Dynamics of Inflation in developing economies: A quest for conceptual-framework.

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ABSTRACT: The paper is aimed at making conceptual analysis of the dynamics of inflation, for the purpose of providing vital information on contemporary knowledge and understanding of the patterns and nature of effects of some variables on inflation in developing economies and countries of Commonwealth West Africa. Existing literatures on inflation and its dynamics were used as source of data for this study. Methodology used in this research was relied heavily on existing literatures (previous studies) on the subject. The paper indicated that various previous studies used a number of (but limited) econometrics models which limits the scope of the analysis of the various write ups.A number of studies reported positive significant relationships or influences by money supply, exchange rate, GDP (as a measure of economic growth), interest rate and fiscal deficit on inflation rate. The paper concluded that not all variables are in the same manner of significance and essential in explaining the dynamics of inflation in various locations. Lastly, the paper recommended some important areas to be considered and covered by the future studies on dynamics of inflation in developing economies.

I. INTRODUCTION

Pursuance of sustainable price stability has become one of the perpetual aims of many nations. Sustainable price stability attempts to provide and promote long term sustainable economic growth and development. High rates of increases of prices have been considered harmful to (especially, developing) economies (Sek, Teo& Wong, 2015).

The principal point of discussion and argument to analyst and policymakers prevail to be inflation especially in developing economies (Mordi, *et al.*, 2007). The consequences of high inflation rates can adversely influence the national macroeconomic setup with a possibility of obstructing the economy from the trail of sustainable growth and development. They also stressed that the importance of deep comprehension and understanding of dynamic of inflation to developing countries and economies (like Nigeria in particular and the rest of African countries in general) that depict a notable or remarkable structural disparities and uncertainties for making efficient policies that will adjust the determinants of the concerned factor or variable on the right and the needed way.

Luenberger (1979) maintained that "the term dynamics refers to the phenomena that produce time-changing patterns, the characteristics of the pattern at one time being interrelated with those at other times." Persistent changes in a series of a variable that shows no repetition (having no the same value) in two or more consecutive periods could be termed as dynamics. West African Commonwealth Countries (WACC) have been experiencing rates of inflation that are considered high and adverse to their respective economies by many scholars. It was generally, recommended that developing economies should make and retain their rates of inflation (measures by Consumer Price Index – CPI) single digit (below ten percent) for the purpose of recording meaningful progress in the quest for developing their respective economies (Risso&Sanchez-Carrera, 2009; Phiri, 2012 and Babalola, Danladi, Akomolafe&Ajiboye, 2015). The rate of inflation in WACC has been constantly changing annually to the extent that no recurrence of the same rate in two periods consecutively. Figure 1 and 2 show various inflation rates of WACC for a period of forty five years (1970 – 2014).

Figure 1 shows the rates of inflation for Nigeria and Gambia from 1970 – 2014 a period of four and a half decades. In the first decade (1970 -1979), two years of single digit inflation rate were recorded in Nigeria while in the second and third decades (1980 – 1989 & 1990 - 1999), four years of single digit inflation rate were recorded in each decade. Three years of single digit inflation rate were recorded in the fourth decade (2000 – 2009) and lastly, two periods of single digit inflation rate were recorded in 2010 – 2014. The average rate of inflation from 1970 – 2014 is above 18 percent. The situation is better in Gambia, it recorded single digit inflation rate for over 70 percent of the period but the average is a little bit high above nine percent though it is still single digit.
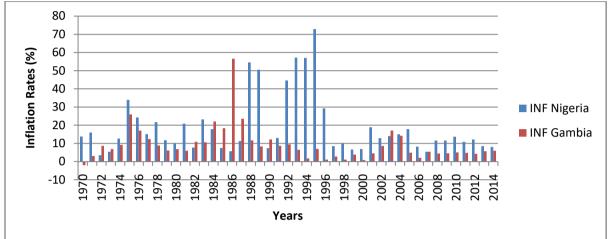

Figure 1: Inflation rates Nigeria and Gambia 1970 – 2014

Figure 2 shows the rates of inflation for Ghana and Sierra Leone from 1970 – 2014. For the period of forty five years, Ghana recorded only four years of single digit inflation rate with an average of over 30 percent. Sierra Leone on the other hand recorded four periods of deflation, nine years of single digit inflation rate and the rest of the periods are of high inflation rates. The country has an average of over 28 percent rate of inflation.
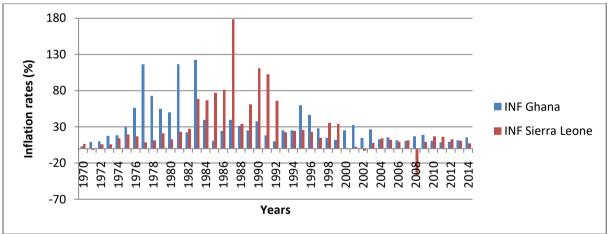

Figure 2: Inflation Rates Ghana and Sierra Leone

The inability of the WACC to make and maintain the rate of inflation single digit motivates this study. Frequent expansion and increase in money supply, excessive dependence on imported commodities, high interest rate, nature of their economic growth and increasing fiscal deficit could be the major reasons behind the high rates of inflation of WACC. The paper is aimed at making a conceptual analysis of the dynamics of inflation on the basis of the findings of the previous studies, for the purpose of providing vital information on contemporary knowledge and understanding of the patterns and nature of effects of some variables on inflation in developing economies especially, WACC. And, it's also aimed at proposing a conceptual framework base on structural rigidity theory of inflation that will be suitable for analyzing inflation rate dynamics in developing economies of WACC. The rest of the write ups are as follows; next section provides literature review, section three proposes the conceptual framework and section four concludes the paper.

