The Applied fiscal-monetary theory: Character of constraint and essentials to the advancement of developing economies

Tweneboah Senzu, Emmanuel

Frederic Bastiat Institute, Africa, School of Social Sciences and Law, Njala University, Sierra Leone

31 December 2020

The Applied fiscal-monetary theory: Character of constraint and essentials to the advancement of developing economies

Emmanuel TWENEBOAH SENZU
Professor of Economics & Investment
Frederic Bastiat Institute, Africa
School of Social Sciences & Law, Njala University, Sierra Leone
tsenzu@njala.edu.sl / tsenzu@fbiresearchedu.org
1st January, 2021.

ABSTRACT

The paper makes a proposition that the chaotic functioning order of the operating factors of the economy as a system only results in a constraint. And further, argue that a persistent aggregate chaotic functioning becomes a complex constraint, creating more distortion in the performance of the economy. Which the study further establishes the major causal factors that make the mainstream theoretical approach to economic growth and development within fiscal-monetary policy and its management space, fails to be effective in application towards developing and under developing economies, and recommends resolution as a method in a form of a policy framework, having within its core a job creation system to initiate full employment towards development as a focal interest of the paper.

Keywords: Monetary Policy, Fiscal Policy, Development theory, Economic growth, Constraint

Jel Classification: E51, E52, E58, E62, E63

A. Introduction

This paper is premised on the health of the modern economy for sustainable growth, geared-up towards development as established in the tenet of macroeconomics within the framework of the fiscal-monetary theory. Hence, argue that the theoretical foundation of macroeconomics, in summary, defines the elementary rationalized actions required to be taken by any government of a sovereign nation and its Central Banks at a particular geographical area, and to observe the constraint in other to secure economic growth and possibly sustain it.

The paper further argues, for any appropriate action to be taken in the public interest of an economy, the effort of the economic manager is to understand and appreciate the character of constraint existing within a geographical area to guide in the construct of appropriate policy frameworks to remedy the challenge through the market behaviour. Which was succinctly posit by Samuelson (1947), as he states, the best effort of the economic manager is to maximize the behaviour of agents such as utility by consumers and profits by firms, and further, establish the stability of equilibrium to the economic systems such as the market. Basically, the fundamental challenge faced by every economic manager is the ability to establish equilibrium to the relationship challenges of price and quantity, cost and production, consumer behaviour and business cycles of the economic market. And beyond such relationship challenge, what it has not been clearly understood and appreciated, in other to draw effective economic calculations and models that resolve market challenges, which is peculiar to a particular geographical zone, is the identification of unique character of constraints to the factor-relation, which is at play in the economy and observed to vary from one geographical point to another, and never universally

constant. As a result, affect policy framework prescriptions. Thereby, making the attempt to mechanically apply an instituted policy, known to be very friendly to advanced economies for its growth and development, sometimes becomes suicidal to developing economies in terms of market expansion and growth. And mostly causes' retrogression to the growth curve least expected. Therefore, the theoretical foundation of this paper is to establish, a carefully examined character of constraint in developing economies, which defy the theoretically expected outcome of universally principled policy applications and it known expected result at any point in time.

The character variation as in constraint in different geographical locations, which is undermined in policy application framework, for the purpose of simplicity, and assumed by most macroeconomic theorists in advanced economies as constant in all situation, in other to pave an easier means towards the acceptance of proposed economic policies, as mainstream universal principles, has significantly contributed to economic retrogression and promoted poverty in most developing economies through an exponential escalation of debt burdens difficult to be paid instead of expected projected sustainable growth. Hence, the study focuses on the observable constraint in developing and under economies and its characteristics for conceptualization, empirical testing, and modelling for policy development frameworks, as a recommendation towards fiscal-monetary management space of fragile economies and its sustainable growth. However, the paper will also admit, any kind of constraint that fall-out of the paradigm of economic study, will be presumed by the study as a constant variable within the studied economic systems.

The paper in its submission, therefore, structure its propositions under the following fiscal-monetary thematic areas as below;

[1] Standard macroeconomics constraint and endogenous money creation approach applicable to developed economies but ineffective in developing economies to sustain growth.

[2] The examination of characters of fiscal constraint in developing and underdeveloped economies, which defy the principled expectation of macroeconomic development theory.

[3] The proposition of fiscal-monetary policy framework as a recommendation to resolve the current developmental challenges associated with developing and underdeveloped countries.

The interest to understand the word construct of this paper, certain key words adopted by the study will be carefully defined as follows;

Constraint: - Is any action or behaviour of the economy that creates a limitation or restriction towards a purposive economic action for a progressive result.

Money Supply: - Is the total value of money available in an economy at any point in time

Advanced Economy: - Is a country who has attained a standard technological infrastructure along with an industrialized system, yet with the avenue for structural improvement mechanism of it economy.

B. Standard macroeconomic constraint and endogenous money creation

In any macro economy, the standard measure of the monetary stock takes into consideration, currency in circulation and demand deposits, which is mostly recorded by the Central Banks of the Individual sovereign nations for the analysts to monitor the changing effect on the price level of securities, inflation, the exchange rate and possibly the performance trend of the business cycle. In the money creation theory of the fractional-

reserve Banking of any economic system, there are two major agents that drive the financial market.

