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Analysis of Tanzania Government Revenue Capability on Managing Public Debt: Ordinary Least Square Evidence

Nuhu A. Sansa

Guangxi University, China

Email: nuhusansa09@gmail.com

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Abstract *- Currently Tanzania public debt is rapidly growing to the extent the country is using 40% of domestic revenue collected to service the public debt at a time more funds are required to facilitate necessary government budget and developments projects towards accomplishing the priority industrialisation agenda for sustainable economic development in Tanzania. Despite that fact, no studies have been done to analyse the capability of the government revenue on managing the public debt in Tanzania. The present study's objective is to analyse the Government revenue capability on managing the public debt during the period 2009 to 2018 in Tanzania. From that regard the study applied the Ordinary Least Square (OLS) Method to analyse the capability of the government revenue on managing the public debt during the period 2009 to 2018 in Tanzania. The study applied the time series data during the period 2009 to 2018 from the World Bank to accomplish the study's objective. To investigate the capability of the government revenue on managing the public debt, the study computed the average annual percentage marginal change of the government public debt and the government revenue during the period 2009 to 2018 in Tanzania. The study findings revealed that the public debt annual average marginal change is positive and its trend continuously changes in a double digit form while the government revenue is positive and the annual average marginal change trend is continuously in a single digit form throughout the study period from 2009 to 2018 in Tanzania. Since the average percentage annual marginal change trend of the public debt is in double digit form while the government revenue changes trend is in a single digit form, that means the government revenue was incapable to manage the public debt during the period 2009 to 2018 in Tanzania.*

Keywords: *Tanzania, government revenue, public debt*

1. INTRODUCTION

The fundamental goal and objective of fiscal equalisation is to maintain the same level of services particularly taxes imposed to citizens in respective sub governments regions from the financial capacity given and distributed by the central government of respective country. Chan and Petchey (2017) clarified the objective of fiscal equalisation with respect to federal and decentralised unitary countries, saying that, the objective of fiscal equalisation which is implemented in many federal and decentralised unitary countries is to give sub-national regions (e.g. states, provinces or local governments) similar capacities to offer local public services without imposing different tax burdens on their populations.

The necessary significance of fiscal equalisation system to the government is basically to offset the tax base revenue and public expenditure differences to the sub governments authorities which means there will be no double standard for public service delivering to all people within the same country. The outcome of the good fiscal equalisation system will lead to the proper control of financial resources and eliminate the rooms of corruption to the respective local government authorities (Chr. Michelsen Institute, 2001).

Currently Tanzania public debt is rapidly growing to the extent the country is using 40% of domestic revenue collected to service the public debt at a time more funds are required to facilitate necessary government budget and developments projects towards accomplishing the priority industrialisation agenda for sustainable economic development in Tanzania. Despite that fact, no studies have been done to analyse the capability of the government revenue on managing the public debt in Tanzania.

The Tanzania Government using the 40% of the internal revenue to service the public debt resulting in the rise of the lending rates by the commercial banks to the private sector, the final implication is the private sector discouraged to make more investment and to support different economic activities including agriculture sector activities (World Bank Group Report, 2019).

The present study's objective is to analyse the Government revenue capability on managing the public debt during the period 2009 to 2018 in Tanzania.

Significance of the Study

From the existing literature this study will generate new knowledge concerning the capability of the government revenue on servicing the public debt during the period 2009 to 2018 in Tanzania. In addition to that the study will be useful to the public finance field of study and the Tanzania government monetary policy makers for policy innovation and necessary government decision to run the government.

2. LITERATURE REVIEW

TANZANIA PUBLIC DEBT

Evidence still shows that the Tanzania debt is still well manageable with regard to macroeconomic indicators including growth, inflation, interest rate, primary balance and the possibility and availability of external finance. Sharer, et al. (2004, pg.30), suggested that; "Based on the macroeconomic assumptions made about growth, inflation, interest rate, primary balance, and the availability of external financing, the simulations indicate that Tanzania's domestic debt position is manageable, if it continues to enjoy access to highly concessional external financing".

According to Charles (2018), the Tanzania public debt is still sustainable for short and medium term for the Country. He argued that, the most recent debt sustainability analysis (DSA) by the Government (2017) and by the IMF and World Bank (2016/17) indicated that Tanzania's public debt remains sustainable in both the short and medium term.