II.   LITERATURE REVIEW

Several theories and models have emerged to explain causes of inflation and to show the nature of relationship between some set of variables and inflation. Depending on the theoretical arguments and some setup of predetermined conditions, reviews of some literatures are conducted and later a theory will be sourced to support the findings of the research.

An analysis of the dynamics of inflation and inflation's determinants have been the center of attention of previous studies using various econometric tools of analysis which is being determined by the nature and scope of the study. Money supply increments have been considered to be source of inflation by many theories and it is empirically proven by some studies. For instance, Mawajje and Lwanga (2016), Cheng and Tan (2002) and Asongu (2013) used Vecto Error Correction Model (VECM) to empirically, prove the existence of positive influence on inflation by money supply.Darrat (1985) used log linear model (on Vector Autoregressive – VAR), Shamsul-Alam and Kamath (1986) used Ordinary Least Square (OLS) to vindicate positive influence on money supply on inflation rate. On the other hand, Pool Mean Group (PMG) was used by Nguyen (2014), while Bawa, Abdullahi and Ibrahim (2016) used Autoregressive Distributed Lag Model (ARDL) and Adu and Marbuah (2011) used ARDL, Dynamic OLS (DOLS) and Fully-Modified OLS (FMOLS) to empirically prove that money supply influences inflation rate positively in their studies.

Most theories believed that currency devaluation (increase in exchange rate) discourages imports and encourages exports and hence motivate more productions of commodities internally as well as suppresses inflation. Contrary to that, some empirical studies discovered existence of positive influence on inflation rate by exchange rate. Among them include: Cheng and Tan (2002) using VECM, Impulse Response Function (IRF) and Variance Decomposition (VD), Mawajje and Lwanga (2016) used VECM, Darrat (1985) used log linear model on VAR and Karagoz, Demirel and Bozdag (2015) used panel VAR and IRF, all discovered positive influence of exchange rate on inflation rate.

Furthermore, majority of inflation theories postulated that economic growth comes with many advantages which include reduction of prices and increases in profitability due to economies of scale in production process. This implies that economic growth inversely influences inflation. This has been disputed by some empirical studies (using GDP as a proxy of economic growth). Among them include: Aliyu and Englama (2009) that used VAR and IRF and stated that the response of inflation rate to output growth is positive. Omoto (2008) and Bashir *et al*. (2011) both studies used VECM to show the existence of positive influence of GDP on inflation rates.

Even though, the arguments of monetary policy promoters (monetarists) indicated the existence of inverse relationship between interest rate and the rate of inflation, some empirical studies proved otherwise. Bayo (2011) using OLS discovered that interest rate influencesinflation rate positively. While Adu and Marbuah (2011) obtained the same results using ARDL, FMOLS and DOLS. Positive influence of interest rate on inflation rate was also discovered by Jalil, Tariq and Bibi (2013) using ARDL and Nguyen (2014) using both PMG and Generalized Method of Moment (GMM). This might not be unconnected to the arguments of fiscal policy supporters that presumed the existence of positive influence of interest rate on inflation.

Nevertheless, some empirical studies used some econometric techniques to prove the existence of positive influence of fiscal deficit on inflation. Among them include: Aliyu and Englama (2009) used VAR, Adu and Marbuah (2011) used ARDL, FMOLS and DOLS, Jalil, Tariq and Bibi (2013) used ARDL, Ishaq and Mohsin (2015) used GMM and Nguyen (2014) used GMM and PMG (long run).

It can be perceived from the review that not all the variables are unanimously important in influencing the dynamics of inflation, depending on the area or cluster of research, countries and their level of employment, level of foreign reserve, debt and fiscal deficit as well as their level of economic growth. The reviews are summarized in table 1 below;

Table 1: Summary of the reviewed literatures with positive effect of variable(s) on inflation

Authors (Year)	Econometrics Methodology	Money Supply	Exchange Rate	GDP	Fiscal Deficit	Interest rate
Mawajja and Lwanga (2016)	VECM	√	√			
Cheng and Tan (2002)	VECM, IRF, VD	√	√			
Asongu (2013)	VECM	√				
Darrat (1985)	VAR	√	√			
Shamsul-Alam&Kamath(1986)	OLS	√				
Nguyen (2014)	PMG, GMM	√			√	√
Bawa, Abdullahi and Ibrahim (2016)	ARDL	√				
Adu and Marbuah (2011)	ARDL, DOLS, FMOLS	√			√	√
Karagoz, Demirel and Bozdag (2015)	VAR, IRF		√			
Aliyu and Englama (2009)	VAR, IRF			√	√	
Omoto (2008)	VECM			√		
Bashir *et al*., (2011)	VECM			√		
Bayo (2011)	OLS					√
Jalil, Tariq and Bibi (2013)	ARDL				√	√
Ishaq and Mohsin (2015)	GMM				√	

Source: Authors' (2017).

