided a robust way to check for unit roots in this study.

3.5.4 Lag Length Selection

An appropriate lag length was crucial in determining the accuracy of the Panel ARDL model, to obtain the optimal lag length we used the Akaike Information Criterion (AIC), the Schwarz Criterion (SC) and Hannan Quinn (HQ) Criterion. These helped in identifying the model that best fits the data while avoiding overfitting.

3.5.5 Cointegration Test

The cointegration test was used to assess the existence of a long-run relationship between the variables, employing the Panel ARDL model.

$$\Delta Y_{it} = \alpha_i + \delta_i(Y_{it-1} - \theta_i X_{it-1}) + \sum_{j=1}^{p-1} \beta_{ij} Y_{it-j} + \sum_{k=0}^{q-1} \gamma_{ik} X_{it-k} + \varepsilon_{it} \dots \dots (ii)$$

Where.

Δ is the first difference operator.

α_i the drift component

δ_i speed of adjustment parameter

θ_i long-run relationship coefficient

The bounds test compares the F-statistic with critical values to determine whether the variables are cointegrated.

3.5.6 Error Correction Model

The Error Correction Model (ECM) was estimated to incorporate the long-run relationship that indicates the speed at which the dependent variable returns to equilibrium after a short-term shock.

$$\Delta Y_{it} = \alpha_i + \sum_{p=1}^p \beta_{ip} \Delta Y_{it-p} + \sum_{q=0}^q \gamma_{iq} \Delta X_{it-q} + \phi \varepsilon_{it-1} + \mu_{it} \dots (iii)$$

Where:

ϕ is the error correction term, the rate at which the deviation from the long-run equilibrium is corrected in the short run.

ε_{it-1} the lagged error correction term from the long-run equation.

μ_{it} the disturbance term.

3.6 Research Objective and Hypothesis

The following hypotheses were tested to identify the relationship between economic growth (GDP), and unemployment rates in selected African countries and how these are influenced by Foreign Direct Investments (FDI), inflation, and population, where unemployment was the dependent variable:

H_0 : There is no significant relationship between economic growth and the unemployment rate.

H_a : There is a significant relationship between economic growth and the unemployment rate.

3.7 Ethical Considerations

Since the study used secondary data, informed consent from participants was not required. However, it is crucial to use the data per the data usage policies stipulated by the sources. Secondary data from reputable sources such as the World Bank, moreover confidentiality and siting of the required reference papers were maintained. Proper citation not only respects intellectual property rights but also enhances the credibility and transparency of the research.

3.8 Limitations

A significant weakness of the ARDL model is that it assumes no structural breaks in the period of interest, this may not be the case as structural breaks can lead to economic crises, policy changes or any other significant events that can alter the data collected. These limitations could affect the generalizability of the findings. For instance, the presence of structural breaks can lead to biased or inconsistent estimates, affecting the validity of the long-run and short-run relationships identified in the study. However, the use of robust econometric techniques, such as the ARDL model, helps mitigate some of these concerns. M. Hashem Pesaran (2001)

3.9 Conclusion

This chapter has detailed the research methodology, justifying the selection of the Panel ARDL model. Its suitability for handling mixed orders of integration and small sample sizes aligned well with the study's objectives. The model's ability to simultaneously estimate short-run and long-run relationships allowed for a comprehensive analysis of the dynamic interactions between unemployment, economic growth, and other pertinent economic factors like FDI, inflation, and population. The subsequent chapter will present the findings from this analysis, illuminating the relationship between unemployment and economic growth within the chosen African countries.

CHAPTER FOUR: PRESENTATION OF RESEARCH FINDINGS

4.1 Introduction

This chapter represents the empirical analysis of the variables studied in the given countries: Kenya, Nigeria, South Africa, Egypt, and the Republic of Congo. They were chosen to represent their given region. This chapter includes a descriptive analysis of the variables, tests for stationarity, optimal lag selection, cointegration tests and estimation of the Error Correction Model (ECM). The following results will be represented in a table, figures and a brief description.