Which are;

   I.   The Central Bank money creation

   II.   The Commercial Bank's money creation

[I] Central Bank Money Creation: Even though the theory that governs the quantity of domestic currency printing of a Central Bank at any particular time for its economy has evolved over the years to a large extent due to the adoption of advanced technology in the financial system as an *ex-post* analysis. The basic printing and supply-demand formula, which is dependent on constraints that exist within an endogenous economy, cannot be undermined. The operations of the Federal Reserve or the Central Bank, in the printing of currency and its supply-demand in their domestic market, hardly have a defined limitation in relation to an advanced economy, through the purchasing of government securities such as bonds or treasury bills, which increases the liquidity in the banking system translated into the economy using the commercial banks as a medium for lending as posits by Laidler (1991). It is observed, in an advanced developed financial system, it usually has a minimal constraint to the operating performance of their Central Bank, due to the performance strategy argued below;

> The major constraint of a Central Bank at any point in time is the ability of its skilled monetary economists to control the supply quantity of its money in other to avoid inflation or hyperinflation at its worst, as an effort and a systematic measure to always control the currency-value, a means to sustain the trust of usage and patronization. Beyond this challenge, most developed economies have the capacity

by their Central Banks to print the limitless number of cash to meet the optimum stock level of the endogenous market to secure an economic expansion, real GDP growth, and possibly full employment, when all other minor constrain factors out of the scope of economic analysis are equally held at constant or in a control measure. Which, equally, requires economic managers to have the ability to stimulate a high demand for their domestic currency beyond their operational jurisdiction as a Central Bank. This kind of economic action initiates the space for limitless currency printing capacity, as an opportunity enjoyed by hard-currency managing Central Banks, whose currencies further play an international role as base currency or convertible currency for other sovereign national currencies. Such kind of role-played by certain hard-currencies as convertible and base currencies at the international financial system stimulate a high demand for its market utilization, giving their Central Banks a limitless capacity of currency printing under controlled inflation, to the benefit of their domestic economy. As a result, such economies have at any point in time an optimum stock volume of currency in circulation to the favour of their domestic economy to cushion industrialization and technological advancement at a very low-cost rate as an *ex-post* study. Which, such kind of economic scenario does play differently with developing and underdeveloped economies, whose Central Banks manage purely soft-currency at the local market, and only utilize at their domestic economy and has no external stimulation demand with patronization, in other to give its Central Bank the printing capacity to meet the required stock level, of its domestic market demand for economic expansion, industrialization and growth, without losing control of their inflation burden. For this very reason, they are always

[6]

presiding on a shallow financial market. Therefore, in other for such Central Banks located in developing economies to sustain their market-value of currency, within the global financial exchange market and uphold the trust of 'value' for its domestic market, as well hold-on to it as a medium of exchange by law, their printing capacity is defined by the stated formula, which stipulates; "In other to preside over a developing economy as a Central Bank, which holds a printing capacity of a soft-currency to stock the domestic economy, it is required to largely depend on the foreign exchange reserve level of the nation as assets held on by the Central Bank for international trade, to back liabilities and influence monetary policy, as an *ex-post* operating principle of the market. Therefore, if a Central Bank presides on an economy, whose export capacity is very weak compared to import, there is always a high constraint in the printing of its own cash to meet the supply-demand as well as the stock level required of their market, as a means to stimulate expansion and create full employment as proposed and proven by mainstream policy design, guided by macroeconomic theory, which initiate sustainable growth, powered by industrialization, the bedrock of development in medium and long term target.

[II] Commercial Bank money creation: With the theoretical framework that guides the operational performance of any macro economy of contemporary times, the role of the commercial bank money creation is mostly categorized under MI, M2 and M3 of any economy. The definition of M1, M2 and M2 as broad money supply, ever since it was developed by the Federal Reserve Bank in 1971, has gone through definition evolution over the years, however, since the researcher has it studies focus on developing economies and it monetary management space, the definition of Association of African Central Banks

on broad money supply was resorted to as a guideline. Which defined [M1] money supply to include all those monies that are very liquid such as coins and notes, as cash in circulation outside the monetary sector. Which was further argued by (Mohr, 2015), by indicating, it equally includes checkable and (demand) deposits of the domestic private sector with the monetary institution. The [M2] money supply is less liquid in nature, which includes [M1] and all other short-term and medium-term deposits of the domestic private sector with the monetary institutions. Which Mohr (2015) submitted in addition, short-term, is deposits notice less than 30 days and medium-term, is deposits notices within 30 days to 6 months at least. [M3] according to (Mohr, 2015) is the broadest definition of money supply, which engulf [M2] definition along with long term deposits notice from the domestic private sector, with the monetary institutions. With the long term notice, it depends on deposits having maturity of more than six (6) months. And this approach of measurement does include the country's aggregate money supply not only on the medium of exchange categories of money but also its "store of value" in all categories of money. However, unlike the developed economies, the financial system of developing economies is shallow, with a weak attitude to Savings through deposits, which denies a reliable broad money measure of [M2] and [M3] from Commercial Bank money creation. Most Commercial Banks in developing economies by constraint are not effective in the approach of money multiplier principle through credit lending and efficient loan engagement to the private sector for private goods because they largely serve an economy with dysfunctional private sector industry. Beyond the multinational companies and government dominating agencies, most of the local enterprises do not live up to an expectation deem fit as an entrepreneurial enhanced industrial economy to qualify for a

