

A Fiscal Vulnerability Indicator for Lesotho¹

By Moeti Damane*

Abstract

THE OBJECTIVE of this paper is to construct a fiscal vulnerability indicator for Lesotho using annual fiscal and macroeconomic data from 1993 to 2017 and a Dynamic Debt Equation for calculating Fiscal Vulnerability (DDE-FV) that estimates a debt stabilising primary balance. A normal fiscal vulnerability range of 2 to 4 per cent of GDP and a severe fiscal vulnerability range of 8 to 10 per cent of GDP were identified. Results show few periods of severe fiscal vulnerability compared to normal fiscal vulnerability episodes during 1993 to 2017. Severe fiscal vulnerability was observed in two out of the 25 years. Normal fiscal vulnerability was observed for 11 out of the 25 periods. Lesotho's fiscal policy was above the normal fiscal vulnerability threshold between 1992 and 2001 before returning to levels largely within the tolerable fiscal vulnerability level for the remainder of the 1993 – 2017 period.

Keywords: Fiscal Policy, Budget Deficit, Fiscal vulnerability, Public Debt, Lesotho

JEL classification: H2; H3

¹ The views and opinions expressed in this paper are those of the author(s) and should not be attributed to the Central Bank of Lesotho (CBL).

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1 INTRODUCTION

1.1 Background

IN THE IMMEDIATE aftermath of the global financial crisis of 2007/08, interest in literature on fiscal policy experienced a significant rise. This is evidenced by an increase of empirical studies whose themes range from fiscal stress, public debt, debt limits and fiscal solvency (Mendoza and Ostry, 2008; Berti *et al.*, 2012; Ghosh *et al.*, 2013; Mauro *et al.*, 2015 and Lorenzoni and Werning, 2019) to studies with a focus on fiscal vulnerability and fiscal sustainability (Stoian, 2010; Baldacci *et al.*, 2011; McHugh *et al.*, 2011; Jedrzejowicz and Koziński, 2012 and Stoian, 2018). Similarly, in the wake of the global outbreak of the Corona Virus Disease of 2019 (COVID-19), fiscal policy literature finds itself back in vogue with policy makers as broader implications of unsustainable fiscal positions are discussed, including the consequences for monetary policy and financial stability. This owes to the financial and economic consequences of the COVID-19 outbreak which are expected to lead to sizeable increases in fiscal deficits and public debt ratios around the world. The fiscal costs of the virus will mainly be the result of infection-control measures that will necessitate sharp increases in health expenditure by governments, coupled with tax and spending initiatives to support people and firms affected by the disease. Based on anticipated policy responses², fiscal balances are expected to severely deteriorate around the globe. This is especially true in emerging market and developing economies. The reason being their heavy reliance on commodity exports and their relatively greater vulnerability to various shocks that include the pandemic, worsening financing conditions, weak external demand and declining terms of trade (lower prices of export commodities) (IMF, 2020 and World Bank, 2020).

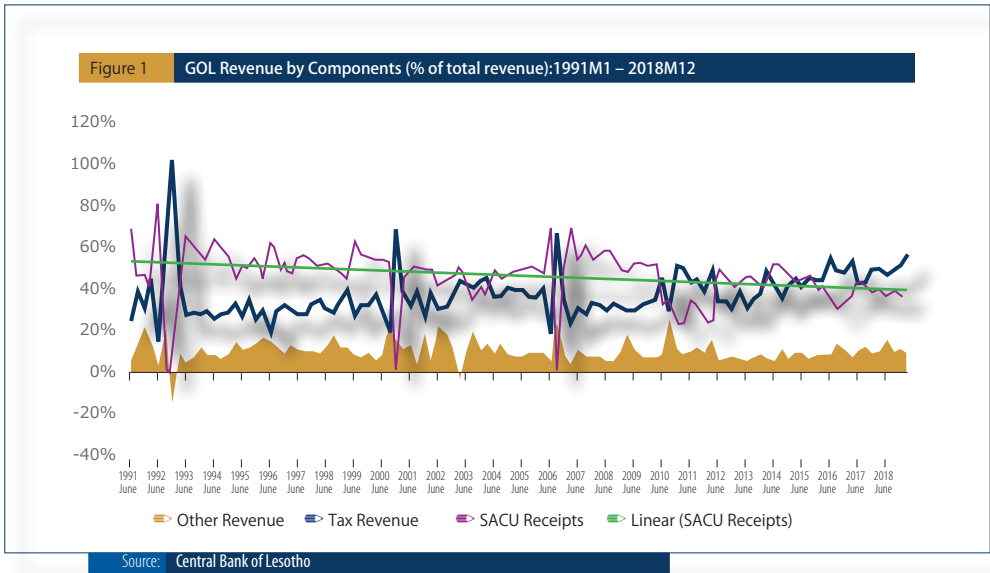
In the case of Lesotho, a small open economy that operates under a fixed exchange rate regime³ with strong macroeconomic linkages with the rest of the world, COVID-19 infection-control measures are anticipated to result in significant tax revenue declines together with large scale public spending pressures as government moves to mitigate the health and economic impacts of

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² Stabilisation packages to mitigate the effects of unemployment and business closures given infection-control actions (that have disrupted the economy) can include (i) government purchases, (ii) income tax cuts (iii) unconditional transfers, unemployment income (iv) and (v) liquidity assistance to distressed firms (Faria-e-Castro, 2020).

³ Lesotho operates under a fixed exchange rate regime where the country's currency, the loti is pegged at par with the South African currency, the rand.

the disease. This likelihood would be coming on the heels of an already stressful fiscal situation for the country. Lesotho's main source of revenue is its receipts from the Southern African Customs Union (SACU⁴) revenue sharing pool⁵. The aftermath of the global financial crisis of 2007/08 brought with it a significant slowdown in economic growth and a deterioration in the fiscal balances of SACU member countries. This weakened fiscal position was largely the result of significant reductions in SACU transfers and elevated levels of government expenditure⁶. Figure 1 presents trends in the government of Lesotho's (GOL's) revenue components as percentages of total revenue for the period 1991M1 to 2018M12.



Over the review period, Lesotho's share of SACU receipts roughly averaged 46.29 per cent of total revenue, with domestic tax revenue's share of the same averaging 37.69 per cent. From the 2005/06 to the 2013/14 financial years, Lesotho's SACU receipts grew from roughly 14 per cent of GDP to 24 per cent of GDP. This development was coupled with high

⁴ The Southern African Customs Union (SACU) consists of Botswana, Lesotho, Namibia, South Africa, and Eswatini. The SACU Secretariat is located in Windhoek, Namibia. SACU was established in 1910, making it the world's oldest Customs Union.

⁵ Customs and excise duties collected by SACU members are pooled and distributed quarterly, based on a revenue-sharing formula negotiated by the member countries.

⁶ When SACU revenues were buoyant (around the 2005/06 to the 2013/14 financial years), the public sector wage bill expanded to one of the largest in the world thus creating fiscal rigidities that manifested into financing challenges (IMF, 2019).



levels of government expenditure, most notably the wage bill, which doubled as a per cent of GDP on account of salary hikes. SACU receipts (and GOL total revenue, by extension) started to dwindle considerably after the 2014/15 financial year alongside a slowdown in South African import growth. This reflected the procyclical nature of the SACU receipts that largely follow economic growth conditions in the region. During this time, the GOL wage bill remained stubbornly high, causing a depletion of the fiscal and reserve buffers in subsequent years. In the tail end of the 2017/18 financial year, the GOL ran out of the fiscal space to draw down on its deposits with the Central Bank of Lesotho (CBL) without threatening the level of reserves required to support monetary policy operations. Consequently, rather than jeopardize the rand – loti peg, the government (not able to fully finance the deficit via shallow domestic markets⁷) experienced delays in certain domestic payments. The result was a build-up of GOL payment arrears (IMF, 2019).

