A Critical Assessment of the Sustainability of South Africa's Fiscal Policy and Related Institutional Frameworks

Submitted to the University of Cape Town's School of Economics in order to fulfil the partial requirements of the degree of

Master's in Commerce (Economic Development)

by

Azande Ngewana

School of Economics

Supervisor:

Dr Lebogang Mateane

Plagiarism declaration

Compulsory declaration:

1. This dissertation has been submitted to the Turnitin module (or equivalent similarity- and originality-checking software) and I confirm that my supervisor has seen my report and any concerns revealed by such have been resolved with my supervisor.
2. I certify that I have received ethics approval (if applicable) from the Commerce Ethics Committee
3. This work has not been previously submitted in whole, or in part, for the award of any degree in this or any other university. It is my own work. Each significant contribution to, and quotation in, this dissertation from the work or works of other people has been attributed, and has been cited and referenced.

Student number	
Student name	
Signature of student	
Date	

Acknowledgments

The writing of this thesis would not have been possible without the support and contribution of several people. Therefore, I would like to express my sincere gratitude to:

1. Dr Lebogang Mateane, who has continuously encouraged me to wrap up and who has remained patient with me.
2. Lara Schoeman and Chris Tisdall, my respective bosses during this period, who have been very supportive and understanding in terms of my needing time to be off work to go to campus.
3. Friends, who have been an important pillar of support.
4. My late mom, my dad and my brother, who have given me incredible support, emotionally and financially, throughout my studies. Your love has carried me through.

Abstract

Historically, there are many examples of countries that have had to deal with the unpleasant consequences of economic mismanagement. A recent example is Venezuela, which has imploded into hyperinflation. It is therefore important to consider the question of fiscal sustainability in the South African context. This study ultimately aimed to test the sustainability of South Africa's fiscal policy and public debt, with fiscal policy defined as the satisfaction of the intertemporal budget constraint. The Augmented Dickey–Fuller test was used to assess the stationarity of national government revenue and national government expenditure – both expressed as percentages of GDP – while the Engle–Granger test was used to test the residuals of the regression between national government revenue and national government expenditure for a long-run relationship. A long-run relationship was found between these two variables, suggesting that fiscal policy and South Africa's public debt are sustainable. However, due to weakened institutions, the South African government should remain aware that the country's fiscal policy could easily move into unsustainable territory.

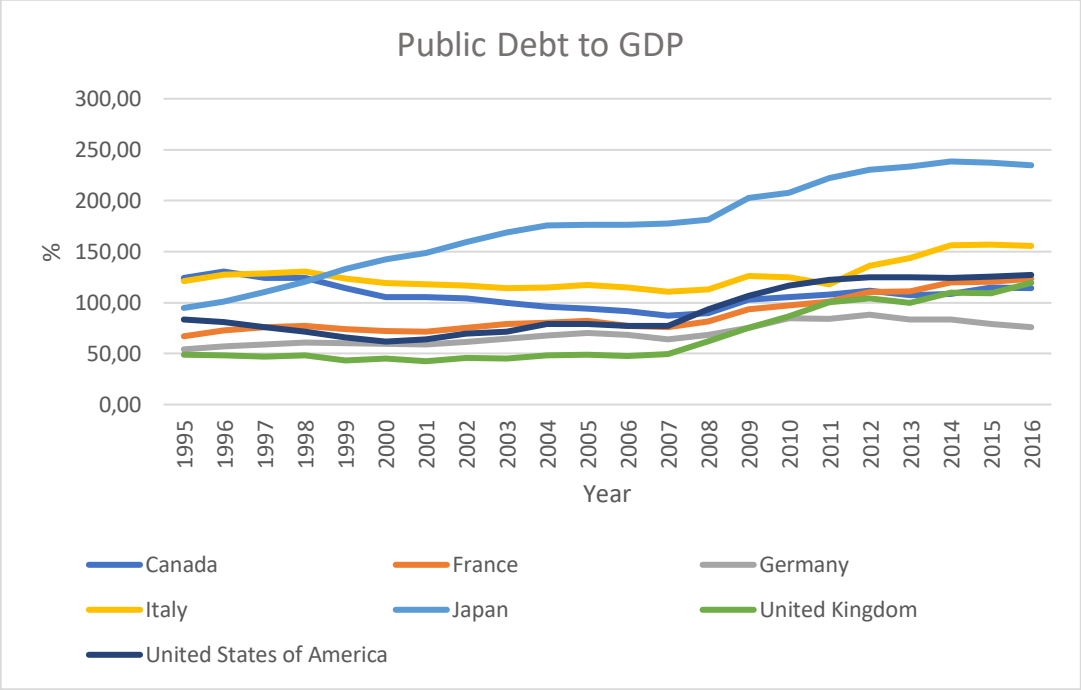
Table of contents

1. Introduction

There has been an intense focus on the subject of fiscal sustainability in recent years. The explosion of public debt as a result of the financial crisis in mid-2008 resulted in governments being forced to recapitalize banks, taking over the debts of large financial institutions and also introducing large stimulus programmes, in an attempt to resuscitate their economies. However, as the world economy recovered, many countries were left with large fiscal imbalances and increasing levels of public debt as a ratio of gross domestic product (GDP). Countries with serious debt problems, such as Greece, required huge bailouts from the European Central Bank (ECB) and the International Monetary Fund (IMF).

Greece went on a debt spree that came crashing down in late 2009. Greece's debt increased from about 100% of GDP in 2003 to about 130% of GDP in 2009. The result was an economic crisis that destroyed the country's economy, brought down its government, unleashed social unrest and threatened the future of the euro (Karagiannis & Kondeas, 2012). However, Greece is not the only country that has faced potential fiscal sustainability issues or increased debt problems. The United States (US) as well as other European countries are sitting on enormous amounts of public debt and are running large fiscal deficits (see Figure 1 below).

Figure 1: Trends in debt-to-GDP – Selected OECD countries



Source: OECD

As Figure 1 shows, many developed countries' debt-to-GDP ratios have been steadily increasing since the global financial crisis in 2008. Japan's debt-to-GDP ratio went from 180% in 2008 to about 230% in 2016, the US went from 93% in 2008 to just under 130% in 2016 and the UK went from just over 60% in 2008 to just under 120% in 2016. Checherita-Westphal and Jacquinot (2018) state that the "global financial and economic crisis has left a legacy of historically high levels of public debt in advanced economies". According to the Congressional Budget Office of the US, the country's federal government debt is sitting at levels not seen since World War II and is forecasted to reach 150% of GDP by 2047 (Bi, 2017). Similarly, and according to Fatas (2010), the increase in government spending by industrialised countries in general is the highest in postwar history, and this is at a time of relative peace in many of these countries. A number of other eurozone countries have also had high and potentially unsustainable levels of public debt in recent years. For example, Portugal and Ireland have had to borrow money from the IMF and from other member countries (see Nelson et al., 2011).

The premise of my research paper is that public debt sustainability is of importance nationally and globally, carrying a heightened importance in recent times for both developed and emerging economies. However, research focusing on emerging or developing countries has been limited. Thus, this study was partly motivated by the fact that it would contribute to the literature by focusing on an emerging economy – namely, South Africa.

This paper focusses on South Africa because the country is faced with the three-fold problem of poverty, inequality and a high unemployment rate, which, if not addressed, could potentially lead to ongoing fiscal deficits, debt unsustainability and further negative economic consequences. According to Statistics South Africa (StatsSA, 2014; 2015), more than half of South Africa's population lives below the upper-bound poverty line of R992 per month, while 61% of income goes to only 20% of South Africans. Unemployment levels were at 27% as of the fourth quarter of 2018, with the South African economy growing at a snail's pace of 1.3% on an annual basis (StatsSA, 2018). Thus, it is critical that the South African government attend to its burgeoning public debt in order to sustainably maintain its large social welfare policy (National Treasury, 2017b).

Tied to the above, this paper analyses whether the South African government will be able to meet its current spending, revenue and other commitments without compromising growth or defaulting on some of its liabilities or promised spending targets. If the government does not address its three-fold economic crisis, it will be faced with increased expected social welfare payments and a reduced ability to collect tax revenue, as a result of higher unemployment; with higher expected expenditure and a lower tax base, the situation becomes grave. It is evident that the South African government needs to manage its increasing public debt, along with fostering mechanisms to increase its tax base, because doing so might lower social dependency on the government and anchor the government's ability to sustainably maintain its social welfare policy (see also National Treasury, 2017b, for related perspectives).

Following this brief introduction, the remainder of the paper is organized as follows: Section 2 provides additional context for the social issues prevalent in South Africa that affect the country in general as well as its developments related to fiscal policy. Section 3 provides an overview of the literature that focuses on fiscal sustainability for both advanced and developing economies, where the objective is to highlight the different arguments and empirical evidence concerning fiscal sustainability for advanced and developing economies. In the same section, I present literature that focuses on the role of institutional frameworks and regulations on economic performance and tax collection. Section 4 presents the theoretical framework for assessing fiscal sustainability. Section 5 contains the empirical analysis and also explains the data along with the results. Section 6 concludes.

2. Background: The South African context

As mentioned, South Africa is faced with the three-fold problem of poverty, inequality and a high unemployment rate, all of which factors have placed a massive burden on the government, which has had to find ways of stimulating the economy in order to create jobs and also maintain a massive social security programme.

The unemployment rate – sitting at about 27% in the first quarter of 2018 – is the highest it has been in 13 years (StatsSA, 2018). If the definition of unemployment is expanded to include people who have stopped looking for work, the unemployment rate in South Africa goes up to 36.7% (StatsSA, 2018). This is a dire situation, even without the potential trappings of a debt spiral.

In addition, according to research done by Orthofer (2016), at least half of all the wealth in South Africa is owned by 1% of the population. The top decile combined owns 90–95% of total wealth and 55–60% of total income. At the same time, recent data released by Statistics South Africa shows that poverty is on the rise in South Africa. Despite a drop in poverty between 2006 and 2011, the report shows that poverty levels have been on the rise again since 2011, with more than half of South Africans poor in 2015 (StatsSA, 2017). It is therefore imperative, in order to avoid a potential catastrophe, that the issue of increased public debt in South Africa is addressed sooner rather than later.