[8]

credit facility, towards the stimulation of economic growth (Senzu, 2020*). Secondly, the prevailing fiscal space management and its related policies seem to promote micro-enterprises that lack the will to transition to medium and large scale enterprises in most developing and underdeveloped economies (Senzu, 2020*; Senzu, T. E., 2019b). As a result, the productive 'tempo' of their industry within the economy does not hold equilibrium to the functioning performance of the modern financial system promoted within such indigenous economy, which is equally operating within the context of the global system, hence, the percentage of extended credit facility by the Commercial Banks in such developing and underdeveloped economies to the private sector mostly becomes a bad debt in the liability books of the Banks. Such a constraint makes the money creation ability of the Commercial Banks to complement the Central Bank's capacity, in other to meet the supply-demand and the stock level of the domestic market very difficult, and ineffective for economic expansion, as well to initiate a sustainable growth that will stimulate possibly full employment. The above assertion was complimentarily argued by Gayed (2020), which stated, traditional cyclical sectors, such as technology, industrials, materials, and consumer discretionary, tend to outperform during period of high volatility market. Let take for instance an *ex-post* case study in Sierra Leone in the performance of its Commercial Banks as submitted by Sankoh (2018), their credit extension support to the economy was only 1%. This makes the efficiency of the domestic Commercial Banks, and their operating performance very weak towards their existence and sustenance as financial agencies within a financial system. This kind of constraint forces the Banks in general of such countries to act (politically) than the economic interest in most situations, to the favour of the Central government political direction on economic management programs,

in other to survive in business for its shareholders, not by merit of independent productive effectiveness, as expected of financial intermediary agency, and a requirement by every sound financial system per *ex-post* observation. (Senzu, 2020a) therefore, argue, when an economy is highly dominated by unprofitable enterprises, which are mostly characteristics of dormant government operating agencies and purely public goods driven economy, lacking quality, profit-driven private sector industry, all basic domestic models easy for government money creation, in other to meet the monetary stock level demand of the market for economic expansion, and growth, within a careful controlled inflation measures, become ceased or inactive. And such is the constraint of most developing and underdeveloped economies. The worst of it is the uphold of the ideological advancement, which proposes for total State control of all economic services of the market with an autarky attitude, and later blame unknown external economic forces for the collapse of such domestic economic industries and it related system, is an incomprehensible dilemma, which still expresses the state of some level of ignorance in addressing economic challenges on the continent of Africa in relation to the state of the global financial-economic affairs, to stimulate domestic economic growth and development. A process, which is required to increase the liquidity strength of the financial market through a calculated money creation models accessible, and immune to an inflation system, but holds the ability to expand the domestic economy for industrial productive capacity, with less external financial dependency. Such proposition is in strong conformity to the empirical observation of Gayed (2020), which deduced, during high volatility market, the traditional cyclical sectors like technology, industrials, materials, and consumer discretionary, mostly private-led services and goods, tends to outperform, while the
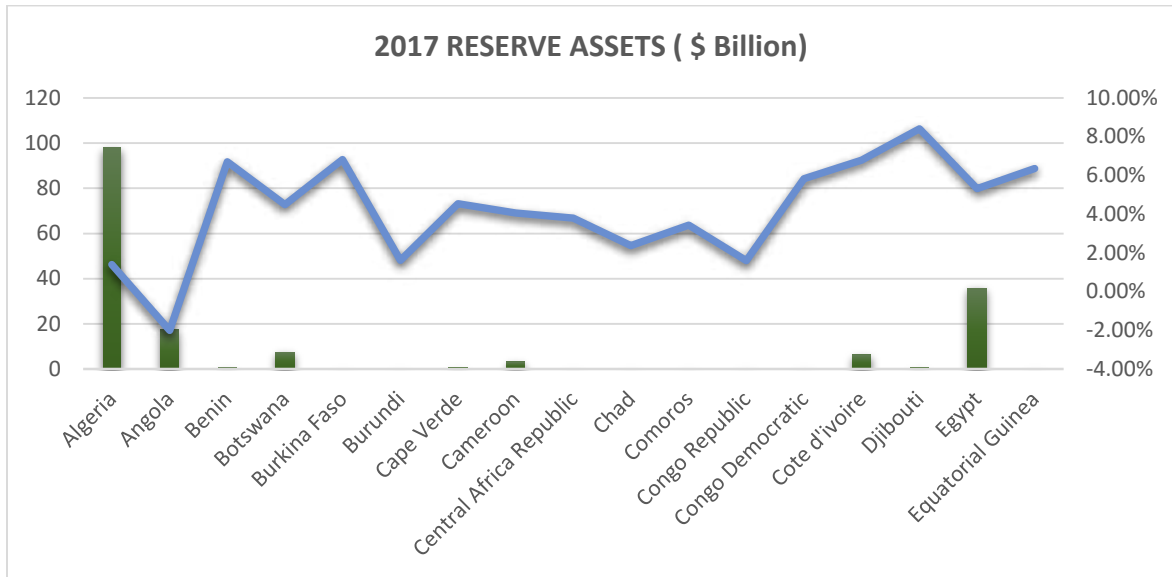
defensive sectors, such as utilities, consumer staples, health care, which are predominantly public-led-services, turns to underperform.

[III] **Empirical analysis and modeling**

Policy-wise, the paper proposes, for a developing and underdeveloped economy, to retract from their current trend of unsustainable growth in the performance of its macro-economy to development trajectory, as soft-currency environmental settings, which comply with the global financial trading laws and regulations, the following formulae model should drive it monetary policy framework;

$$\dot{Z} = \mu\,[\,\alpha + \beta\,]\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots..\ldots\ldots Eq.\,1$$

$$|\,DE\,| = [(\ln \rho_{ra} + \tau) + (X.Y.\dot{Z})]\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots. Eq.\,2$$

$|DE|$ *Assessment rate of development performance of the economy*

 $|\rho_{ra}|$ *National Foreign Exchange Reserve Assets held by the Central Bank*