With Lesotho's fiscal difficulties in mind, one of the major lessons from the 2007/08 global financial crisis was the emphasis on the importance of having in place early warning systems that can be used to identify risks and vulnerabilities to fiscal and macro-financial stability. Analytical work on the assessment of fiscal vulnerability and early warning systems of potential fiscal distress (see IMF, 2008, 2011 and 2012; Jedrzejowicz and Koziński, 2012; Berti *et al.*, 2012 and Stoian, 2018) has proven that a country's ability to detect fiscal risks early allows for the effective coordination of timely policy responses that are crucial in an interconnected and globalised world. Against the foregoing background, the objective of this paper is to develop a fiscal vulnerability⁸ indicator for measuring fiscal vulnerability in Lesotho. The indicator is expected to provide early warning (short-term) signals on rollover problems by being able to track key fiscal indicators while also providing policy makers with room to adjust policy given signs of fiscal vulnerabilities or extreme fiscal stress. Currently Lesotho does not have a fiscal vulnerability indicator. Our study, therefore looks to add to the existing fiscal policy tool kit by providing policy makers with a framework for assessing fiscal vulnerability in Lesotho. The rest of the paper is organised as follows: Section 2 discusses recent fiscal developments in Lesotho. Section 3 presents the theoretical and empirical review of literature. Section 4 outlines the data

⁷ Efforts to finance the deficit initially fell short as only 50 per cent of the bonds auctioned in the first half of the 2018/19 fiscal year were subscribed (IMF, 2019).

⁸ In a similar way to Hemming *et al.*, (2003); Hemming and Petrie (2002) and Stoian (2010, 2012, 2013), the paper defines fiscal vulnerability in the context of the government's ability to achieve its macroeconomic objectives. A detailed explanation is offered in Section 3.

and methodology used in the paper. Section 5 discusses the results. Last, Section 6 gives the conclusion and policy recommendations.

2 RECENT FISCAL DEVELOPMENTS IN LESOTHO

Rena and Kefela (2011) explain fiscal policy as a government tool designed to monitor and influence a nation's economy through its control over the size and structure of the government's revenues and expenditures. Fiscal policy can, therefore, be recognised as a macroeconomic stabilisation instrument. The purpose of this section is to offer a review and discussion of the most recent fiscal developments in Lesotho. The review uses annual time series data and some stylised facts on the impact of fiscal policy in the country. The fiscal policy analysis is in terms of government expenditure, tax revenue, debts and debt service.

2.1 Evolution of Tax and Expenditures in Lesotho: 1982 – 2015

Similar to most governments around the globe, the Government of Lesotho (GoL) collects revenues to finance infrastructure projects, social protection and well-being, and other public needs. From the early 1980s to the early 2010s, Lesotho's revenues (tax and non-tax) and expenditures have been volatile. The volatility has in part been driven by significant changes in the country's political economy. For instance, the year 1993 marked the country's political transition into a democracy after the coup de tat of 1986. This time also reflected a drastic change in fiscal policy as income tax rates were increased markedly from the rates of 1962. Specifically, the upper bracket of the income tax rate was adjusted from 12.5 per cent in 1962 to 35 per cent in 1993. Table 1 presents the trends in fiscal policy indicators and Gross Domestic Product (GDP) in Lesotho from 1982 to 2015. During this 34-year period, real GDP grew by an average of 4.1 per cent while Government revenues and expenditures recorded an average of 49.9 per cent and 48.4 per cent of GDP, respectively.



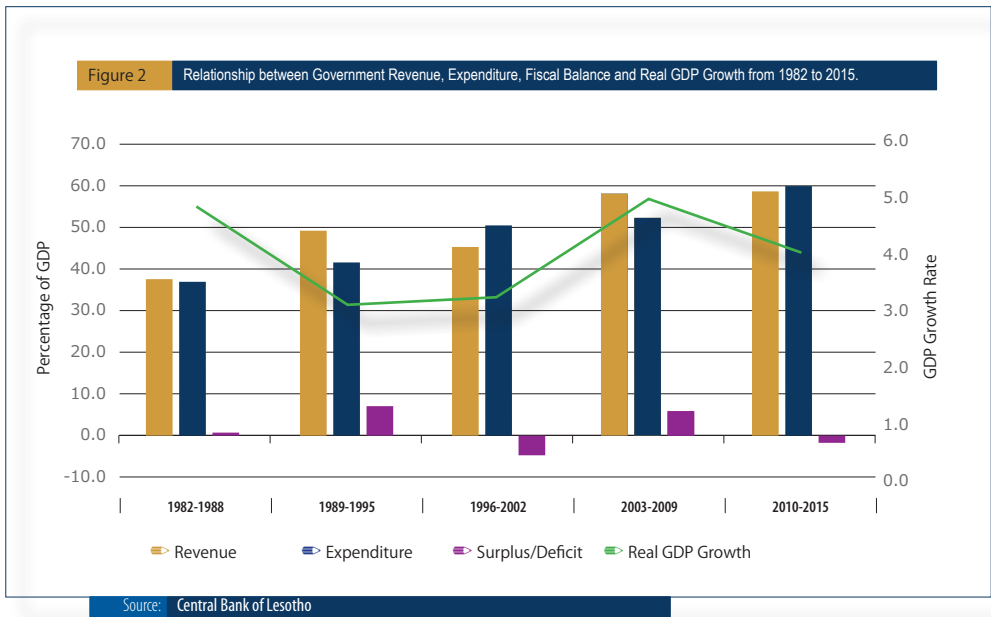
Table 1	Trends in Fiscal Policy Indicators and GDP from 1982 to 2015 (In percentages of GDP)				
	1982-1988	1989-1995	1996-2002	2003-2009	2010-2015
Revenue	37.8	49.2	45.4	58.4	58.6
Expenditure	37.4	41.7	50.5	52.4	60.1
o/w capital	10.8	5.7	7.1	5.8	13.5
Surplus/Deficit	0.4	7.5	-5.1	6.0	-1.5
Real GDP growth (% changes)	4.9	3.1	3.3	5.0	4.1
Source	Ministry of Finance and Central Bank of Lesotho				

Between 1996 and 2002 the GoL registered an average fiscal deficit of 5.1 per cent of GDP. The government's biggest expenditure emanated from the liquidation and privatisation of State Owned Enterprises (SOEs) including two indigenous banks; Lesotho Bank and Lesotho Agricultural Development Bank. The cost of privatisation was estimated at M605.00 million that was spent on, among others, retrenchment packages. This led to an accumulation of public debt that was used for financing (Damane *et al.*, 2018). There was also a rise in public capital expenditure from the implementation of the infrastructure related to the Lesotho Highlands Water Project⁹ (LHWP). Spending on the LHWP constituted a major part of the government's capital expenditure during the period from 1996 to 1999. On a broader perspective, the period between 1996 and 2002 saw the real GDP growth increase marginally to 3.3 per cent from 3.1 per cent recorded between 1989 and 1995.

Figure 2 presents a graphical relationship between government revenue, expenditure, the fiscal balance and real GDP growth from 1982 to 2015. The fiscal balance exhibited a surplus of approximately 2.2 per cent of GDP between 2003 and 2015. According to Tsekoa (2002), in 2003, as a way to strengthen the tax administration in the country, the GoL established the Lesotho Revenue Authority (LRA). The tax administration reform of 2003 contributed positively to domestic tax revenue collection that registered an average of 33.2 per cent of GDP between 2003 and 2015 compared to 6.6 per cent of GDP between 1982 and 2002. Another important contribution to Lesotho's revenue during the period 2003 and 2015 were the sizeable inflows of Southern African Customs Union (SACU) receipts that registered 40.3 per cent of GDP.

⁹ The Lesotho Highlands Water Project was signed in 1986 by the GoL and the Government of the Republic of South Africa (RSA) aiming to transfer water to RSA and generate hydropower for Lesotho. Upon completion, this introduced two revenue items that expanded the revenue base: royalties paid by the RSA on water transfer from Lesotho to RSA, and cash flows on electricity sales from hydropower component of the project.

Thahane (2005) pointed out that together with domestic tax revenue (income tax and value added tax), foreign grants from the United States (US) Millennium Challenge Account (MCA) also boosted Lesotho’s revenue base during the 2003 to 2015 period.



Total government spending from 2003 to 2015 stood at an average of 56.3 per cent of GDP. This included the redemption of 5-year and 10-year bonds related to the privatisation process of SOEs, spending on *Old Age Pension Scheme*, pension liability to Public Officers Defined Contribution Pension Fund, unitary payments on health projects through public-private partnership financing, expenses related to government fleet management as well as international transport costs. There was also a significant increase in capital spending to finance the cost of building the Metolong Dam project, road networks linking highlands and lowlands districts, and other MCA-funded projects. The real GDP growth registered an average of 5.0 per cent.

