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

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ABSTRACT

The paper makes a proposition that the chaotic order in the functioning of input factors of an economic system, results in a constraint towards an output performance. And further, argues that aggregate chaotic functioning of such input elements becomes a complex constraint, creating more distortion towards the performance output of the economy. The study further establishes, the major causal factors that uphold the mainstream theoretical approach to economic growth, and developmental trajectory within a fiscal-monetary policy space and its management, does fail to be effective in application in favour of developing and under developed countries, and thereby recommend alternative policy frameworks, having within its core model, a job creation system to initiate full employment towards development as a focal study interest of the paper.

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

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

A. Introduction

The paper is premised on the health of 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 her Central Bank within it jurisdiction, to observe the constraint, in other to secure economic growth and possibly sustain it.

The paper further argue, for any appropriate economic welfare actions to be taken in favour of the public, the effort of the economic manager is to understand and acknowledge the character of constraint existing within a given jurisdiction to guide the construct of appropriate policy framework as a remedy to the challenges that emerges out of the market interactions and dynamics. Just as it was succinctly posit by Samuelson (1947), the best effort of the economic manager is to maximize the behaviour of agents such as utility by consumers, and profits by firms. He further placed an emphasis on the relevance of obtaining stability of equilibrium to any given economic system, such as the market. He advancedly argued, the fundamental problem faced by every economic manager is the ability to establish equilibrium to the relationship challenge of 'price and quantity', 'cost and production', 'consumer behaviour and business cycles' of the economic market. Therefore, the author adduce, beyond such a relationship challenge as debated, is lack of understanding to draw effective economic calculations and models, which is unique to solve certain economic climate issues, and mostly such unique economic problems, fails to conform to normal expected macroeconomic performance indicators, which is a generalized theoretical expectation. Thereby, affecting policy framework prescriptions,

which are adopted from advanced economic system regime. It is therefore noted, in a deliberate attempt to ignore the warning signs, and chose to enforce such hand-picked foreign policies for implementation in a fragile economic settings, does result to inhibition of market expansion and growth in most cases. The theoretical foundation of this paper is to establish, a carefully examined character of constraint associated with fragile economies, which defies the mainstream theoretical expectations.

The paper upholds in it observational perspective that policy prescriptions for developing countries, which are based from advanced economies as a wholesale adoption, for the purpose of simplicity, has significantly contributed to economic retrogression and promoted poverty in such countries, with observed symptom of exponential national-debt escalation as a burden on citizens, without any prospects of sustainable economic growth. Hence, the study focuses on the observable constraint in developing and under developed countries, to ascertain the characteristics for conceptualization, empirical testing, as well as a model guide for policy formulation. Then, with the aftermath established empirical evidences, offer recommendations towards fiscal-monetary management space of fragile economies for a sustainable growth model. However, the study does admit to a weakness of its findings, that any kind of constraint that fall-out of the paradigm of economic study within the studied ecosystem, will be presumed by the paper as a constant variable.
The paper in its submission, thereby, structure its propositions for investigation under the following fiscal-monetary thematic as outlined below;
[1] Standard macro-economy constraint and endogenous money creation approach applicable to advanced economies but ineffective in developing economies to sustain growth.

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

[3] Alternative postulation of fiscal-monetary policy framework as a recommendation to resolve certain developmental challenges associated with developing and underdeveloped countries.

For the purpose of interpretational understanding of the readers in accordance to the spirit of the paper, the use of certain 'words' as terminology adopted by the author, holding a slight different meaning in it application of general usage from the English lexicon, such choices of words, 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 an expected progressive result.

[Money Supply]: - Is the total volume of money available in an economic system at any given point in time

[Advanced Economy]: - Is a country who has attained a standard technological infrastructure accompanied with industrialized system, yet with the avenue for structural improvement mechanism of it economic system.

B. Standard macro-economy 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, which is believed to drive the financial market.