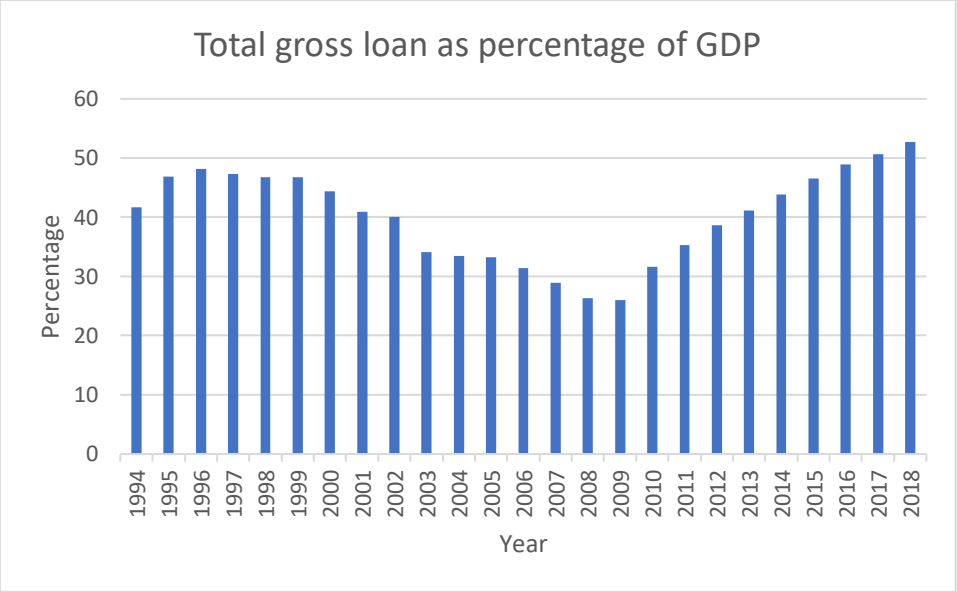
Brief historical background

When the ANC government came into power in 1994, following a democratic national election that was the first in the country's history, the fiscal situation in South Africa had worsened quite extensively. As Ajam and Aron (2007) have pointed out, reduced revenue collection and swelling expenditure had resulted in growing fiscal deficits, which the incoming government inherited. This situation raised concerns about the issue of sustainability and the possibility of a debt trap. Widespread pessimism and concerns about the populist rhetoric in some quarters of the ANC meant that there were many people expecting dire outcomes for the country's fiscal position following the new dispensation.

South Africa has also had to deal with the pressures of globalisation, which has reduced fiscal policy discretion, according to Ajam and Aron (2007). The authors argue that if fiscal policy is not

"sound" or in accordance with the conventional wisdom, it is likely to result in foreign capital outflows, which puts pressure on the government to conform to global norms. In spite of these tough initial conditions, the South African government managed to achieve a remarkable improvement in its fiscal position (see Figure 2 below), at least up until the 2008 global financial crisis. In 1994, total gross loan as a percentage of GDP was above 40%. At its lowest, in 2009, the number was far lower, at about 25% debt-to-GDP – an impressive turnaround. It is important to note, however, that such data alone does not tell the full story because it makes it seem like there is a single debt cycle, with the possibility that the debt to GDP could explode in the future. However, the series may still be technically stationary over the period. This is an example of the uncertainty of statistics where there is not a sufficiently long enough series that covers several cycles.

Figure 2: Trends in total debt-to-GDP – South Africa



Road to "sound" fiscal policy

Calitz et al. (2009) observe that it is quite remarkable that the government was able to cut the debt ratio during a period of intense pressure from the newly enfranchised but poor population. According to Naidoo et al. (2008), since 1994, South Africa has been on a sustainable fiscal path, which has been a major factor in the general stability of the economy and the faster economic growth experienced by the country.

Naidoo et al. (2008) state that South Africa's policy stance can be separated into three phases. From 1994 to 2000, the main goal of fiscal policy was to reduce the massive budget deficit inherited from the apartheid government. The aim, in short, was macroeconomic stability. In the next period, 2000 to 2006, there was an increase in public spending, with a view to boosting economic growth, and the last period, which runs from 2007 onwards, has been characterised by a countercyclical policy stance aimed at ensuring macroeconomic stability (Naidoo et al., 2008).

Siebrits and van der Berg (2011) support the above contentions, stating that decreases in interest payments on public debt and fast revenue growth allowed the South African government to increase all spending categories as a share of GDP from 2001 to 2007. This is in contrast to a general decrease in government expenditure of 4.1% between 1995 and 2000 (Siebrits & van der Berg, 2011). Lending further weight to these findings, Calitz et al. (2009) observe that the period 1985–1995 was characterised by rising debt, with the debt-to-GDP ratio increasing from 31.8% to 50.4% during this period, before falling to 23.8% at the end of 2008.

According to Ajam and Aron (2007), this improvement in South Africa's public finances has been due to the creation of transparent and constitutionally compliant intergovernmental fiscal relations, the improved quality of the data in question and better budgeting at all government levels. The reformed and efficient tax system has also been a factor.

Importance of government in funding social spending

Over the past 15 years, the South African government has been able to increase spending on social protection as a percentage of GDP,[1] dedicate half of its expenditure to the social sector and, between 2000 and 2008, increase the number of beneficiaries by 350% (Durán-Valverde & Pacheco, 2012). According to Durán-Valverde and Pacheco (2012), the government used two main fiscal mechanisms to obtain these results: first, the reassigning of public spending in order to give more funds to social programmes and, second, the decreasing of public debt.[2] The South African government achieved these results in the face of a restrained economic growth rate and weak gains in fiscal revenue.

However, despite the gains made in achieving sound and sustainable fiscal policy after the precarious situation inherited from the apartheid state, there are some concerns about the increasing public debt that followed the 2008 financial crisis and the further fairly rapid rise in public debt that has occurred since then.

Episode of increasing debt

The most recent episode of rapidly increasing debt in South Africa was the 2008–2009 global financial crisis, alluded to above, which led many governments across the world to focus on maintaining and even increasing their expenditure in the face of declining revenues. In South Africa, this move resulted in a widening of the fiscal deficit to 5.2% of GDP in 2012–2013 (National Treasury, 2013). According to the *2011/2012 Debt Management Report*, published by the National Treasury, South Africa's national government debt was R1.2 trillion as of 31 March 2012 (National Treasury, 2012). This translated into a total government indebtedness of 46.6%, as a percentage of GDP.

[1] "Public Expenditure on the social sector in 2008 accounted for 15.3 per cent of GDP and 50.9 per cent of total public spending" (Durán-Valverde & Pacheco, 2012:131).
[2] "Total public debt fell from 49.5 per cent of GDP in 1996 to 29.5 per cent in 2009" (Durán-Valverde & Pacheco, 2012:128)

This worrying increase in South Africa's public debt has not improved much over the years. In fact, public debt-to-GDP has been steadily rising year-on-year since 2012 and is currently over 50% of GDP.

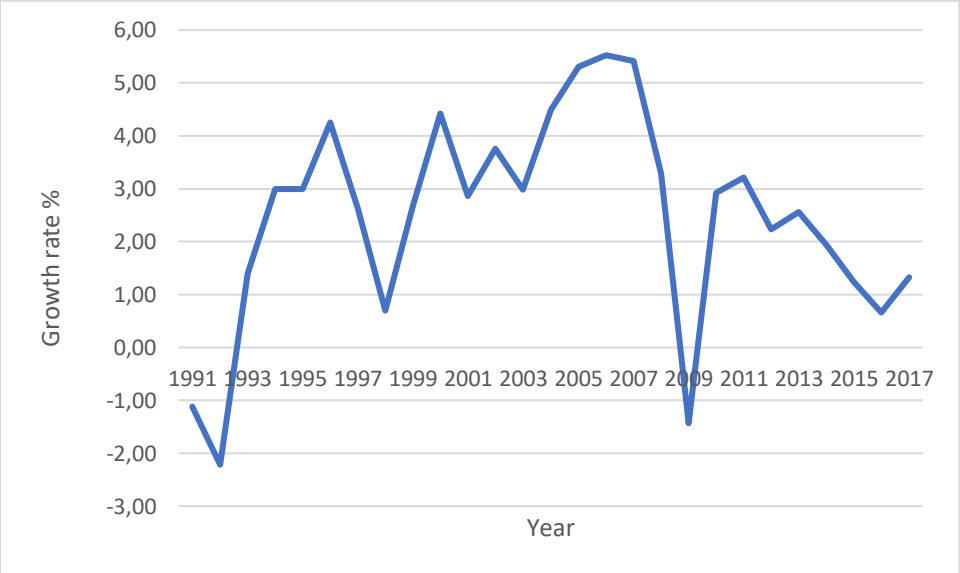
Furthermore, it is important to note that South Africa recently saw its sovereign debt being downgraded by all three major credit rating agencies. Downgrades raise the cost of borrowing and servicing debt and therefore represent a further challenge to fiscal sustainability.

Factors contributing to rapid public debt increase

In the main, the increase in South Africa's government debt is a function of low growth; the mismanagement of state-owned entities (SOEs); governance issues at the South African Revenue Service (SARS), which has affected tax revenue collections; the increased costs of borrowing and servicing of debt associated with three sovereign downgrades; the general erosion of the institutional framework, which depletes investor confidence and thus investment; and finally, high public sector wages, which are a pressing issue. All of these variables interact at the macro level and eventually take a toll on the country's public finances.

South Africa has experienced very slow growth in the period following the global financial crisis. The average growth rate between 2009 and 2017 was a meagre 1.63% (see Figure 3), which has contributed to the country's deteriorating public debt dynamic.

Figure 3: Annual GDP growth rate – South Africa



In addition to a declining growth rate, the 2017 Budget Review confirmed that the finances of some SOEs had deteriorated, no doubt due to mismanagement (National Treasury, 2017). If not addressed, the issue of SOE mismanagement has the potential to weaken South Africa's fiscal policy by exposing the government to contingent liabilities. The governance issues that are plaguing SARS have also affected tax revenue collections, which puts extra strain on, and

generates extra risk for, the fiscus. This threat is affirmed by the recent Nugent Commission of Inquiry, which found that the restructuring that has happened limits coordinated action, to the benefit of "delinquent taxpayers" (Nugent, 2018). The increasing cost of borrowing and servicing debt is directly linked to the recent sovereign downgrades, which in turn are tied to poor governance. Moody's (2017), for instance, cited the fact that "the institutional framework has become less transparent, effective and predictable" as one reason for its downgrading of South Africa's sovereign rating. This weakened institutional framework no doubt plays an important role in increasing debt levels. Linked to this is the importance of strong institutions for investor confidence and therefore growth.

Finally, another key fiscal risk for the South African government is the wage bill. The public sector wage bill has been increasingly crowding out other areas of expenditure. Between the 2008–2009 and 2015–2016 financial years, national and provincial government salaries have nearly doubled (National Treasury, 2017b), contributing further to increasing debt levels.