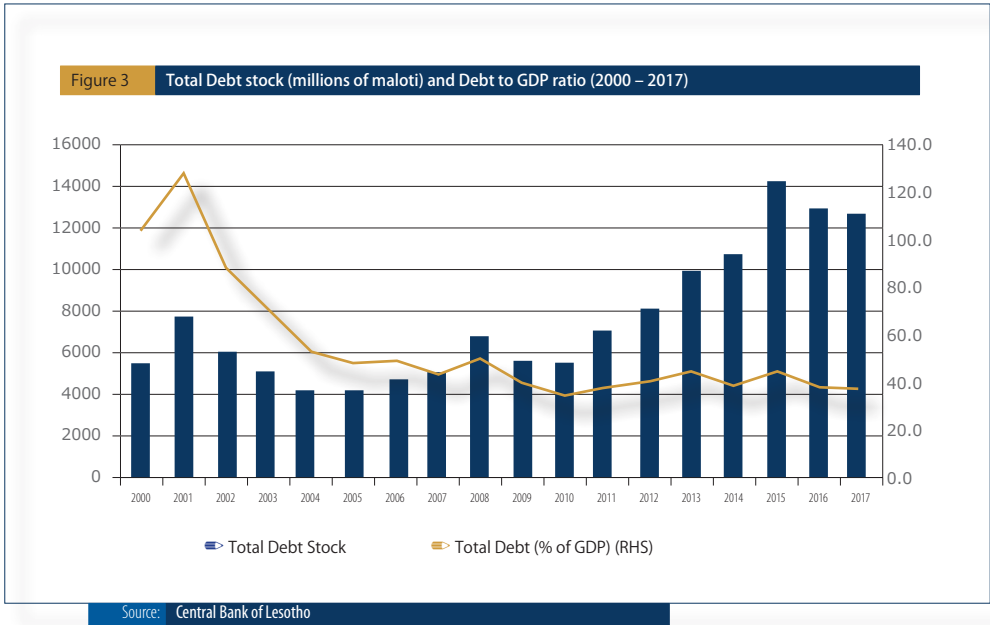
Table 2 shows Lesotho’s history of lending arrangements with the International Monetary Fund (IMF) as of the end of May 2020 in thousands of Special Drawing Rights (SDRs). The country’s lending arrangements with the IMF date as far back as 1988 and as recent as 2010. They have



mainly consisted of the IMF's standby arrangements and extended credit facilities. Despite the existence of standby arrangements among the list of facilities, only the extended credit facilities and one structural adjustment facility were drawn upon. The extended credit facilities are used by the IMF to provide balance of payments support to member states experiencing external financing problems. Table 2, therefore, reflects that Lesotho was faced with episodes of medium-term macroeconomic instability in the form of balance of payments problems around 1994, 2001 and 2010.

Facility	Date of Arrangement	Expiration Date	Amount Agreed	Amount Drawn	Amount Outstanding
Extended Credit Facility	Jun 02, 2010	Sep 17, 2013	50,605	50,605	20,742
Extended Credit Facility	Mar 09, 2001	Oct 31, 2004	24,500	24,500	0
Standby Arrangement	Sep 23, 1996	Sep 22, 1997	7,170	0	0
Standby Arrangement	Jul 31, 1995	Jul 30, 1996	7,170	0	0
Standby Arrangement	Sep 23, 1994	Jul 31, 1995	8,365	0	0
Extended Credit Facility	May 22, 1991	Aug 01, 1994	18,120	18,120	0
Structural Adjustment Facility Commitment	Jun 29, 1988	Jun 28, 1991	10,570	10,570	0
Total			126,500	103,795	20,742
Source	International Monetary Fund				

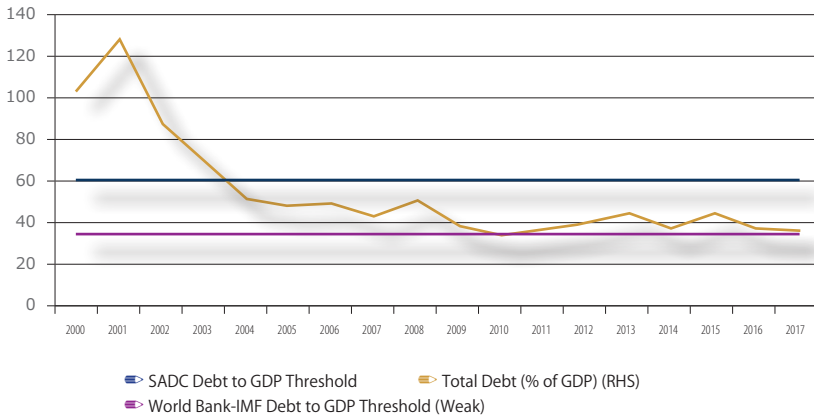
Figure 3 represents Lesotho's Debt Profile and Debt to GDP between 2000 – 2017. The public debt to GDP ratio is an important fiscal indicator and yardstick often used by governments to guide fiscal consolidation since it can be used to set prudential limits on public borrowing. Empirical evidence suggests that high levels of the ratio of debt to GDP are usually linked to an unsustainable public debt path that can cause macroeconomic instability and subsequently hinder economic growth (Mendoza and Ostry, 2008; Stoian, 2010; Baldacci *et al.*, 2011; McHugh *et al.*, 2011; Jędrzejowicz and Koziński, 2012; Berti *et al.*, 2012; Ghosh *et al.*, 2013; Mauro *et al.*, 2015; Stoian, 2018 and Lorenzoni and Werning, 2019). From Figure 3, Lesotho's debt to GDP averaged 40.6 per cent between 2008 and 2017. This was a significant drop from the 72.8 per cent average registered between 2001 and 2007 following accelerated repayment of external debt in the early 2000s. Interestingly, the stock of public debt was much higher in the 2008 to 2017 period than it was in the 2001-2007 period. The lower ratio of debt to GDP in 2008-2017 could, therefore, be a reflection of relatively higher levels of GDP growth in this period.



The Southern African Development Community (SADC), of which Lesotho is a member, has put in place macroeconomic convergence criteria that prescribe nominal values of public and publicly guaranteed debt of less than 60 per cent of GDP (Mrema, 2008 and SADC, 2020). Furthermore, the joint World Bank and International Monetary Fund (IMF) debt sustainability framework for low-income countries ascribes a debt to GDP ratio of 35 per cent, 55 per cent and 70 per cent for countries with weak, medium and strong institutional strengths and macroeconomic performances, respectively (IMF, 2020). Figure 4 reflects Lesotho’s debt to GDP ratio against the SADC and World Bank-IMF (weak) debt thresholds.



Figure 4 Debt to GDP Ratio against SADC and World Bank-IMF Debt Thresholds (2000 – 2017)



Source: Central Bank of Lesotho

From Figure 4, Lesotho’s debt to GDP ratio was well above both the SADC and World Bank-IMF thresholds between 2000 and 2003. Since 2004, the country’s ratio of public debt to GDP has been below the SADC threshold of 60 per cent (averaging 42.8 per cent of GDP) but above the World Bank-IMF threshold of 35 per cent. Figure 5 provides trends in total public stock as divided into its external and domestic components from 2000 to 2017. Figure 6 provide the same variables as percentages of GDP. Lesotho’s stock of public debt was largely dominated by external debt (most of which is concessional) over the review period. The external debt component accounted for roughly 84.4 per cent of public debt and 46.8 per cent of GDP around the entire period.