4.2 Descriptive Analysis of the Study Variable

The sample used in this study was obtained from the World Bank (2020) for all countries from 1992 to 2022. Table 4.1 illustrates the descriptive statistics for all variables of interest in the given countries.

Table 4.1 Descriptive Statistics of the Variables of Interest

Variables	No of Observations	Mean	Standard Deviation	Max. Value	Min. Value
Unemployment Rate	31	11.89%	7.98%	28.84%	2.61%
GDP	31	USD 160 billion	USD 156 billion	USD 574 billion	USD 1.8 billion
FDI	31	USD 2.6 billion	USD 4.3 billion	USD 40 billion	USD -1.1 billion
Population Rate	31	2.30%	0.713%	4.24%	1.23%
Inflation	31	9.97%	10.58%	72.38%	-0.88%

The unemployment rate is noticeably high in South Africa and the Republic of Congo averaging 21.70% and 20.20%, with South Africa having the highest level of unemployment at 28.84% in 2022. This suggests persistent labour market challenges in both countries. As for GDP, South Africa and Nigeria have the largest average GDPs, USD 284 billion and USD 279 billion respectively, reflecting their dominance as major economies in the African continent. In addition to this South Africa and Egypt attract the most FDI inflows in comparison to the rest indicating the importance of FDI in their economic growth over the years. Nigeria experiences the highest average inflation rate at 18.5% indicating price instability, while population growth across the African countries is positive indicating population growth over the past 31 years.

4.3 Graphical Presentation of Unemployment Rate and GDP

The section below will provide an analysis of the graphical representation of Okun's Law in all five countries, highlighting the trends in unemployment and GDP. Okun's law states that there is an inverse relationship between changes in the unemployment rate and GDP growth, where when high economic growth is experienced in a country it corresponds with a decrease in unemployment rates Okun (1962).

The table below, Table 4.2, highlights the intercept, slope coefficients, and R-squared for each country. Furthermore, Figure 4.2 below is a graphical representation of Okun's Law in each country.

Table 4.2 Okun's Law Regression Results

Country	Slope	Intercept	R-Squared
Egypt	-0.01298	0.0207	0.0154
Kenya	-0.00387	0.1209	0.0322
Nigeria	-0.00127	0.0112	0.0139
Republic of Congo	-0.00931	0.0687	0.0979
South Africa	0.023741	0.1875	0.0690

The slope coefficients dictate the sensitivity of unemployment to changes in GDP growth, observed in the regression table is a negative slope for Egypt, Kenya, Nigeria and the Republic of Congo. This is consistent with the fundamental idea of Okun's Law, that increases in GDP growth rate are associated with decreases in the unemployment rate. However, the slope is small.

In addition to this South Africa has a positive slope, implying that GDP growth does not correlate with unemployment. Moreover, the R-squared obtained for all countries are relatively small showing that the independent variable in the model is not sufficiently explaining the variation in the dependent variable. This is one of the main reasons on why this paper expands on Okun's law by adding more independent variables in hope to improve the R-squared or understand the complexity of unemployment in Africa.