TANZANIA PUBLIC DEBT THREAT

Recently Tanzania has been using 40% of the domestic revenue to service the debt bill. The World Bank Group Report (2019, pg.2&3) discusses the matter stating that, "Public debt is still sustainable, despite the recent jump in domestic borrowing. Though Tanzania is at low risk of debt distress, commercial debt as a share of total public debt has risen because domestic debt has risen by 2.3 percent of GDP to finance the 2018/19 budget".

MEANING OF FISCAL POLICY AND FISCAL EQUALISATION

Different literature has clarified the meaning of fiscal equalisation, among them is OECD (2014) who argued that fiscal equalisation is the act of the central government to disburse the financial resources to the sub governments aiming to quickly efficiently deliver the services to its people with the same level of taxation and service quality. OECD (2014, pg.1) clearly defined fiscal equalisation as, "Fiscal equalisation is the transfer of financial resources to sub-central governments (SCG) to enable them to provide their citizens with similar levels of public services at similar levels of taxation".

The modified meaning of the term fiscal equalisation has included the item of public service costs equalities to sub governments expenditure. OECD (2007) modified the meaning and argued that the fiscal equalisation consists of disbursing the financial resources to the sub countries purposely to remove the differences on income revenue and public service costs to their citizens in respective regions. OECD (2007, pg.1) insisted that, "Fiscal equalisation is a transfer of fiscal resources across jurisdictions with the aim of offsetting differences in revenue raising capacity or public service cost".

Fiscal Policy definitions have been highlighted by different literature. In particular, Amadeo (2020) believe these are the government monetary policies implemented and imposed to the public through the central bank with the core intending to manage the economy of the country, specifically the economic indicators of interest rates and the public spending. Amadeo clearly defined fiscal policy as how Congress and other elected officials influence the economy using spending and taxation.

Britannica clarified the meaning of fiscal policy as the government monetary policies steps targeting to stabilise the economy on the area of revenue taxes and controlling the public expenditure. Britannica (2020) stating the definition of fiscal policy as the measures employed by governments to stabilize the economy, specifically by manipulating the levels and allocations of taxes and government expenditures.

CHALLENGES OF FISCAL EQUALISATION IN TANZANIA

Literature revealed that the Tanzania Government intergovernmental transfer system has not put in place the fiscal equalisation mechanism to offset the revenue tax collection and public expenditures differences to its sub government local authorities while serving the public, that leads to the differences in collection of incomes through taxation and public expenditure while serving the public in Tanzania. The authors insisted that the Tanzania rich local governments generate more revenue while the poor local governments authorities remain poor and fail to finance the public services. They further argued that, the current intergovernmental transfer system in Tanzania does not take differences in fiscal capacity into account. As a result, local governments in rich areas are able to generate considerably more revenue per capita than those in poor areas. Public services in poor areas are hard to finance (Allers & Ishemoi, 2010).

In Tanzania evidence shows that local governments authorities which are basically responsible to implement the fiscal equalisation mechanism do not have adequate capacity and necessary integrity to undertake the demanded fiscal autonomy by the central government. This evidence makes clear that the Tanzania government has not put in place the fiscal equalisation system mechanism to offset the tax income revenue collected and public expenditure differences to the local governments authorities (Chr. Michelsen Institute, 2001).

Recently Tanzania Government is experiencing the rise of public expenditure at a time the revenue collected from the public through taxation is not sufficient to accommodate the respective public expenditures eventually resulting in the serious Government deficit to accommodate and run the government budget (David, 2012).

SIGNIFICANCE OF FISCAL EQUALISATION IN TANZANIA

The necessary significance of fiscal equalisation system to the government is basically to offset the tax base revenue and public expenditure differences to the sub governments authorities which means there will be no double standard for public service delivering to all people within the same country. The outcome of the good fiscal equalisation system will lead to the proper control of financial resources and eliminate the rooms of corruption to the respective local government authorities (Chr. Michelsen Institute, 2001).

Masaki (2018) on his necessary contribution about the Tanzania government fiscal equalisation system advantages argued that, analysing newly available quarterly fiscal data on local revenues in Tanzania, it was shown that intergovernmental grants increase the mobilisation of local revenues, and also that the positive effect of fiscal transfers on local revenue collection seems to be more pronounced in rural districts.