The South African government should therefore tread carefully. Studies have shown that running large fiscal deficits has the potential to hamper economic growth, cause inflation and affect general macroeconomic performance through a crowding-out of private investment (Elliot & Kearney, 1988). This is a view supported by Calitz et al. (2009; 2013), who note that the past few decades have provided sufficient evidence of the harmful effects that running huge fiscal deficits has on macroeconomic performance. As noted earlier, if fiscal policy is not seen to be sound, it is likely to lead to foreign capital outflows (Ajam & Aron, 2007).

However, as pointed out by Cecchetti et al. (2010), high public debt does not necessarily mean that a country's fiscal policy is unsustainable. The authors state that, post-World War II, many industrialised economies experienced much higher levels of debt than are seen today and that, more recently, Japan has had a debt-to-GDP ratio of over 150% without any negative impact on its borrowing costs (Cecchetti et al., 2010). Their argument is that as long as market mechanisms continue to place their faith in the ability of these industrialised economies to repay their obligations (which has been the case in Japan, for example), then reservations about debt are overstated.

Nonetheless, the South African government should remain cautious. Even though market mechanisms may not adjust sovereign debt yields or interest rates with regard to more industrialised countries, it is not clear that the same investors would be willing to do this for South Africa. Indeed, the signs suggest that this would not be the case. For example, in 2016, Futuregrowth Asset Management (Futuregrowth) announced in a note that the company would be suspending additional loans to some of South Africa's large SOEs (Futuregrowth, 2016). In explaining its decision, the company cited concerns around decision-making and governance in these specific SOEs.

Moreover, another one of the reasons given by Moody's for its downgrading of South Africa's sovereign debt was the decline in the country's debt metrics and revenue prospects. This suggests that the market would adjust its perceptions accordingly. The next section reviews the literature

on the effects of institutional strength on economic growth and, by implication, fiscal policy sustainability.

3. Literature review

The first piece of empirical research that focused on the subject of public debt was written by Domar in 1944. On account of this seminal paper, titled "The Burden of the Debt and the National Income", Domar is widely regarded as the pioneer of the mathematical treatment of the public debt question.

Domar's (1944) main goal in the paper was to contrast the two main schools of thought on public debt. The first view, critical of or opposed to deficit financing, maintained that a sustained deficit spending leads to ever-increasing public debt and that the servicing of debt will require an increase in taxes over time. The alternative view maintained that the debt problem should be addressed in relation to GDP. The argument was that, with a growing economy, the burden is likely to be within manageable limits.

The main finding of this important research study was that the problem of debt can be solved by growing national income, which increases GDP. Furthermore, Domar (1944) states that, in order to grow GDP, there has to be an increase in the volume of monetary expenditure (i.e., demand-side spending) and, in order to avoid inflation, the spending must result in increased productivity. Domar's main takeaway is that instead of worrying about debt, effort should be spent trying to find ways of achieving a growing GDP, which would be a far better outcome for the "benefit and well-being of humanity" and a solution to the debt problem. As early as the 1940s, then, there have been debates around the issue of fiscal policy sustainability.

Since Domar's ground-breaking early work, there has been a multitude of empirical studies that have focused on the sustainability of governments' fiscal policy in developed countries (Hamilton & Flavin, 1986; Elliot & Kearney, 1988; Blanchard et al., 1990; Bravo & Silvestre, 2001; Afonso & Rault, 2009; Cecchetti et al., 2010; Bi, 2017).

In order to distinguish empirically between two views on the limitations of government borrowing, Hamilton and Flavin (1986) tested the present-value government borrowing constraint, which states that the present value of future primary surpluses are equal to the present value of the stock of debt. To test for sustainability in the US's fiscal deficit, they employed a methodology developed by Flood and Garber (1980), which was developed to test for bubbles in asset prices.

According to one view on the limitations of government borrowing, nothing precludes the government from running a permanent budget deficit, paying interest due on the increasing debt burden simply by issuing more debt. The second view holds that creditors would be unwilling to purchase the newly issued government debt unless the government in question made a sincere guarantee that it would balance its budget in present value terms. Hamilton and Flavin (1986) found the suggestion that a government must make a commitment to creditors to balance its budget in expected present-value terms to be largely consistent with postwar US data. In other words, to

ensure that US debt would be considered sustainable, the US government committed itself to balance its budget in present-value terms.

Similarly, Elliot and Kearney (1988) applied the methods used by Hamilton and Flavin (1986) and MacDonald and Speight (1987) when testing for bubble financing of the fiscal deficit in Australia for the period 1953/1954–1986/1987. They developed the methods by allowing for the effects of income growth on sustainability and they also critically evaluated some of the methods used in previous literature. They found that, over the assessed period, there was no evidence of the unsustainability of government debt. Their analysis suggests that seigniorage was used to pay for sustained fiscal deficits, and that the overall level of debt as a ratio of GDP fell over the period as a result of strong GDP growth and inflation.

Following the papers by Hamilton and Flavin (1986) and Elliot and Kearney (1988), Blanchard et al. (1990) investigated this subject matter further by proposing a set of indicators of fiscal policy sustainability that were designed to assess the extent to which governments can maintain current tax and spending programmes without experiencing a continued increase in their public debt. These indicators were constructed and illustrated for a sample of OECD countries. Their finding was that fiscal policy must not be static and should rather be forward-looking. Furthermore, the assessment of sustainability cannot always be limited to the medium term, but government's commitments to specific programmes do have implications for fiscal policy that affect the future. Therefore, projected future pressures, such as those on social spending arising from population ageing, should be incorporated into any measure that purports to indicate underlying sustainability problems.

In more recent years, one extensively used mode of assessing fiscal sustainability has been to test for cointegration between government revenues and expenditures, or else to test the public debt (appropriately discounted) or the deficit for stationarity (Bravo & Silvestre, 2001; Afonso & Rault, 2009; Trehan & Walsh, 1988; Quintos, 1995).

Trehan and Walsh (1991:207) applied the method that tests for the presence of a cointegrating relationship between expenditures and revenues, but they relaxed the requirement that expenditures and revenues be stationary in first-difference terms. Their objective was to "show that the cointegration test is valid as long as a quasi-difference of the net-of-interest deficit is stationary". Furthermore, they showed a scenario where the real interest rate was not constant and where, as a result, the cointegration test was no longer valid.

They also presented two applications of the tests mentioned. In the first test, they examined the US federal government's budget data and found a stationary linear combination of the stock of debt and concluded that the deficit, net-of-interest, did not exist (Trehan & Walsh, 1991:222). They also found that the first difference of the stock of debt was stationary. According to the authors, these findings imply that this deficit process is consistent with sustainability but that the assumption of a constant expected real rate is a bad approximate of the data (Trehan & Walsh, 1991).

In his 1995 paper, Quintos found that under a weak condition – specifically, one that allows the bubble term in the debt process to go to 0 at a slower rate – cointegration between revenues and expenditures is a sufficient condition for deficit sustainability. His article focused on testing whether US fiscal policy was consistent with intertemporal budget balance and whether there has been structural change in deficit policy.

Also employing cointegrating tests, Bravo and Silvestre (2001) conducted a study of 11 member states of the European Union (EU) for the period 1960–2000. They tested for sustainability using an empirical analysis of cointegration between public revenues and expenditures as a ratio of GDP for these countries. Using the Augmented Dickey–Fuller unit root test for each of the countries, they concluded that the ratios of government revenues and expenditures may be regarded as integrated of order one or I(1) in all the countries. They also ran Engle–Granger cointegration tests for the 11 countries and generated results that also indicate the coefficients of the independent variable for each equation and country.

Their results show that cointegration was not rejected at the 5% significance level for France, Austria, Germany and the UK as well as the Netherlands if the 10% significance level was included. A Johansen cointegration trace test was also run. Similar results to the Engle–Granger test were obtained, except in one instance where cointegration was rejected for France at the 5% level and for the Netherlands at the 10% level. The authors do, however, note that their results depended on the type of test ran and the sample they used.

Using similar methods, Afonso and Rault (2009) also used stationarity and cointegration tests to assess the sustainability of public finances in the EU-15[3] from 1970 to 2006. They investigated past fiscal data to determine whether government debt was stationary and whether there was a cointegrating relationship between government revenue and expenditure as a percentage of GDP. Their results showed that the essential requirement for fiscal policy sustainability, which is that the government debt must be integrated of order zero, was satisfied. Panel-unit root tests were used to generate the results (Afonso & Rault, 2009).

Kalyoncu (2005) studied the sustainability of fiscal policy in South Korea, Mexico, the Philippines, South Africa and Turkey. In order to carry out this study, the author tested for a long-run relationship between revenue and expenditure (including interest) payments. Cointegration approaches were used in the empirical analysis. Kalyoncu's empirical results suggest that a unique long-run relationship exists for South Korea and Turkey, while the cointegration results suggest that Turkey's and South Korea's fiscal position satisfies the sustainability condition. For the other three countries, Mexico, the Philippines and South Africa, however, the results suggest that fiscal policy is unsustainable.

It is clear from the literature on fiscal sustainability that many of the existing studies have focused exclusively on empirical evaluations and tend to centre on the US, Europe and other industrial or

[3] The EU-15 is comprised of Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden and the UK.

advanced economies. Literature on African economies (and on less quantitative factors) in this subject area is limited. Some notable research that focuses on Africa includes studies by, among others, Lusinyan and Thornton (2009); Oyeleke and Ajilore (2014); Oshikoya and Tarawalie (2010); Calitz et al. (2013); and Ajam and Aron (2007).

Oyeleke and Ajilore (2014) examined the sustainability of fiscal policy in Nigeria between 1980 and 2010 in order to determine whether or not the Nigerian government has violated the intertemporal government budget constraint. The authors used an error-correction method of analysis and their results showed that Nigeria's fiscal policy was weakly sustainable. Oshikoya and Tarawalie (2010), meanwhile, examined the sustainability of the fiscal policy of West African Monetary Zone (WAMZ) countries using a time-series approach (annual data) to conduct cointegration tests for the period 1980–2008. Their results suggest that fiscal policy was weakly sustainable for all the countries in the zone except for Sierra Leone.

Cohen (1996) approximated the value of debt in African countries by looking at the debt-to-export ratio and concluded that fiscal policy was sustainable. On the other hand, Lusinyan and Thornton (2009), in their investigation of South Africa's long-run fiscal sustainability, adopted a range of more modern unit root and cointegration methods for analysing data on government revenue and spending in the country from 1985 to 2005. They found that, allowing for structural breaks, South Africa's government revenue and spending during this period were one-series and cointegrated, with the estimated long-run equilibrium relation confirming the presence of a weak deficit sustainability condition.