Figure 4.2 Okun's Law Across the Countries of Interest

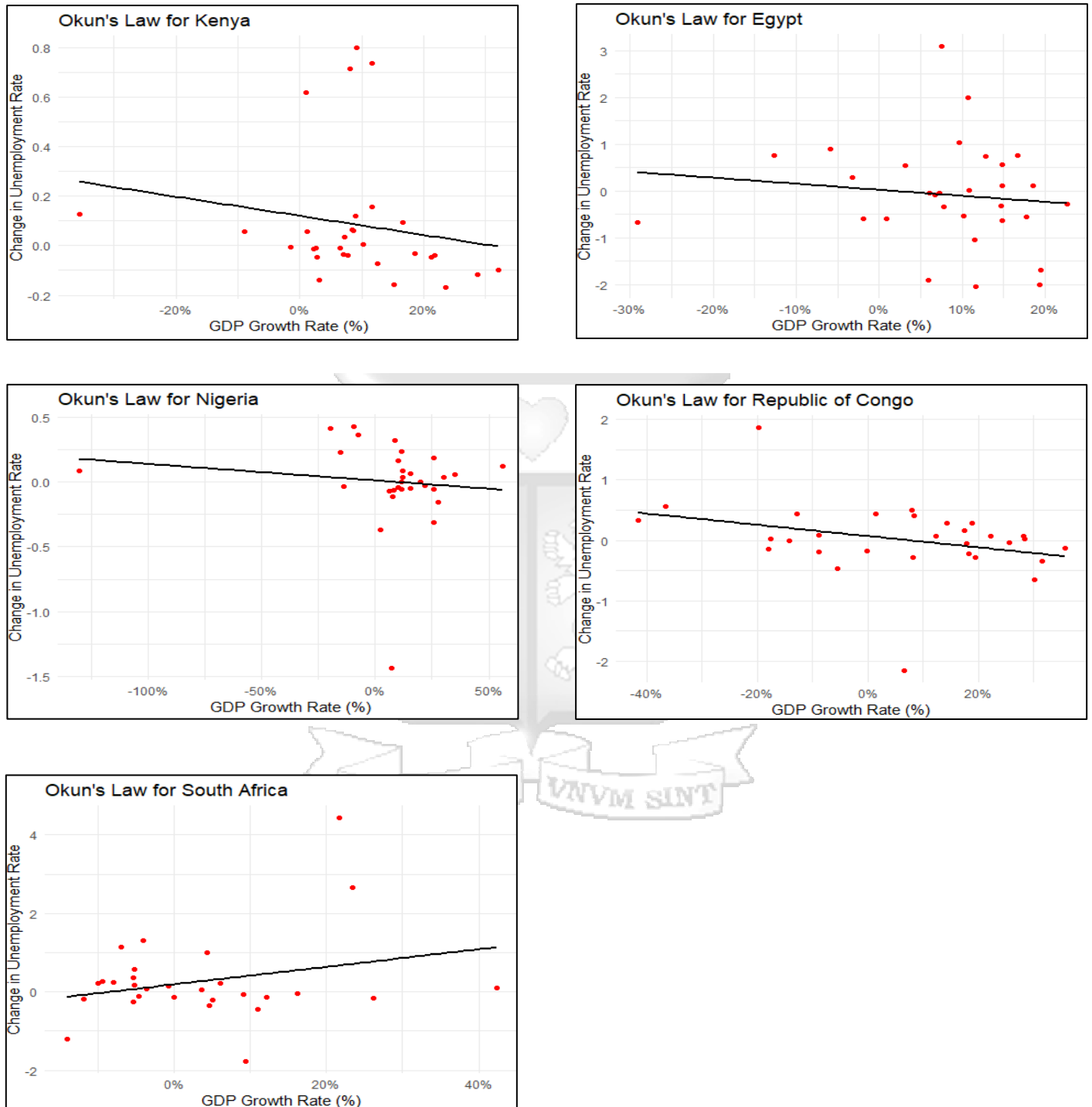


Figure 4.2 illustrates the relationship between GDP growth and changes in unemployment rates for each country. The graph illustrates the individual points, while the regression line is the estimated relationship as defined by Okun's Law Okun (1962).

4.4 Stationarity Tests

The stationarity of the given variables was examined using the Im-Pesaran-Shin (IPS) unit root tests Pesaran, M. H., & Shin (2003). It is used to determine if the data series are stationary at levels or require differencing to achieve stationarity. Inflation and FDI are stationary at level, while the unemployment rate, GDP, and population growth at stationary at first difference. Table 4.3 illustrates the stationarity test results for all the variables of interest.

Table 4.3 Stationarity Test Results

Variable	Level	First Difference	Conclusion
Unemployment rate	Non-stationary	Stationary	I (1)
GDP	Non-stationary	Stationary	I (1)
FDI	Stationary	-	I (0)
Inflation	Stationary	-	I (0)
Population growth	Non-stationary	Stationary	I (1)

4.5 Lag Length Selection

An optimal number of lags for the panel ARDL model is crucial in determining the accuracy of the model. The various selection criteria include the Akaike Information Criterion (AIC), Schwarz Criterion (SC) and Hannan Quinn (HQ) Criterion. The results obtained from the lag selection process suggested a more balanced approach for selecting the optimal lag one to help avoid overfitting. Table 4.4 is a visual representation of the lags selected by each criterion.

