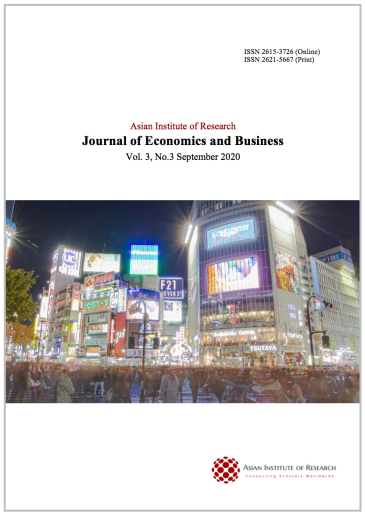

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Public Debt Dynamics and Fiscal Sustainability in Namibia: An Intertemporal Budget Constraint Analysis

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Abstract
The paper examines Namibia's salient issues of public debt-dynamics and fiscal sustainability from 1980 to 2018. Time series data for the same study period was used. Of interest is the aspect of demystifying the dearth surrounding the trend of increasing public debt in Namibia when it is economically concerning that the existing capacity to mobilise needed resources is inadequate. The inter-temporal budget constraints model was used to examine the various fiscal reaction functions, debt dynamics and fiscal policy adjustment to debt. The study found that the intertemporal budget constraint does not hold for Namibia. This is for the period under review, confirming that no surplus exists or somewhat too little to offset the accumulated debt from the previous period. The fiscal reaction functions are consistent with the intertemporal budget constraint with resounding results for both fiscal reaction and extended fiscal reaction functions. The debt dynamics function exposition is that in the short-run, Namibia's public debt is unsustainable. The government can address debt and fiscal sustainability issues by adjusting its expenditure through resources-wise matching. While government expenditure-containment amidst a global down turn could be complicated there is scope to design workable approaches for generating needed revenues while seeking to balance up expenditure concerns.

Keywords: Debt Dynamics, Fiscal Sustainability, Inter-Temporal Budget Constraint

1. Introduction and background

In lieu of the current fiscal constraints and the quest for fiscal sustainability in many countries across the world, the issues of public debt dynamics and fiscal sustainability has gained momentum. The principle of increasing debt-financed for government spending to be paid by posterity has over the years brought great controversies in economic literature and political debates. Elliot and Kearney (1988) used cointegration and Restricted Garber tests in seeking to assess the hypothesis of unsustainable financing. They purport that intertemporal budget constraint gives the sustainable limits about how government debt should grow considering performance of the

macroeconomy. They further enlightens that in the short term, such constraint can be exceeded by engaging in bubble financing.

Of late, common debates on this matter revolve around whether there exists a certain debt threshold that has negative implication for economic growth (Chudik, Mohaddes, Pesaran, and Raissi, 2017; Chandia and Javid, 2013). Critics argues that persistent public debt retard economic growth because it raises equilibrium interest rates that will ultimately crowds out private borrowing. Moreover, uncapped high debt levels have raised concerns of debt sustainability that may increase default risk and hyperinflation. Sovereign defaults have deteriorating effect to the macroeconomic fundamentals. They are often associated with straining fiscal and structural adjustment programmes that negatively affects output and employment. According to Bohn (1998) fiscal sustainability will be attained if an increase in primary public balance is observed after an increase in debt financed spending.

Arguing from a point of Portfolio Theory of Inflation, Bossone (2019) asserts that a country that has low credibility and heavily indebted could have its economy held tighter to an intertemporal budget constraint by investors. Such an action would undermine its policies, cause currency depreciation and trigger inflation.

In order to understand government spending shocks not only on output and prices but such should be extended to include debt to GDP ratio and interest on public debt (Auerbach and Gorodnichenko, 2017). It is difficult to determine an acceptable fiscal debt especially when an economy is not doing well. Even so, debt sustainability analysis is pertinent as it aids planning for financial and economic growth of a country. It is more imperative for small economies due to their narrow fiscal and reduced domestic resource mobilization options.