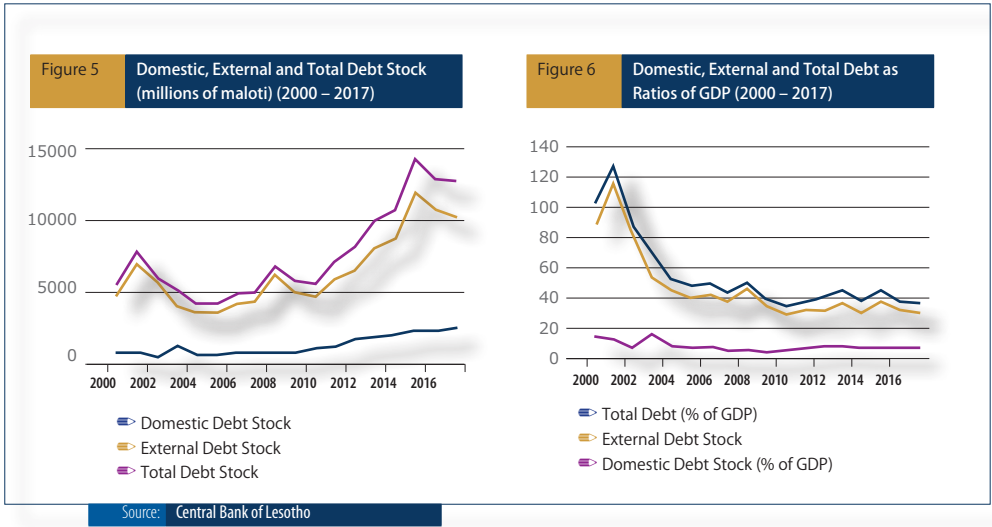
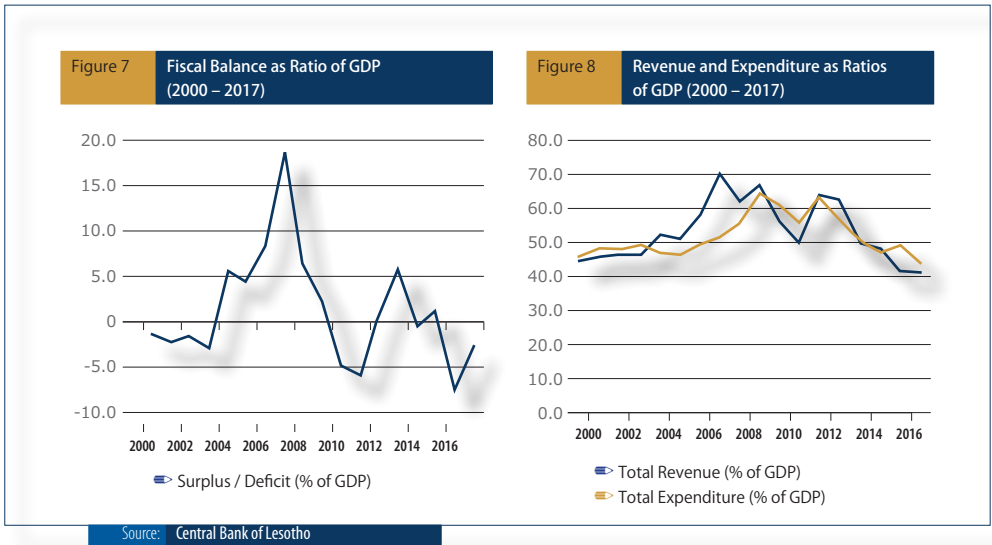


Figure 7 displays the fiscal balance as a ratio of GDP from 2000 to 2017. Furthermore, Figure 8 shows the ratios of government revenue and expenditure to GDP, respectively over the same period. During this time the government revenue averaged 53.1 per cent of GDP while the government expenditure was less at an average of 51.7 per cent of GDP. Overall, the government registered a fiscal surplus of 1.3 per cent of GDP during 2000 and 2017.



3 LITERATURE REVIEW

3.1 Theoretical Review

According to Hemming *et al.*,(2003); Hemming and Petrie (2002) and Stoian (2010, 2012, 2013), fiscal vulnerability is best defined in the context of the government's ability to achieve its macroeconomic objectives, such as: (i) avoiding excessive fiscal deficits and public debt stocks that can threaten macroeconomic stability in the short run and fiscal sustainability¹⁰ in the long run; (ii) designing a flexible fiscal policy that assures the immediate reaction to domestic and external disequilibrium; and (iii) assuring stable and proper taxation rate that allows for collecting sufficient fiscal revenues for the public budget. Under this operational definition, fiscal policy could be considered as being vulnerable when government is not able to generate current primary surpluses to meet its financial needs without increasing the rate of taxation, without reducing its spending and without contracting public debt. A key risk in this context emanates from frequent fiscal imbalances that have the potential to lead to elevated levels of public debt, sovereign debt rollover challenges and ultimately, insolvency.

Theoretical literature on indicators of fiscal vulnerability predominantly sets off with the satisfaction of three important features, namely; (i) the determination of thresholds or limits for public debt, (ii) the choice of appropriate fiscal variables to estimate rollover risks and fiscal challenges and (iii) the long-term sustainability of public debt (Mendoza and Ostry, 2008; Stoian, 2010; Baldacci *et al.*, 2011; McHugh *et al.*, 2011; Jedrzejowicz and Koziński, 2012; Berti *et al.*, 2012; Ghosh *et al.*, 2013; Mauro *et al.*, 2015; Stoian, 2018 and Lorenzoni and Werning, 2019). The remainder of this section provides a discussion of the three features as mentioned.

i. Determination of Public Debt Thresholds

When measuring government solvency, the most commonly used metric is the headline ratio of public debt to GDP. In this case, the government budget constraint dictates that future surpluses

¹⁰ Fiscal sustainability is attained when (among other things) (i) public debt does not explode, nor are governments forced to increase taxes, decrease spending, monetise fiscal deficits or repudiate public debt, (ii) public debt, as a ratio of GDP does not increase faster than the gap between real interest and real growth rate or (iii) governments have the ability to generate future primary surpluses to meet the current government expenditure needs and debt service costs, without any fiscal adjustment measures having to be taken (Hemming *et al.*,2003; Hemming and Petrie, 2002 and Stoian, 2010).

be sufficient to repay the current level of public debt. In this regard, a higher debt to GDP ratio implies greater difficulty for the government to generate sufficient surpluses. Although the debt ratio is useful and widely employed, it is not a comprehensive measure of government solvency. A key caveat in this respect lies in the lack of consensus in the literature on what constitutes a safe public debt level. On one hand, some guidance on critical levels uses lessons from the examination of public debt developments in emerging market countries undergoing financial crisis, including sovereign defaults. In such circumstances, a foreign debt level of around 35 to 60 per cent of GDP may indicate an insolvency risk. On the other hand, recent studies seek to define safe debt levels from the perspective of debt's effect on economic growth. In general, such studies reveal evidence to suggest that public debt's impact on economic growth is non-linear and becomes significantly stronger when debt exceeds a critical level of around 90 to 100 per cent of GDP (Abiad and Ostry, 2005; Mendoza and Ostry, 2008; Stoian, 2010; Baldacci *et al.*, 2011; McHugh *et al.*, 2011; Jędrzejowicz and Koziński, 2012; Berti *et al.*, 2012; Ghosh *et al.*, 2013).

In some cases, a debt to GDP ratio of 60 per cent is cited as the requisite prudential limit for developed countries while a debt to GDP ratio of 40 per cent is suggested for developing emerging economies. Given such divergent views, a critical point to note is that although thresholds provide some psychological level that if crossed is believed to signal threats to public debt sustainability, they need not necessarily be the main focus. Instead, focus should be on achieving faster growth of gross national product (GNP). The argument being that government will be under less pressure to repay debt as long as the interest on the debt grows at a slower rate than the annual increase in nominal GDP (Berg, *et al.*, 2014; Mauro *et al.*, 2015; Cassimon, *et al.*, 2017; Stoian, 2018 and Lorenzoni and Werning, 2019). Medium term dynamics of public debt as reflected in the change in debt-to-GDP ratio may be decomposed into the primary balance, interest rate on government debt and the growth rate of the economy. This is reflected in Equation (1).

$$d_t - d_{t-1} = \frac{r-g}{1+g} - p_t \quad (1)$$

where: d , r , g and p are the debt-to-GDP ratio, interest rate, GDP growth rate and the primary balance ratio to GDP, respectively. The equation indicates that the medium term trajectory of a



country's debt-to-GDP ratio hinges on its primary balance, its economic growth prospects and the risk premium attached to its sovereign debt (Berg, *et al.*, 2014; Mauro *et al.*, 2015; Cassimon, *et al.*, 2017; Stoian, 2018 and Lorenzoni and Werning, 2019).

