Journal of Economics

Political Instability Nexus Inflation & Unemployment Trade off: Reexamination of Philips Curve and its Stability in Sub-Saharan Africa

Hakundimana Jean Paul & Dr. Afolabi Luqman

ISSN: 2617-5800

Stratford Peer Reviewed Journals and Book Publishing
Journal of Economics
Volume 8||Issue 1||Page 1-15 ||January||2024|
Email: info@stratfordjournals.org ISSN: 2617-5800

Political Instability Nexus Inflation & Unemployment Trade off: Reexamination of Philips Curve and its Stability in Sub-Saharan Africa

Hakundimana Jean Paul[1] & Dr. Afolabi Luqman[2]
[1] Master of science in Economics, University of Kigali, Rwanda
[2] School of Graduate Studies, Senior Lecturer, University of Kigali, Rwanda

***How to cite this article*: Hakundimana J. P., & Afolabi L. (2024). Political Instability Nexus Inflation & Unemployment Trade off: Reexamination of Philips Curve and its Stability in Sub-Saharan Africa. *Journal of Economics. Vol* 8(1) pp. 1-15** https://doi.org/10.53819/81018102t2310

Abstract

The general objective was to conduct an empirical study on political instability nexus Inflation & Unemployment Tradeoff: Reexamination of Philip Curve and its Stability in Sub-Saharan Africa.The study conducted in 40 Sub-Saharan Africa member countries. This research design used panel data from the World Bank databank records related to Sub-Saharan Africa, which span 37 years (1986–2022), serve as the foundation for this study's analysis. This study's findings will benefit a wide range of parties, including academia, continents, and the economy, and will add to existing knowledge. The STATA software was used to perform the analysis on all of the data and estimation tests such as Unit root test, Kao cointegration, regression, lag selection and (Dynamic) Common Correlated Effects Estimator - Mean Group. Results confirmed the presence of a long-run relationship between the dependent variable (Inflation) and independent variables (Unemployment rate, GDP, Foreign Direct investment, Political instability and Population growth). The findings of this study indicate that the trade-off Phillips curve exists in Sub-Saharan Africa, and the relationship is stable over the long-run. Results revealed that unemployment, political instability, and foreign direct investment, exhibit a detrimental positive influence on inflation**.** Recommendations, policy makers in Sub-Saharan Africa should prioritize the development of policies aimed at effectively addressing inflation and unemployment, while also striving to stabilize the Philips curve. Additionally, Sub-Saharan Africa should implement economic policies that can enhance the likelihood of economic growth within the region's population. To achieve this, it is crucial for Sub-Saharan Africa to adopt fiscal and monetary policies that effectively mitigate economic issues especial during the period of political instability, as well as establish mechanisms that can effectively slow down population growth rates.

1. Introduction

1.1 Background to the Study

In 2022, global growth was 3.4 percent by World Economic Outlook (WEO) but was below the 2000 average of 3.8 percent. Russia's war in Ukraine and inflation-fighting central bank rates hinder economic activity. China's rapid COVID-19 spread slowed growth in 2022, but reopening has accelerated recovery. Global inflation was 8.8% in 2022 still above pre-pandemic (2017–19) levels of 3.5 percent (IMF,2023)

In Sub-Saharan Africa, after a COVID-19 reopening rebound in 2022, projected growth fell to 1.2 percent in 2023 due to weaker external demand, power shortages, and structural constraints (IMF,2023) According to the findings of a number of academics (Khan and Senhadji, 2001; Azam and Khan, 2020), persistently high inflation increases economic uncertainty, which in turn reduces capital investment and slows down economic growth. A threshold effect of inflation on economic growth was studied by Azam and Khan (2020) between 1975 and 2018 in 27 different countries and indicated that when inflation exceeds 12.23% and 5.36 % in developing and developed countries, respectively, economic growth is hindered.

The COVID-19 pandemic caused unemployment to rise to nearly 15% in April 2020 before steadily declining through January 2021. The unemployment rate reduced by 0.4% to 6.3% in January 2021. This measurement is less than that of April 2020, but it is still higher than of pre-pandemic levels (3.5%). In February 2021, inflation increased significantly. Price increases were mostly due to the global supply shocks, but unemployment in some industries was the root causes (Elvis Picardo, 2022).

There is a study that investigated the relationship between inflation, unemployment, and economic growth in a number of countries that are members of the OECD (including France, Australia, Canada, Germany, Iceland, Poland, Italy, Spain, Portugal, and Turkey) from 2010 to 2020. The countries that were also examined were: Poland, Italy, Spain, Portugal, and Turkey. According to the findings, growth and unemployment both move in opposite directions, while inflation and unemployment only move in the same direction (Kerem ZEN, 2022). On the other side, the researcher investigated how inflation affects the finance-growth nexus in 23 Sub-Saharan African countries using a data set that averaged over five years from 1982 to 2016. Results showed that financial development has a negative impact on economic growth when inflation is greater than 31%. As a result, the inflation rate ought to be maintained at or below 31% in order to guarantee sustainable economic growth. (Witness Nyasha Bandura, 2020)

Many years ago, the Phillips curve showed no correlation between inflation and unemployment. For example, in 1999, the shape of the US inflation curve changed, and researchers concluded that unemployment no longer has any impact on inflation. A nonlinear Phillips curve shows that inflation was moderate over the next few years, while a flat curve shows that there won't be much change (Joseph E. Gagnon and Christopher G. Collins, 2019).