For a country like Namibia, its surge in public debt has raised various concerns regarding debt sustainability and its implication to the growth prospects of the economy. Public debt has increased faster than the GDP growth rate since independence, (Zaaruka et al., 2004, MOF, 2017). Also, in terms of the country's adopted benchmark, the government expenditure, budget deficits and public debts should be within the 40%, 5% and 35% of GDP respectively (MOF, 2017a). Despite the government's efforts to introduce the SDMS in 2005 and the MTEF, Namibia has breached its own thresholds. Both total expenditure, budget deficit and public debt exceeded the targets by end of 2015/2016 while total government revenue slowed to 35%, failing to keep up with growing public spending public (MOF, 2017a). According to Sherbourne et al. (2002), the formulation of consistent fiscal policy should consider how revenue, expenditure and debt relate to each other in order to maintain a stable debt to GDP ratio. To our knowledge, there is currently limited research in Namibia intended to address the nexus between public debt dynamics and fiscal sustainability.

Based on the raising concerns of fiscal sustainability and increase in debt burdens, expenditure and budget deficits above thresholds in Namibia, it is therefore imperative to examine and understand the underlying dynamics and determine the fiscal sustainability of the surge in public debt in Namibia. In order to achieve these objectives, an inter-temporal budget constraints model was used to examine the various fiscal reaction functions, debt dynamics and fiscal policy adjustment to debt.

2. Literature review

Theoretical predictions on the issue of fiscal deficit and the macroeconomic fundamentals are not without ambiguities. They revolve around three macroeconomic schools of thought. These are essentially the Neoclassical (crowding out effect); the Keynesians (crowding in effect) and the Ricardian equivalence. The proponents of the Neoclassical School of thought are of the view that fiscal deficit is bad and it has a deteriorating effect to the macroeconomic fundamentals. Deficit financed government expenditure directly crowds out private investment and through the multiplier effect it will further restart the growth prospects of the underlying economy. This transmission mechanism occurs through the capital market, where increased government spending will raise consumption that may lead to a fall in savings. This will cause a temporal disequilibrium in the capital market, implying that to restore equilibrium in the capital market an upward movement in interest rate will be required. The resulting increase in interest rate crowds out private investment,

leading to a fall in consumption spending and aggregate demand which will ultimately lead to a fall in economic activity/growth. Contrary to the Neoclassical school of thought, the proponents of the Keynesian school of thought postulates that debt-financed government spending is not necessarily bad, especially when there is an underemployment of resources. According to the Keynesian view, fiscal deficit crows-in private investment by stimulating aggregate demand through expansionary effect of government spending.

Debt-financed spending is argued to increase domestic productivity and marginal productivity of private investment. The proponents further argued that, government spending on infrastructure and other developmental capital projects will stimulate backward, forward and complementary linkages with the private sector, this process will therefore crowds in private investment and simultaneously enhance economic growth. The Ricardian equivalence offers a balancing act between the Neoclassical and the Keynesian schools of thoughts. It proponents assert that deficit financed government spending (through an increase in taxes) does change economic agents permanent income or lifetime constraints, hence their consumption decisions are not responsive to fiscal deficits (Barro, 1974). The agents are assumed to have perfect foresight such that a low or tax cuts in the current period is regarded as threat for future tax burden and vice versa. Therefore the present value of the taxes is not influenced by the timing of tax driven budget deficits but depends largely on real government spending. This implies that any increase deficit finance spending has no real effects on the macroeconomic fundamental. (Barro, 1974).This is often regarded as the neutrality of the Ricardian equivalence theorem.

In a study looked at intertemporal budget constraint and current account in Cyprus, Pattichis (2010) used a bounds testing approach and discovered that Cyprus was not in violation of the intertemporal budget constraint and it had a sustainable current account. In another study that used dynamic ordinary least squares method on ascertaining budget deficit sustainability in Asian economies, it was confirmed that a long run relationship existed between government revenue and expenditure. It was also found that fiscal consolidation needs adjustment of revenues in order to control spending in Nepal whereas controlling expenditure is effective for India, Bangladesh, Pakistan and Sri Lanka (Shastri, Giri and Mohapatra, 2019).