$|X|$ *M2 broad money creation by the Commercial Banks of a developing economy*

$|Y|$ *The rate of the real GDP growth of a developing economy*

 $|\dot{Z}|$ *The rate of full employment performance of the economy*

 $|\mu|$ *Exports of goods and services as a percentage of GDP*

 $|\alpha|$ *The Human Development Index of the Economy*

 $|\beta|$ *The Innovation Index of the Economy*

 $|\tau|$ *(Measurable Constraint) Economic Freedom Index*

Fig. 1

A proposed monetary policy framework to transition a developing to developed economic performance
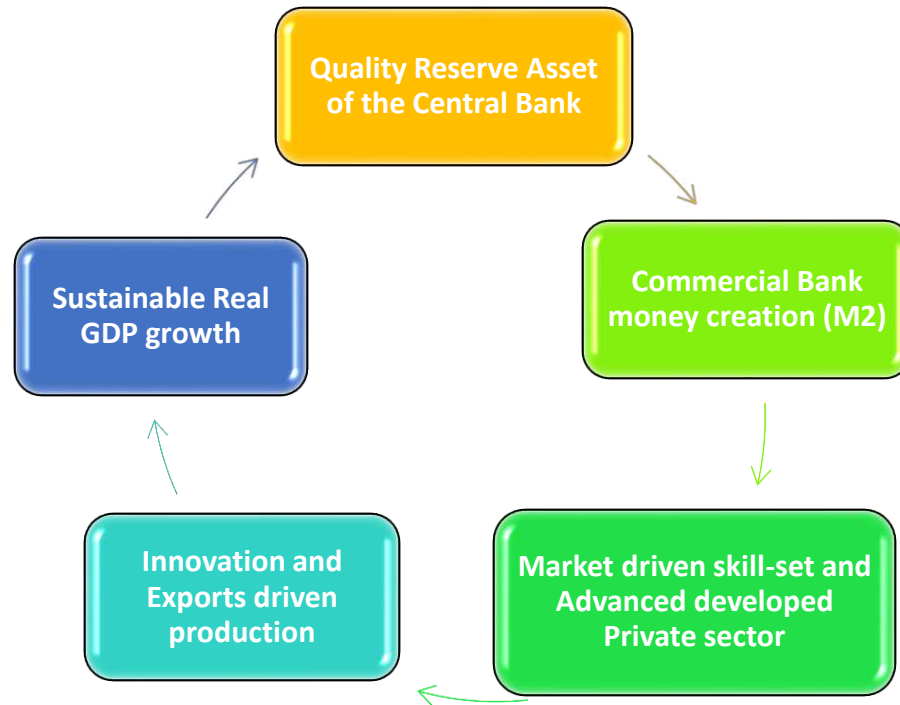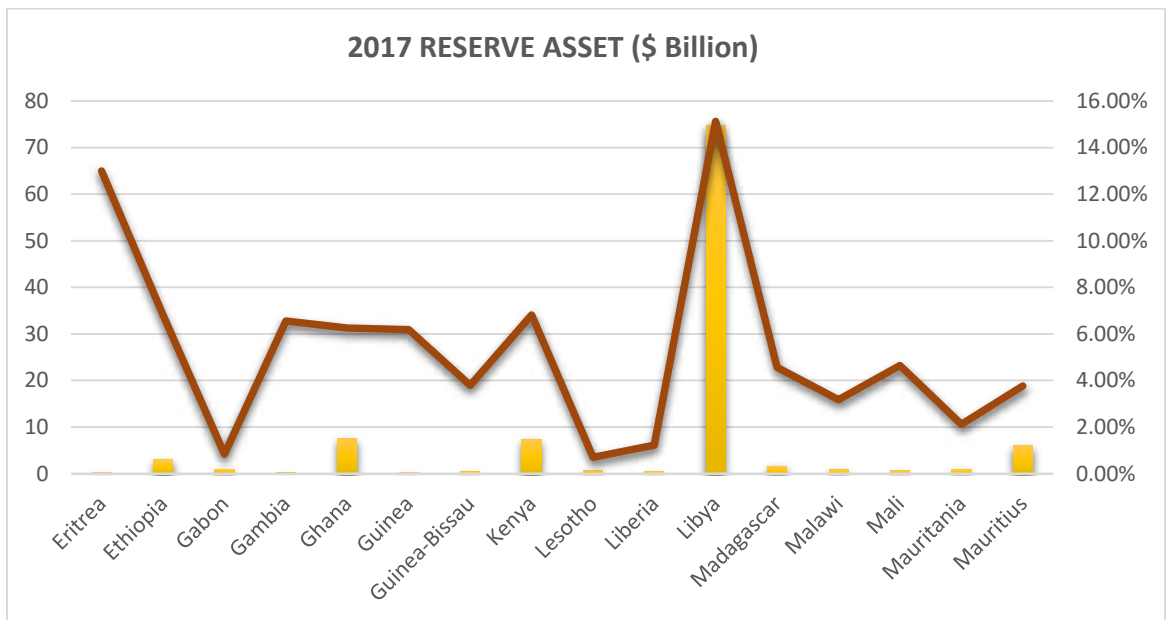