Ajam and Aron (2007:1), in their paper, "review[ed] the policies and outcomes of South Africa's fiscal reform since 1994 and explore[d] the main challenges that were raised". They examined the performance of fiscal policy "by means of the trends of the main budget indicators, measures of cyclically adjusted fiscal stance, a comparison of budget projections and actual outcomes, the management and sustainability of debt, and finally, the contribution of fiscal policy to South Africa's improved macroeconomic stability" (Ajam & Aron, 2007:2).

Calitz et al. (2013) corroborated previous studies that have found South Africa's fiscal policy to be sustainable since 1960. They achieved this by providing a perspective on the manner in which the country's fiscal sustainability was maintained. Furthermore, their paper provides a projection of the fiscal outlook for South Africa based on a structural VAR model, and their results suggest that the discretionary fiscal decisions of 2007 and 2010 could pose a threat to sustainability. This scenario could be safeguarded against if the authorities respond as they have done in the past – that is, by checking large fiscal deficits and rapid increases in the public debt.

It is therefore clear that there is no consensus among economic researchers on a standard and precise definition of fiscal sustainability. Researchers have used varying methods that are quite similar in scope to assess sustainability, and their research has mostly been focused on developed countries, with a limited number of studies focusing on emerging economies. African countries have scarcely been assessed. The competing theories on fiscal sustainability date back as far as Domar's seminal work in 1944. An important takeaway from these studies is that the results have

varied in different contexts and there is still no consensus as to what makes a country's fiscal policy sustainable.

For example, many large and advanced economies such as Japan and the US run large debt-to-GDP ratios but are generally considered sustainable, while there seem to be stricter criteria in place for developing nations. Why is this the case? It could be due to the presence of stronger institutions in the developed nations, and part of this paper will argue that institutions and a strong regularly framework are important criteria for assessing a country's fiscal policy.

For example, Cecchetti et al. (2010:1) argue that high public debt does not necessarily mean that a country's fiscal policy is unsustainable. Their argument is that as long as the market continues to place its faith in the ability of these industrialised economies to repay their obligations (which has been the case in Japan), then reservations about debt are overstated. Nonetheless, countries such as South Africa still need to be careful. While investors have been willing to place their faith in countries like Japan's future ability to pay, it is not clear that they would do the same for South Africa. As mentioned earlier, one of the reasons given by Moody's for its downgrading of South Africa's sovereign debt was a decline in the country's debt metrics. This suggests that the market would adjust its perceptions accordingly.

As observed above, the government's intertemporal budget constraint is a measure that has been frequently used (Oyeleke & Ajilore, 2014; Domar, 1944; Elliot & Kearney, 1988; Hamilton & Flavin, 1986). This method states that a government's initial debt level should be equal to the present value of future surpluses. Another measure that is used involves fiscal sustainability indicators (Blanchard et al., 1990). These indicators indicate the adjustment required to bring public finances back to a sustainable path. Finally, as mentioned, another extensively used method of assessing fiscal sustainability involves testing for cointegration between government revenues and expenditures, or testing the public debt (appropriately discounted) or the deficit for stationarity (see Hakkio & Rush, 1991; Quintos, 1995; Bravo & Silvestre, 2001; Afonso & Rault, 2009; Oshikoya & Tarawalie, 2010).

Importance of institutional strength for economic growth and fiscal discipline

A review of the existing literature on fiscal sustainability shows how little focus is placed on "non-tangible" metrics, which may have a significant impact on a country's growth prospects and therefore ultimately on that country's fiscal position. It is widely accepted that strong institutions – for example, a strong regulatory framework, adherence with the laws of the country, an independent judiciary, a working prosecutions system, and good governance – are fundamental to a country's economic performance (Mauro, 1996; Buckberg, 1997; Mo, 2001; Abed & Gupta, 2002). Institutions are also important because, by definition, they are the "rules" that govern human interaction, whether they be formal (official laws and regulations) or informal (customs, habits and expectations), and they therefore underpin the economic, political and social spheres.

For example, there are potentially massive costs associated with corruption. Bribing government officials may lead to decisions that are not optimal for society and can exacerbate inequality, because those who can afford to pay bribes are at an advantage compared to those who cannot.

Tax evasion can lead to mistrust in a government and loss of foreign direct investment. There is therefore the argument that it is important in any analysis of fiscal sustainability to critically evaluate the role of institutions and their effect on economic growth. Furthermore, it will be argued that in order to maintain its history of sustainable fiscal policy, South Africa's institutional framework must be strengthened again. This is because strong institutions and a culture of good governance will be important for maintaining the credibility of South Africa's fiscal policy.

Research that has been conducted on institutions seems to point to strong institutions being important for sustained economic growth (Mauro, 1996; Buckberg, 1997; Mo, 2001; Abed & Gupta, 2002). This is particularly relevant because a large part of the increase in South Africa's public debt is due to the continued low-growth environment. The argument made is that strong institutions and a clear regulatory environment matter for economic success because these factors affect the level of investment and private sector activity.

According to Mauro (1996), research has shown a negative effect on economic performance in cases where there is evidence of corruption, and policymakers should be paying attention to this phenomenon. For example, Mo (2001) found that a 1% increase in corruption levels reduces the growth rate by about 0.72%. The most important channel through which corruption affects economic growth is political instability, which accounts for about 53% of the total effect. They also found that corruption reduces the level of investment in human capital and also reduces the share of private investment. Similarly, Abed and Gupta (2002) argue that for countries to achieve better economic performance, they need sound policies and institutions.

Similarly, Buckberg (1997) has argued that, in order to lay the foundation for economic success and achieve a successful transition in the Russia post-Soviet era, the Russian government needed to create an institutional and regulatory environment that would foster investment and promote new private sector activity. Today, while we can see improvements in the regulatory environment, it can be argued that Russia still has a fair way to go to in fulfilling its economic potential.

In addition to the above factors, adherence with the laws of a country is fundamental for economic success. In order for businesses to function as intended, a clear legal framework needs to be respected and maintained. This argument is supported by Buckberg (1997), who states that there should be strong order in place if businesses are to successfully resolve disputes, for example. More generally, the IMF's 1997 paper, "Good Governance: The IMF's Role", stipulated that countries would need to put in place broad institutional reforms if they wanted to establish and maintain private sector confidence (and therefore investments).

Another important avenue through which poor institutional strength affects economic performance is tax revenue collections, which ultimately have an impact on a country's fiscal position as a result of increased borrowing to finance the deficit for expenditure programmes. A number of studies seem to suggest that a tax system that is perceived to be corrupt can lead to tax evasion. For example, in Russia, the tax system was considered unfair due to tax preferences and an uneven application of its tax code. According to Buckberg (1997), this perception led to firms using sophisticated means of reducing their profits. In the author's interviews with business leaders in

Russia, these leaders stated that "corruption involving tax inspectors further undermines tax compliance and collections".

Driving home this point, Lewis and Alton (2015) have argued that the fact that SARS officials in South Africa have generally been well regarded by taxpayers has likely contributed to SARS' track record of excellent revenue collections. This argument is supported by the findings of Ajam and Aron (2007), who state that the efficient tax system in South Africa helped reduce debt-to-GDP in the early 2000s.

Finally, weakened institutions can also affect a country's growth potential and ultimately its fiscal situation through poor governance. If state institutions are deemed to not be credible, this has broader implications for a country's fiscal policy. It should be acknowledged that governance is quite a broad concept and there is no single formula for good governance that can be applied in all scenarios.

The World Bank (1994) defines governances as being "epitomised by predictable, open and enlightened policy making; a bureaucracy imbued with a professional ethos; an executive arm of government accountable for its actions; and a strong civil society participating in public affairs; and all behaving under the rule of law". Kaufmann et al. (2010), meanwhile, state there is no consensus or single definition of what governance is. In their view, governance means the way that power is exercised, including how governments are elected, monitored and re-elected, as well as the ability of the state to implement policies and respect for citizens and institutions. Yousaf et al. (2016) describe good governance as the method through which economic and social relations are directed, which includes rule of law, transparency and accountability.

The big question, then, is how governance affects the economic growth of a country. There are a number of different viewpoints here. The long-held consensus is that there is a strong and positive correlation between economic growth and the quality of governance (North & Thomas, 1996; Aron, 2000; Kaufmann & Kraay, 2002; Gray, 2007). This dominant view broadly promotes reduced corruption, transparency in public sector and state institutions, property rights and rule of law and free markets. If most of these factors are in place, then economic growth is stimulated and there is potential for sustainably reducing poverty. It should be noted, though, that there is some debate on the effect of governance on economic growth. For example, according to Aron (2000), the evidence regarding the impact of institutional strength on economic growth is not straightforward, because there is no clear vehicle or channel through which institutions will influence economic outcomes.

Kaufmann and Kraay (2002) proposed an empirical analysis that allows for a separation of a positive causal effect that goes from good governance to higher per capita incomes and a weak and negative causal effect in the opposite direction. According to the authors, the negative feedback suggests that improvements in the quality of institutions and governance do not occur merely as a result of economic development. The argument is that, as nations develop, higher incomes do not lead to demands for better quality of governance and institutions – rather, the opposite might happen.

Specifically, elites within a country might capture the private benefits available within a status quo of poor institutional quality. The authors cite East Asia's crony capitalism as an example of this phenomenon (Kaufmann & Kraay, 2002). The authors refer to the phenomenon – "the undue and illicit influence of the elite in shaping the laws, policies and regulations of the state" – as "state capture". They point to state capture as a possible reason for the weak and negative causal effect from higher per capita income to improved governance.

According to Gray (2007), an important factor in solidifying the consensus on the links between growth and governance has been the quantification of measures of institutions, which has supported the basic insights of new institutional economics. Reiterating Aron (2000), Knack (2006) points out that there is still uncertainty around the role of governance and that aspects of both empirical and theoretical evidence have been contested by economists. Issues include concerns about the quality of data and the lack of detailed case studies of governance and growth in specific countries.

It is therefore evident that, while the consensus view is that good governance is associated with improved economic performance, there are a number of dissenting views regarding its exact impact. Governance issues as they specifically relate to South Africa will be touched on later in this paper. The next section describes and sets out the theoretical framework for the present study.

4. Theoretical framework

An extensively used method or framework for assessing fiscal sustainability is a two-step approach that involves stationarity and cointegration tests (Trehan & Walsh, 1988; Quintos, 1995; Bravo & Silvestre, 2001; Kalyoncu, 2005; Afonso & Rault, 2009, Lusinyan & Thornton, 2009; Oshikoya & Tarawalie, 2010; Afonso et al., 2017).