In the study by Elvis, Inflation and unemployment have historically inversed related. However, this relationship has had many setbacks over the past half-century (Elvis, 2022). According to the information that was provided in the appendix 2 the annual percentage rate of inflation rose significantly in Jordan, Latin America, and Sub-Saharan Africa in the years 1988, 1989, and 1992, respectively. During the same time period, this pattern was also noticed in Jordan, specifically between the years 1993 and 1997. In the period between 2022 and 2021, Pakistan, Sub-Saharan Africa, and Jordan each experienced significant difficulties with price increases.

In Sub-Saharan Africa, supply shocks drive inflation. Monetary policy has little short-term effect. Over the past decade, Sub-Saharan Africa has grown rapidly, integrated with the global economy, and changed policy frameworks, suggesting that inflation drivers may have shifted. Domestic supply shocks and political instability and monetary variables drove 2015 price increases. Demand pressures, global shocks, and output shocks have raised inflation over the past decade. It demonstrated that shocks are caused by country characteristics like oil and food imports, weather vulnerability, agricultural importance, trade openness, and policy regimes. (IMF,2015)

Sub-Saharan Africa is located on the African continent specifically in the southern part of the Sahara Desert. It encompasses Africa's Central, East, Southern, and Western regions. According to the United Nations, the term may include African countries that are only partially part of that region. There are between 46 and 48 countries that are considered to be part of a region by the UN, WHO, WB, and other international organizations (Wikipedia, 2023)

In their study, political instability has a significant negative impact on economic growth in the Republic of the Congo, thus hindering economic growth on the other side. The findings suggest that it is possible to understate youth unemployment and the effect of policies meant to combat youth unemployment if only those between the ages of 15 and 24 are considered young (), (Kramo, 2020).

1.2 Problem statement

In his study conducted in 28 Sub-Saharan Africa countries about inflation and unemployment. This study showed that this region recorded an average unemployment rate of 7.86 percent over the period 1990-2018 with South Africa posting the highest rate of unemployment while Niger posted the lowest rate of unemployed labour force. The mean inflation rate stands at 9.23 percent. unemployment rate remains largely unchanged and increased slightly between 2016 and 2018. The persistency of relatively high unemployment rates in most SSA countries requires revisiting the relationships between inflation, unemployment and output and apply them to economic policy (Ahiadorme, 2020).

Especially, Sub-Saharan Africa experienced high inflation and unemployment in the years 90s. on the other hand, In 2022 inflation rate in Sub-Saharan Africa was 0.14% While unemployment rate was 6.7% (Appendix 3)

The Appendix 3 shows that unemployment has witnessed cyclical movements within these years with years of increases and decreases. Equally, inflation equally witnessed fluctuations within the very high rates and very moderate rates. On a closer observation of the Appendix 3, it demonstrates an existence of rising inflation rate and declining rate of unemployment and this point towards the establishment of the Philips curve doctrine within the Sub-Saharan economy.

Sub-Saharan Africa is in political turmoil. Since most African nations gained independence in the early 1960s, more than fifty coups have occurred. Political insecurity contributes to macroeconomic insecurity, which is marked by high inflation and unemployment.

Based on these multiple-insight scenarios and the effects of inflation and unemployment in this region, it is therefore a great motivation of this research work to empirically unravel the political instability nexus inflation & unemployment trade off: reexamination of Philips curve and its stability in Sub-Sarahan Africa.

The main focus of the study is to ascertain the nature of trade-off if any between inflation and unemployment in Sub-Sarahan Africa between 1986 -2022. The research is of paramount

importance as it will provide policy directions for policy makers in ensuring stability in the Sub-Sarahan Africa macro economy.

1.3 Research objectives

The general objective of this study is to examine the political instability nexus inflation & unemployment trade off and reexamination of Philips curve and its stability in Sub-Sarahan Africa**.**

Specific Objectives:

1. Assess the relationship between political instability, Inflation and unemployment in Sub-Saharan Africa;
2. Investigate the trade-off that exists between inflation and unemployment in Sub-Saharan Africa;
3. Reexamine of Philip Curve and its Stability in Sub-Saharan Africa

2. Literature review

2.1 Theories of Inflation

The term "inflation" was defined by Frisch (1963) as a continuous increase in the price levels measured by CPI, it is clearly visible that the behavior of inflation can be influenced by the consumption. Mankiw (2006) divided inflation into two based is called Cost-Push Inflation and Demand-Pull Inflation. Demand-pull Inflation is the inflation caused by the pull of demand. This inflation stems from their total demand (aggregate demand), while production has been in a state of full employment or nearing full employment. On the other hand, Cost-push inflation characterized by rising prices and lower levels of production.

2.2. Theories of Unemployment

Unemployment is a population that included labor force but not working and looking for work according to a certain time reference (Feriyanto, 2014). Meanwhile, according to Mankiw (2006) the unemployment rate shows the percentage of the workforce that does not work or the number of unemployed as compared to the total labor force. According to McConnell et al. (2012) unemployment is divided into several types, namely frictional unemployment, structural unemployment and cyclical unemployment.

2.3. Theory of Phillips Curve

The Phillips curve is an economic theory that inflation and unemployment have a stable and inverse relationship. Developed by William Phillips, it claims that with economic growth comes inflation, which in turn should lead to more jobs and less unemployment.

The original concept of the Phillips curve has been somewhat disproven due to the occurrence of stagflation in the 1970s, when there were high levels of both inflation and unemployment.

