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Determinants of Inflation in Sub-Saharan Africa: A Systematic Review

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Abstract

Macroeconomic stability is the central aim of policymakers of most nations. Inflation is considered a crucial element of Macroeconomic stability. Empirical evidences confirmed the long-run effect of some macroeconomic variables on inflation. The major objective of the study was to investigate the main determinants of inflation in sub-Saharan African countries. The study used a systematic review technique. The relevance of the topic and geographical area were considered to include previous studies for review purpose. In-depth literature review has been done on 11 studies undertaken in 9 sub-Saharan African countries. Accordingly, among the eight variables used for analysis, GDP, Broad money supply, Real exchange rate, and interest rate are the main source of inflation. Import prices, Inflation expectations, public expenditure, and oil prices are found to determine inflation slightly. Accordingly as most of Sub-Saharan countries are on the path of development high considerations should be given for inflationary effect of GDP. Money supply also should get special attention by central banks as it is found to be the second most inflationary factor among other variables. The effects of Real exchange rate and interest rate on inflation also need the attention of policy makers in order to preserve macroeconomic stability.

Keywords: *Determinant, Inflation, Sub-Saharan Africa*

1. INTRODUCTION

Macroeconomic stability is the central goal of policymakers of most nations. It promotes investment of all types, from conventional physical-capital investment to research and development (Romer, 2012). Inflation is one of the basic indicators of macroeconomic stability. The term inflation has been defined in different ways. But as commonly used, it refers to a sustained increase in the general price level of goods and services in an economy over a period of time. Moreover, it is not a change in a specific price; rather it is an increase in the average level of prices (Barro, 1997).

When measured regarding an average price rise, all forms of inflation have no equal level of severity. They are commonly classified into three. As: low inflation, galloping inflation, and hyperinflation. Low inflation is a slow and predictable rise in inflation that characterizes low inflation. It can be defined as single-digit annual inflation. Most countries have experienced low inflation since 2000. However, Galloping inflation is in the double-digit or triple-digit range of 20, 100, or 200 percent per year (Samualson and Nordhas, 2012). Lastly, hyperinflation is the most severe level of inflation. In 2008 the inflation rate in Zimbabwe was 24,000 percent (Mankiw N. G., 2010). Extraordinary inflation such as this is called hyperinflation.

Theoretically, the determinants of inflation can be categorized into two broad parts: demand-pull and cost-push inflation. Or some time inflation may arise due to both demand-pull and cost-push factors. Demand pool inflation is when aggregate demand rises more than the economy's productive potential and cost-push inflation is when a rise in production costs of a given commodity leads to a rise in the price of that commodity.

Inflation redistributes income from wage earners and fixed income groups to profit recipients and from creditors to debtors. This in turn increases the number of poor hence resulting in more inequality (Jhingan, 1997). High inflation would also increase uncertainty about future inflation. Increased uncertainty could be harmful to the economy since it could discourage economic activities.

Inflation also results in a reduction in exports. This is because a rise in domestic input prices makes the price of domestically produced products expensive in the international market (Abeba, 2014). Most African countries are facing the problem of rising inflation (AFDB, 2012). COVID-19 has its own inflationary pressure on the African economy. Ibrahim (2020) reported as Africa imports 90% of pharmaceuticals from outside the continent, the rise in the demand for pharmaceuticals in the world market causes supply-side shortage on food and pharmaceuticals, in turn causing inflationary pressure on the African economy.

Theory and shreds of evidence suggest that managing inflation is a key factor to attain a healthy economy. Understanding the determinants of inflation is essential for effective control of inflation. So far, various studies were conducted to identify the determinants of Inflation. The objective of this systematic review is to identify the major factors that determine inflation in Africa.

2. METHODOLOGY

The method of systematic review was used, to get the full picture of the determinants of inflation in Africa. Random sampling was used to assure the representatives of the sample. The relevance of the topic, variables included and geographical area of studies is the criteria for sample selection. The geographical area is the first criterion and after checking this, the studies were selected based on the relevance of the topic. On the variable side studies has been selected based on the theoretical and empirical relevance of the variables they include. And for propose of comparison almost each study reviewed uses each of the variables studied. Studies conducted in eleven, African countries have been used to collect the dependent and the majority of them are also the determinants of inflation in the short run. The study used a descriptive statistical tool (percentage), to differentiate the most influential variables.