In an attempt to investigate the sustainability of fiscal policy in Turkey, a fiscal reaction function was employed for analysis. It was found that primary budget balance showed significant reaction to the previous increase in the GDP gap (Vural, 2018).

While studying the dynamics of fiscal policy in Algeria Chibi, Chekouri and Benbouziane (2019) used quarterly data from 1963 to 2017. For their analysis, they applied a smooth transition autoregressive model. The results show that the time series of budget balance was not stationary which implied that it was not possible to sustain the budget deficit in that country. That called for government authorities to reduce the deficit.

When anticipating joining the EU, there arose a need to assess how Poland faired in fiscal sustainability issues. Against this need, a study was conducted by Tronzano (2017) used cointegration test and also a vector auto regressive model. The results confirmed an existence of a long run relationship between revenues and expenditure variables. Furthermore, it was found that there was a bi-directional causality between revenues and expenditures. To join the EU, it was advisable for Poland to engage in further fiscal consolidation mechanisms in seeking to balance up revenue options with declining expenditure.

3. Methodology

3.1. Theoretical framework

The paper is anchored on theoretical framework of the intertemporal budget constraints for the public sector which was developed by Hamilton and Favin (1986). The same was also referred to as the present value of borrowing constraint. The rationale of the inter-temporal budget constraint model is informed by the assumption that when current period fiscal deficits are proportionately associated with future period surpluses that will be used to repay the accumulated principal plus interest. The economics of this model implies that the present value of the cumulative sum of current and expected future non-interest outlays must be less or equal to the associated

cumulative sum the present value of revenues and seignorage (Baglioni, A. and Cherubini, A. (1993). The mathematical expression of the borrowing constraint is given by;

$$b_t = (1 + r)b_{t-1} - s_t \quad (1)$$

Such that$b_t$denotes real value of outstanding public debt, r represent the real interest rate accrued to the debt and s_t is the budget surplus in real terms. The expression for the budget surplus is given by;

$$s_t = t_t + \frac{(m_t - m_{t-1})}{p_t} - g_t \quad (2)$$

Where t_t denotes real tax revenue, g_t represent government non-interest expenditures, m_t is the nominal stock higher powered money and p_t captures the price index. The underlying assumption regarding equation (2) is that budget surplus includes seignorage but excludes interest payment of debt. Taking a forward solution of equation (1), and denoting expected values at time t to be represented by E_t will yield an expression that relates the present value of public debt to the expected discounted values of cumulative future budget surplus as well as the constraining values of the discounted debt stock. This expression is given by;

$$b_t = \sum_{i=t+1}^{\infty} \frac{1}{(1 + r)^{t-1}} E_t S_t + \lim_{n\to\infty} \left(\frac{1}{(1 + r)^N}\right) E_t b_N \quad (3)$$

According to Baglioni and Cherubini (1993), the binding condition for debt sustainability to hold is that the current budget deficit should equate to the cumulative sum of expected future surplus. This implies that the following hypothesis should hold;

$$H_0: b_t = \sum_{i=t+1}^{\infty} \frac{1}{(1 + r)^{t-1}} E_t S_t \quad (4)$$

For the hypothesis in equation (4) to hold, the following hypothesis should also be true: $H_0: \lim_{N\to\infty} \frac{E_t b_N}{(1+r)^N} = 0.$ (5)

It is important to note that equations 1-5, debt sustainability condition allows for the scenario where the deficit is indefinite. However, an indefinite net of interest budget deficit is not desirable because it leads to unsustainability issues. This does not rule out the fact that government may run a deficit indefinitely. An indefinite deficit may be sustainable conditional to the reasoning that the growth rate of debt is less than its associated rate of interest incurred by the government. To capture the dynamics of the economy, equations 1-5 can be modified by factoring in the growth rate of the underlying economy. In this instance, the above variables should be expressed as a ratio to gross national income. Additionally the interest rate needs to be expressed as difference between real interest rate charged on fiscal deficit and the growth rate of the national income.