Table 4.4 lag selection

AIC (n)	SC (n)	HQ (n)
4	1	1

4.6 Cointegration Test Results

To determine if a long-term equilibrium relationship exists between unemployment and the independent variables, a cointegration test was necessary as it ensures that the variables move together over time, despite short-term deviations. The Augmented Dickey-Fuller (ADF) test on the residuals of the ARDL model was used to test for cointegration. The ADF test statistics value is -8.66 which is more negative than all the critical values at 1%,5% and 10% levels of significance we reject the null hypothesis of no cointegration.

Therefore, by rejecting the null hypothesis, we conclude that the residuals are stationary and that a long-term equilibrium relationship between unemployment rate, GDP, FDI, inflation and Population rate.

4.7 Error Correction Model

The Error Correction Model (ECM) was estimated for each country to understand the short-term dynamics and speed of adjustment to the long-run equilibrium after a shock was observed in the given countries. Table 4.5 summarizes the key coefficients from the ECM estimation for each country.

Table 4.5 Error Correction Model (ECM) Results

Country	ECM Term	GDP	FDI	Inflation	Population
Egypt	-0.4766	-0.0005472	0.001650	0.01938	8.510
Kenya	-0.2728	0.002328	-0.01542	0.005582	0.3518
Nigeria	-0.1174	-0.0001282	0.007758	0.004822	-2.121
Republic of Congo	-0.5619	-0.00577	-0.000208	0.0002089	-0.1025
South Africa	-0.4117	0.0007259	0.007768	-0.06002	-0.7814

Egypt has an Error Correction Term (ECT) of 47.66%, indicating a relatively fast adjustment of any deviation from the long-run equilibrium which is corrected. This could be reflective of Egypt's structural reforms that were aimed in stabilizing the economy and reducing unemployment given the Arab Spring in 2011 Khan (2014). In addition, the 2016 International Monetary Fund (IMF) agreement of \$12 billion helped addressed macroeconomic challenges and promoting growth and

job creation International Monetary Fund (2016). Elshamy (2013) and Salman (2019) findings highlighted that Egypt's policy reforms aimed at economic diversification and job creation have contributed to faster adjustments in the recent years post the Arab Spring, hence a higher ECT.

In Kenya the ECT is 27.28%, this is much slower than Egypt this could be due to the structural challenges in the Kenyan labour market. Omolo (2013), highlighted that challenges such as a high proportion of informal labour employment makes it harder for unemployment to fall when GDP increases. With the short-run impact of FDI being negative -1.54%, suggesting FDI is not effectively absorbed into the productive sectors of the country to reduce unemployment, a study by Kenya Institute for Public Policy Research and Analysis notes the dominance of informal jobs with 83% employment in this sector making FDI less impactful Onsomu (2023).

Nigeria, with the lowest ECT at 11.74% having the slowest pace for adjustment, as unemployment tends to persist in Nigeria, given the structural labour market challenges and reliance on agriculture and oil has exacerbated Nigeria's unemployment crisis Agbaeze (2015). In addition to this the lack of diversification in other sectors and the country's ability to create jobs given its rapid growing population has led to high levels of unemployment. Findings by Ali Madina Dankum (2019) suggested that economic growth does not significantly impact unemployment hence a low ECT, but political instability was found to be negatively significant calling for the need of better governance.

The highest ECT is 56.19% by the Republic of Congo, suggesting that the country's economy quickly goes back to equilibrium despite short-term shocks. With the negative GDP coefficient -0.58% implies that higher economic growth in the short term will not lead to immediate reduction in unemployment. This is tied to the fact that the Republic of Congo is heavily driven by exports in oil, suggesting that oil-dependent economies often experience jobless growth, GDP increase but unemployment is still high Sala-i-Martin (2013).