ii. Choice of Appropriate Fiscal Variables

The choice of appropriate fiscal variables to use in the measurement of fiscal vulnerability has to take into consideration the structure of the government's balance sheet or the structure of its public debt and its exposure to rollover needs. This is critical since it can be a channel or source of vulnerability to the real economy and the financial system. The government is said to have high exposure to solvency problems if it needs to rollover huge amounts of its debts in the near term. In this case, there are two main sources of vulnerability, namely: foreign currency denominated liabilities and short-term liabilities. Literature suggests that the level of short-term debt usually rises in periods directly preceding a financial crisis. This comes on account of the excessive reliance on short-term funding leading to a self-fulfilling sudden stop crisis (Abiad and Ostry, 2005; Mendoza and Ostry, 2008; Stoian, 2010; Baldacci *et al.*, 2011; McHugh *et al.*, 2011; Jędrzejowicz and Koziński, 2012; Berti *et al.*, 2012; Ghosh *et al.*, 2013). Given the above discussion, Table 3 presents some asset and liability management indicators that can be useful in the development of a fiscal vulnerability indicator:

Table 3 Asset and Liability Management Indicators	
Indicator Name	Usefulness
Gross Financing Needs	Also known as the total stock of maturing public debt, it serves as a good measure of the requirements for government rollover.
Share of short-term government debt to total public debt	Countries with a typically higher need for short-term funding are more exposed to sudden stops when solvency risks are high. A large share of short-term debt compared to total debt signals a high exposure to rollover and solvency risks.
Ratio of short-term external debt to international reserves	This indicator is useful in providing insight on the likely amount of foreign currency needed to service short-term foreign debt obligations. It is particularly useful in countries that follow a fixed exchange rate regime.
Share of external debt to total debt	A high level of foreign currency denominated debt exposes a country to foreign exchange rate risk and raise the possibility of a negative impact on the government's ability to service its debt in light of unfavourable exchange rate shocks.
Source	(Hemming and Petrie, 2000; Mendoza and Ostry, 2008; Stoian, 2010; Baldacci <i>et al.</i> , 2011; McHugh <i>et al.</i> , 2011; Jędrzejowicz and Koziński, 2012; Berti <i>et al.</i> , 2012; Ghosh <i>et al.</i> , 2013; Mauro <i>et al.</i> , 2015; Stoian, 2018 and Lorenzoni and Werning, 2019).

iii. Long-term Public Debt Sustainability

Another critical determinant of fiscal solvency beyond the current fiscal position is the extent to which a country's long-term demographic and economic trends will put pressure on the budget. Some crucial long term factors to consider when developing a fiscal vulnerability indicator include trends in health care and pension expenditure that are affected by demographic trends such as the rate of fertility and the ageing population. Low levels of fertility have the potential to lead to declines in labour force participation and economic activity. Subsequently, this could compromise the fiscal position of a country, especially in the face of low migrant labour inflows. Similarly, a rapidly aging population places stress on the government's primary balance given the increased need to provide social safety nets for the elderly (Stoian, 2010; Baldacci *et al.*, 2011; McHugh *et al.*, 2011; Jedrzejowicz and Koziński, 2012; Mauro *et al.*, 2015; Berg, *et al.*, 2014; Cassimon, *et al.*, 2017; Stoian, 2018 and Lorenzoni and Werning, 2019).

4 EMPIRICAL REVIEW

The purpose of this section is to provide a survey of empirical studies that have been undertaken to measure fiscal vulnerability across various countries. Particular attention is placed on how the fiscal vulnerability indicator developed in each study has captured the three salient features of fiscal vulnerability theory, namely: (i) the determination of thresholds or limits for public debt, (ii) the choice of appropriate fiscal variables to estimate rollover risks and fiscal challenges and (iii) the long-term sustainability of public debt, as discussed above. Given the dearth of empirical work on fiscal vulnerability indicators (especially in less developed and developing countries), the studies were chosen on the basis that they had an exclusive objective to develop a fiscal vulnerability indicator as a short-term early warning system of fiscal stress. This meant that the studies had to provide a clear definition of fiscal vulnerability and underscore the three salient features of fiscal vulnerability theory. The studies considered consist of work by Hemming and Petrie (2000); Rial and Vicente (2004); Ghezzi *et al.*, (2010); Hayes (2011); Jedrzejowicz and Koziński (2012); Stoian (2013) and Stoian (2018). A detailed discussion of the studies is provided in Appendix I.



Although the measures of fiscal vulnerability developed and outlined in the handful of studies surveyed in the literature show some aspects that make them dissimilar (for e.g., the choice of fiscal variables to focus on, the use of nominal or cyclically adjusted primary balance etc.), a unifying feature is in the definition of fiscal vulnerability. Fiscal vulnerability is defined as aligned to the government's ability to meet its macroeconomic objectives and thus fulfil its intertemporal budget constraint. In this regard, all studies underscore the need to measure and/or track a country's debt dynamics (i.e. solvency - is the debt ratio stable or increasing?) in conjunction with developments in other vulnerability components considered to be of import in determining the public debt trajectory. These generally involve (i) fiscal financing needs and debt composition, (ii) external financing dependence, (iii) financial sector health and institutional strength, (iv) long term sustainability of public debt, and (v) fiscal rules and institutions.

5 DATA AND METHODOLOGY

5.1 Data

The study makes use of annual fiscal and macroeconomic data from 1993 to 2017. Table 4 shows the names and sources of the data. The variables include public debt to GDP ratio, primary balance to GDP ratio, debt service to GDP ratio, nominal interest rate on public debt, the real GDP growth rate and the rate of inflation. The timeline and the choice of fiscal variables was made on the basis of readily available data.

Table 4 Data and Data Sources	
Name of Variable	Source
Public debt to GDP ratio	CBL
Primary balance to GDP ratio	CBL
Debt service to GDP ratio	CBL
Nominal interest rate on public debt	CBL
Real GDP growth rate	WBDI
Inflation rate (as changes in GDP deflator)	WBDI
Source	CBL – Central Bank of Lesotho. WBDI - World Bank Development Indicators.

5.2. Methodology

For purposes of our study, we adopt the Dynamic Debt Equation for calculating Fiscal Vulnerability (DDE-FV), as advanced by Stoian (2012) and Stoian (2013). The DDE-FV method defines fiscal policy as being vulnerable when the government cannot fulfil its intertemporal budget constraints and thus faces a liquidity or fiscal solvency risk. It studies fiscal vulnerability on the assumption that the government aims to stabilise public debt at a predetermined level when confronted with large indebtedness ratios or increasing indebtedness rates. The model has four key strengths. First, it uses annual data to estimate the primary balance which stabilises public debt. This means that it provides a way to evaluate and avoid excessive fiscal deficits and public debt stocks that have the potential to threaten macroeconomic stability in the short run and fiscal sustainability in the long run. This provides policy makers with a valuable *early warning* system to inform the design of flexible fiscal policy to correct any disequilibrium. Second, it is able to check whether the government is able to generate sufficient revenues to finance its primary expenditures without increasing public debt. Third, the model explicitly incorporates an inflation component to cater for the effects of price volatility in the fiscal vulnerability measure. Fourth, the model boasts analytic continuity and reproducibility of results based on its relative computational ease (it is Microsoft excel based) and less tedious data requirements.

Suppose that at time t , the government borrows money (B_t) to finance the primary deficit (the difference between primary expenditures (G) and government revenues (R_t)), interest payment ($i * B_{t-1}$), and public debt from previous year (B_{t-1}) from the previous year:

$$B_t = G_t - R_t + B_{t-1} + i * B_{t-1} \quad (2)$$

Where: i : nominal interest rate on public debt.

Rearranging equation (2), equation (3) is obtained:

$$B_t - B_{t-1} = R_t + B_{t-1} + i * B_{t-1} \quad (3)$$

Expressing the variables as ratios of GDP (where small caps denote this) and using GDP deflator (P_t) and real GDP (Y_t), equation (3) becomes:



$$\frac{B_t}{P_t Y_t} - \frac{B_{t-1}}{P_{t-1} Y_{t-1}} * \frac{P_{t-1} Y_{t-1}}{P_t Y_t} = \left(\frac{G_t}{Y_t} - \frac{R_t}{Y_t} \right) + i * \frac{B_{t-1}}{P_{t-1} Y_{t-1}} * \frac{P_{t-1} Y_{t-1}}{P_t Y_t} \quad (4)$$

Defining inflation rate as $\pi_t = \frac{P_t}{P_{t-1}} - 1$, and growth rate as $g_t = \frac{Y_t}{Y_{t-1}} - 1$, equation

(4) can be written as:

$$b_t - \frac{1}{(1+\pi)(1+g)} b_{t-1} = p_t + \frac{i}{(1+\pi)(1+g)} b_{t-1} \quad (5)$$

where:

p_t = primary balance-to-GDP ratio (- surplus; + deficit), at time p

Given equation (5), if the government confronts increasing public debt/and or large indebtedness ratio over time, it will have to aim at stabilizing public debt in order to fulfil the intertemporal government budget constraint in the long-run. That is, it will have to ensure that the public debt to GDP ratio remains unchanged ($b_t = b_{t-1}$.)