The movement of inflation and unemployment rise simultaneously shows the Phillips curve shift that occurred in the United States during 1950 to 1982 (Dornbusch *et al*., 2011).

2.4 Theories of Gross Domestic Product

2.4.1 Classical Theories of Economic Growth

The classical theory was presented by Adam Smith in 1776. Also, David Ricardo, Robert Malthus, and others contributed in later years. According to them, deliberate efforts to increase Gross Domestic Product (GDP) can lead to overutilization or exploitation of resources, leading to slow economic growth. It means economic growth can be achieved only when markets operate freely based on changing circumstances.

2.4.2 Neoclassical Theory (Solow-Swan or Exogenous Model)

As the name suggests, this theory was primarily popularized by neoclassical economists. However, the most popular model was presented by Solow-Swan (Robert Solow and Trevor

Swan) Growth Model. The theory suggests that increased production inputs like labor or capital can cause diminishing returns eventually, i.e., growth can be seen only up to a certain level. Others who contributed to this theory include French economists Leon Walras and Sir Henry Roy Forbes Harrod and Evsey Domar, who gave the Walrasian Model and Harrod-Domar Model.

2.4.3 Endogenous Theory

Also known as new or modern theories of economic growth, endogenous growth theory laid emphasis on human resources (or labor). These models use endogenous instead of exogenous variables. It was developed by Paul Romer and Robert Lucas. Endogenous theories highlight human contributions and state how knowledge leads to growth. It states external factors, such as government policies, can also affect economic growth. These theories also throw light on how technological innovation in the private sector affects growth. However, there might be no way to invest in technology in a free market model.

2.5 Theories of Foreign Direct Investment

According to Vintila (2010), Foreign direct investment (FDI) is an ownership stake in a foreign company or project made by an investor, company, or government from another country. Generally, the term is used to describe a business decision to acquire a substantial stake in a foreign business or to buy it outright to expand operations to a new region. The term is usually not used to describe a stock investment in a foreign company alone. FDI is a key element in international economic integration because it creates stable and long-lasting links between economies. Foreign direct investments are commonly categorized as horizontal, vertical, or conglomerate.

2.5 1. Theories of FDI based on perfect competition

The early works of FDI theory can be traced in the work by MacDougall (1958) who established his model based on the assumptions of perfectly competitive market. His theory was further elaborated by Kemp (1964). Assuming a two-country model and prices of capital being equal to its marginal productivity, MacDougall and Kemp both stated that when there was free movement of capital from an investing country to a host country, the marginal productivity of capital tended to be equalized between the two countries. They found that after investment, the output of the investing country fell without any decrease in the national income of the country. This is because in the long term the investing country gets higher income from its investment abroad.

2.5 2. Theories of FDI based on imperfect markets

2.5.2.1. Industrial organization approach

Hymer was one of the pioneers who established a systematic approach towards the study of FDI. In his 1960 doctoral dissertation, Hymer (1976)3 developed the FDI theory approach of industrial organization. His theory, which was one of the first works to explain international production in an imperfect market framework, was supported by Lemfalussy (1961), Kindleberger (1969), Knickerbocker (1973), Caves (1974), Dunning (1974), Vaitsos (1974) and Cohen (1975) among others. The essence of Hymer's theory is that firms operating abroad have to compete with domestic firms that are in an advantageous position in terms of culture, language, legal system and consumer's preference.

2.5.2.2. FDI based on monopolistic power

Kindleberger (1969), by extending the work of Hymer, put forward his theory of FDI on the basis of monopolistic power. Kindleberger argued that advantages enjoyed by MNCs could be useful only in the case of market imperfection. The advantages described by him might be in

the form of superior technology, managerial expertise, patents etc. These advantages generally encourage a firm to invest in a foreign country in order to fully exploit them instead of sharing them with potential competitors in the foreign market. The greater the chances of earning monopoly profits, the higher will be the encouragement among firms to invest directly.

2.6. Theories of population growth

The Malthusian theory explained that the population grows in a geometrical fashion. The population would double in 25 years at this rate. However, the food supply grows in an arithmetic progression. Food supply increases at a slower rate than the population.

Sociologists have long looked at population issues as central to understanding human interactions. Below we will look at four theories about population that inform sociological thought: Malthusian, zero population growth, cornucopian, and demographic transition theories.

2.6.1 Malthusian Theory

Thomas Malthus (1766–1834) was an English clergyman who made dire predictions about earth's ability to sustain its growing population. According to Malthusian theory, three factors would control human population that exceeded the earth's carrying capacity, or how many people can live in a given area considering the amount of available resources. Malthus identified these factors as war, famine, and disease (Malthus 1798).

2.6.2 Zero Population Growth

A neo-Malthusian researcher named Paul Ehrlich brought Malthus's predictions into the twentieth century. However, according to Ehrlich, it is the environment, not specifically the food supply, that will play a crucial role in the continued health of planet's population (Ehrlich 1968). Ehrlich's ideas suggest that the human population is moving rapidly toward complete environmental collapse, as privileged people use up or pollute a number of environmental resources such as water and air.

2.6.3 Cornucopian Theory

Of course, some theories are less focused on the pessimistic hypothesis that the world's population will meet a detrimental challenge to sustaining itself. Cornucopian theory scoffs at the idea of humans wiping themselves out; it asserts that human ingenuity can resolve any environmental or social issues that develop. As an example, it points to the issue of food supply. If we need more food, the theory contends, agricultural scientists will figure out how to grow it, as they have already been doing for centuries. After all, in this perspective, human ingenuity has been up to the task for thousands of years and there is no reason for that pattern not to continue (Simon 1981).