3.2 Modelling strategy

The paper adopts Chandia and Javid (2013) IBC function of the form;

$$PL_t - PL_{t-1} = r_t PL_{t-1} + G_t - R_t \quad (6)$$

Where: PL_t denotes debt stock at in period t; G_t represent primary public expenditure (less interest payment); R_t captures government revenue and r_t is the lagged interest rate on government debt. From equation 6, the primary deficit is expressed as $G_t - R_t$where $PL_{t-1} + G_t$ represents the government expenditure. According to Sanchez-Fung (2006), the government budget constraint is expressed as;

$$PS_t = \alpha + \beta PL_t \quad (7)$$

Where; *PS* represent the ratio of primary budget surplus to GDP, *PL* is the ratio of debt to GDP. Debt sustainability is tested using Bohn (1998) policy rules/reaction function. According to Bohn (1998), the government should take sustainable measures that are aligned with the inter-temporal budget constraint i.e. surplus to GDP ratio and debt tp GDP ratio. The satisfaction of the intertemporal budget constraint is tested as follows;

$$PS_t = \gamma_0 + \gamma_1 PL_{t-1} + \xi_t \quad (8)$$

Where; PS is net budget surplus measured a ratio to GDP, PL represent the ratio of debt to GDP. The following one sided hypothesis is tested; $H_0: \gamma_1 \prec 0$. The inter-temporal budget constraint will hold if the alternative hypothesis is supported (positive and significant) i.e. current period surplus should be large enough to offset the the accumulated debt from the previous period. Equation (8) is based on the assumption that the underlying process is stationary if unit exists then a long-run relationship will be estimated

3.2.1 Fiscal reaction functions

According to Bohn (1998); Barro (1986); Weichenrieder & Zimmer (2014) fiscal sustainability is constrained by government expenditure and the accumulated value of debt. Therefore, the fiscal reaction function is expression;

$$PS_t = \gamma_0 + \gamma_1 PL_{t-1} + \gamma_2 G_t + \gamma_3 GAP_t + \xi_t \quad (9)$$

Where *PS* is the primary budget surplus to GDP ratio, *PL* denotes debt to GDP ratio, *G* represent government spending, *GAP* is the output gap (difference between actual and potential GDP of Namibia). From economic theory, debt to GDP ratio is expected to be positive. This is driven by the inter-temporal budget constraint where an increase in public debt in a given period should be associated with an increase of a higher budget surplus in the next period to offset the accrued deficit. On the contrary, a negative sign expected for government spending and output gap. This is because an increase in government spending/output gap will reduce the prevailing budget surplus. Economic theory further postulates that current period budget surplus is also determined by the previous period budget surplus. This leads to the following extended fiscal reaction function;

$$PS_t = \gamma_0 + \gamma_1 PL_{t-1} + \gamma_2 G_t + \gamma_3 GAP_t + \gamma_4 PS_{t-1} + \xi_t \quad (10)$$

Where: all term are as defined before. There are various methods {linear method, single variate (Hodrick-Prescott (HP) filter)}, hybrid approach, multivariate, DSGE models, etc.} to estimate the output gap[1]. The linear trend is the simplest method of estimating the output gap. It uses a linear trend to estimating the potential output. The main criticism for this approach is that the output gap is highly influenced by the sample period. Moreover the output gap estimates are highly sensitive to the underlying sample period, rendering uncertainty of the results. The HP-filter is the common single variate technique to estimate output gap. Both linear method and HP filter only use one variable i.e. GDP for estimation. Restricting estimation to one variable may produce unreliable results because other macroeconomic fundamentals (labour, inflation, total factor productivity, etc.) are not incorporated in the analysis. However the ability of the HP-filter to render the output gap stationary over longer horizons makes it to be superior to the linear method. The hybrid and multivariate methods are often regarded as more reliable when estimating the output gap because they incorporate economic information that reflects both on the supply side and on business cycles, Alichi (2017). Due to data limitations, this paper uses the HP filter to estimate the output gap.