Equation (5) can be re-written as Equation (6):

$$-p_t = \frac{i}{(1+\pi)(1+g)} b_{t-1} - \frac{(1+\pi)(1+g)-1}{(1+\pi)(1+g)} b_{t-1} \quad (6)$$

where:

p_t = primary balance-to-GDP ratio (+ surplus; - deficit), at time t

From Equation (6), the assumption is that the government chooses the stabilize public debt at the level from the previous time (t-1) and not immediately. This is on account of possible operational delays that might occur in the public debt stabilization initiative from the moment fiscal policy was found to be vulnerable.

Rearranging Equation (6), Equation (7) is obtained:

$$p_t = \frac{i - [(1+\pi)(1+g) - 1]}{(1+\pi)(1+g)} b_{t-1} \quad (7)$$

Considering small variations in π * g , Equation (7) can be re-written as Equation (8):

$$p_t^* = \frac{i - \pi - g}{(1+\pi)(1+g)} b_{t-1} \quad (8)$$

Equation (8) is the primary balance that should be achieved by the government if its aim is to stabilize public debt. Stoian (2012) points out that (p_t^*) can almost be viewed as a *fiscal rule*¹¹ that sets the financing requirements for the government considering the rate of growth, the price movement, the implicit rate on public debt and the public debt from the previous year.

Fiscal vulnerability is assessed each year through the primary gap, which is the difference between the debt stabilizing primary balance and current primary balance, ($p_t^* - p_t$). The current value of the primary balance is important because it shows the extent to which the government may need to adjust to fulfil the intertemporal budget constraint. Fiscal policy is said to be good and non-vulnerable when $p_t^* = p_t$, or $p_t^* < p_t$. This means that if the government's aim is to keep the rate of public debt growth down to zero, it should strive for the equality between the current primary balance and the debt stabilising primary balance. Fiscal policy is vulnerable when $p_t^* > p_t$. In this case, the implication is that the government is not able to achieve the required primary balance to stabilise the public debt. The size of public debt is growing on account of debt being raised to finance government's payment obligations. Should the level of public debt continue to grow unabated for many consecutive years, with the government unable to fulfil the debt stabilising primary balance, this will affect fiscal solvency and sustainability in the long run.

¹¹ In this case, Stoian (2012) uses the term fiscal rule to refer to a numerical threshold that imposes a certain size for the headline fiscal indicator (e.g. the primary balance, the budget deficit, the public debt etc.).



6 RESULTS

This section discusses results of the fiscal vulnerability assessment for Lesotho using annual fiscal and macroeconomic data from 1993 to 2017 and the DDE-FV technique as advanced by Stoian (2012, 2013). The discussion is divided into four parts. Part 1 presents results of the primary gap. Part 2 details the primary gap distribution. Part 3 compares the primary gap and the normal fiscal policy vulnerability range. Last, Part 4 offers a robustness check of the computed fiscal vulnerability indicator.

6.1. Primary Gap

Table 5 presents the primary gap (i.e., the difference between the debt stabilising primary balance and current primary balance) over the period from 1993 to 2017 as a percent of GDP. The primary gap is obtained by taking a yearly comparison of the two levels of the primary balances on an annual basis. Under this method, fiscal sustainability is threatened in the long run if the government fails to achieve the debt stabilising primary balance for consecutive years (that is, if the primary gap is positive, $p_t^* - p_t > 0$ for consecutive years).

Table 5 Primary Gap (% of GDP, 1993 – 2017)			
	Stabilising Primary Balance (p_t^*)	Current Primary Balance (p_t)	Primary Gap
	$p_t^* = \frac{i - \pi - g}{(1 + \pi)(1 + g)} b_{t-1}$	$p_t = \frac{i - [(1 + \pi)(1 + g) - 1]}{(1 + \pi)(1 + g)} b_{t-1}$	$p_t^* - p_t$
1993	3.99	-2.66	6.65
1994	-42.68	-47.70	5.02
1995	-19.62	-27.73	8.11
1996	-29.62	-33.55	3.93
1997	-47.86	-53.13	5.27
1998	41.31	36.84	4.47
1999	90.31	88.20	2.11
2000	-25.75	-30.35	4.60
2001	-33.84	-42.15	8.31
2002	69.48	62.82	6.66
2003	16.36	14.65	1.71
2004	52.18	48.34	3.84
2005	22.88	20.60	2.27
2006	-19.72	-23.05	3.33
2007	51.59	53.90	-2.31
2008	-24.54	-28.80	4.26
2009	0.18	-0.24	0.43
2010	-21.03	-24.00	2.96
2011	-16.35	-18.69	2.33
2012	-16.63	-17.40	0.78
2013	5.65	3.39	2.26
2014	-6.27	-10.08	3.81
2015	-8.13	-10.61	2.48
2016	-12.36	-13.36	1.00
2017	-158.33	-160.50	2.17
Source	Central Bank of Lesotho		



Fiscal vulnerability is suggested in the positive values of the annual primary gaps. From the table, the Government of Lesotho's fiscal policy was faced with vulnerability across all the years under observation, except for 2007. The fiscal vulnerability was most severe in 2001 (with primary gap recording 8.31 per cent of GDP), the same year the country underwent an Extended Credit Facility arrangement with the IMF. On the same token, the second highest level of fiscal vulnerability was in 1995, the same year the country undertook a Standby arrangement with the IMF. Interestingly, the primary gaps in 1994 and 2000 were both markedly lower than they were in 1994 and 2001, respectively. Assuming that Authorities in Lesotho intently wanted to stabilise public debt at levels consistent with the predetermined primary balance (p_t^*), the findings imply that in these times, the government did not achieve the required primary balance consistent with the stabilisation of public debt.

6.2. Primary Gap Distribution

Table 6 presents the results of the primary gap distribution. The DDE-FV identifies *normal fiscal vulnerability* by positive gap ranges with the highest frequency while *severe fiscal vulnerability* is identified in ranges with the most extreme positive values.

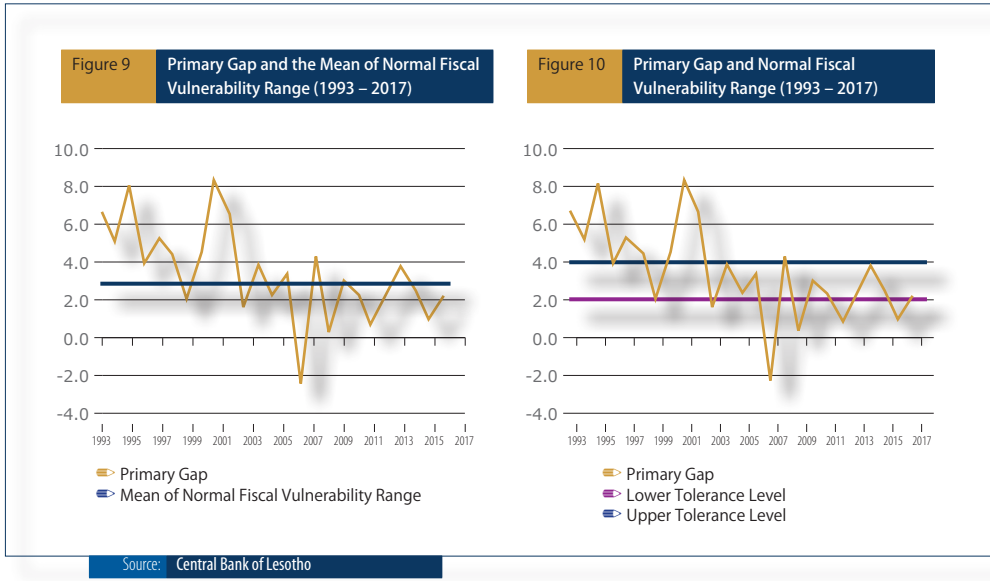
Table 6 Primary Gap Distribution (% of GDP, 1992 – 2017)		
Gap Range	Mean	Observations
(-3, 0)	-2.31	1
(0, 2)	0.98	4
(2, 4)	2.86	11
(4, 6)	4.73	5
(6, 8)	6.65	2
(8, 10)	7.70	2
	Total	25
Source	Central Bank of Lesotho	