E. T. Senzu (2021)

Figure 1, above, is a modelled structure that defines how a developing or underdeveloped country, desiring to transition its economic performance to a status of an advanced economy, requires to have its fiscal-monetary system modelled according to the above scenario as a policy instrument, taken into consideration the character of prevailing constraints, in other to achieve a developmental trajectory, that will minimize the state of poverty and maximize national welfare support to the citizens.
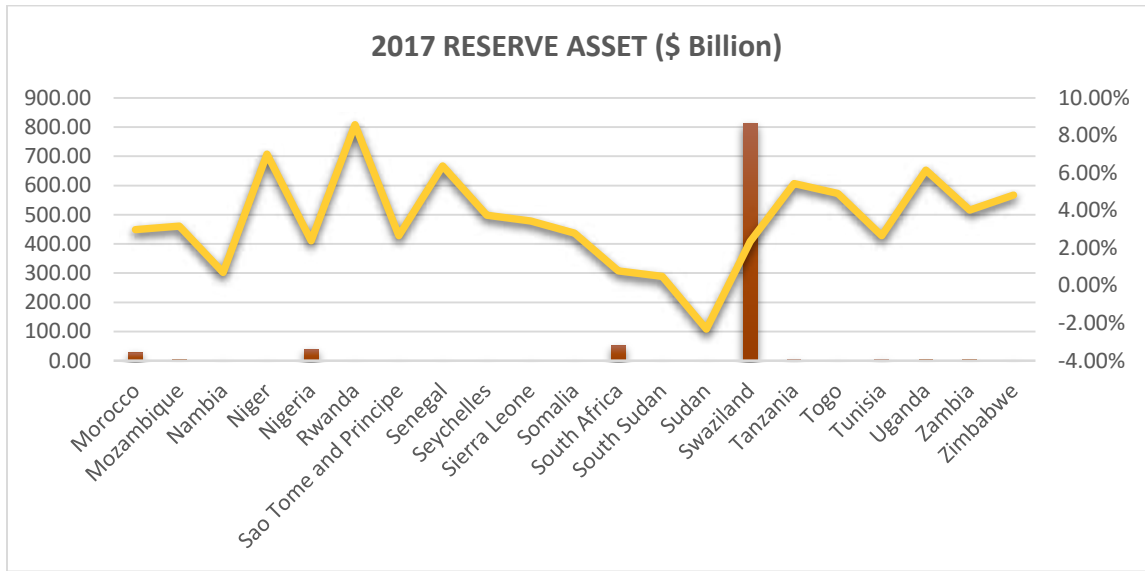
Fig. 2

2017 RESERVE ASSETS ($ Billion)

Fig.3

2017 RESERVE ASSET ($ Billion)

[13]

Fig.4

2017 RESERVE ASSET ($ Billion)

Analysis from Fig. 2-4, as shown above, gives an account of the foreign exchange reserve of the Central Banks of the fifty-four (54) African countries at the end of the 2017 year. The analysis was conducted along with the respective growth rate of their economies as of the year 2018 to measure the monetary supply lag-effect from 2017 to 2018 on such respective economies. The outcome of the analysis, as shown above, conforms to the macroeconomic theoretical tenet and related policy rule, which establishes the necessity of the money supply rate of the economy and its effect on real GDP growth. The study observed that 40% of these fifty-four (54) African countries, whose analysis did not conform to the policy rule, was largely observed to be a constrain factor. And such constraints of the economy was traced to be as follows; a poor developed infrastructural system of the private sector industry, which carried 26% out of the 40% of the sampled countries, then another segment of 8% out of the 40% sampled countries suffered a constraint factor of the CFA franc effect, based on it centrally managed treasury rule to the

[14]

francophone derived countries on the continent of Africa, and finally, the remaining 6% out of the 40% sampled countries was noted popularly of a poor fiscal policy approach in economic management through political expediency.

C. The Characteristic of Fiscal constraint in developing and underdeveloped economies

The paper defines a fiscal policy to be the use of government spending and tax policies to influence economic conditions towards sustainable growth and development. And because in most developing and underdeveloped countries the fiscal policy framework spearheads the management phenomenon of the economy, and complemented by the monetary policy effort towards growth and developmental path, it must be acknowledged, no matter a quality monetary policy communication, when the fiscal policy framework design is questionable, the constraint experience becomes a distortion and misalignment of indicators in its performance, lacking a convergence that will initiate a sustainable growth and development. For instance, the SL-Central Bank (July 2016: pp.01) monetary policy framework state, the Bank's mission is to "formulate and implement monetary and supervisory policies to foster a sound economic and financial environment. It further indicates, it acknowledges its monetary policy cannot contribute directly to economic growth and employment creation, however, by creating a stable financial environment, monetary policy fulfils an [important precondition] for economic development." The record of such a statement defies the main tenet, which underpin the theoretical foundation of monetary economics and its related policy designs, upon which Central Banks were established to function in macroeconomic settings and accorded the powers to be autonomous. And that statement emphasizes the admission of a constraint encountered by the SL Central Bank in its juridical area of operation. From the field study as an *ex-post*

observation and analysis, it concludes that in the fiscal management space of the developing countries, the challenge weighs not on government deficit spending, especially, when there is a legislative instrument on the cap of deficit spending based on sound economic rules, which most fragile economies were noted to have such domestic laws enacted by their legislature, as current findings. However, the study deduces, the challenge is rather on the required tax system to stimulate growth and sustain it. Effiong et.al (2020) findings do complement the argument of the paper by submitting that the nations across the world collect taxes to boost infrastructural development and to meet the daily operating costs in relation to maintaining a fair and free society. Which they proceeded to conclude, the actual challenge of a nation is on how to assure those taxpayers are managed with justice, equity, and equality while they maintain their control as taxing authorities. The paper, therefore, argue further, in a sound public administration, fiscal policy is associated with a solid tax system, which recognizes excesses in the economy and taxes them in a manner that has a minimal adverse effect on production capabilities. (Effiong et. al, 2020) does takes a special interest in tax framework in fiscal policy and proceed to define tax policy as "a statement of government's approach to taxation both from the practical and normative points of view, which the latter manifests in the body of Laws and the formal pertains to the administration." When a study was conducted by Levine & Renelt (1992) to examine economic policies and growth rates across countries using their sensitivity model, the empirical evidence suggested that different tax rates affect monetary development. And, further submitted, the driving force for the disaggregation, emanate from the speculation and monetary inspiration, which does affect the fundamentals of the economy. As a result, Effiong et.al, (2020) argues, to appreciate the ability of an economy to deliver productively,

it should be easier to fundamentally classify it into Consumer and Capital Goods. Which becomes the framework for tax policy to be effectively designed. However, the researcher, acknowledges that the administration of taxation varies from one country to the other due to the variation of social, economic, historic, and cultural settings, which is a critical constraint in most developing and underdeveloped economies. The researcher observed, the approach of most government on tax policy from the studied sample population, deduce that most lack scientific procedures, taken a careful analysis of its environment in the framework of cultural, historic, social and economic settings, which underpin the industrial climate, in other to design it taxation policies expected to drive its fiscal policy space. It became evident from the field base study that most policies within the sampled studied economies thrive on political expediency to address unreasonable balloon debt or to satisfy the voracious tasty demand of government towards its expenditure patterns when it Central Bank suffers from supply-demand constraint to print more currency without creating a danger of uncontrolled inflation.