3.2.2 Debt dynamics

To gain deeper insight on Namibia's fiscal sustainability, a dynamic analysis is required. This paper capture debt dynamics by using Bohn (1998) short -run dynamics between surplus to GDP and debt to GDP ratios. This analysis is based on the basic theoretical assumptions that surplus to GDP ratio and debt to GDP ratio may temporary moves away from each in a short-run, however there exists an adjustment process where debt to GDP ratio revert to its mean. This dynamic process is expressed;

$$\Delta PS_t = \gamma_0 + \gamma_1 \Delta PL_{t-1} + \gamma_2 \Delta G_t + \gamma_3 \Delta GAP_t + \xi_t \quad (11)$$

3.2.3 *Government revenue and expenditure adjustment to debt*

In addition to debt sustainability and debt dynamics analyses, the paper further examines how fiscal adjustment trickle down to the output. In line with Blanchard and Perotti (2002); Chandia and Javid (2013), the following revenue and expenditure functions are analyzed;

$$R_t = \gamma_0 + \gamma_1 PL_{t-1} + \gamma_2 GAP_t + \xi_t \quad (12)$$

See Alichi (2017) for a detailed discussion on output gap methods

$$G_t = \gamma_0 + \gamma_1 PL_{t-1} + \gamma_2 GAP_t + \xi_t \quad (13)$$

Where R_t and G_t denotes government revenue and expenditure respectively. The revenue and expenditure functions model their dependency on public debt and output gap.

3.3 Data sources and description

The paper employs secondary time series data from 1990 to 2017. Data on government spending, revenue and debt are sourced from the Ministry of Finance, whereas GDP, money supply, interest rates and consumption expenditure are sourced from Bank of Namibia.

3.4 Time series properties of the data

To ensure meaningful sample statistics, it's important that the time series properties are evaluated. Most economic time series data are prone to unit roots but a stable long-run relationship may exist. The paper uses the Augmented Dickey-Fuller test (ADF) to test for unit root. In addition to the ADF test, the Phillips–Perron (PP) test that corrects for autocorrelation and heteroscedasticity is also used as a robustness approach. The existence of the long-run relationship is examined using the Johansen cointegration test.

3.4.1 Unit root

The ADF and the PP unit roots are used to test for unit root. The general expression for the ADF tests is given as$\Delta x_t = \gamma x_{t-1} + \xi_t$; where $\gamma = (1 - \rho)$. This expression sets on testing the null hypothesis that $\rho = 1$ i.e. the series exhibits a unit a unit root process. The alternative hypothesis can be that x_t is $I(0)$ or x_t exhibits a deterministic trend (t) or (t^2). The ADF test may produce biased results when the residual term suffers from serial correlation/ heteroscedasticity, this also reduces the power of the ADF test. In the presence of serial correlation or heteroscedasticity, the PP-test is presumed to have more power as it corrects for serial correlation and heteroscedasticity in the residual term. The PP-test expression is given by; $y_t = c + \delta_t + \alpha y_{t-1} + \varepsilon_t$. The null hypothesis of unit root restrict $\alpha = 1$, where as c and α is restricted to be zero.

3.4.2 Cointegration

Cointegration is said to exist when the time series variables are non-stationary but their linear combination exhibits a long-run relationship. The common stochastic process between X and Y can be expressed as;

$$X_t = \gamma_0 + \gamma_1 Z_t + \varepsilon_t \backsim I(1)$$
$$X_t = \delta_0 + \delta_1 Z_t + \xi_t \backsim I(1)$$
$$\varepsilon_t, \xi_t \sim I(0)$$

The above expressions indicate that although X and Y may be non-stationary, there exists a stochastic linear process that is stationary. This paper uses the Engle-Granger cointegration technique because of the limited number of observations.