2.6.4 Demographic Transition Theory

Whether you believe that we are headed for environmental disaster and the end of human existence as we know it, or you think people will always adapt to changing circumstances, we can see clear patterns in population growth. Societies develop along a predictable continuum as they evolve from unindustrialized to postindustrial. Demographic transition theory (Caldwell and Caldwell 2006) suggests that future population growth will develop along a predictable four-stage model.

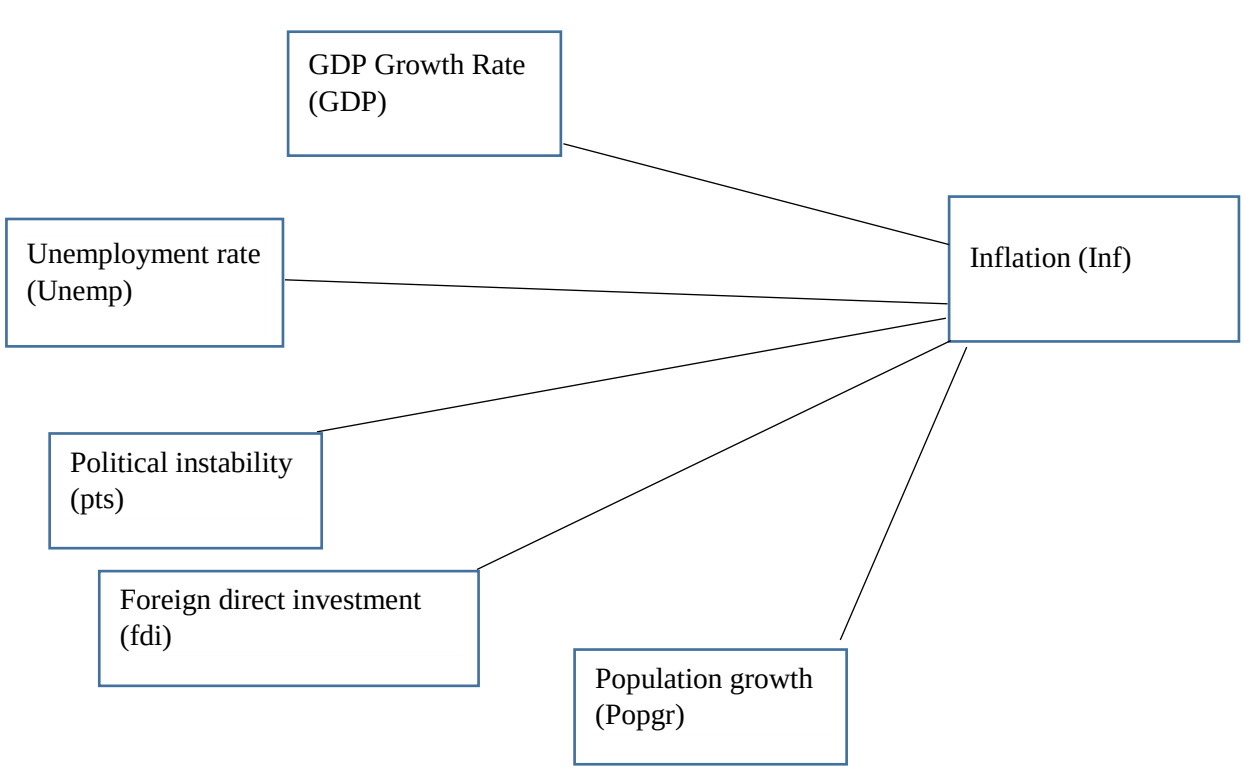
2.7 Conceptual framework

The conceptual framework is made up of the key ideas that are linked to each other. This framework goes into more detail about the relationship between the variables and the proposed solutions to the research problem that the researchers have already found.

Stratford Peer Reviewed Journals and Book Publishing
Journal of Economics
Volume 8||Issue 1||Page 1-15 ||January||2024|
Email: info@stratfordjournals.org ISSN: 2617-5800

It shows the relationships between the ideas or variables that the student will look into to reach the goals that have been set for the research. You can draw a diagram to show how the ideas and variables fit together. In the context of this investigation, unemployment, FDI, and population growth serves as an independent variable, while inflation is treated as a dependent variable. It is a representation of the connections between the concepts or variables that the student will investigate in order to achieve the goals that have been outlined for the research. It is possible to sketch a diagram in order to illustrate the connections between the concepts and the variables.

Figure 1: Conceptual framework of the study



3. Research methodology

This chapter contains a discussion of the overall methodology that was used in the course of conducting the study. It is divided into the following sections: Research Design, Data Collection Procedure, Data Processing, Data Analysis Approach, and econometric Model Specification.

3.1. Research Design

A research design facilitates all processes till achieving the study's results (Creswell and Plano, 2007). This research used a panel data research design, which is a type of quasi-experimental design, and make an effort to determine the cause-and-effect relationships that exist among the variables that are of interest by analyzing the data collected over time.

According to Bostley (2019), A good research design prevents frustration by coordinating all the major parts of the research to answer the research questions. Successful research projects

start with clear goals and justification. After this, it was easier to identify and organize the sequential steps needed to write a research plan and complete the research.

3.2. Study Population

The study population is the group of people, things, or events that you want to learn more about.The population of this study is times series data on unemployemnt rate, GDP growth rate, political instability , FDI, Population growth rate and inflation rate. This research will cover 37 years being from 1986 to 2022.