And they 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 (QE) 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 currency printing and supply-demand formula, which is basically dependent on constraints that exist within an endogenous economy, cannot be undermined. The operations of the Federal Reserve or the Central Bank in an environment we term as 'advanced economy', its capacity to print currency and the supply-demand in their domestic market, hardly have a defined limitation, in as much there is a 'computational' space for the purchasing of government securities such as bonds or notes(bills), which increases the liquidity in the banking system and further translate into the real economy using the commercial banks as a medium for credits lending as posits by Laidler (1991). In such 'advanced economy' the anticipated constraint of the Central Bank in most cases is her performance strategies as argued below;

> The major constraint of Central Bank in an 'advanced economy' or defined herein as 'monetary sovereign' government at any given 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 ensure an economic expansion, real GDP growth, and possibly full employment, when all other factors out of the scope of economic analysis are equally held at a constant performing rate or in a control measure. It further grant the economic managers in such settings to have the ability to stimulate a high demand for their currency notes beyond their operational jurisdiction as a Central Bank. This kind of economic action initiates the space for limitless currency printing capacity, which is an opportunity enjoyed by hard-currency managing Central Banks, whose currencies further play an international role as a base or convertible currency for other national currencies. Such kind of role-played by certain hard-currencies as convertible at the international financial system stimulate a high demand for its global patronizataion, giving their Central Banks a limitless capacity of currency printing under a low interest rate to the benefit of their domestic business community, in terms of capital accessing affordability to boost production for GDP. As a result, such economies at any given point in time, hold an optimum stock volume of currency in circulation in favour of their domestic economy to cushion industrialization and technological advancement at a very low-cost rate as an *ex-post* observation. Which, such kind of economic scenario does play differently with developing and underdeveloped countries, whose Central Banks strictly manages a soft-currency market, solely utilize at their domestic economy, and has no external stimulation demand whatsoever, thereby limit the Central Bank

currency printing capacity without a correspondent trade performance via GDP of economic production. Hence, places constraint on domestic market expansion, industrialization, and growth, without losing control of inflationary burden.

For this very reason stated above, these kind of Central Banks are presiding on a shallow financial market, and in their efforts to sustain their domestic market-value of the currency usage, and maintain it performance within the global financial exchange market they are expected to following a formulae, which demand 'QE' method to largely depend on the foreign exchange reserve level of the nation as assets held on by the Central Bank based on related international trade in a form of 'IOU' of a convertible currency, to back liabilities and influence monetary policy, as an *ex-post* operating principle of the Global market. Therefore, if a Central Bank presides on an economy, whose exports performances is very weak compared to imports, there is always a high constraint in the printing of its own currency notes to meet the supply-demand as a stock level requirement of the domestic market, to stimulate smooth business cycle operations without a consequence of losing her inflation management programme. An attempt to ignore such warning and proceed on careless quantitative easing will cause an unjustifiable currency value debasement, which in an extreme cases may destroy the business operational cycle, and the investment community, which is a potential consequence to high unemployment situations, and long term recession to the economy.

[II] Commercial Bank money creation: As it is uphold in the orthodox macroeconomics doctrine, the role of the commercial bank in money creation is mostly categorized under MI, M2 and M3 of any given 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 paper has it study focus and priority on developing countries of Africa 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 in cash of circulation outside the monetary sector. (Mohr, 2015) thereby indicated, 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) defined the precise duration of 'short-term' in the financial circle as in deposits notice, to be less than 30 days, but in a medium-term, the deposits notices is 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. In the long term notice, it always 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 countries, the financial system of developing countries are mostly shallow, with a weak attitude to savings, which is mostly expected from deposits, hence, denies a reliable broad money measure of [M2] and [M3] from Commercial Bank money creation. Most Commercial Banks in developing countries by constraint as a default, are not effective in the approach of money multiplier principle through credit expansion and

efficient loan engagement to the private sector for goods and services, because they largely serve an economy with dysfunctional business community. Based on observations in fragile economic settings, a complete elimination of multinational companies serving in such economies, as well as government dominating agencies, there is no business community to drive the domestic economy, most of the local enterprises hardly live up to an expectation deem fit as an entrepreneurial enhanced industrial economy, in other to qualify for a credit lending, worth a stimulation of economic growth (Senzu, 2020*). Secondly, the prevailing fiscal space management and its related policies seem to promote micro-enterprises that lacks the will to transition to medium and large scale enterprises in most developing and underdeveloped countries (Senzu, 2020*; Senzu, T. E., 2019b). As a result, the productive 'temperament' of their industrial economy does not hold-up to the equilibrium functioning of the modern financial system of the Global order. Thereby, the possibility and probability of bad debts in the liability books of their Commercial Banks are very high within such environmental settings. With the identified character of the observed constraint adequately present a difficult money creation ability in the circles of Commercial Banks as credits expansion and extension efforts of the Central Bank's capacity, in other to meet the supply-demand stock level requirements of the domestic market, which becomes a difficult task for economic expansion and sustainable growth. The above presented phenomenon had a complimentary submission by Gayed (2020), who stated, traditional cyclical sectors, such as technology, industrials, materials, and consumer discretionary, tend to outperform during period of high volatility market. Proceeding to an *ex-post* observation analysis of Sierra Leone economic performance, the Commercial Banks as submitted by Sankoh (2018), their credit lending support to the