Table 1: Studies selected for review; by relevance of the topic, Variable and geographical area

No	Author/s	Country	Title
1	Kibrom (2008)	Ethiopia	The Sources of The Recent Inflationary Experience In Ethiopia
2	Tsegay (2014)	Ethiopia	Determinants of Recent Inflation (Case Study In Ethiopia)
3	Sisay (2008)	Ethiopia	Determinants of recent inflation in Ethiopia
4	Gyebi & Boafo (2013)	Ghana	Macroeconomic Determinants of Inflation In Ghana From 1990 ï 2009
5	Kirimi (2014)	Kenya	The Determinants Of Inflation In Kenya (1970 ï 2013)
6	Ayinde et al (2010)	Nigeria	Determinants Of Inflation In Nigeria: A Co Integration Approach (Mansaray-Pearce Emmanuel Alpha, 2015)
7	Mansaray & liu (2015)	Sierra Leone	The Determinants of Inflation in Sierra Leone: A Co-integration Analysis
8	Oatlhotse & Nicholas (2018)	South Africa	The Main Determinants of Inflation in South Africa: an Empirical Investigation
9	Almahdi & Faroug (2020)	Sudan	Modeling The Determinants of Inflation In Sudan
10	Samuel A. & Ussif R. (2001)	Tanzania	Determinants of inflation in Tanzania
11	Mally (2007)	Namibia	An Econometrics Analysis of The Determinants of Inflation In Namibia

Source: Reviewed literatures (2020)

3. RESULTS AND DISCUSSIONS

3.1. Description of Reviewed Literatures

Under this topic, some general characteristics of works of literature concerning the country, the nature of data, periods under a study, and models for analysis are presented.

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Table 2: Characteristics of Reviewed Studies

S.N	Author/s	country	Nature of Data	Time	Models
1	Kibrom (2008)	Ethiopia	Time series	1994-2008	VAR-ECM
E	Tsegay (2014)	Ethiopia	Time series	2001-2011	VAR
3	Sisay (2008)	Ethiopia	Time series	1997-2008	OLS-ECM
4	Gyebi & Boafo (2013)	Ghana	Time series	1990 ï 2009	OLS-ECM
5	Kirimi (2014)	Kenya	Time series	1970 ï 2013	OLS Co-integration-ECM
6	Ayinde et al (2010)	Nigeria	Time series	1970-2006	Co-Integration-ECM
7	Mansaray & Liu (2015)	Sierra Leone	Time series	1990-2013	Co-Integration-ECM
8	Oatlhotse & Nicholas (2018)	South Africa	Time series	1970-2015	Co-Integration-ECM
9	Almahdi & Faroug (2020)	Sudan	Time series	2000-2017	GMM
10	Samuel A. & Ussif R. (2001)	Tanzania	Time series	1992-1998	OLS-ECM
11	Mally (2007)	Namibia	Time series	1993-2003	E.G-Co-integration

Source: Reviewed literatures (2020)

As it can be seen in the table above all the studies are conducted in Sub-Saharan Africa between the years 1970 to 2017. Out of the total studies, 8 (66%) of them are conducted in the second decade of the 21st century. Therefore, they provide us the recent phenomena of determinants of inflation in Sub-Saharan Africa. All the studies used time-series data for their analysis and applied appropriate econometric models.

3.2. Determinants of Inflation

Different factors are expected to affect inflation, especially in the long run. In this study, however, eight influential variables are selected from literatures as of the following table. The sign √ shows that the variables have been found significant in the long run from the reviewed literatures.