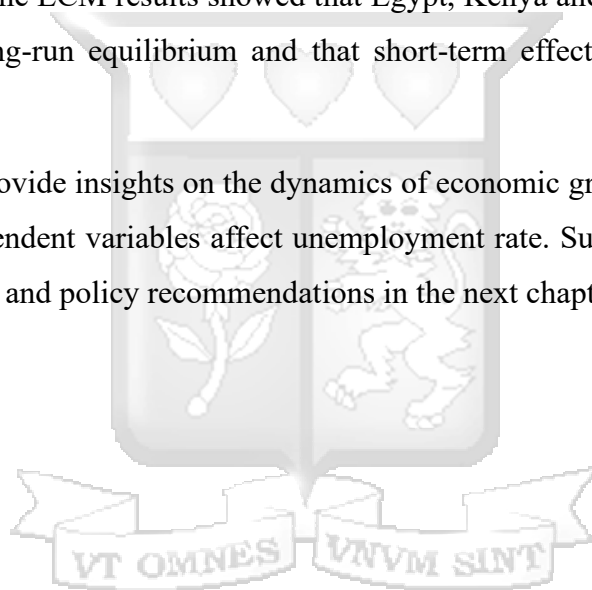
South Africa, ECT is 41.17% exhibiting a relatively fast adjustment to long-run equilibrium, the FDI coefficient is positive at 0.78%, indicating that FDI has a strong impact on reducing unemployment in the short run. Naudé (2017) noted that FDI has a significant role in employment generation in South Africa. Findings by Mumba (2022) illustrated that the ECT is significantly negative, however the long run effect of real GDP growth rate on unemployment is not statistically significant.

4.8 Summary of the Findings

This chapter has presented the empirical analysis of the unemployment dynamics in the five African countries. Okun's Law, most countries showed a negative relationship between GDP and unemployment, while South Africa exhibited a positive relationship indicating structural challenges in the labour market. Moreover, GDP unemployment rate and population growth became stationary after first differencing, while inflation and FDI were stationary at level, with the AIC and SC criterion suggesting various optimal lags.

In addition, the cointegration test confirmed the existence of a long-run relationship between unemployment and the underlying independent variables, this indicated that they move together over time. Furthermore, the ECM results showed that Egypt, Kenya and South Africa experience faster adjustments to long-run equilibrium and that short-term effects of FDI and population growth were observed.

The findings collected provide insights on the dynamics of economic growth and unemployment, and how the other independent variables affect unemployment rate. Such findings are important for deeper interpretations and policy recommendations in the next chapter.



CHAPTER FIVE: SUMMARY, CONCLUSION AND POLICY RECOMMENDATIONS

5.1 Introduction

The following chapter provides a summary of empirical results, the conclusion of the study and policy recommendations on unemployment and economic growth levels in Egypt, Kenya, Nigeria, the Republic of Congo and South Africa. By summarising key findings from statistical analysis, conclude and suggest policy recommendations. Moreover, other research areas are identified in light of building from existing knowledge and responding to gaps in research. The main findings of this study highlight the complexity of unemployment-economic growth relationship in different African economies. Provides a summary of empirical results, the conclusion of the study and policy recommendations on unemployment and economic growth levels in

5.2 Summary of Findings

The main findings of this study highlight the complexity of unemployment and economic growth in the different African economies.

Egypt displayed a relatively high adjustment in speed to the equilibrium, which suggests economic resilience despite high population pressure on the major cities, contributing to unemployment. Moreover, Foreign Direct Investment (FDI) was identified as a beneficial factor that has the potential to alleviate labour market strain. Kenya illustrated a moderate adjustment in equilibrium, however, structural challenges in its labour market limit the effective absorption of FDI, given its high-informality sectors.

Nigeria's slow return to equilibrium highlights structural rigidity, given its lack of job creation despite its rapidly growing population. Moreover, given the country's high inflation, the cost of doing business in Nigeria deters investors and entrepreneurs who can create employment opportunities. In contrast, the Republic of Congo exhibited the fastest adjustment rate, reflecting the economy's resilience to shocks but challenged by an oil-driven, capital-intensive growth model that provides limited job creation. South Africa, with a notable speed to adjustment, displayed the importance of FDI in reducing unemployment, however high levels of inequality in education levels and income are still persistence making it the country with the highest unemployment rate numbers in the sample size.