economy as at 2018 was only 1%. This narrows the efficiency of the domestic Commercial Banks, as well as their operating performance, granting them a very weak existence and sustenance as financial agencies, within the financial system. This kind of constraint forces the Banks in general to act (politically) in assessment towards decision making, rather than a real economic actions, as a survival perspective for shareholders and the desire to stay in business. This further breeds a behaviour of Bankers lacking the will to support expansion initiatives of the real economy, due to the high-risk factor, against the general expectation and requirement of financial intermediary agencies in any sound financial system.

(Senzu, 2020a) did argue, when an economy is highly dominated by unprofitable enterprises, which are mostly characteristics of dormant government operating agencies, offering public goods and services, without profit driven intent, it denies basic monetary creation channels within the operating market system of that same economy. As a result, an indirect infestation of economic recession becomes pre-eminent, especially, in a circumstances where there is a persistent uphold of an ideology of a total [State] control of all economic goods and services of the market in the spirit of an autarky attitude.

[State] dominated market, unconsciously promote market system that lacks structure in its economic performance against external competition. And in a situation whereby a statutory authority is granted to the Central government for a complete domestic market control, it places a natural self-imposed cap on it liquidity strength, due to limitation in its domestic money creation channels to serve as immune factor to inflations, in other to push-out for market expansion through industrialization. Gayed (2020) in an empirical support to the above postulation put forward that during high volatility market, the

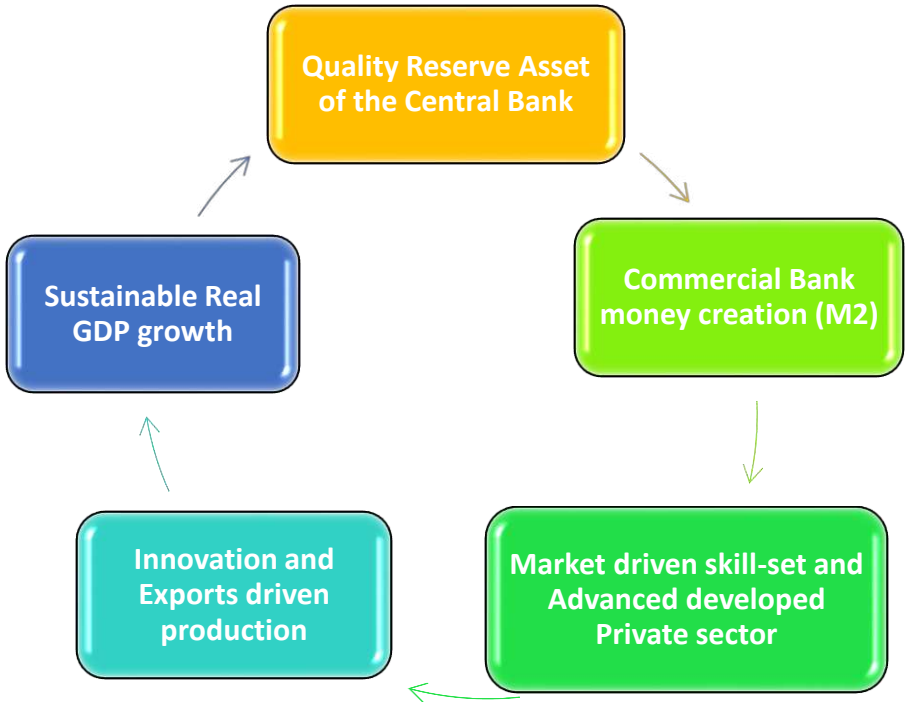
traditional cyclical sectors like technology, industrials, materials, and consumer discretionary, mostly private-led services and goods, tends to outperform, while the defensive sectors, such as utilities, consumer staples, health care, which are predominantly public-led-services, turns to underperform.

[III] **Empirical Analysis and Modeling**

- The 'fig.1' is a model structural proposal expected of a developing country to have as a cyclical flow within its economy, consisting of (both the capital market and real economy), in other to initiate growth that is sustainable.