4. Analysis of empirical estimates

4.1 Descriptive statistics

The descriptive statistics are reported in Table 1. It reports the mean, standard deviation the coefficient of variation. The coefficient variation provides important descriptive statistics for comparing the degree of variation between the data series, even if the means are different from one another. Table 1 shows that the coefficient of variation is fairly uniform between the data series.

Table 1: Descriptive statistics

Variable	Mean	S.deviation	C.variation
PS	-0.0196	0.0350	1.7857
PL	0.1672	0.2147	1.2840
GE	0.2040	0.1992	0.9764
GR	0.1844	0.1697	0.9202

4.2 Time series properties of the data

Table 2: Unit root tests

Variable	ADF-level	ADF-1st difference	Critical value at 5%
PS	-0.4413	-6.4030*	-2.9458
PL	-1.4758	5.3123*	-2.9511
G	-3.1667	-4.7547*	-3.5742
GAP	-3.5228	-6.4605*	-3.5330
GR	1.8060	-4.0599	-3.2046

Table 2 reports both the ADF-unit root test and Engle granger cointegration results. It shows a mixture of I(0) and I(1) and I(2) order of integration. This indicates that although the variables exhibit a unit root process, they become stationary after the dth order of differencing.

4.3 Intertemporal budget constraints result

The inter-temporal budget constraint results show that an inverse relationship exists between primary budget deficit and government debt stock. This finding is inconsistent with the debt sustainability condition. The sustanability condition requires a negative/positive relationship to hold for a budget surplus/deficit in response to public debt stock.

Table 3: Inter-temporal budget constraint

Dependent variable: budget deficit			
Regressors	coefficients	t-statistics	Prob.
Debt stock (-1)	-0.1419	-7.4065	0.0000
Constant	0.0020	0.4247	0.6752
R-squared			0.6037
Prob. (F-statistics)			0.0000
Durbin-Watson			0.8285

Table 3 shows that if debt stock increases by one unit, budget deficit will decreases by 0.14 units, an outcome that is contrary to the sustainability condition. Therefore, the sustainability condition does not hold. This provides empirical evidence that for the period under review, Namibia's stock of debt does not satisfy the fiscal stability condition.

4.4 Fiscal reaction functions

The fiscal reaction function is tested using equation 9. Table 4 reports an insignificant and positive coefficient of the public debt, this indicates that after adjusting for other control variables Namibia public debt could be unsustainable. Accordingly Bohn (1998) predicts that a positive/negative relationship between primary surplus/deficit and debt stock should hold.

Table 4: Fiscal reaction function
Dependent variable: primary budget deficit

Variables	Coefficients	t-statistics	Prob.
Debt stock(-1)	0.0398	0.7757	0.4433
G	-0.1876	-4.0552	0.0003
GAP	0.0155	0.1005	0.8783
Constant 0.0131	2.8728		0.0070
R-squared			0.7573
Prob(F-statistic)			0.0000
Durbin-Watson stat			0.7509

Table 4 reports a positive relationship between budget deficit and debt stock, an indication of public debt unsustainability. The output gap carries the correct sign, any increase in output gap will worsen budget deficit whereas government exhibits a wrong sign. The extended fiscal reaction function supports the hypothesis that the intertemporal budget constraint does not hold an indication that fiscal policy may be unsustainable if it continues on the same trajectory.