3.3. Data Collection Procedure

The study was used a published annual panel data of secondary data from 1986 until 2022. The data set was collected from the World Bank Group. The timeframe covers the period 1986–2022, covering annual data on the variables of inflation and unemployment rate, GDP, FDI, PTS and Population growth.

The panel data that was used in this study are the inflation rate, unemployment rate, GDP growth rate, political instability, FDI and Population growth rate all expressed in percentages. The choice of using annual panel data is based on the fact that it takes a whole year for an inflation rate to have an impact on the economy and unemployment. It is also a good period to measure its impact on economic growth and unemployment to react to the macro-economic changes.

3.4. Functional Form and econometric model

Phillips (1958) was used to create this inflation-unemployment model. In that study, the author argued that money wage rates (or inflation) can be explained by unemployment rate and level. This study models inflation and unemployment using those ideas. He concluded that inflation and unemployment are negatively correlated. However, high unemployment tends to lower or even reverse inflation. Blanchard (2016) found that higher unemployment rates lowered inflation and lower unemployment rates raised it. These findings support it.

The Phillips Curve is made up of an equation with several parts:

$\pi = \pi e - ß\ (u - un) + v$

Where:

π = Inflation

e = Expected Inflation

ß is a parameter that measures the response of inflation with relation to cyclical unemployment

$(u - u^n)$ = Cyclical Unemployment

v= Supply Shocks

This equation shows that unemployment is related to inflation and movements in the inflation rate. This parallels the relationship between output and price level which is reflected in the Short-Run Aggregate Supply Curve.

In this study an econometric model inflation (INF) is linearly dependent on unemployment (UNEM), GDP Growth rate (GDP), Political instability (PINST), Foreign Direct investment (FDI) and Population growth (POPGR) is specified as follows:

$$INF_t = \beta 0 + \beta 1UNEMP_{it} + \beta 2GDP_{it} + \beta 3PINST_{it} + \beta 4FDI_{it} + \beta 5POPGR_{it} + U_{it} \quad (1)$$

The model is then rewritten as follows:

$\ln INF_{it} = \ln\beta o + \beta 1 \ln UNEMP_{it} + \beta 2 \ln GDP_{it} + \beta 3 \ln PINST_{it} + \beta 4 \ln FDI_{it} + \beta 5 \ln POPGR_{it} + U_{it}$ (2)

Where INF_{it} stands for inflation rate, $UNEMP_{it}$, Unemployment rate, GDP_{it}, GDP Growth rate, $PINST_{it}$, Political instability, FDI_{it}, Foreign Direct investment, $POPGR_{it}$, Population growth, ln natural logarithm and U_t error term. Where β0, β1, β2, β3, β4 and β5 are coefficients of the constant, inflation, Unemployment rate, Growth rate, Political instability, Foreign Direct Investment and Population growth respectively.

Annual panel data from 1986 to 2022 were employed in this study. Both data on the inflation rate, unemployment rate, GDP Growth rate, Political instability, FDI and population growth was collected from the World Bank data.

3.5. Data Analysis approach

The process of establishing order, structure, and meaning within a large quantity of previously collected data is referred to as data analysis. It is a process that is chaotic, unclear, time-consuming, creative, and fascinating all at the same time. It does not progress in a linear fashion, nor is it neat in any way. According to Marshall and Rossman (1990), qualitative data analysis is the process of looking for general statements that can be made about relationships between different categories of data.

The STATA software was used to perform the analysis on all of the data and estimation tests such as Unit root test, Kao cointegration, regression and lag selection.

4. Research findings

This chapter delves into various findings and results derived from diverse analyses conducted on our data sets in order to address our research objectives within the study of the role of political instability in the relationship of inflation and unemployment trade-offs, as well as to re-examine the stability of the Philips curve in Sub-Saharan Africa.

4.1. Descriptive Statistics

Descriptive statistics are brief informational coefficients that summarize a given data set, which can be either a representation of the entire population or a sample of a population. Descriptive statistics are broken down into measures of central tendency and measures of variability (spread). Measures of central tendency include the mean, while measures of variability include standard deviation, minimum and maximum variables (Adam Hayes, 2023). Descriptive statistics presents descriptive statistics for variables used in the estimation. This study considered 6 variables (inflation as dependent variable and unemployment, GDP, FDI, Political instability and population growth as independent variables) of which each variable has 1480 observations.

Table 1: Results of Descriptive statistics

Variables	Inflation	Unemployment	Population growth	Political instability	Foreign Direct investment	Gross Domestic Product
Mean	1.839078	541.0554	2.524757	2.855405	17.39556	1.379165
Maximum	2.88489	1092	2.855528	5	19.79722	1.741046
Minimum	1.180169	2	1.966762	1	11.34001	0.292615
Std. Deviation	0.4211843	307.2817	0.1934188	1.05272	1.657861	0.2658637
Observations	1480	1480	1480	1480	1480	1480

Stratford Peer Reviewed Journals and Book Publishing
Journal of Economics
Volume 8||Issue 1||Page 1-15 ||January||2024|
Email: info@stratfordjournals.org ISSN: 2617-5800

The above mentioned table reveals that inflation in Sub-Saharan Africa for the period between 1986 and 2022 had a mean of 1.839078 from minimum of 1.180169 to a maximum of 2.88489 within a standard deviation of 0.4211843. Unemployment in Sub-Saharan Africa in the same period had mean of 541.0554 from minimum of 2 to maximum of 1092 and within a standard deviation 307.2817. Population growth (Popgr) had mean of 2.524757 from minimum of 1.966762 to maximum of 2.855528 within standard of deviation of 0.1934188. Political instability (PTS) had a mean of 2.855405 from a minimum of 1 to the maximum of 5 within standard deviation of 1.05272. Foreign Direct Investment (FDI) had mean of 17.39556 from minimum of 11.34001 to the maximum of 19.79722 within the Standard deviation of 1.657861. Gross domestic product (GDP) had mean of 1.379165 from minimum of 0.292615 to the maximum of 1.741046 within the Standard deviation of 0.2658637.