Fig. 1

A proposed monetary policy framework to transition an economy from unstable growth to sustainable growth performance



E. T. Senzu (2021)

The model structure above is required to be governed by a policy instrument, which takes into consideration the character of its current prevailing constraint to guide the developmental trajectory, thereby factoring into it a full scale employment programme.

- In policy-wise, the paper proposes, for a developing and underdeveloped economy, to retract from unsustainable growth pattern as a performance of its macro-economy into a path of sustainable growth trajectory, with reliance on soft-currency notes as a medium of exchange within her domestic market, then the following formulae as a model, should constitute the foundation of it monetary policy framework prescription and application;

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

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

While, the computational variables to rely upon as the model equation, is defined as follows;

$|DE|$ *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*

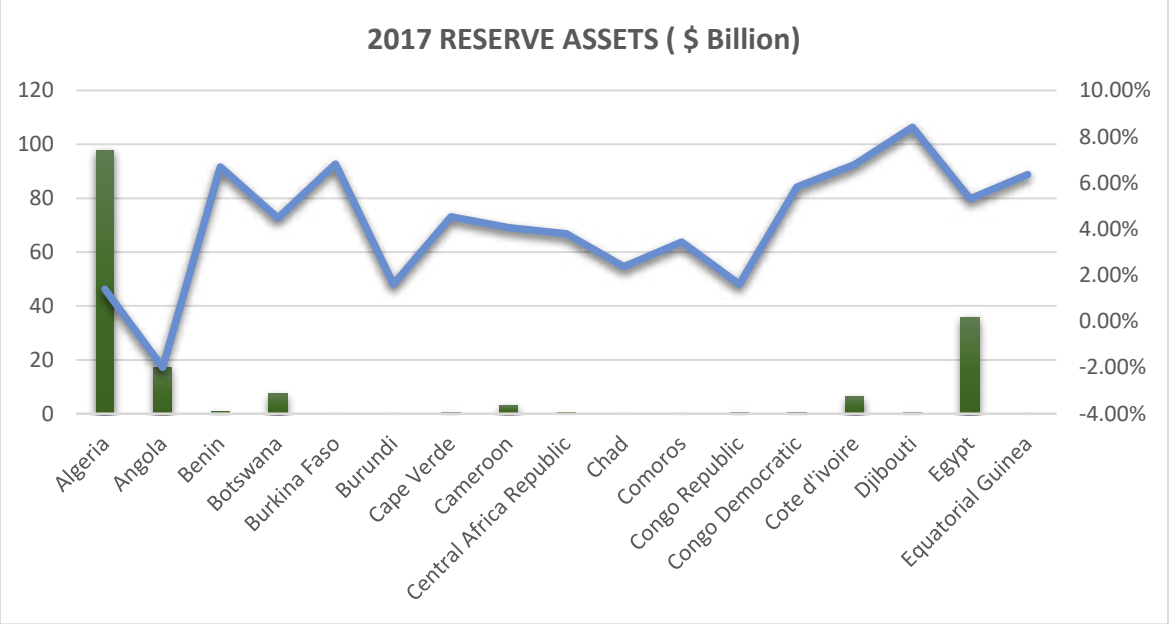
$|\,\beta|$ *The Innovation Index of the Economy*

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

The above model equation validity test will be examined at the subsequent pages of the paper.

- The outlined graphs of analysis below from 'Fig 2-4' present a real economic performance effects out of a historic data, which establishes a relationship equation between the Reserve Assets of a Central Bank and that of a monetary supply to their various domestic market, and its corresponding effects on the real GDP growth of their respective economies, when the employment equation was accurately factored into the policy modeling. Employment factor modeling, citing (Senzu, 2018e) revised version.