Bravo and Silvestre (2001) examined 11 member states within the EU during the period 1960–2000. Their study excluded Greece, Spain, Norway and Sweden due to a lack of availability of the corresponding series for the entire sample (Bravo & Silvestre, 2001). As their first step, the authors applied the Augmented Dickey–Fuller unit root test for each of the countries and concluded that the ratios of government revenues and expenditures may be regarded as integrated of order one or I(1) in all the countries. Thereafter, they tested for sustainability using an empirical analysis of cointegration between public revenues and expenditures, as ratios of GDP.

Cointegration tests were assessed applying the Engle–Granger cointegration test for the 11 countries, and the generated results indicate the coefficients of the independent variable for each equation and country. The cointegration tests were not rejected at the 5% significance level for France, Austria, Germany and the UK as well as the Netherlands if the 10% significance level was included (Bravo & Silvestre, 2001). A Johansen cointegration trace test was also run, and similar results to the Engle–Granger test were found, except that cointegration was rejected for France at the 5% level and for the Netherlands at the 10% level. The authors note that their results were dependent on the type of test they ran and the sample they used (Bravo & Silvestre, 2001).

As discussed above, Afonso and Rault (2009) also used stationarity and cointegration tests to assess the sustainability of public finances in the EU-15[4] from 1970 to 2006, investigating past fiscal data to see whether government debt was stationary and whether there was a cointegrating relationship between government revenue and expenditure as a percentage of GDP (Afonso & Rault, 2009). The essential requirement for fiscal policy sustainability (namely, that government debt must be integrated of order zero) was satisfied by their study, confirming that these tests are indeed optimal for assessing sustainability.

In a study focusing on South Africa, Lusinyan and Thornton (2009) adopted a "battery of" more modern unit root and cointegration methods to analyse data on government revenue and spending in the country from 1895 to 2005. These methods allow for the following: breakpoints that are determined "endogenously", different breakpoints for different series, more than one structural break in testing for a unit root, and a VAR approach to cointegration. Lusinyan and Thornton's (2009) results suggest that "allowing for structural breaks, South Africa's government revenue and spending during this period were I(1) series and cointegrated, with the estimated long-run equilibrium relation supporting the presence of a weak deficit sustainability condition".

In a recent paper, Afonso et al. (2017) applied stationarity tests in their analysis of Portuguese-speaking African countries' (PALOP) economies.[5] The tests were applied to external public debt as a percentage of GDP. The Augmented Dickey–Fuller unit root test was used across the sample. The authors applied the Zivot and Andrew testing method to guard against the potential existence of structural breaks in the underlying time series. An important point to consider here is that the unit root and cointegration tests that are usually used do not always reject the null of a unit root in the series and are not very powerful in small samples and, moreover, that these tests can be unreliable if there is reason to believe that a country has experienced a structural break in its fiscal policy over the period being examined (Lusinyan & Thornton, 2009).

As a second step, Afonso et al. (2017) apply cointegration tests between public expenditures and public revenues (as percentages of GDP). The methods employed were the Johansen and Engle–Granger tests. This two-step method has been the most popular method for assessing fiscal sustainability. I will now define the inter-temporal budget constraint (IBC).

Based on previous studies that have been conducted, the derivation of the inter-temporal budget constraint begins with a simple-version, one-period budget constraint, which describes the progression of the net debt:

$$B_{t+1} = (1+r)B_t - PB_{t+1} \quad (1)$$

Where B_t is the stock of debt, r is the interest rate and PB_t is the primary balance (total government revenues minus total government expenditure excluding interest payments).

[4] See footnote 5 above.

[5] This community of countries comprises Angola, Cape Verde, Guinea-Bissau, Mozambique and São Tomé and Príncipe.

If we solve for the constraint going forward in time, we have the following:

$$B_t = (1+r)^{-1} B_t - (1+r)^{-1} PB_{t+1} \quad (2)$$

$$B_t = (1+r)^{-2} B_{t+2} - (1+r)^{-2} PB_{t+2} + (1+r)^{-1} PB_t \quad (3)$$

$$B_t = (1+r)^{-n} B_{t+n} + \Sigma^{n}_{i=1} (1+r)^{-i} PB_{t+i} \quad (4)$$

If the limit is taken as it tends to infinity, we have the following:

$$B_t = \lim(n \to \infty) (1+r)^{-n} B_{t+n} + \Sigma^{\infty}_{i=1} (1+r)^{-i} PB_{t+I} \quad (5)$$

An important assumption is that the first term (the present value of the government debt in infinity) is equal to zero:

$$\lim(n \to \infty) (1+r)^{-n} B_{t+n} = 0 \quad (6)$$

This is the transversality condition of the no-Ponzi game condition. By substituting the above term into the IBC, we have the following:

$$B_t = \Sigma^{\infty}_{i=1} (1+r)^{-i} PB_{t+I} \quad (7)$$

The IBC tells us that the present value of future primary balances must be equal to the present value of the stock of debt. This is the no-Ponzi game condition. A Ponzi game would be a scenario where a country always pays interest by issuing more debt. The relevant sustainability test is then conducted to establish if past fiscal data is likely to result in the IBC being contravened (Chalk & Hemming, 2000). If the IBC condition is found to have been violated, this implies that fiscal policy is considered unstainable.

Trehan and Walsh (1991) and Wilcox (1989) have modified the IBC test and proven that a stationary quasi-difference of primary deficit $D_t \sim \Theta$. $D_t \sim I(0)$ is sufficient for the transversality condition to hold, if and only if debt and primary deficit are cointegrated (D_t, B_{t-1}).

Therefore, from Equation (1), and assuming the interest rate is constant, it can be written as:

$$B_{t+1} = G_t - T_t + B_t + \varepsilon_t \quad (8)$$

This implies the following:

$$B_{t+1} - B_t = G_t - T_t = D_t$$

(9)

Therefore, a typical cointegration regression estimation is as follows (Trehan & Walsh, 1991; Hakkio & Rush, 1991):

$$D_t = -\alpha B_{t-1} + \varepsilon_t$$

(10)

With $\alpha>0$, where D_t is the primary deficit.

Trehan and Walsh (1991) and Hakkio and Rush (1991) provide a second modification of the IBC. This version demonstrates that the cointegrating relationship between government expenditure and tax revenue is a necessary requirement for the IBC to hold. It also assumes stochastic real interest rates.

Assuming the interest rate is stationary, Equation (2) can be written as follows:

$$PB_t = GG_t - T_t = \Sigma^{\infty}_{j=1} \delta^{j=1} (\Delta T_{t+j} - \Delta GG_{t+j} + r\Delta B_{t+j-1})$$

(11)

Where $GG_t = G_t + i_t B_{t-1}$ is total government expenditure including interest payments and the debt outstanding with discount factor $\delta = (1+r)^{-1}$ and Δ is the first differences. Due to the variables GG_t and T_t usually being non-stationary, this equation provides a framework for testing sustainability. Therefore, fiscal sustainability implies that tax revenues and expenditures must be cointegrated if GG_t and T_t are I(1) process.

In line with Trehan and Walsh (1991), as well as Hakkio and Rush (1991), the equation that needs to be estimated takes the following form:

$$\Delta GG_t = \alpha + \Theta\Delta T_t + \varepsilon_t$$

(12)

The theoretical model says that the regression of the two-time series that are not stationary may result in a spurious regression being produced. Consider the time series of total government expenditure and revenues given above. Subjecting the time series of these variables to a unit root test individually, it may be found that they are integrated of order one or I(1) and therefore contain a unit root. Suppose the above equation is rewritten as follows:

$$\varepsilon_t = \Delta GG_t - \alpha - \Theta\Delta T_t$$

(13)

Suppose now it is μt that is subjected to a unit root test and that it is found that it is stationary; it therefore means that it is integrated of order zero or I(0). Therefore, although total government revenue and total government expenditure have stochastic trends – that is, they are individually

I(1) – their linear combination is I(0). The linear relationship cancels out the stochastic trends in the two series.

As a result, if total government expenditure and total revenue are taken as two variables that are I(1), the surplus (or deficit) – that is, total revenue less expenditure – could be I(0). Consequently, a regression of total government expenditure on total government revenue would not be spurious. It would be meaningful. Therefore, total government expenditure and total revenue would be cointegrated (i.e., the two variables have a long-term relationship between them).

Shortcoming of the chosen methodology

Before diving into the empirical analysis, it is important to note an important shortcoming of the chosen methodology. The fact that it does not incorporate the role of interest rates. Along with institutions is the important role of interest rates as mentioned earlier in the paper (pages 12 and 17). Interest rate setting is closely linked to institutions and how countries are perceived. For example, we often see industrialised or developed economies with very low interest rates on their outstanding debt being able to manage it sustainably even at much higher rates as a result of the interest being low.

This is a luxury developing countries unfortunately do not have to rely on. Therefore, while Japan or Italy may be able to manage public debt to GDP ratios exceeding 150% and being considered sustainable. South Africa with a public debt to GDP ratio of almost 60% would be considered a risk. This is something that the methodology fails to deal with adequately.

5. Empirical analysis

Data

In this section, a descriptive summary of the data used is first provided, then unit root tests will be conducted and finally cointegration tests will be run in order to test for a long-run relationship between total government revenue and total government expenditure.

I use annual data for the period 1961–2017 and, in particular, South African national government revenue and national government expenditure data, both as percentages of GDP. This data is obtained from the South African Reserve Bank (SARB). There is a total of 58 observations in the sample.

Descriptive statistics

The descriptive statistics of the total national revenue and the national government expenditure will be presented below. The statistics that will be shown include the graphs of each variable as well as the mean, median, standard deviation, skewness, kurtosis, maximum, minimum and Jarque–Bera for each of the variables. Following this, and as mentioned above, the next step will be to test the revenue and expenditure variables for a unit root using the Augmented Dickey–Fuller test. Thereafter, the Engle–Granger test will be used to test for a long-run relationship

(cointegration) between these variables. As stated earlier, if there is a linear combination between total revenue and expenditure, which are both I(1), then the linear combination is I(0), which implies that a long-run relationship exists because the linear combination purges the stochastic trend.