5.3 Conclusion

In conclusion, the study illustrates that while Okun's Law states that there is an inverse relationship between GDP and unemployment, this relationship varies across the different African economies due to their structural differences and policies implemented over time.

Egypt and the Republic of Congo have a high ECT displaying a fast adjustment to economic shocks, while Kenya and Nigeria exhibit slower responses due to structural and policy-related challenges. Furthermore, FDI plays a significant role in Egypt and South Africa's employment dynamics due to a more refined labour market setup and less informal sectors, while in Kenya and Nigeria, it has limited influence on unemployment.

Therefore, this study contributes to the ongoing discourse on labour markets in African economies by providing insights into the differential impacts of economic indicators on unemployment, calling for a more tailored solution for each country.

5.4 Policy Recommendations

Economic diversification, countries like Nigeria, Kenya and the Republic of Congo are very reliant on natural resources and primary products. The countries should pursue policies that help promote sectoral diversification, especially in agriculture and manufacturing. Research conducted by Kiriti-Nganga (2020) highlight the importance of an economy diversifying and the positive impact it may have on employment.

Urban-rural balance, by encouraging economic opportunities outside major urban areas, and having policies that support decentralization and development of new urban areas outside the major cities. This is essential, 10.5% of Egypt is habitable and most people stay in the major urban areas like Cairo, Monir (2017) highlighted that establishing urban centres in underdeveloped areas and redistributing populations has reduced pressure on resources in dense urban centres. Therefore, expanding on the following concept government policy on enhancing incentives for industries and infrastructure in less populated areas can attract a diverse workforce and bring about employment opportunities.

Youth employment initiatives, policies that focus on creating employment opportunities tailored for a country's young population, findings by Eldah Onsomu (2023) show that programs focusing on skills development and entrepreneurship Kenya Youth Employment and Opportunities Project

have shown success in creating sustainable employment pathways. Such findings highlight the potential of youth programs that provide employment opportunities, especially in growing sectors like technology and renewable energy.

Governance, strengthening governance across African countries, countries like the Republic of Congo despite the country responding well to economic changes, correct governance is crucial for ensuring FDI inflows lead to job creation as seen in South Africa the positive impact of FDI, Naudé (2017). Moreover, controlling inflation Nigeria's labour market is sensitive to inflation which in turn deter FDI and job creation. Macroeconomic policies such as contractionary monetary policy or fiscal policy should be implemented, currently, despite Nigeria's GDP it collects one of the lowest Tax-GDP ratios of 6.4% lower than the continent's average of 15.6% as of 2023 African Union & OECD (2023). This indicates that there is more room for increasing the tax base in Nigeria to reduce inflation and increase government revenue.

Inequality, in South Africa the persistent economic inequality due to the rigidity in the labour market, historical inequality and divide and barriers for inclusive growth Makgetla (2020) suggest empowering communities through local development and supporting small and medium size enterprises. By focusing on developing community-based business and employment initiatives, this eases the restrictions on the labour market.

5.5 Areas for Further Research

Future studies might make use of more detailed sectoral data to capture the complexity of labour market conditions in the African economies. Such studies, based on employment trends by sector, would better discern exactly how each sector-manufacturing, agriculture and services contribute to employment opportunities. Furthermore, investigations that fill in the implications of the expansion of the informal sector are relevant in light of the high level of informality in employment observed in many African countries, such an investigation shall yield significant insight into the structural and policy needs for African countries.

In addition, conducting research on how regional policies, trade agreements and labour mobility programs affect cross border labour market outcomes in Africa may shed light on certain aspects of the labour market in Africa. As technology is becoming increasingly relevant understanding how digital skill development can bring about economic diversification informing government on

the policies to implement that bring about inclusive growth and address inequality in skills and income.



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