Fig. 2



E. T. Senzu (2021)

Fig.3

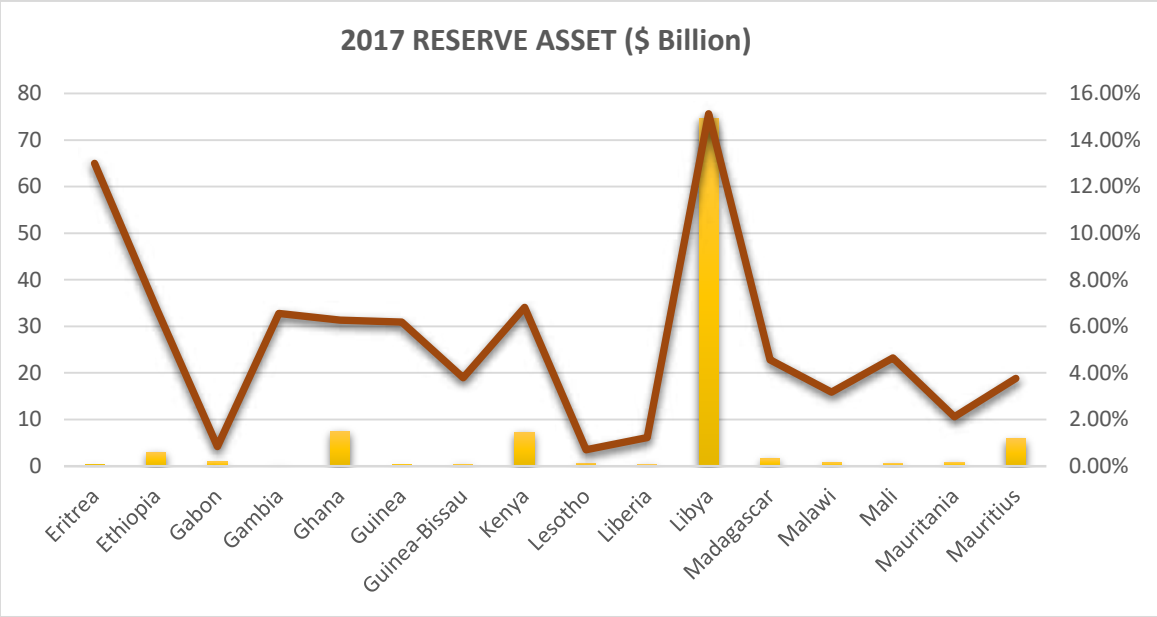


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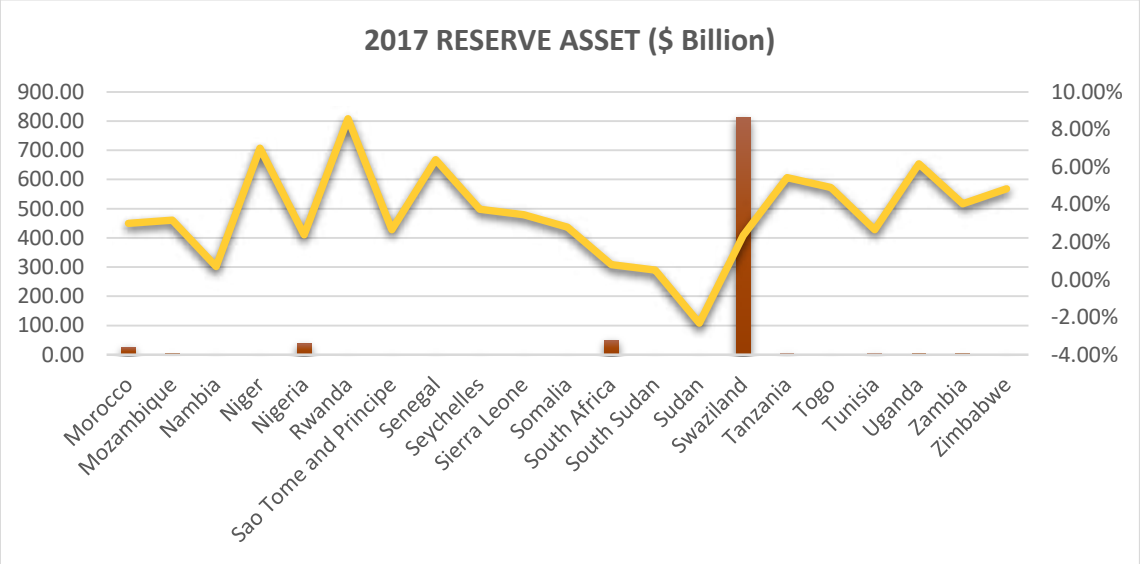
Fig.4



E. T. Senzu, (2021)

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 constraint factor. And such constraints of the economy was traced to be as follows; a poor developed infrastructural system of the private sector industry, which affected the employment inputs, constituted 26% out of the 40% of the sampled countries, then 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 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 within developing and underdeveloped countries

The paper defines fiscal policy to be the use of government spending and tax policies to influence economic conditions towards sustainable growth and development trajectory. And in most developing and underdeveloped countries, it is the fiscal policy framework, which spearheads the management space of the real economy, with the monetary policy perceived to be complimentary instrument, which in most cases fail to live up to its expectation in fragile economies (Senzu, 2018e). However, the author places an

emphasis on the counter-effects against quality monetary policy communication when the fiscal policy framework design for such economic settings is questionable, the constraint becomes a distortion, and create misalignment of performance indicators, expected to initiate a sustainable growth and possible development.