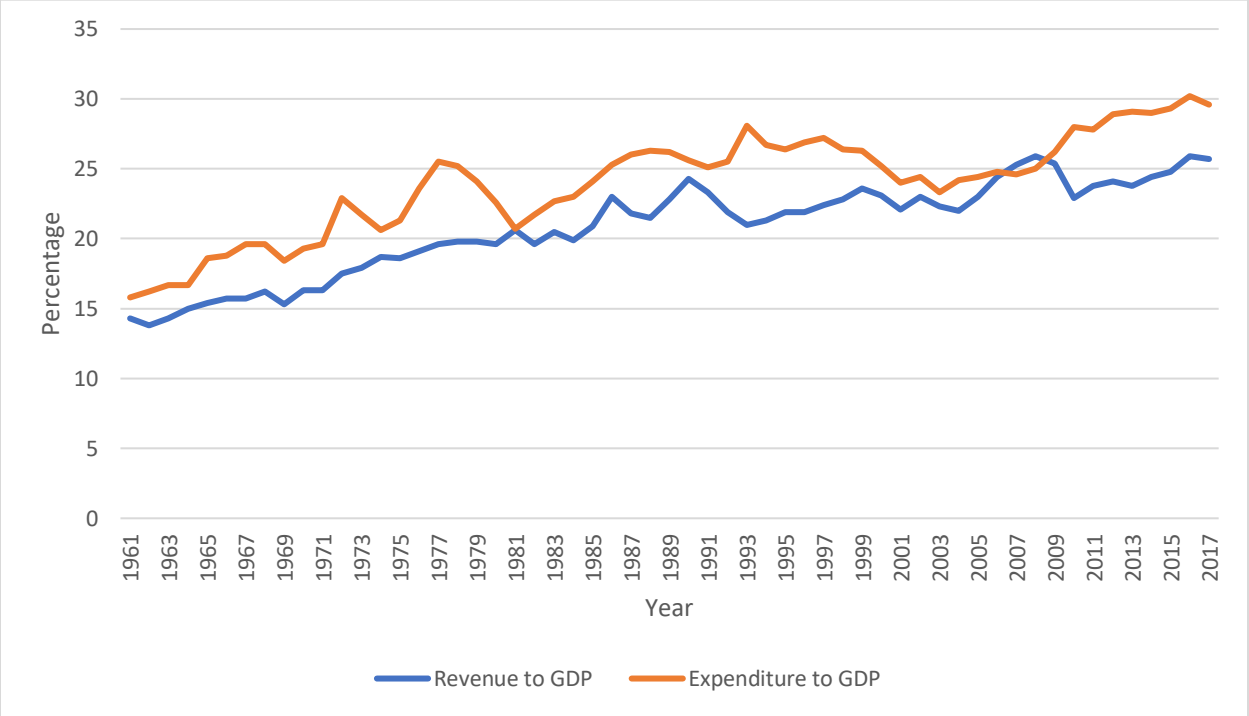
Table 1 shows that the average national government revenue as a percentage of GDP between 1961 and 2017 has been 20.80%, the average national government expenditure (also as a percentage of GDP) in the same period has been 23.94%, and the total national debt-to-GDP ratio in this period has averaged 37.89% – which would be considered a stable ratio today. The median values for these three variables are 21.80 for national revenue, 24.60 for national expenditure and 38.60 for national debt (all as a percentage of GDP).

The standard deviations of the three variables are 3.378% for national revenue, 3.650% for national expenditure and 6.765% for national debt, as percentages of GDP. There is therefore not much dispersion from the mean for all three variables, which seems to suggest that there has not been much volatility in the examined period for all three variables. The skewness of national government revenue is -0.500 and the kurtosis is 2.209; for national government expenditure, skewness is -0.497 and kurtosis is 2.505; for national debt, skewness is -0.025 and kurtosis is 1.768. Skewness for all the three variables is less than zero, which means that the distribution is negatively skewed. The implication is that most of the values are concentrated on the left of the mean, with extreme values to the right. Conversely, all three kurtosis values are lower than three, which means that the distribution is platykurtic (flatter than a normal distribution). This implies that the probability for extreme values is less than it would be for a normal distribution and that the values are spread widely around the mean.

Table 1: Summary statistics – National revenue to GDP, national expenditure to GDP, debt to GDP

	National government revenue (% of GDP)	National government expenditure (% of GDP)	National government debt (% of GDP)
Mean	20.80	23.94	37.89
Median	21.80	24.60	38.60
Maximum	25.90	30.20	50.60
Minimum	13.80	15.80	26.00
Standard deviation	3.378	3.650	6.765
Skewness	-0.500	-0.497	-0.025
Kurtosis	2.209	2.505	1.768
Jarque–Bera	3.859	2.930	3.668

Figure 4: Trends in national revenue and expenditure (1961–2017)

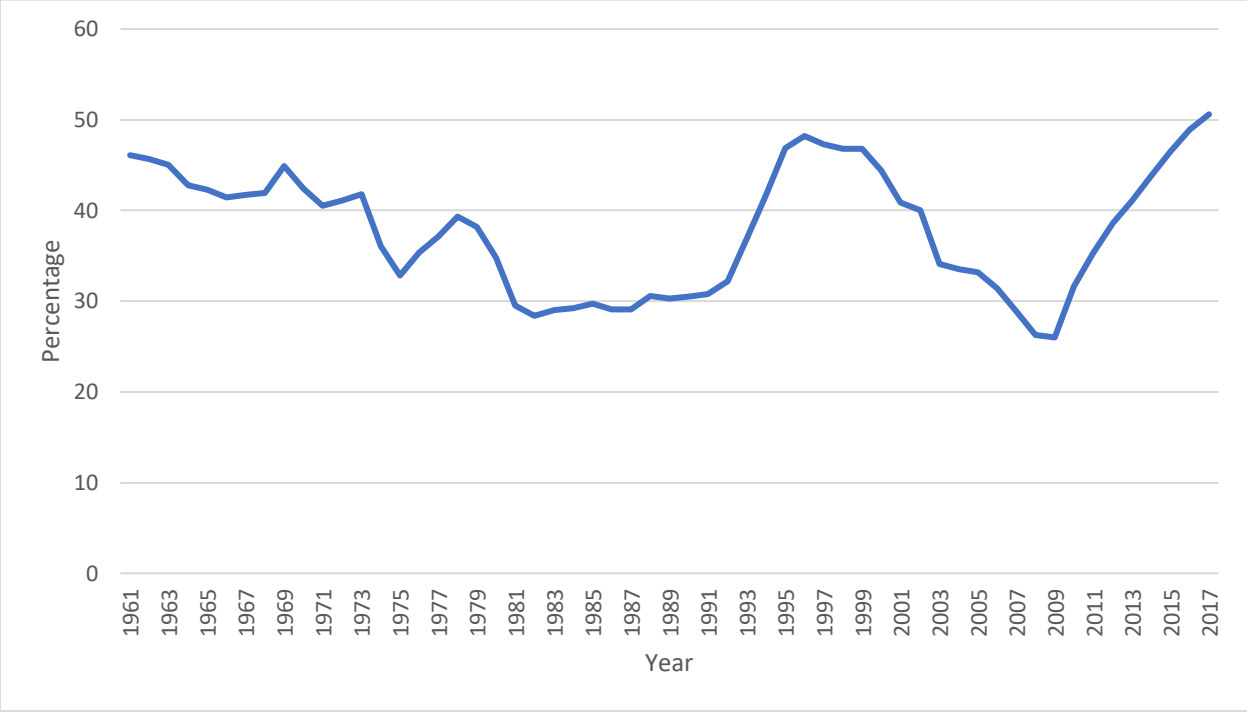


Source: South African Reserve Bank; KBP4433J – National Revenue (% of GDP) and KBP4434J – National Expenditure (% of GDP)

Figure 4 shows that both national government revenue and national government expenditure have, in the main, generally trended upwards, with the exception of the post-1995 to early 2000s period. National expenditure, while there is a clear upward trend, appears to be more cyclical. Based on the trends seen in the figure above, these series would be expected to be non-stationary. The unit root tests that have already been discussed above will be conducted in order to test for this.

In contrast, South Africa's debt does not seem to exhibit a clear trend when looking at the same period (1961–2017). The debt-to-GDP ratio seems to have largely revolved around the 40% mark over the period – in line with the mean of 37% mentioned above. It should be noted, though, that following the steady decline in the debt-to-GDP ratio between 1999 and 2008, the debt-to-GDP ratio has been growing exponentially since 2009 – which is a cause for concern. These trends are shown in Figure 5 below.

Figure 5: Trends in national debt (1961–2017)



Unit root tests (Augmented Dickey–Fuller)

Next, we progress to conduct unit root tests and cointegration tests, in order to test for a long-run relationship between total government revenue and total government expenditure in South Africa. Our null hypothesis (H_o) states that revenue and expenditure – which are our variables of interest – are not stationary or do have unit roots. Our alternative hypothesis (H_1) states that the variables are stationary (i.e., do not have unit roots).

In testing for unit roots, if we find that the p-value is less than 5%, we reject the null hypothesis, meaning the particular variable is stationary. If the p-value is more than 5%, we do not reject the null, and the variable is non-stationary. Furthermore, looking at the test statistics and critical values as absolute values, we either reject or accept our null hypothesis. If the test statistic is less than the critical values, you cannot reject the null and we accept it.

Level terms

Unit root tests are performed in level terms – with an intercept; with an intercept and a trend; and with no intercept or trend – for both national government revenue and national government expenditure (both as percentages of GDP). See Table 2 below.

Table 2: Unit root tests in level terms (Augmented Dickey–Fuller)

	National government revenue (% of GDP)			National government expenditure (% of GDP)		
	No intercept	Trend and intercept	None	No intercept	Trend and intercept	None
[Prob. value]	0.5819	0.1902	0.9716	0.4048	0.3119	0.9621
Test statistic	-1.3877	-2.8384	1.5952	-1.7424	-2.5327	1.4515
Test critical values @ 1% level	-3.5526	-4.1305	-2.6069	-.35526	-4.1305	-2.6069
Test critical values @ 5% level	-2.9145	-3.4921	-1.9467	-2.9145	-3.4921	-1.9467
Test critical values @ 10% level	-2.5950	-3.1748	-1.6130	-2.5950	-3.1748	-1.6130

Based on all three expressions of the unit root equations, we can see that South Africa's national government revenue series contains a unit root and is not stationary. The p-value is 0.5819 when no intercept is included (which is greater than 5%), meaning that we cannot reject the null hypothesis and that national revenue has a unit root. Similarly, the p-values for the other specifications (with trend and intercept, and without trend or intercept) are also greater than 5%, meaning that we do not reject the null hypothesis.