The results revealed a significant difference between the maximum and minimum levels of unemployment and other variables (inflation, growth domestic product, foreign direct investment, political instability and population growth). This explain how unemployment have a big influence on inflation and as stated by Erni and Metasari (2020) there is no relationship between unemployment and inflation. Throughout history, there has been a consistent inverse correlation between inflation and unemployment. This implies that an increase in inflation is associated with a decrease in unemployment. Conversely, an increase in unemployment leads to a decrease in inflation. When there is a higher labor force participation rate, individuals possess greater purchasing power, resulting in a subsequent rise in aggregate demand.

The mean values which are the central tendency of the data or the point around which the data is distributed are positive and lower order of magnitude in political instability, inflation, inflation, population growth and GDP. It is however considerably larger and positive in Unemployment. In a similar fashion, the standard deviation which is the computation of the average between each point and mean is big in unemployment compared to political instability, inflation, growth domestic product, foreign direct investment and population growth due to their different magnitude order. This highlights substantial variation in these variables overtime. The standard deviation in inflation, population growth and gross domestic product is relatively lower because the variable values tend to be in the same range. No trade-off between inflation and unemployment in long run (Friedman and Phelps) in long run the real variables such as employment, potential output and real wages remain unaffected by inflation.

4.2 Panel Unit Root Tests

The Unit root test has been used to test the stationarity of our variables in the model. If the variables are non-stationary, the standard assumptions for asymptotic analysis will not be valid and the usual "t-ratios" will not follow a t-distribution and therefore we cannot validly undertake the hypothesis test statistic about the regression parameters.

Table 2 : Panel unit root summary results

Variables				**Pesaran's CADF test**	
	T-bar	**level**	**T-bar**	**At first difference**	Decision Rule
Nlninfltn	1.700	1.000 1(0)	-4.732	0.000	Stationary
Logemploy	-2.332	0.523 1(0)	-4.002	0.000	Stationary
Nlngdp	1.700	1.000 1(0)	-4.566	0.000	Stationary
logfdi	1.700	1.000 1(0)	-4.037	0.000	Stationary
Pts	-2.431	0.257 1(0)	-3.940	0.000	Stationary
Popgr	-1.921	0.999 1(0)	-2.776	0.001	Stationary

Stratford Peer Reviewed Journals and Book Publishing
Journal of Economics
Volume 8||Issue 1||Page 1-15 ||January||2024|
Email: info@stratfordjournals.org ISSN: 2617-5800

As indicated in the above table (2), by using Pesaran's CADF test, the null hypothesis of unit root is not rejected for all variables (Inflation, Unemployment, Gross Domestic Product, Foreign Direct investment, political instability and population growth) at first difference which means that all probabilities are less than 0.05. Hence all variables are stationary at first difference. The model will be able to faithfully reflect the underlying patterns in the data of all mentioned variables if it is stationary, and the findings will not be erroneous

4.3. Lag Selection Criteria

Many selection order statistics have been developed to assist researchers in fitting a VAR of the correct order. Several of these selection-order statistics appear in the VAR output. The Pvarsoc command computes these statistics over a range of lags p while maintaining a common sample and option selection. PVarsoc can be used as pre estimation or a post estimation command. When it is used as a pre estimation command, a depvarlist is required, and the default maximum lag is 3. when it is used as a post estimation command, Pvarsoc uses the model specification stored in estname or the previously fitted model. For a given lag p, the LR test compares a VAR with p lags with one with p-1lags.the null hypothesis is that all the coefficients on the pth lags of the endogenous variables are zero.

Table 3: Lag selection criteria result

Lag	CD	J	J-Pvalue	MBIC	MAIC	MQIC
1	0.8865417	1195.858	3.3e-203	678.5099	1051.858	911.8827
2	0.9897596	494.4408	6.25e-82	235.7668	422.4408	352.4532
3	09880191	.	.	.	.	.

As indicated in table 3 the Matching Adjusted Indirect Comparison (MAIC) was used to choose the appropriate lag length to include in the lag 3 was highlighted by the criteria

4.4. Kao Cointegration Test for long relationship

Several tests have been proposed for panel cointegration like Pedroni (1999; 2004), Kao (1999) and a Fisher-type test using an underlying Johansen methodology (Maddala and Wu, 1999). The Fisher test is a simply the combined Johansen test (as for the time series). The Pedroni and Kao tests are based on Engle-Granger (1987) two-step (residual-based) cointegration tests. Pedroni proposes several tests for cointegration that allow for heterogeneous intercepts and trend coefficients across cross-sections.

The stationarity test confirmed that the variables are integrated of different orders where by some are I(1) while others are 1(0). Therefore, performing a cointegration to establish whether the long-run relationship exists or not. The Kao Test for cointegration was performed to see if there is exist along-run relationship among the dependent variables and independent variables.