An extract of a constraint case analysis of the SL-Central Bank based in West Africa (July 2016: pp.01), which I quote as a mission of it monetary policy framework, “the Bank's mission is to formulate and implement monetary and supervisory policies to foster a sound economic and financial environment”. It further states, “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.” An analysis of such a statement establishes how it actual actions in the financial market defies the Bank main tenet, as a theoretical foundation of monetary economics, and its related policy designs, upon which all Central Banks are Instituted to function in a macroeconomic settings, and accorded the powers to be autonomous. And such a statement further emphasizes the admission of the constraint encountered by the SL Central Bank in its jurisdiction. In the field study as an *ex-post* observation and analysis, the author find out that in the fiscal management space of most of the developing countries, the challenge weighs not much on government deficit spending, where there is a legislative instrument on the cap of deficit spending based on sound economic rules enacted. However, in a debt-controlled system of governance as adopted by some developing countries, the focus is shifted to the accepted threshold of tax requirement regime to stimulate growth and sustain it. Effiong et.al (2020) findings, does complement the argument of the paper by adducing 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 the taxpayers that, their taxes are managed with justice, equity, and equality while maintaining the control as taxing authorities. The paper, therefore, argue further, by alluding to the fact that, in 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 market into 'Consumer' and 'Capital Goods'. Which becomes the framework for tax policy to be effectively designed. However, the author predicates that the administration of taxation should differ from one country to the other, due to the variation of social, economic, historic, and cultural settings, which becomes a critical constraint in terms of valid methods to employ based on the market understanding of developing and underdeveloped countries. The author observed, the approach of most government on tax policy from the studied

sample population, deduce that most lacks scientific procedures, taken a careful analysis of its economic market in the framework of cultural, historic and social, which is underpinning to the industrial climate, and need to be understood to guide the designing of it taxation policies as a tool to drive its fiscal policy space. From the field based study, most policies within the sampled studied economies thrives on political expediency to address unreasonable balloon debt or to satisfy the voracious tasty demand of government through its expenditure patterns, especially when it Central Bank suffers from supply-demand constraint to print more currency without creating a danger of uncontrolled inflation.

D. Equational model evaluation and estimation

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 'Development Performance' rate model proposed. As defined below:

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

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

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

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

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

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

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

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

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

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

The 'Table 1-3' is a computational assessment rate of |DE| defined herein as 'Development Performance' rating of an Economy, relying on the proposed 'equational model' for evaluation and estimation based on historic data outsourced from World Bank, IMF and The-Global-Economic.com

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'

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

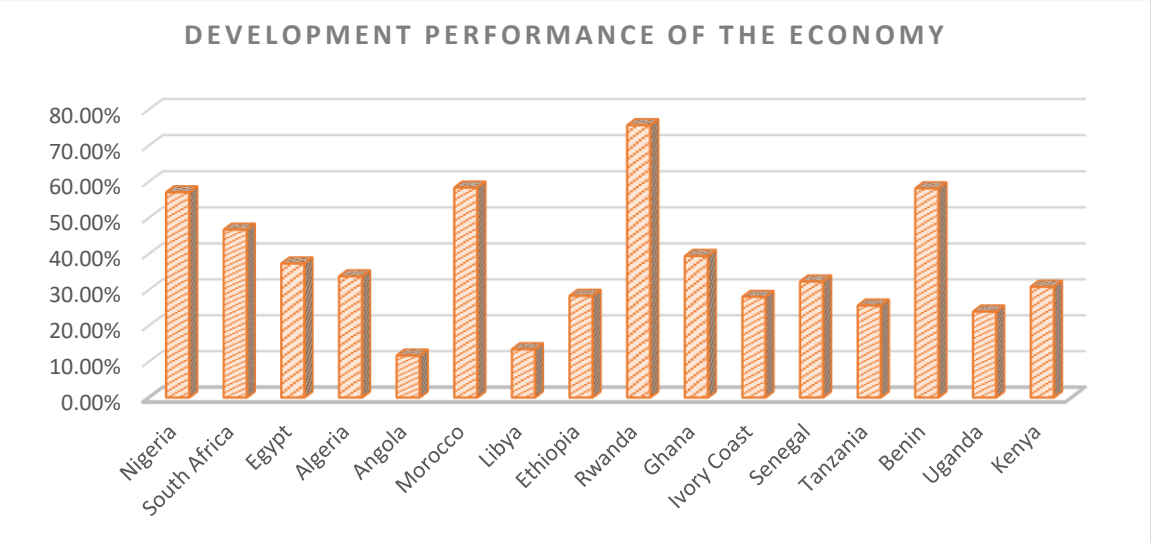
Countries	$(X.Y.\dot{Z}_{/100})$	(τ)	$(\ln \rho_{ra})$	$(\ln \rho_{ra} +\ \tau\ )$	|DE|
Nigeria	0.048%	57.00%	-	57.0%	57.05%
South Africa	0.997%	32.70%	13.01	45.71%	46.71%
Egypt	0.335%	24.20%	12.80	37.00%	37.34%
Algeria	0.970%	19.50%	13.27	32.77%	33.74%
Angola	(-0.100)%	-	11.79	11.79%	11.69%
Morocco	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 among 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