Looking at the test statistic values for all three specifications, we also do not reject the null hypothesis for all three. Test statistic values of -1.3877, -2.8384 and 1.5952 are all smaller or less than their associated critical values at the 1%, 5% and 10% levels. Similar to the national revenue described above, based on all three expressions of the unit root equations, South Africa's national

government expenditure series contains a unit root and is not stationary. The p-values – with an intercept; with a trend and an intercept; and with no trend or intercept – are greater than 5%. Therefore, we cannot reject the null hypothesis that national expenditure has a unit root (see p-values in Table 2 above). If we look at the unit root test (in levels) with no intercept, the test statistic is -1.7424, which is less than the critical values at the 1%, 5% and 10% levels (-3.5526, -2.9145, and -2.59503). Therefore, we cannot reject the null hypothesis: revenue has a unit root. The same scenario occurs when we assess unit roots with trends and intercept and with no trend or intercept, as shown in Table 2.

Unit root tests are now performed in first-difference terms – with an intercept; with an intercept and a trend; and with no intercept or trend – for both national government revenue and national government expenditure (both as percentages of GDP). See Table 3 below. The null hypothesis of all three tests assumes that the first differences of national revenue and national expenditure have unit roots.

Table 3: Unit root tests in first-difference terms (Augmented Dickey–Fuller)

	National government revenue (% of GDP)			National government expenditure (% of GDP)		
	No intercept	Trend and intercept	None	No intercept	Trend and intercept	None
[Prob. value]	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Test statistic	-7.4223	-7.4092	-7.0123	-6.5932	-6.5621	-6.3625
Test critical values @ 1% level	-3.5550	-4.1338	-2.6076	-3.5550	-4.1338	-2.6076
Test critical values @ 5% level	-2.9155	-3.4936	-1.9468	-2.9155	-3.4936	-1.9468
Test critical values @ 10% level	-2.5955	-3.1756	-1.6129	-2.5955	-3.1756	-1.6129

Whether testing for a unit root in first-difference terms with no intercept, with a trend and intercept, or with neither, the p-value is less than 5%, which means that we can reject the null hypothesis that says that the first difference of national revenue does not have a unit root. This means that the first difference of national revenue is stationary. Similarly, the test statistic, for all three expressions, is greater than the critical values at the 1%, 5% and 10% levels, meaning that, based on the results, we can reject the null hypothesis. The first difference of national revenue does not have a unit root and is stationary.

Following the same steps as were used for national revenue, unit root tests were applied in first-difference terms for the national government expenditure (with no intercept; with a trend and intercept; and with neither). Similar results were found. The p-value is less than 5%, which means

that we can reject the null hypothesis that says that the first difference of national expenditure has a unit root. This means that the first difference of national expenditure does not have a unit root and is stationary. Furthermore, the test statistic, for all three expressions, is greater than the critical values at the 1%, 5% and 10% levels, meaning that, based on the results, we can reject the null hypothesis. The first difference of national expenditure therefore does not have a unit root and is stationary.

In the next step, we conduct cointegration testing between the national government revenues and expenditures (as percentages of GDP), an approach that was also followed by Trehan and Walsh (1988); Kalyoncu (2005); Afonso and Rault (2009); Lusinyan and Thornton (2009); and Afonso et. al. (2017). The Engle–Granger test performs a unit root on the residuals of the regression as a proxy for the error term, which is a linear combination of the variables in the regression.

As can be seen above, we have used the Augmented Dickey–Fuller test in order to test the stationarity of the underlying time series. Both the national revenue and the national expenditure time series are not stationary in level terms, but they were found to be stationary in first-difference terms (i.e., they are I(1)).

For the Engle–Granger test, our null hypothesis (H_0) is that the residual series has a unit root (i.e., the residuals are non-stationary). In other words, there is no cointegration between the variables (national government expenditure and national government revenue). As stated earlier, if the residuals of the regression between the two variables of interest are subjected to a unit root test and it is found that they are stationary, it means that the residuals are integrated of order zero or I(0). Therefore, although total government revenue and total government expenditure have stochastic trends – that is, they are individually I(1) – their linear combination is I(0). The linear relationship cancels out the stochastic trends in the two series. Furthermore, the regression of a nonstationary time series or another nonstationary time series may cause a spurious regression, which is not desirable. In this case, we have two variables – national government revenue and national government expenditure – and they have a unit root in level terms but are stationary in first-difference terms.

If we were to run a regression model with these two nonstationary variables, the regression may be spurious or false. The symptom or indicator of a spurious regression is that the r-square value is greater than the Durbin–Watson statistic. However, if the residual of the regression equation is found to be stationary, then the model is not spurious. This would also mean that the two variables are cointegrated or that there is a long-run relationship between them. Below are the results of a least squares equation with dependent variable being the deficit and the independent variables are revenue and expenditure.

Table 4: Least squares equation with deficit as dependent variable

Sample: 1961 to 2018 Observations: 58				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
Revenue	1.000000	1.28E-14	7.84E+13	0.0000
Expenditure	-1.000000	1.17E-14	-8.54E+13	0.0000
C	-2.19E-14	1.29E-13	-0.169242	0.8662

We can see from the results of the table above that the negative constant is not statistically significant. We can therefore reject the null hypothesis that the residuals have a unit root. Whilst a negative constant exists, it is not significant and does not suggest a stationary fiscal deficit.

Table 5: Unit root of the residual series (Engle–Granger)

	Residuals of the estimated revenue and expenditure equation		
	No intercept	Trend and intercept	None
[Prob. value]	0.0050	0.0260	0.0002
Test statistic	-3.8026	-3.7675	-3.8395
Test critical values @ 1% level	-4.008	-4.008	-4.008
Test critical values @ 5% level	-3.398	-3.398	-3.398
Test critical values @ 10% level	-3.087	-3.087	-3.087

The Engle–Granger critical values at 1%, 5% and 10% levels are equal to 4.008, 3.398 and 3.087, respectively. This means that the t-stat is greater than the Engle-Granger critical values at the 5% and 10% levels; therefore, we can reject the null hypothesis. The residuals of the estimated equation do not have a unit root and are stationary. The regression is thus not spurious, and national government revenue and national government expenditure are cointegrated. A long-run relationship does exist between revenue and expenditure. Consequently, based on these tests, which are consistent with the outlined theoretical and empirical literature, we find results that suggest that fiscal policy is sustainable in South Africa.

Other fiscal risk factors that South Africa needs to address

In this last part, the argument is made that in order for South Africa to maintain its recent history of sustainable fiscal policy, institutions will need to be strengthened again.

This measure is necessary because, as already outlined in this paper, strong institutions are important for sustained economic growth, and a large part of the increase in South Africa's public debt is attributed to continued low growth. Furthermore, governance issues at SARS have affected tax revenue collections, while mismanaged SOEs have added to South Africa's fiscal risk.

Strength of institutions and growth

The perception of corruption in South Africa has affected investor confidence, and investment in the country has taken a knock as a result. As stated earlier on, some institutional investors have simply refused to provide new loans or invest in the country's SOEs, as a vote against corruption (see Futuregrowth, 2016). A decrease in investment decreases the growth potential. The perceived corruption – in relation to the country's investigative authorities and other arms of state – has played a significant part in the erosion of credibility in South Africa's fiscal policy over the past half-decade or so.

An important part of these perceptions is what has been termed the "state capture project", which is currently being investigated by the Zondo Commission, headed by South Africa's Deputy Chief Justice Raymond Zondo. The state capture project provides a conceptual framework for the "silent coup". It has been argued that, over the course of this project, there was an extensive "repurposing" of government institutions, with the aim of redirecting rents away from development and into the hands of an increasingly confident power elite, with that power elite intentionally operating in extra-legal and anti-constitutional ways.

Linked to the state capture project, and another key fiscal risk for South Africa, is the government's wage bill. The public sector wage bill has, as mentioned, been increasingly crowding out other areas of expenditure. Between 2008–2009 and 2015–2016, national and provincial government salaries nearly doubled. Some have argued that the government is bloated due to patronage being extended and employees being rewarded with government posts as part of the broader state capture project. In 2017, all three major ratings agencies (Fitch, S&P and Moody's) cited weakening institutional framework as a key driver for the downgrades that they issued. They also cited political uncertainty related to the March 2017 cabinet reshuffle.

Coupled with the perception of corruption, the deteriorating economic environment has exerted huge pressure on South Africa's public debt, due to the pressure placed on the government to finance its budget.

Governance issues at SARS and SOEs

SARS announced an unexpected R30 billion shortfall in revenue collections in the 2016–2017 tax year – the biggest shortfall in budget estimates since 2009–2010, according to the National Treasury (2017b). The known issues at SARS do not bode well insofar as arresting the increasing public debt is concerned. To make matters worse, the collection of tax revenues has decreased across all categories besides dividends. Moreover, SARS is expected to miss its overall target for the 2017–2018 tax year by R50 billion. If we also take into account the collapse in skills in both the National Treasury and at SARS, the situation does not look promising.

Acting Commissioner Ivan Pillay, Strategic Planning Risk Group Executive Peter Richer, Tax and Customs Investigations Heads Gene Ravele and Johann van Loggerenberg have all departed SARS, while the Director General, Lungisa Fuzile, the Deputy Director-General: Budget Office, Michael Sachs, and Andrew Donaldson, the former Deputy Director General, have all left the National Treasury (Pauw, 2017; National Treasury, 2017c; National Treasury, 2017d). This represents a loss of vital skills and deep institutional knowledge in the case of both institutions, which adds to the fiscal sustainability uncertainty.

Substantial revenue under-collection in 2016–2017 has imposed sharper limits on public spending and has placed further pressure on government spending (National Treasury, 2017a). The proposed budget for 2017–2018 is equal to R1.56 trillion. The revenue is R1.41 trillion, which means that R149 billion is debt.

Furthermore, financially distressed and mismanaged SOEs have the potential to weaken fiscal policy. The fact that contingent liabilities[6] are excluded from the national government debt means that this is an area that the country needs to correct sooner rather than later. There has been an increase in the total guarantees issued to public institutions by the South African government. In 2015–2016, the guarantees were R469.9 billion, and by 2016–2017 they had increased by R7.8 billion (to R477.7 billion). Over the same period, exposure (or the amount that SOEs have borrowed against their guarantee) is expected to rise by R52.5 billion. The changes in this regard were driven mainly by Eskom, but SAA, the South African National Roads Agency Limited (SANRAL) and the South African Post Office also contributed.

The contingent liabilities and risks associated with South Africa's SOEs were cited by all three major ratings agencies as a reason for their 2017 sovereign downgrades. Increasing public debt undermines fiscal stability; increasing debt that is coupled with poor governance is even worse, because it triggers credit ratings downgrades. Government debt currently stands at R2.2 trillion or about 50.7% of GDP, with interest payments continuing to grow rapidly (National Treasury, 2017a). Debt-service costs, which were about R162 billion in 2017–2018, are the fastest growing element of the budget. This is problematic because it diverts critical resources away from critical areas. To put it otherwise: For every R1 collected in tax, 13c goes to servicing the debt.