HO: No cointegration equation
H1: HO is not true
Conclusion: Reject the null hypothesis (HO) if the t-statistics is greater than value (5%,)

Table 4: Result of Kao cointegration test

TESTS	Statistics	P-Value
MODIFIED DICKEY FULLER T	-2.8917	0.0019
DICKEY- FULLER T	-4.4366	0.0000
AUGMENTED DICKEY-FULLER T	-0.5749	0.2827
UNADJUSTED MODIFIED DICKEY-FULLER T	-20.9758	0.0000
UNADJUSTED DICKEY- FULLER T	-12.0632	0.0000

The results from the Table 4, shows that the null hypothesis state that there is no cointegration and the alternative hypothesis, that the panels are cointegrated. As the p-value of the modified Dickey-Fuller t is 0.0000 and it is less than 0.05, the null hypothesis is rejected therefore we conclude that the panels are cointegrated. The results of the Kao cointegration test confirm the existence of a level relationship among the variables since the t-statistics is above the value of significance level suggesting the rejection of the null hypothesis of no level relationship. The result illustrates that the value of t-statistic of Modified Dickey-Fuller in absolute value of 2.8917 is larger than the critical value at 5% level of significance which confirms the presence of a long-run relationship between the dependent variable (Inflation) and independent variables (Unemployment rate, GDP, Foreign Direct investment, Political instability and Population growth).

4.5 (Dynamic) Common Correlated Effects Estimator-Mean Group

Table 5: (Dynamic) Common Correlated Effects Mean Group estimation results

L.nininfltn	Coef.	Std.err	z	p>/z/	(95%conf. Interval)	
Mean Group						
L. Unemployment	-0.0010505	0.000392	-2.68	0.007	-0.0018188	-0.0002823
D.pts	-0.0459819	0.0194622	-2.36	0.018	-0.0841271	-0.0078366
L. popgr	0.0128784	0.088855	0.14	0.885	-0.1612742	0.181031
LD.logfdi	-0.0030492	0.0055315	-0.55	0.581	0.0138908	0.0077924
D.lngdp	0.0260469	0.0155594	1.67	0.094	-0.004449	0.0565428
Const	2.561156	0.3952789	6.48	0.0000	1.786424	3.335888

According to the appendix (8) The regression model show that there is relationship between variables either positive or negative. According to Meixi (2023) inflation and per capita real GDP are moving in opposite ways. The study conducted by Afolabi and Abu (2016) revealed a unidirectional association between political instability and both foreign direct investment (FDI) and gross domestic product (GDP). The findings derived from the regression analysis indicate that various independent variables, namely unemployment, political instability, and foreign direct investment, exhibit a detrimental influence on inflation which means that when unemployment increases by 1% inflation reduces by 0.0010505, when political instability increases by 1% inflation reduces by 0.0459819 and when foreign direct investment increases by 1% inflation reduces by 0.030492. Teh and Dayang (2020) conducted a study which demonstrated that the inflation rate has a detrimental impact on foreign direct investment over an extended period of time. Foreign direct investment (FDI) plays a significant role in fostering a nation's economic growth. Consequently, it is imperative for governments to adopt supply-side policies aimed at mitigating inflationary pressures. By doing so, they can effectively enhance FDI inflows.

In his article titled "Population Growth and Inflation," Adam Ozimek presents findings that indicate a correlation between decelerating population growth and the persistence of low inflation rates in certain regions. In contrast, the regression analysis yielded findings indicating a positive relationship between population growth and gross economic growth with inflation.

A trade-off exists between inflation and unemployment, whereby an increase in unemployment results in a decrease in inflation over an extended period of time. The existence of a tradeoff

Phillips curve in Nigeria has been observed, and this relationship demonstrates stability over the long-term. According to the research conducted by Nurudeen (2019), the present study proposes a set of policy recommendations aimed at mitigating the issues of inflation and unemployment in Nigeria.

According to Nurudeen (2019), there is a trade-off between inflation and unemployment, and higher unemployment leads to lower inflation in the long-run. The tradeoff Phillips curve exists in Nigeria, and the relationship is stable over the long-run. According to Ari Aisen and Francisco José Veig) a higher degree of political instability is associated with higher inflation. In general, Researchers found that there was a strong and positive relationship between lack of jobs among youth and political unrest (Kramo, 2020)

A study was done in the Eurozone to look at the relationship between the growth rate, or GDP growth, and the inflation rate. The study that was done showed that inflation helps the economy grow in the euro area. (Nexhat & Esat, 2019)

From the CBSL Annual Report. Variables have long-term relationships. Inflation and FDI are inversely related. FDI causes INF. Forecasts cover 2009–2017. The regression model indicated that FDI has a significant effect on inflation. The simple regression model cannot forecast inflation (A. M. M. Mustafa, 2019).

Population growth and inflation increase unemployment in the long and short term, but foreign direct investment decreases. Inflation and unemployment have no Philips curve. (Uwiringiyimana & Gakuru, 2020). There is suggestive evidence that the relationship between population growth and inflation is nonlinear, with population declines having a stronger effect than population growth.

Throughout history, there has been a consistent inverse correlation between inflation and unemployment. This implies that there exists an inverse relationship between inflation and unemployment, such that an increase in inflation is associated with a decrease in unemployment. Conversely, increased levels of unemployment are associated with decreased levels of inflation. When there is a larger labor force, individuals possess greater purchasing power, resulting in a subsequent rise in aggregate demand.