Based on the plotted graph of Fig.5 above, as a comparative analysis of development trajectory among the sixteen (16) countries selected and promoted by both the World Bank and IMF on the continent of Africa in the year 2019, the graphical evidence depicts that, the Republic of Rwanda is at the highest peak of developmental trajectory, at the rate of 75.63% as a comparative analysis to the others, while Angola is the lowest among these recommended countries at a rate of 11.69% followed by Libya around 13.45%. Relying on the model design analysis for graphical interpretation.

E. Fiscal-Monetary Policy Framework Recommendation for Developing Countries

In the summation of the empirical outcome of the computational model analysis, and other graphical interpretation of empirical surveys, the following are careful outlined fiscal-monetary policy framework recommendations;

[1] As Senzu (2019a) argued, the government of fragile economies requires quality policy design to sanitize the current private-sector production efficiency. This requires a policy framework that promote private property, as well as innovational incentive to stimulate the domestic private sector, with a motivation to acquire competent and innovative skills to drive a productive speed for private goods as a complement of government production performance to the economy, as in public goods and services. Such policy approach uphold a strong response to increasing liquidity capacity via domestic monetary supply, a leverage to reduce poverty and enhance sustainable wealth of the average individual.

[2] The paper recommends a policy for purposive entrepreneurial driven economy in a conceptual framework of Schumpeterian growth model, which assume a responsible role to high export production to increase the foreign reserve in a form of IOU's, constituting a quality asset of the Central Bank to grants it a sufficient quantitative easing capacity, to meet its domestic market monetary stock level, a means to facilitate expansion, real GDP growth and possibly, full employment under controlled inflation.

[3] A sustained vibrant entrepreneurial economy upholding 'Schumpeter effect' 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, as well as meeting the optimum stock level of currency demand, for the domestic economy, towards expansion and growth.

[4] The developing and underdeveloped countries should develop a high desire to institute an independent and structural sustainable private-sector-productive-market via a policy instrument to strengthen its various domestic money creation avenue. The surest means to minimize poverty in such environmental settings and sustain growth that emerges 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, corporate tax, property 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, and rather invest an efforts in practical base and normative policy formulation for both tax administration and legislation.

F. Conclusion

In whatever chaotic functioning order of an economy, there are observed factors within an economic system that contribute to such a constraint effect. And the complexity of constraint, create more distortion to the performance output of the economy. Until the causal effect of the constraint is consciously enquired, and addressed, before there could be a sustainable growth. The paper in-depth submission of different angles of market function, concludes, such constraints exist to thwart the positive expected policy effect. The paper advanced its argument on certain unique challenges peculiar to certain economic system, which is also defined herein as constraint effect, using the continent of Africa as a population sample and a case study, and thereby presenting theoretical approach as well as

an equation model analysis to give an instructive policy framework towards the stimulation of sustainable economic growth of such a macroeconomic system, counting on the vibrant domestic private sector as the engine to a quality fiscal-monetary policy for development.

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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%

Source of Data: theGlobalEconomy.com retrieved from https://www.theglobaleconomy.com/