D. Fiscal-Monetary Policy Framework Recommendation

[1] As Senzu (2019a) argued, the government of fragile economies requires policies to sanitize the current private-sector production efficiency. This requires a policy framework of profit incentive to stimulate the domestic private sector with a motivation to acquire competent and innovative skills, in other to drive a productive speed for private goods as a complement of government production performance to the economy as in public goods, a basis to engineer the sustainable growth rate of the economy, which is a policy approach that holds a strong response to the increasing of liquidity capacity of the domestic money supply of such kind of economy, to reduce poverty and enhance the sustainable wealth of

the average individual within such a developing or underdeveloped country in a controlled inflation.

[2] The paper recommends a policy for purposive entrepreneurial driven economy, which will respond to high export production to increase the foreign reserve of the Central Bank and gives it a sufficient currency printing capacity to meet its domestic market demand and stock level, as a means to facilitate expansion, real GDP growth and possibly, full employment under controlled inflation.

[3] A sustained vibrant entrepreneurial economy is an engine to domestic Commercial Bank money creation capacity, under the fractional-reserve banking system, to complement the Central Bank for the money supply, to meet the optimum stock level of currency demand, for the domestic economy towards expansion and growth.

[4] The developing and underdeveloped economies should develop a high desire to institute an independent and sustainable private sector productive environment as a policy instrument to strengthen its various domestic money creation avenue, which is an easier means to generate sustainable revenue to satisfy the welfare responsibility of the State, towards its citizens. The surest means to minimize poverty in such environmental settings and sustain growth to development.

[5] The tax policy system designed for any particular developing and underdeveloped economy should carefully assess under the scientific lenses of its social, economic, historical, and cultural settings to define its peculiar constraint in other to design its policy on income tax, company tax, inheritance tax, luxuries purchase tax, which largely influences the motivational capacity of the production of the economy. And avoid a

wholesale foreign-adopted tax policy program, as an initiative's sake, in other to design a practical and normative policy for both tax administration and legislation.

E. Empirical Survey of Model

Over the years, the analytical narration of a performing economy of developing countries is largely defined as, the growing economy by the IMF, then, the largest economy, by the World Bank. Hence, 2019 published data of the largest economies of Africa was listed in the order as follows; Nigeria, South Africa, Egypt, Algeria, Angola, and Morocco. In that same year, the IMF outlined the top fastest-growing economies of Africa in their order as follows; Libya, Ethiopia, Rwanda, Ghana, Ivory Coast, Senegal, Tanzania, Benin, Uganda, and Kenya. The paper, therefore, established a sample population from the two categorized countries based on their economic performance as published by the World Bank and IMF in respect of their 2019 report, for the empirical survey of the model developed, and as well proposed by the paper. Which is stated below:

$$| DE| = [(\ln \rho_{ra} + \tau) + (X.Y.\dot{Z})]$$

$|DE|$ *Assessment rate of development performance of the economy*

$|\rho_{ra}|$ *National Foreign Exchange Reserve Assets held by the Central Bank*

$|X|$ *M2 broad money creation by the Commercial Banks in developing economy*

$|Y|$ *The rate of the real GDP growth of a developing economy*

$|\dot{Z}|$ *The rate of full employment performance of the economy*

$|\mu|$ *Exports of goods and services as a percentage of GDP*

$|\alpha|$ *The Human Development Index of the Economy*

$|\beta|$ *The Innovation Index of the Economy*

$|\tau|$ *(Constraint) Economic Freedom Index*

Table 1.

2019 Raw Data extract from 'the globaleconomic.com'

Countries	(ρ_{ra}) Foreign Reserve Asset ($ Billions)	$\ln(\rho_{ra})$ Natural Log of Foreign Reserve Asset	(X) M2 Money Creation	(Y) Rate of RGDP Growth	(μ) Export of Goods & Services	(α) Full (HDI)	(β) Employment (Innovation Index)	(τ) Constraint (Economic Freedom Index)
Nigeria	-	-	10.43%	2.21%	-	0.534%	20.10%	57.00%
South Africa	55.06	13.01	66.72%	0.15%	29.85%	0.705%	32.70%	58.00%
Egypt	44.56	12.80	24.02%	5.56%	-	0.700%	24.20%	53.00%
Algeria	71.80	13.27	26.06%	0.80%	22.79%	0.759%	19.50%	46.00%
Angola	16.33	11.79	12.52%	-0.80%	-	0.576%	-	51.00%
Morocco	26.41	12.27	63.87%	2.30%	39.14%	0.676%	29.00%	63.00%
Libya	84.66	13.44	-	2.54%	64.84%	0.708%	-	-
Ethiopia	2.99	10.10	-	8.28%	7.92%	0.470%	18.10%	54.00%
Rwanda	21.81	12.08	21.81%	9.41%	4.90%	0.536%	25.10%	71.00%
Ghana	7.56	11.02	11.47%	6.48%	35.98%	0.596%	22.30%	58.00%
Ivory Coast	-	-	19.54%	6.85%	23.51%	0.516%	21.20%	62.00%
Senegal	-	-	29.56%	5.27%	22.79%	0.514%	23.70%	56.00%
Tanzania	-	-	-	5.79%	-	0.528%	25.60%	60.00%
Benin	17.56	11.87	17.56%	6.87%	8.61%	0.520%	18.10%	55.00%
Uganda	-	-	13.06%	6.51%	19.37%	0.528%	20.50%	60.00%
Kenya	9.12	11.21	27.51%	5.37%	12.03%	0.563%	26.10%	55.00%