III. CONCEPTUAL FRAMEWORK

The dynamics of inflation in developing economies can be comprehended by evaluating and understanding the summarized arguments of structural rigidity theory. The theory was developed by Latin American economists such as Seers (1962), Myrdal (1968) and Streeten (1962) based on the experiences of their economies but it was later generalized to all underdeveloped economies by Kirkpatrick and Nixon (1976) (Dwivendi, 2005). The main argument of the theory is that any economy that is attempting to grow would experience inflation as a result of existence of rigidities or constraints that have manifested themselves in developing economies. Such constraints include: inelastic supply of food or constraint in agriculture, foreign exchange constraints and constraints on government budget (Kenedy, 2011).

Figure 3 is developed to simplify the understanding the arguments of the theory with it link to some of the variables reviewed.
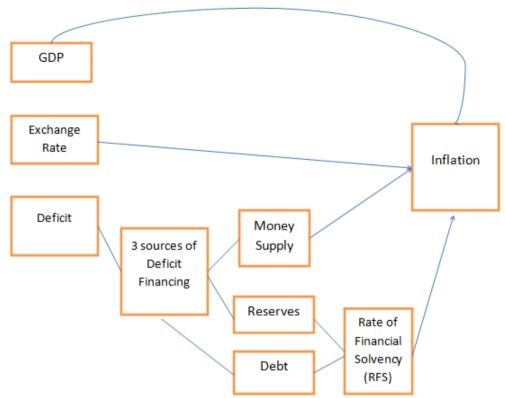
Figure 3: Conceptual Framework

From the framework developed, GDP as a measure of economic growth is hypothesized to have positive influence on inflation base on the argument of the theory; any economy that is attempting to grow will experience inflation as a result of built-in constraints in the economy (Kenedy, 2011). Though, such nature of relationship is expected to change once the economy attains certain stage of growth and overcome the constraints. The inherent constraints in the economy also made the demand for imports to be highly inelastic if not perfectly hence the theory hypothesized positive influence of exchange rate on inflation.

The effects of fiscal deficit on inflation depend on the source of deficit financing. Fischer and Easterly (1990) identified three sources of deficit financing as money supply increment (printing more money), borrowing (domestic and foreign) and withdrawing from reserve. For instant the effect of deficit that was financed by printing money (increase in money supply) will have different direct effect compared to a deficit that was financed by debt (borrowing) or reserves withdrawal (even though, money supply supposed to be determined by central bank, this creates another constraints and distortions in the economy). Domestic debt at maturity might be paid back with another borrowing or through printing of money if government has no enough revenue to finance its expenditures. To this theory, increase in money supply feeds directly into prices of goods and services in the economy.

Countries might be eligible to borrow internationally if they are financially solvent. An index was developed by World Bank that is termed as Rate of Financial Solvency (RFS) or Reserve Debt Ratio; it is being calculated through dividing total reserves by total foreign debt of a country (World Bank, 2017). It measures how many times reserves ofa country can pay its debts; which is the measure of the financial strength of a country. The effects of fiscal deficit that is being financed by foreign debt and reserves of a country can be measured through determining the effects of RFS on inflation which is hypothesized to have inverse influence on inflation as the higher the RFS the better for a country.

IV. CONCLUSION

This paper reviewed a number of related empirical studies on the dynamics of inflation and highlights that several variables influence inflation rate in a unique way that is contrary to most of contemporary theories. Though, explanationson such nature of relationship have been provided by structural rigidity theory.

The paper also shows that not all variables are uniformly important as some may be replaced with other variables in analyzing and understanding the dynamics of inflation in developing economies (as in figure 3; conceptual framework). Moreover, the nature of relationship or influence of some variables (GDP as a measure of economic growth and exchange rate) could be changed with provisions of solutions to the inbuilt rigidities or constraints that hinder the reaping of the advantages of economic of scale and that of economic growth.

Nevertheless, differences in nature of growth and development of various countries and the features of their economies resulted in an inconsistent conclusion on the nature of relationship or influence of some variables on inflation rate both empirically and theoretically.Based on this, the research suggests the need for empirical studies to be conducted on the nature of relationships and influence between some set of variables and inflation rate in developing economies of WACC using both time series and panel data. Also, empirical studies need to be conducted to ascertain the actual threshold of inflation rate that is inimical to economic growth of developing economies.

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