Over the course of time, the expansion of Gross Domestic Product (GDP) leads to the occurrence of inflation. If inflation is not effectively controlled, there is a possibility that it may escalate into hyperinflation. Once this procedural mechanism is established, it has the potential to rapidly evolve into a self-perpetuating cycle of feedback.

The long-term and short-term relationship between foreign direct investment (FDI) and inflation can be characterized as either symmetric or asymmetric.

There is a notable correlation between the instability of the political regime dimension and inflation volatility, with the former having a significant positive effect on the latter. Conversely, the dimension of government instability exhibits a significant negative impact on inflation volatility. There exists compelling evidence indicating a non-linear association between population growth and inflation, wherein population declines exert a more pronounced impact compared to population growth.

5. Conclusion

The main objective of this research was to conduct an empirical study on the role of political instability nexus Inflation & Unemployment Tradeoff: Reexamination of Philip Curve and its Stability in Sub-Saharan Africa. Concluding, this thesis emphasized on the role of political instability on inflation nexus unemployment trade off: Re-examination of Philips curve in Sub-

Saharan Africa. To solve questions related to the research, it has used different methodologies to ensure the accuracy and reliability of the findings. The main findings that have been found are in line with the questions that have been asked, moreover, this research as also set a bridge and pointed out gaps that can be addressed in future researches to follow this thesis or other authors who may be interested in analysing the relationship between inflation nexus unemployment and political instability.

6. Recommendations

The researcher recommends the following recommendations:

Policy makers in Sub-Saharan Africa should prioritize the development of policies aimed at effectively addressing inflation and unemployment, while also striving to stabilize the Philips curve. Additionally, Sub-Saharan Africa should implement economic policies that can enhance the likelihood of economic growth within the region's population. To achieve this, it is crucial for SUB-SAHARAN Africa to adopt fiscal and monetary policies that effectively mitigate high levels of political instability, as well as establish mechanisms that can effectively slow down population growth rates. Furthermore, the implementation of policies that promote foreign direct investment should be pursued, which may involve reducing taxes and barriers, while simultaneously fostering a favourable business environment.

Acknowledgment

I would like to thank my supervisor Dr. AFOLABI Luqman for his noble guidance, support with full encouragement and enthusiasm to undertake this thesis.

References

Abu, N. (2019). *Inflation and Unemployment Trade-off: A Re-examination of the Phillips Curve and its Stability in Nigeria*.

Asenahabi, B. M. (2019). *Basics of Research Design: A Guide to selecting appropriate research design*.

Bandura, W. N. (2020). *Inflation and Finance-Growth Nexus in Sub-Saharan Africa*.

Deleidi, E. C. (2021). *The trade-off between inflation and unemployment in an 'MMT world': an open-economy perspective*.

Demeke, Y. H. (2022). *Youth unemployment and political instability: evidence from IGAD member countries*.

Tawheed N.i and Haroon A. (2019). *Inflation and Fiscal Deficit In Sub-Saharan Africa*.

Duncan Omenda Hongo, Fanglin Li1 and Max William Sub-Saharan Africali. (2019). *Trade-Off Phillips Curve, Inflation and Economic Implication: The Kenyan Case*.

Emerentienne B. Aye S., Jacques H. (2021). *Effects of Political Instability on Economic Growth in the Republic of Congo.*

Geerolf, F. (2020). *The Phillips Curve: a Relation between Real Exchange Rate Growth and Unemployment*.

Germain, K. K. (2020). *Youth Unemployment and Political Instability in Côte D'ivoire*.

Ho, S.-Y. (2018). *Unemployment And Inflation: Evidence Of A Nonlinear Phillips Curve In TheEurozone The Journal of Developing Areas · May 2018.*

Khan, S. U. (2008). *Political Instability and Inflation in Pakistan*.

Kristin J. & Forbes, J. E. (2020). *20-6 Low Inflation Bends the Phillips Curve around the World 1750 MaSub-Saharan Africachusetts Avenue, NW | Washington, DC 20036-1903 USA | +1.202.328.9000 | www.piie.com*.

Le Thanh Tung, P. T. (2022). *The Relationship Between Unemployment and Inflation in Vietnam: Does the Phillips Curve Exist? Contemporary Economic Issues in Asian Countries: Proceeding of CEIAC 2022, Volume 1 pp 357–368*.

Umur M. & Tosun, M. C. (2008). *The Political Instability, Investment Profile and the Macroeconomic Performance of the Middle East & North Africa (MENA) Region*.

Moyer, J. B. and Jonathan D. (2018). *Structural pressures and political instability Trajectories for Sub-Saharan Africa*.

Mustafa, A. M. M. (2019). *The Relationship between Foreign Direct Investment and Inflation:Econometric Analysis and Forecasts in the Case of Sri Lanka*.

Nexhat K. & Esat D. (2019). *The impact of inflation on economic growth: The case of Eurozone Kryeziu and Durguti / International Journal of Finance & Banking Studies, Vol 8 No 1, 2019 ISSN: 2147-4486*.

Opeyemi, A. F. (2020). *Impact of foreign direct investment and inflation on economic growth of five randomly selected Countries in Africa*.

Sim, D. R. (2021). *Who Killed the Phillips Curve? A Murder Mystery, Vol. 18 No. 3, 2019*(A Murder Mystery∗), 366-380.

Teh Yi H. and Dayang H. A. A. (2020). *The Impact of Inflation Towards Foreign Direct Investment in*.

Uwiringiyimana F. and Gakuru E. (2020). *Impact of Foreign Direct Investment, Population,Growth & Inflation on Unemployment in Rwanda (1985-2018)*.