E.T. Senzu, (2021) statistically computed figures for model analysis

Table 2. | 2019 Raw Data extract from 'the globaleconomic.com'

Derivation of $|\dot{Z}| = \mu \, (\, \alpha + \beta \,)$

Countries	(μ) Export of Goods & Services	(α) Human Development Index	(β) Innovation Index	$(\dot{Z})$ Full employment performance	$\left(\dot{Z}/_{100}\right)$
Nigeria	-	0.534%	20.10%	20.63	0.2063%
South Africa	29.85%	0.705%	32.70%	997.14	9.9714%
Egypt	-	0.700%	24.20%	0	0
Algeria	22.79%	0.759%	19.50%	461.70	4.6170%
Angola	-	0.576%	-	0	0
Morocco	39.14%	0.676%	29.00%	1,161.52	11.6152%
Libya	64.84%	0.708%	-	45.91	0.4591%
Ethiopia	7.92%	0.470%	18.10%	147.07	1.4707%
Rwanda	4.90%	0.536%	25.10%	125.62	1.2562%
Ghana	35.98%	0.596%	22.30%	823.80	8.2380%
Ivory Coast	23.51%	0.516%	21.20%	510.54	5.1054%
Senegal	22.79%	0.514%	23.70%	551.84	5.5184%
Tanzania	-	0.528%	25.60%	26.13	0.2613%
Benin	8.61%	0.520%	18.10%	160.32	1.6031%
Uganda	19.37%	0.528%	20.50%	407.31	4.0731%
Kenya	12.03%	0.563%	26.10%	320.76	3.2076%

E.T. Senzu, (2021) statistically computed figures for model analysis

Table 3. | 2019 Raw Data extract from 'the globaleconomic.com'

$$|DE| = [\,(\ln \rho_{ra} + \tau) + (X.Y.\dot{Z})]$$

Countries	$(X.Y.\dot{Z}/_{100})$	(τ)	$(\ln \rho_{ra})$	$(\ln \rho_{ra} + \tau)$	$|DE|$
Nigeria	0.048%	57.00%	-	57.0%	57.05%
South Africa	0.997%	32.70%	13.01	45.71%	46.71%
Egypt	0.335%	24.20%	12.80	37.00%	37.34%
Algeria	0.970%	19.50%	13.27	32.77%	33.74%
Angola	(-0.100)%	-	11.79	11.79%	11.69%
Morocco	17.081%	29.00%	12.27	41.27%	58.35%
Libya	0.014%	-	13.44	13.44%	13.45%
Ethiopia	0.118%	18.10%	10.10	28.20%	28.32%
Rwanda	1.256%	71.00%	2.05	73.05%	75.63%
Ghana	6.098%	22.30%	11.02	33.32%	39.42%
Ivory Coast	6.847%	21.20%	-	21.20%	28.05%
Senegal	8.611%	23.70%	-	23.70%	32.31%
Tanzania	0.016%	25.60%	-	25.60%	25.62%
Benin	1.603%	56.00%	1.21	56.21%	58.15%
Uganda	3.460%	20.50%	-	20.50%	23.96%
Kenya	4.751%	26.10%	11.21	26.10%	30.85%

E.T. Senzu, (2021) statistically computed figures for model analysis

- The symbol (-) in the data was assumed in the calculation as Zero (0)

- The calculation result of |DE| from Table 3, does establish the state of development performance of the economy relative to the each other as the sixteen (16) developing countries used in the table to represent the population sample.

Relative assessment of the sixteen (16) targeted economies in Africa placed in the 2019 bracket as progressive economies, which this paper sought to measure their exact development performance relative to each other, taken into consideration it measurable constraint accessible, while holding the assumption that each variable studied and subjected into computation is performing on a sustainable rate. And the outcome result was graphically plotted as below;

Fig.5 | DE-Plotted Graph
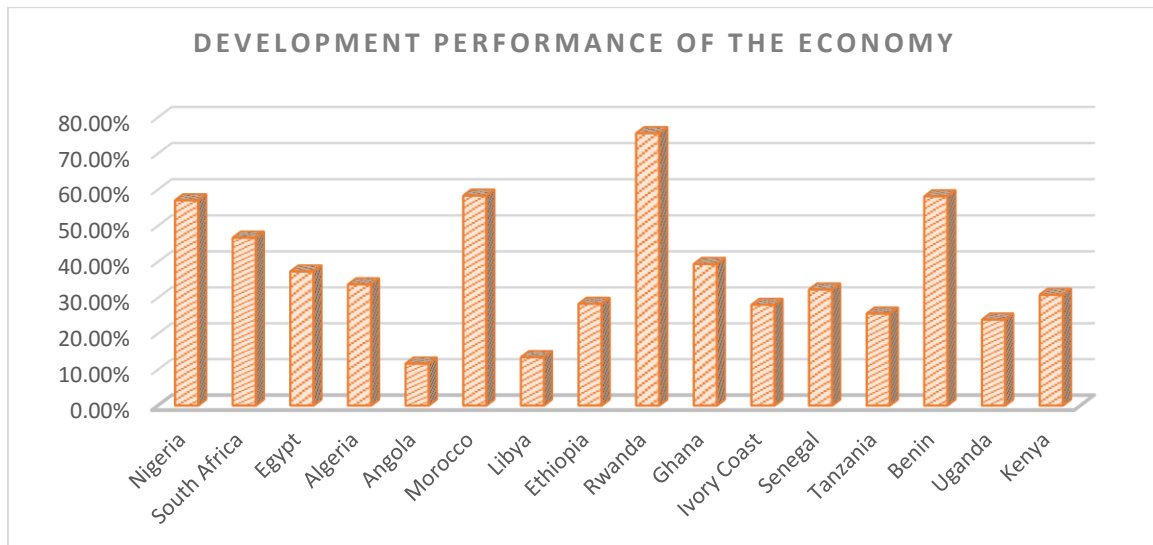
E.T.Senzu (2021), Development trajectory analysis