From the table, Lesotho's primary gap distribution ranged within (-3, 10) per cent of GDP from 1993 to 2017. The country had relatively few periods of severe fiscal vulnerability compared to normal fiscal vulnerability during this time. Severe fiscal vulnerability was in the range of (8, 10) per cent of GDP and was observed in two out of the 25 observations. The normal state of fiscal vulnerability was in the range of (2, 4) per cent of GDP during this period and it was observed for 11 out of the 25 periods. The range does not represent the government's failure to accomplish the stabilising primary balance, but rather the government's failure to aim at stabilising public debt. In a sense, the government can be seen to have put off achieving a primary surplus that could have reduced the size of the public debt growth to zero during this time. It is noteworthy that according to Stoain (2011, 2012) as well as Stoain and Alves (2012), registering positive primary gaps over consecutive years may expose fiscal policy to solvency risk that may negatively affect fiscal sustainability in the long run.

6.3. Comparison of Primary Gap with Normal Fiscal Vulnerability Range

Figure 9 graphs the relationship between the computed primary gap and the mean of the normal fiscal vulnerability range for the period 1993 to 2017. Figure 10 graphs the primary gap with the normal fiscal vulnerability range for the same period. The mean of the normal fiscal vulnerability range, which in this case is 2.86 per cent of GDP, signifies the value at which the primary gap reflects a tolerably vulnerable fiscal policy. Conversely, values that lie above the upper tolerance level of the normal fiscal vulnerability range signal a more severe fiscal vulnerability condition.





Lesotho’s fiscal policy was severely vulnerable between 1993 and 1997 before improving to within the tolerable level in 1998. The improvement was short-lived as the fiscal vulnerability worsened to severe levels from 1999 to 2001 before returning to levels roughly within the tolerable fiscal vulnerability level for the remainder of the period. It is important to reflect that the country had an IMF ECF in 1991, 2001 and 2010. It also had a series of IMF SBA in 1994, 1995 and 1996, respectively, although none of them were drawn on.

6.4. Robustness

For purposes of robustness, the study uses two criteria, namely: Correlation with selected fiscal variables and two, synchronicity with IMF external financing support agreements.

i. Correlation with Selected Fiscal Variables

The computed DDE-FV fiscal vulnerability indicator is tracked against four fiscal indicators, namely: (i) the ratio of public debt to GDP, (ii) the ratio of debt service to GDP, (iii) the ratio of

external debt to GDP and last, (iv) the ratio of the primary balance to GDP. Each indicator x_t^i is transformed into a standardised score z_t^i as shown in Equation (9) as per the method used by Hayes (2011) and Baldacci *et al.*, (2011).

$$z_t^i = \frac{x_t^i - \mu}{\sigma} \tag{9}$$

Where μ is the ten year average (from for 2008 to 2017). Standardising the indicators allows for their use with reference to their historical norms or past performance trends. Standardised scores close to zero are a reflection that the particular indicator is close to its historical average. Figures 11 to 14 track the relationship between the computed fiscal vulnerability indicator (DDE-FV primary gap) and the ratio of public debt to GDP, the ratio of debt service to GDP, the ratio of external debt to GDP and the ratio of the primary balance to GDP for the period from 2008 to 2017, respectively. In addition, Table 7 displays the correlation coefficients between the primary gap and respective fiscal indicators over the same period.

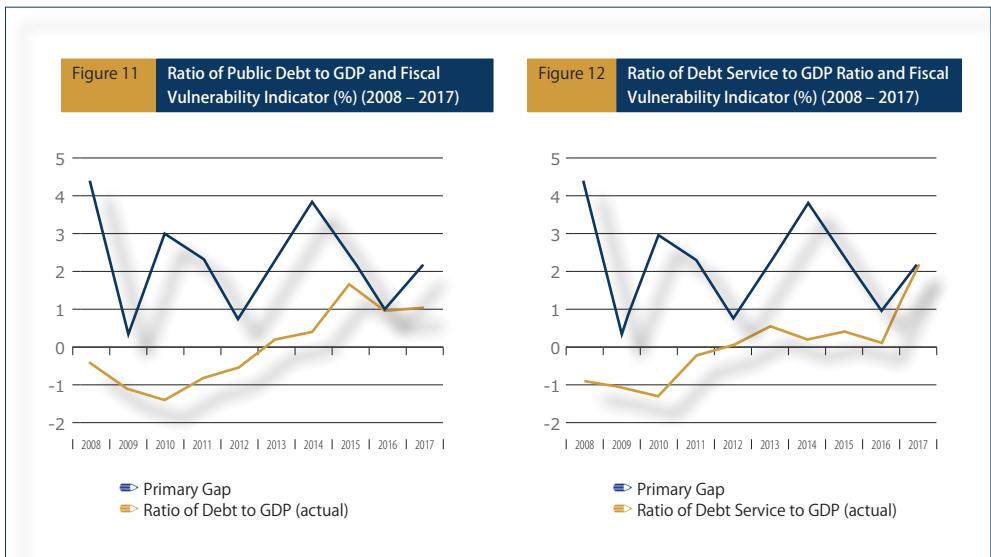


Figure 13 Ratio of External Debt to GDP and Fiscal Vulnerability Indicator (%) (2008 – 2017)

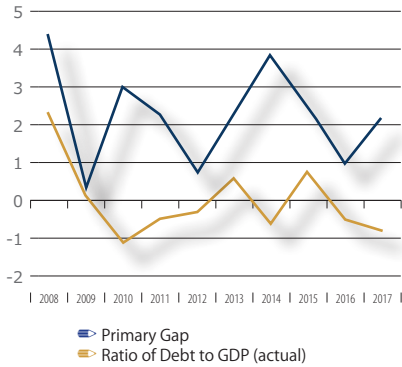
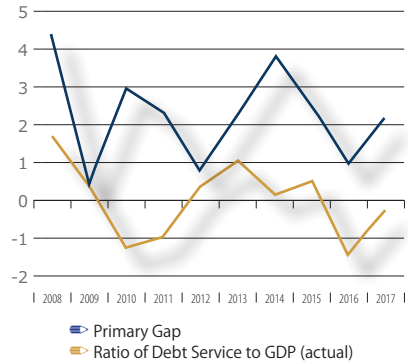


Figure 14 Ratio of Primary Balance to GDP and Fiscal Vulnerability Indicator (%) (2008 – 2017)



Source: Central Bank of Lesotho

Table 6 Primary Gap Distribution (% of GDP, 1992 – 2017)

	Ratio of Public Debt to GDP	Ratio of Debt Service to GDP	Ratio of External Debt to GDP	Ratio of Primary Balance to GDP
2008-2012	22.47%	-28.37%	51.03%	16.65%
2013-2017	-29.90%	-8.55%	-1.09%	58.15%
2015-2017	70.09%	42.27%	50.95%	97.95%
2008-2017	5.77%	-6.00%	35.95%	29.94%
Source	Central Bank of Lesotho			

From 2008 to 2017, the computed DDE-FV fiscal vulnerability indicator is positively correlated with all but one of the four fiscal variables (i.e., the ratio of debt service to GDP). However, the primary gap is positively correlated with all four fiscal indicators between 2015 to 2017. This period also reflects the strongest level of positive correlation between the computed fiscal vulnerability indicator and all fiscal variables except the ratio of external debt to GDP (the strongest positive correlation between it and the primary gap is in the period 2008 to 2012). It is interesting to note that the primary gap has a positive correlation with the ratio of the primary balance to GDP in all periods. The strong positive correlation between the computed fiscal vulnerability indicator and the selected fiscal variables, especially in the last three years of

the 2008 to 2017 period, indicate its potential usefulness to policy makers in the evaluation of fiscal vulnerability in the country.