Table 5: Extended fiscal reaction function (Dependent variable-primary budget deficit)

Variables	Coefficients	t-statistics	Prob.
Debt stock(-1)	0.1434	3.5629	0.0011
G	-0.1688	-5.1462	0.0000
GAP	0.0593	0.8313	0.4117
PS(-1)	0.7510	5.9356	0.0000
Constant. 0.0073.	2.1861		0.0360
R-squared			0.8826
Prob(F-statistic)			0.0000
Durbin-Watson stat			2.5828

Table 5 shows a positive relation between primary budget deficit previous, period primary surplus and public debt. Similarly there exists supporting evidence that an increase in government expenditure will lead to fall in the budget deficit. These findings are indicative of the fact that fiscal policy in Namibia may be unsustainable and also shows potential weakness in the form of debt sustainability.

4.5 Debt dynamics

To further unlock the underlying dynamics, equation 11 is estimated to examine debt dynamics.

Table 6: Debt dynamics (Dependent variable - Δprimary budget deficit)

Variables	Coefficients	t-statistics	Prob.
ΔDebt stock(-1)	0.1340	2.4729	0.0187
ΔG	-0.4224	-3.8933	0.0005
ΔGAP	-0.026	-0.3537	0.7258
Constant 0.0022	0.7352		0.4674
R-squared	0.3600		
Prob(F-statistic)	0.0018		
Durbin-Watson stat	1.4511		

In Table 6, there exists supporting evidence that Namibia's public debt is not sustainable in the short-run. This is further reinforced by the presence of an inverse relationship between public expenditure and primary budget deficits, indicating that debt dynamics is pro-cyclical in response to government expenditure.

4.6 Government expenditure and revenue adjustment to debt

In order to address policy issues of debt and fiscal policy sustainability, equations 12 are 13 are estimated to provide insights on how fiscal policy components (expenditure and revenue) are adjusting to debt accumulation.

Table 7: Government expenditure adjustment to debt accumulation

Dependent variable: government expenditure			
Variables	Coefficients	t-statistics	Prob. values
Debt stock (-1	1.0512	17.311	0.0000
GAP	1.1174	3.5465	0.0011
Constant	0.0535	3.8240	0.0005
R-squared			0.8954
Prob (F-statistic			0.0000
Durbin-Watson stat			0.7278

Table 8: Government revenue adjustment to debt accumulation

Dependent variable: government expenditure			
Variables	Coefficients	t-statistics	Prob. values
Debt stock (-1	0.8938	17.1957	0.0000
GAP	0.9232	3.4233	0.0016
Constant	0.0566	4.7231	0.0000
R-squared			0.8942
Prob (F-statistic			0.0000
Durbin-Watson stat			0.6181

The findings in Tables 7 and 8 indicate that there exists an adjustment process from both the government expenditure and revenue. This is consistent with the inter-temporal budget constraint and it reinforces the arguments that revenue can be enhanced to maintain debt fiscal policy sustainability. Similarly the government can address debt and fiscal sustainability issues by adjusting its expenditure and/or through the output gap.

5. Conclusion

The paper found that the intertemporal budget constraint does not hold for Namibia, this indicates that there is no sufficient budget surplus that exists or somewhat too little to offset the accumulated debt from the previous periods. The evidence of debt unsustainability is robust even after employing the fiscal reaction functions. Additionally, the debt dynamics analysis supports the hypothesis that fiscal policy instruments in terms of government expenditure and revenue could be used to address the issues of debt and fiscal sustainability. For a small economy such as that of Namibia, fiscal consolidation is vital especially when the global economy is declining. This is necessitated by the fact that trade tends to decline and as such inflows as well declines which then has consequences on fiscal resources. It is also rational to engage in possible approaches that tend to assist with fiscal debt arrest or expenditure containment. On the supply side, revenues need to increase to finance a growing deficit. For expenditure reduction, the process needs to be considered as urgent in order to avoid a spiral effect beyond the GDP limit. Some of the ways of containing the deficit would require reducing fiscal allocations to non-pertinent sectors for a while. Productive sectors such as agriculture, tourism and mining have a multiplier effect on the economy and should thus receive support. However, increasing tax is unsustainable in a long rush as such have potential to cause social unrest when job opportunities become scarce.

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