In Tanzania and Zambia, it is evident that the more the tax revenue collection increases the more public service delivery improves and increases, with this regard the fiscal equalisation system for Tanzania is a must and must be effectively assessed to ensure the reliable outcomes from it. Using data from local government budgets in Tanzania and Zambia, it was revealed that local governments in both countries produce more public services as their budget's share of local taxes increases (Hoffman & Gibson, 2005).

The importance of fiscal policy in Tanzania has been highlighted on revenue collection as the evidence revealed that the revenue collection after the implementation of fiscal policies are higher and improving, however during the global crises, Tanzania's revenue capacity collapsed (Bevan & Adam, 2012).

IMPACT OF FISCAL POLICY TO FISCAL EQUALISATION

One element of the effects of fiscal policy to fiscal equalisation have been discussed by Younger, Myamba and Mdadila (2016). It was discovered that on the process of raising revenue through taxation by the sub government authorities the indirect taxes tend to increase the poverty while the direct tax does not increase the poverty in Tanzania. From this argument the Tanzania local governments authorities are highly recommended to practice the direct taxation system to collect revenue from the public instead of indirect tax.

The fiscal equalisation outcomes indicated on the United Nations Report (2018), revealed that the Tanzania income and revenue inequality to the sub governments and citizens decline due to the fiscal policies implementation within the country. The United Nations (2018, pg.1) report in particular on income differences stated that, "The decline in inequality is attributed to, among other things, improvements in redistributive policies in the country".

3. RESEARCH METHODOLOGY

The present study's objective is to analyse the Government revenue capability on managing the public debt during the period 2009 to 2018 in Tanzania. From that regard the study applied the Ordinary Least Square (OLS) Method to analyse the capability of the government revenue on managing the public debt during the period 2009 to 2018 in Tanzania. The study applied the time series data during the period 2009 to 2018 from the World Bank to accomplish the study's objective. To investigate the capability of the government revenue on managing the public debt the study computed the average annual percentage marginal change of the government public debt and the government revenue during the period 2009 to 2018 in Tanzania.

The study evaluated the annual growth rates for the public debt and the government revenue during the period 2009 to 2018 in Tanzania. The growing rate was evaluated by the following regression semi-log model:

$$\text{In } EQi = X0 + X1t + Xi \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \text{(1)}$$

From the above equation: X0 and X1 stand as coefficients, Xi stands as random disturbance, and EQi stand as dependent variable factor in the natural log, while t stands for Time period from the year 2009 to 2018.

The growing amount and figure (Rate) was evaluated by the following equation:

$$Rxy = X1 * 100 \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \text{(2)}$$

The present study computed the yearly growing figure for the divided periods of 2009-2013, and 2004-2018.

The slope dummy and the intercept dummy have been applied (Gujarati, 2003). The study particularly employed the regression equation:

In EQi = X0 + X1t + X2D1 + Xi ………………. (3)

From the above equation:

D1 (First Dummy) = 2009 to 2013 = 0

2013 to 2018 = 1

From the equation, X0, X1, ….. Stands as Coefficients, Xi stands as the random disturbance, while EQi and t stand as referred from the equation number 1.

Referring to the regression equation, the growing amount figure for the four divided periods were estimated by the following equation:

Rxy 2009 - 2013 = (X1) * 100 …………………… (4)

Rxy 2013 - 2018 = (X1 + X3) * 100 …………… (5)

The present study assumed the yearly growing amount in the given factors during the period 2013 to 2018 is greater than that of the period 2009 to 2013. This assumption could be equated as follows;

Rxy 2013 to 2018 > R xy 2009 to 2013

From the above equations, the meaning is:

(X1 + X3) * 100 > X1 * 100

Evaluating the Public debt and government revenue marginal annual change, the study employed assumptions to put in practice the Cobb - Douglas production function Cobb & Douglas (1928) and Constant Elasticity of Substitution (CES) Production Function (Arrow, et al., 1961), same applied by Sadhu and Mahajan (1982) and Gaur & Pandey (2003), and Greene (2005) respectively, which are classified and stated as below:

Oi = EL1 Ui ……………………………………… (6)

From the above equation, Oi is the output, EL represents Employment labour, 1 is the quantity of labour applied in the production mechanism, and Ui stands for random disturbance factor.