6.5. Synchronicity with IMF External Financing Support

The computed DDE-FV has identified a normal fiscal vulnerability range of 2 to 4 per cent of GDP. It has also identified a severe fiscal vulnerability range of 8 to 10 per cent of GDP. Results from the DDE-FV show that Lesotho was in periods of above normal to severe fiscal vulnerability between 1993 to 2001. This state of fiscal stress synchronises with the same period as when the country undertook SBA and ECF facilities with the IMF. Lesotho had an IMF ECF in 1991, 2001 and 2010. It also had a series of IMF SBA in 1994, 1995 and 1996, although none of them were drawn on.

7 RESULTS

The global outbreak of the Corona Virus Disease of 2019 (COVID-19) and subsequent infection-control measures are expected to lead to sizeable increases in fiscal deficits and public debt ratios around the world. This is especially likely for Lesotho, a small open market economy with a fixed exchange rate and close macroeconomic links to the rest of the world. This situation gives rise to an increased need for close monitoring of risks to fiscal vulnerability. The objective of this paper is to construct a fiscal vulnerability indicator for Lesotho using annual fiscal and macroeconomic data from 1993 to 2017 and a Dynamic Debt Equation for calculating Fiscal vulnerability (DDE-FV) that assumes that government aims at stabilising public debt. The computed DDE-FV identified a normal fiscal vulnerability range of 2 to 4 per cent of GDP and a severe fiscal vulnerability range of 8 to 10 per cent of GDP. Lesotho had relatively few periods of severe fiscal vulnerability compared to normal fiscal vulnerability during 1993 to 2017. Severe fiscal vulnerability was observed in two out of the 25 years. Normal fiscal vulnerability was observed for 11 out of the 25 periods. Lesotho's fiscal policy was above the computed normal fiscal vulnerability threshold of 4 per cent of GDP between 1992 to 2001 before returning to levels roughly within the tolerable vulnerability level for the remainder of the 1993 - 2017



period. The results show a strong positive correlation between the computed fiscal vulnerability indicator and selected fiscal variables, especially in the last three years of the 2008 to 2017 period. In addition, the computed DDE-FV fiscal vulnerability indicator identifies periods of fiscal stress that synchronise with years in which the country undertook SBA and ECF facilities with the IMF. This indicates the potential usefulness of the computed fiscal vulnerability indicator for policy makers in the country.

The study recommends that policy makers in Lesotho adopt, as part of their existing toolkit, the computed DDE-FV fiscal vulnerability indicator to assess fiscal vulnerability in the country. The indicator is expected to provide early warning (short-term) signals on rollover problems by being able to track key fiscal indicators while also providing policy makers with room to adjust policy given signs of fiscal vulnerabilities or extreme fiscal stress. The fiscal vulnerability indicator developed for Lesotho allows for the estimation of the primary balance that stabilises public debt at the level from the previous year. In this way, it provides policy makers with a one year lag to react to fiscal disequilibrium.

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APPENDIX

A I Survey of Studies on Fiscal Vulnerability Indicators	
Authors	Study's Distinguishing Features
Hemming and Petrie (2000)	The study successfully formulates a single definition of fiscal vulnerability. Fiscal vulnerability was defined in consideration of the government's ability to achieve its macroeconomic objectives by fulfilling its intertemporal budget constraint
	The study also offers a discussion on the main sources of fiscal vulnerability and a list of variables which could be incorporated into further evaluation of fiscal vulnerability is provided.
	A noticeable shortcoming of the study, despite its significant theoretical value addition, is that it does not provide any methodological guidance on how fiscal vulnerability can be assessed with actual data in practice.
Rial and Vicente (2004)	The study complements the Hemming and Petrie (2000) study by introducing a country experience to the investigation of fiscal vulnerability.
	It uses sensitivity analysis to investigate the vulnerability of public debt in Uruguay. That is, it enhances on the traditional debt to GDP ratio framework by developing a set of vulnerability indicators that quantify and evaluate the risks related to the volatility of debt determinants (relative prices, GDP evolution, reference interest rate) and access conditions of capital markets.
	In a similar way to Hemming and Petri (2000), fiscal vulnerability is defined as any violation in liquidity and/or solvency requirements due to changes in macroeconomic conditions.
	The analytical approach starts from a baseline scenario with additional scenarios defined on the assumption that the determinants of debt (GDP growth rate, interest and exchange rate) vary by one or two standard deviations.
Ghezzi et al. (2010)	The index of fiscal vulnerability included debt tolerance conditions that tracked five vulnerability components, namely: (i) solvency (basic debt dynamics – is the debt ratio stable or increasing); (ii) fiscal financing needs and debt composition; external financing dependence; financial sector health; and institutional strength.
	In this context, an assessment of the solvency / debt dynamics has to be undertaken in conjunction to the developments in the other four vulnerability components.
Source	Central Bank of Lesotho.

AI Survey of Studies on Fiscal Vulnerability Indicators (continued)	
Authors	Study's Distinguishing Features
Hayes (2011)	<p>The study presents the Barclays Capital Fiscal Vulnerability Index, which is a composite indicator that consists of 16 fiscal vulnerability indicators across 57 countries. A key feature of the index is its measure of financial market concerns about a country's debt sustainability that uses the cost of insuring against a government defaulting on its bonds, as measured by the credit default swap (CDS) rates. A higher CDS rate reflects that investors attach a higher likelihood of government default and an elevated probability of financial crisis.</p> <p>The 16 indicators are grouped under five broad headings: solvency, government financing needs, external financing dependence, financial sector health and institutional strength. The broad headings show a consensus between the surveyed literature as far as the importance of a holistic and collective analysis of key fiscal indicators.</p> <p>The composite index is reported as a z-score for each country. The z-score measures how far the country's vulnerability is from the cross country average. A positive z-score indicates that a country's fiscal resilience is above average while a negative z-score indicates a below average fiscal resilience.</p>
Jedrzejowicz and Kozirski (2012)	<p>The study assessed Poland's fiscal vulnerability along five elements that consisted of (i) the medium-term dynamics of public debt; (ii) the level of public debt; (iii) public debt management and the liquidity position of the government; (iv) long term sustainability of public debt; and (v) fiscal rules and institutions.</p> <p>Findings supported the usefulness of a well-defined fiscal policy anchor (similar points were made in the previous studies surveyed), which was represented by a public debt threshold of 60 per cent of GDP as established in the public finance act. Any breach of this threshold constitutes a vulnerability in the fiscal policy position and a signal to government for urgent need of fiscal consolidation.</p>
Stoian (2013)	<p>The index was developed for 10 advanced economies in the European Union using annual data that ranged from 1971 to 2010. And fiscal variables that included the nominal interest rate on public debt, the GDP growth rate, the rate of inflation (i.e. changes in GDP deflator) and the ratio of public debt to GDP.</p> <p>The model assumes that the government aims at stabilising public debt at the prior year's level. It calculates the primary balance that stabilises debt and compares it to the current primary balance using the dynamic public debt methodology.</p> <p>Positive primary gaps indicate fiscal vulnerability. The highest frequency of positive primary gaps indicates normal fiscal vulnerability.</p> <p>Fiscal severity is any positive primary gap above the upper limit of the normal fiscal vulnerability range.</p> <p>The study concluded that a country's fiscal policy is vulnerable if the government's primary balance that stabilizes debt is more than the ratio of the government's current primary balance to GDP.</p>
Source	Central Bank of Lesotho.



A1 Survey of Studies on Fiscal Vulnerability Indicators (continued)	
Authors	Study's Distinguishing Features
Stoian (2018)	<p>The study introduces a new framework, namely the V-L-D measure of fiscal vulnerability.</p> <p>The framework comprises two indicators, namely: (i) an indicator of level measuring vulnerability capture through the size of the cyclically adjusted balance and through distance-to-stability and (ii) one indicator of dynamic quantifying the vulnerability denoted by the changes in the cyclically adjusted balance and in the public debt to GDP ratios over two consecutive years.</p> <p>The index was developed for 28 advanced economies in the European Union using annual data that ranged from 1990 to 2013. In a similar way to the Stoian (2013) study, the point of departure was an evaluation of the primary balance that stabilizes public debt using the public debt equation methodology.</p> <p>By defining and determining the primary gap (the difference between the current and stabilizing primary balance) the study was able to compute an index of fiscal vulnerability. The study concluded that a country's fiscal policy is vulnerable if the government's primary balance that stabilizes debt is more than the ratio of the government's current primary balance to GDP.</p>
Source	Central Bank of Lesotho.