F. Conclusion

In whatever chaotic functioning order of an economy, the observed variables within such an economic system do only produce a constraint effect. And a persistent aggregate, chaotic functioning, produces a complex constraint, creating more distortion in the performance of the economy. Until the causal effect of the constraint is consciously enquired scientifically, in other to minimize or resolve the challenge completely. The paper

concludes such constraints exist to thwart the positive expected policy effect. Therefore, the paper focused on certain unique challenges peculiar to certain economic system termed by the paper as a constraint effect, using the continent of Africa as a population sample and a case study, and went further to proposed a qualified theoretical approach and a model of analysis to instruct a policy framework towards the stimulation of sustainable economic growth of such a system, counting on the vibrant domestic private sector as the engine to a quality fiscal-monetary policy for development.

Reference

[1] Bank of Sierra Leone (2016), Monetary policy framework. Retrieved from www.bsl.gov.sl

[2] Effiong, A. S., Udoayang, O. J. & Adesola, A. F. (2020), Tax rates and Economic growth: A conjugal bioscopy: International Journal of Scientific & Technology Research Vol.9 Issue 08. ISSN: 2277-8616. www.ijstr.org

[3] Gayed, A. M. (2020), Actively using passive sectors to generate alpha using the VIX. Retrieved from www.ifta.org

[4] Global Economy.com/ranking/economic growth/Africa

[5] Human development Index (2019). Hdr.undp.org/en/content/2019-human-development-index-ranking

[6] Krugman, P. & Wells, R. (2009) Money, Banking, and the Federal Reserve System: Reserves Bank Deposits, and the money multiplier pp.393-396

[7] Laidler W.D. (1992), Karl Brunner's Monetary Economics an appreciation. Journal of Money, Credit and Banking. Vol.23. No.4 pp.633-658. Doi.10.2307/1992701

[8] Levine, R. & Renelt, D. (1992), A sensitivity analysis of cross-country growth regressions. American Economic Review, Vol. 82, Issue 4. pp.942-963

[9] Mohr, P. (2015), Economics for South African students. 5th ed. Pretoria: Van Schack

[10] Oyekunle, O. (2019), The African Exponent Publisher. www.africanexponent.com

[11] Samuelson, A. P. (1947), Enlarged ed., 1983. Foundations of Economic Analysis. Harvard University Press. ISBN: 0-674-31301-1

[12] Sankoh, O. (2018), Sierra Leone Integrated household survey report. Sierra Leone Statistical services.

[13] Senzu, T. E. (2019b), Theoretical perspective of dynamic credit risk analysis and lending model: effective to enterprise of fragile economy. https://papers.ssrn.com/sol3/paperscfm.abstractid=3324909

[14] Senzu, T. E. (2020a), Theoretically proposed policy instrument to resolve the negative effect of inflation flow into a positive macroeconomic growth: The case of Sierra Leone economy. https://papers.ssern.com/sol3/papers.cfm.abstract id=3565882

[15] Senzu, T. E. (2020*) Entreprenomics (2nd ed.) Book. Njala University, Sierra Leone. ISBN: 978-99910-925-1-5 www.fbiresearchedu.org

[16] World Fact Book (2019), GA.gov/library/publications/the-world-fact book

Appendix

Countries	2017| CB-Reserve Asset ($Bill)	2018| Rate of Change RGDP
Algeria	97.89	1.40%
Angola	17.29	-2.00%
Benin	0.70	6.70%
Botswana	7.49	4.48%
Burkina Faso	0.05	6.82%
Burundi	0.10	1.61%
Cape Verde	0.62	4.53%
Cameroon	3.24	4.06%
Central Africa Republic	0.30	3.79%
Chad	0.02	2.37%
Comoros	0.20	3.43%
Congo Republic	0.51	1.60%
Congo Democratic	0.46	5.82%
Cote d'ivoire	6.26	6.79%
Djibouti	0.55	8.41%
Egypt	35.89	5.31%
Equatorial Guinea	0.05	6.36%
Eritrea	0.24	13.00%
Ethiopia	3.01	6.82%
Gabon	0.98	0.84%
Gambia	0.17	6.55%
Ghana	7.56	6.26%
Guinea	0.33	6.18%
Guinea-Bissau	0.36	3.80%
Kenya	7.35	6.82%
Lesotho	0.66	0.70%
Liberia	0.46	1.22%
Libya	74.71	15.13%
Madagascar	1.60	4.56%
Malawi	0.78	3.17%
Mali	0.65	4.65%
Mauritania	0.88	2.12%
Mauritius	5.98	3.76%
Morocco	26.27	2.99%
Mozambique	3.36	3.17%
Nambia	2.43	0.70%
Niger	1.31	7.00%
Nigeria	38.77	2.38%
Rwanda	0.10	8.57%

Sao Tome and Principe	0.06	2.66%
Senegal	1.83	6.38%
Seychelles	0.55	3.75%
Sierra Leone	0.48	3.45%
Somalia	0.03	2.80%
South Africa	50.72	0.79%
South Sudan	0.07	0.50%
Sudan	0.20	-2.32%
Swaziland	811.20	2.35%
Tanzania	5.30	5.44%
Togo	0.08	4.91%
Tunisia	5.59	2.66%
Uganda	3.65	6.16%
Zambia	3.08	4.03%
Zimbabwe	0.43	4.83%