From the above literature citation, the present study compute the marginal public debt and government revenue as follows:

Extra public debt and the government revenue evaluated in the Double Log model below:

In Oi = In A + X In EL ………………………… (7)

From the above equation: X represents Elasticity of public debt or the government revenue during the period 2009 to 2018 in Tanzania.

4. RESULTS AND DISCUSSION

The Marginal Change for the Annual Average Government Revenue Capability to the Public Debt During the Period 2009 to 2019 In Tanzania

The annual average percentage marginal change for the public debt was double digit throughout the study's period from the year 2009 to 2019. For all sub periods (2009-2013 and 2014-2018), the public debt annual average marginal change recorded double digit figures of 20.45% and 10.44 respectively (Appendix 2).

The annual average percentage marginal change for the government revenue was single digit throughout the study's period from the year 2009 to 2019. For all sub periods (2009-2013 and 2014-2018), the government revenue annual average marginal change recorded the single digit figures of 1.95% and 1.022% respectively (Appendix 2).

The study findings revealed that the public debt annual average marginal change is positive and its trend continuously changes in a double digit form while the government revenue is positive and the annual average marginal change trend is continuously in a single digit form throughout the study period (2009 to 2018) in Tanzania. Since the average percentage annual marginal change trend of the public debt is in double digit form while the government revenue changes trend is in a single digit form, it means the government revenue is incapable to manage the public debt during the period 2009 to 2018 in Tanzania.

Appendix 1: The following table shows the data for the public debt and the government revenue during the period 2009 to 2018 in Tanzania

Year	**P/Debt**	**Revenue**
2009	8120.1	21.68
2010	9548.3	22.259
2011	11336.1	22.485
2012	14098.1	22.776
2013	17087.4	23.413
2014	18804.1	23.793
2015	20718.9	23.654
2016	23118.3	23.431
2017	25692.9	24.605
2018	28063.1	24.605
Total	**176587.3**	**232.701**

Source: The World Bank data from 2009 to 2018 for Tanzania.

Appendix 2: The following table shows the average percentage annual marginal change for the public debt and the government revenue during the period 2009 to 2018 in Tanzania.

Year	**P/Debt**	**AV-01**	**AV-02**	**Revenue**	**AV-01**	**AV-02**
2009	8120.1			21.68		
2010	9548.3	17.59		22.259	2.67	
2011	11336.1	18.72	20.45	22.485	1.02	1.95
2012	14098.1	24.36		22.776	1.3	
2013	17087.4	21.2		23.413	2.8	
		81.87			7.79	
2014	18804.1	10.05		23.793	1.62	
2015	20718.9	10.18		23.654	-0.58	
2016	23118.3	11.58	10.44	23.431	-0.94	1.022
2017	25692.9	11.14		24.605	5.01	
2018	28063.1	9.23		24.605	0	
		52.18			5.11	
Total	**176587.3**			**232.701**		

Source: From Appendix 1

5. SUMMARY OF FINDINGS

The study findings revealed that the public debt annual average marginal change is positive and its trend continuously changes in a double digit form while the government revenue is positive and the annual average marginal change trend is continuously in a single digit form throughout the study period from 2009 to 2018 in Tanzania. Since the average percentage annual marginal change trend of the public debt is in double digit form while the government revenue changes trend is in a single digit form, it means the government revenue is incapable to manage the public debt during the period 2009 to 2018 in Tanzania.

6. LIMITATION OF THE STUDY

The study examined the capability of government revenue to manage the public debt however the study did not mention the influence of the public debt to the government revenue during the period 2009 to 2018 in Tanzania. For the future studies I recommend the study to be undertaken to investigate the influence of the public debt to the government revenue in Tanzania.

7. CONCLUSION

The present study's objective is to analyse the Government revenue capability on managing the public debt during the period 2009 to 2018 in Tanzania.

From the existing literature this study will generate new knowledge concerning the capability of the government revenue on servicing the public debt during the period 2009 to 2018 in Tanzania. In addition to that the study will be useful to the public finance field of study and the Tanzania government monetary policy makers for policy innovation and necessary government decision to run the government.

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