Table 3: Long run determinants of inflation

S.N	Author/s	Independent variables (all are significant)							
		RGDP	G	M2	OP	IMP	ERR	R	P^e
1	Kibrom (2008)	√		√				√	√
2	Tsegay (2014)	√		√			√	√	
3	Sisay (2008)	√		√				√	√
4	Gyebi & Boafo (2013)	√		√			√	√	
5	Kirimi (2014)	√		√			√	√	
6	Ayinde et al (2010)				√	√	√	√	
7	Mansaray & Liu (2015)	√		√		√	√	√	
8	Oatlhotse & Nicholas (2018)	√	√			√	√		√
9	Almahdi & Faroug (2020)	√	√	√			√		
10	Samuel A. & Ussif R. (2001)	√		√		√	√		
11	Mally (2007)	√		√				√	
Summary		10/11	2/11	9/11	1/11	5/11	8/11	8/11	3/11
G-public Expenditure ; M2- Broad Money supply; OP-oil prices; IMP-price of Imports; ERR-Real Exchange rate; OD- overall budget Deficit; R- interest rate; P^e = Price expectations									

Source: Reviewed literatures (2020)

According to Table 3, the main factors affecting inflation are real GDP (90.9%), Broad money supply (81.8%), Real exchange rate (72.7%) and interest rate (72.7). They are found significant in the majority of the studies. The others variables: import price (45%), Inflation expectations (27.27%), public expenditure (18.2%) and oil price (9%) are also slightly important in explaining inflation.

GDP is one of the most important variables that determine inflation. As of Mally (2007), Samuel A. & Ussif R. (2001), Sisay (2008), Oatlhotse & Nicholas (2018), Almahdi & Faroug (2020) and Kirimi (2014) an increase in real output contributes to reduce inflation. The implication is Governments can reduce inflation by increasing production. Contrary to this findings by Gyebi & Boafo (2013), Kibrom (2008), Tsegay (2014) and Mansaray & Liu confirmed that in increase in real output causes inflationary pressure. The justification is an increase in the expenditure pattern in general and of government in particular, on non-productive items will cause the general price level to move upwards. In the other way as income rises, demand for commodities rises, for a given supply of commodity, deriving food price up.

Quantity theorists say that inflation is always and everywhere a monetary phenomenon. Broad money supply, according to literatures influences inflation positively. Studies conducted by Samuel & Ussif R. (2001), Gyebi & Boafo (2013), Tsegay (2014), Kirimi (2014), Mansaray & Liu, Kibrom (2008), Almahdi & Faroug (2020) and Sisay (2008) confirmed increase in broad money supply aggravates inflation in the long run. Accordingly policy makerôs interest in reducing inflation should pursue contractionary monetary policy.

Real exchange rate according to Samuel A. & Ussif R. (2001), Tsegay (2014), Ayinde et al (2010) and Kirimi (2014) has a positive effect on inflation. This is due to the fact that exchange rate increase is expected to make imported goods dearer and result in inflationary trend. Contrary to these findings, Gyebi & Boafo (2013), Oatlhotse & Nicholas (2018), Almahdi & Faroug (2020) and Mansaray & Liu confirmed that Real exchange rate variable (E) is negatively related to inflation. That means exchange rate depreciation reduces the level of inflation.

Interest rate (lending interest rate) is found to have a positive impact on inflation (Sisay, 2008; Tsegay,2014; Kibrom,2008; Kirimi,2014). That means an increase in interest rate causes inflation. Interest rates impact prices through two routes: demand for real money balances and cost of production, both of which inducing upward pressure on prices. Contrary to this evidences by Ayinde et al (2010) and Mansaray & Liu shows that interest rate has negative effect on inflation.

4. CONCLUSION

The objective of the study was to identify the main determinants of in inflation in sub Saharan countries by a systematic review of original researches in the area. Although there is some difference in independent variable selection, depending on country context, there are variables that intersect most studies due to theoretical background. Accordingly eight theoretically justifiable variables had been selected.

The review confirmed that Gross domestic product, money supply, exchange rate and interest rate are found to have a contribution in determining inflation in the long run in most of the reviewed findings.

Accordingly policy makers of Sub-Saharan countries should give high considerations to inflationary effects of GDP, Money supply, Real exchange rate and interest rate in order to preserve macroeconomic stability.

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