[6] These are the outstanding financial liabilities of public entities, such as SOEs and other private companies, whose debt carries an explicit guarantee on the part of the national government.

6. Conclusion

Although the empirical results of this study suggest that South Africa's fiscal policy is sustainable, it must be noted that a level of fiscal risk remains, as a result of the country's burgeoning public debt. This risk is amplified by the sluggish growth rate that the country has achieved over the past few years. The South African government should therefore still be restrained going forward. As Figure 5 above makes clear, debt is increasingly fairly rapidly, and if this trend continues, there could be grave consequences for South Africa.

If the government still wants to implement some of its goals – including new policy initiatives such as national health insurance (NHI) and fee-free tertiary education – then the economy will need to start growing at a much faster pace over the next decade or so. If this outcome is realised, the expanded vocational education programme will be affordable with limited adjustments to tax policies (Gordhan, 2013). The implication, however, is that if faster economic growth is not achieved, then policies such as free education will not be affordable, which should be a cause for concern.

The funding of free education is not the only concern. Important adjustments to the pension system structure are due to take place. According to the IMF (2010), the pensionable age for men in South Africa is being reduced to bring it in line with that for women. In addition, Durán-Valverde and Pacheco (2012) state that, according to forecasts, there is going to be a steady increase in people who are over the age of 65 in the next 15 years. This should raise alarm bells for the South African authorities, as it would mean more commitments for the government. Added to that is the risk of default by the country's SOEs, which are on the brink of collapse. All of these factors add significant risk to South Africa's fiscal policy.

Calitz et al. (2013) argue that the various threats to the prospect of continuing fiscal responsibility all stem from the government's pursuit of a developmental state trajectory. According to these authors, recent policy documents, such as the 2011 Budget Review and the New Growth Path, expose some likely features of the developmental state that they believe is being introduced by the government (Calitz et al., 2013). These features include the follow: increasing government expenditure as a percentage of GDP, associated with a higher average tax burden; greater regulation of the private sector (as is already the case with the health sector, according to the authors); and more control over financial relations across the different spheres of government, despite there being a federalist constitution in place (Calitz et al., 2013:18). The authors also state that dissaving[7] is expected to amount to 1.5% of GDP, which implies continued use of borrowed money to fund current spending – a fiscal practice that is commonly seen to be unsound.

Ajam and Aron (2007) also warn that the sustainability of fiscal policy in South Africa might be threatened if the fall in revenue collection and the risk arising from existing security entitlements are not carefully managed. It is argued that economic growth has not been sufficient to lower unemployment and decrease poverty and that, as a result, the South African government will continue to face pressure to increase existing cash-based entitlements (Ajam & Aron, 2007). This

[7] According to Calitz et al. (2013:18), this is the difference between the budget deficit and capital expenditure.

view is echoed by Jibao et al. (2010), who point out that increasing tensions among the poor majority about abysmal service delivery could be a recipe for fiscal unsustainability in South Africa. Ajam and Aron (2007) raise a crucial point when they state that the political sustainability of policies is as important as fiscal sustainability. It is therefore the contention of this paper that while fiscal policy in South Africa is generally sustainable, the government should remain hyper-aware of the fact that the country's fiscal policy could easily move into unsustainable territory.

7. References

ABED, G., and GUPTA, S. (2002). *Governance, Corruption and Economic Performance*. International Monetary Fund: Washington DC.

AFONSO, A., and RAULT, C. (2009). What Do We Really Know about Fiscal Sustainability in the EU? A Panel Data Diagnostic. *Review World Economy* 145: 731–755.

AFONSO, A., LEAO, E.R., TINY, D., and BHIMJEE, D.C.P. (2017). *Fiscal Sustainability Analysis. The Case of PALOP Economies.* Working Papers. University of Lisbon School of Economics and Management: Lisbon.

AJAM, T., and ARON, J. (2007). Fiscal Renaissance in a Democratic South Africa. *Journal of African Economies* 16 (5): 745–781.

ARON, J. (2000). *Growth and Institutions: A Review of the Evidence*. The World Bank: Washington DC.

BI, H. (2017). *Fiscal Sustainability: A Cross-Country Analysis*. Kansas City: Federal Reserve Bank of Kansas.

BLANCHARD, O., CHOURAQUI, J., and SARTON, N. (1990). The Sustainability of Fiscal Policy: New Answers to Old Questions. *OECD Economic Studies*, 15(1): 7–36.

BRAVO, A.B.S., and SILVESTRE, A.L. (2001). Intertemporal Sustainability of Fiscal Policies: Some Tests for European Countries. *European Journal of Political Economy* 18: 517–528.

BUCKBERG, E. (1997). Legal and Institutional Obstacles to Growth and Business in Russia. The International Monetary Fund: Washington DC.

BURGER, P. (2003). *Sustainable Fiscal Policy and Economic Stability – Theory and Practice*. Cheltenham, UK: Edward Elgar Publishing Limited and Northampton, Massachusetts, USA: Edward Elgar Publishing Inc.

CALITZ, E., DU PLESSIS, S., and SIEBRITS, K. (2009). *Institutions and the Sustainability of Fiscal Policy in South Africa, 1960–2008.* Fifteenth World Economic History Congress, August 2009. Utrecht, the Netherlands.

CALITZ, E., DU PLESSIS, S., and SIEBRITS, K. (2013). Fiscal Sustainability in South Africa: Will History Repeat Itself? Stellenbosch Economic Working Papers 07/13. Stellenbosch: Department of Economics.

CECCHETTI, S.G., MOHANTY, M.S., and ZAMPOLLI, F. (2010). *The Future of Public Debt: Prospects and Implications*. Working Papers 300. Basel: Bank for International Settlements.

CHALK, N., and HEMMING, R. (2000). *Assessing Fiscal Sustainability in Theory and Practice*. The International Monetary Fund: Washington DC.

CHECHERITA-WESTPHAL, C., and JACQUINOT, P. (2018). *Economic Consequences of High Public Debt and Lessons Learned From Past Episodes.* ECFIN Workshop. Brussels. 18 January 2018.

DOMAR, E.D. (1944). The "Burden of the Debt" and the National Income. *The American Economic Review*, 34(4): 798–827.

DURÁN-VALVERDE, F., and PACHECO, J.F. (2012). *Fiscal Space and the Extension of Social Protection: Lessons Learnt from Developing Countries.* ESS Paper no.33. International Labour Office: Geneva.

ELLIOT, G., and KEARNEY, C. (1988). *The Intertemporal Government Budget Constraint and Tests for Bubbles*. Research Department: Reserve Bank of Australia. Sydney: Reserve Bank of Australia.

FATÁS, A. (2010). *The Economics of Achieving Fiscal Sustainability*. Academic Consultants Meeting on Fiscal Sustainability, April 2010. Washington, D.C., United States.

FLOOD, R.P., and GARBER, P.M. (1980). Market Fundamentals versus Price Level Bubbles: The First Tests. *Journal of Political Economy*, 88: 745–770.

FUTUREGROWTH (2016). Futuregrowth Suspends New Loans to State-Owned Entities. Online. Available at: http://www.futuregrowth.co.za/newsroom/futuregrowth-suspends-new-loans-to-state-owned-entities/ [Accessed 20 December 2018]

GORDHAN, P. (2013). *National Budget Speech 2013*. Pretoria: South African National Treasury.

GRAY, H. (2007). Governance for Economic Growth and Poverty Reduction: Empirical Evidence New Directions Reviewed. Department for International Development: London/World Bank: Washington DC.

GUJARATI, D.N. (2003). *Basic Econometrics 4e*. New York: McGraw-Hill.

HAKKIO, C.S. and RUSH, M. (1991). Is the Budget Deficit 'Too Large'? *Economic Inquiry*, 29(3): 429–445.

HAMILTON, J.D., and FLAVIN, M.A. (1986). On the Limitations of Government Borrowing: A Framework for Empirical Testing. *American Economic Review*, 76(4): 808–819.

INTERNATIONAL MONETARY FUND (1997). Good Governance: The IMF's Role. The International Monetary Fund: Washington DC.

JIBAO, S.S., SCHOEMAN, N., and NARAIDOO, R. (2010). *Fiscal Regime Changes and the Sustainability of Fiscal Imbalance in South Africa: A Smooth Transition Error-Correction Approach*. Working paper series. Pretoria: Department of Economics, University of Pretoria.

KALYONCU, H. (2005). Fiscal Policy Sustainability: Test of Intertemporal Borrowing Constraints. *Applied Economic Letters*, 12(15): 957–962.

KARAGIANNIS, N., and KONDEAS, A.G. (2012). The Greek Financial Crisis and a Developmental Path to Recovery: Lessons and Options. *Real-World Economics Review*, 60, 54–72.

KAUFMANN, D., and KRAAY, A. (2002). Growth without Governance. The World Bank: Washington DC.

KAUFMANN, D., KRAAY, A., and MASTRUZZI, M. (2010). The World Governance Indicators: Methodology and Analytical Issues. Draft Policy Research Working Paper. The World Bank: Washington DC.

KNACK, S. (2006). Measuring Corruption in Eastern Europe and Central Asia: A Critique of the Cross-Country Indicators. World Bank: Washington DC.

LEWIS, C., and ALTON, T. (2015). *How Can South Africa's Tax System Meet Revenue Raising Challenges?* Economics Department Working Paper No. 1276. OECD: Paris.

LUSINYAN, L., and THORNTON, J. (2009). The Sustainability of South African Fiscal Policy: An Historical Perspective. *Applied Economics*, 41:7, 859–868.

MACDONALD, R., and SPEIGHT, A.E. (1987). *The Intertemporal Government Budget Constraint in the UK, 1961 to 1986*. Working Paper: University of Aberdeen.

MAURO, P. (1996). *The Effects of Corruption on Growth, Investment and Government Expenditure.* The International Monetary Fund: Washington D.C.

MOODY'S INVESTOR SERVICE (2017). Moody's Downgrades South Africa's Rating to Baa3 and Assigns Negative Outlook. Online. Available https://www.moodys.com/research/Moodys-downgrades-South-Africas-rating-to-Baa3-and-assigns-negative--PR_367769 [Accessed 21 December 2018]

MO, P. (2001). Corruption and Economic Growth. *Journal of Comparative Economics*, 29: 66–79.

NAIDOO, K., WILCOX, O., MAKGETSI, P., and STOTT, J. (2008). Fifteen-Year Review of Fiscal Policy in South Africa. Pretoria: National Treasury.

NATIONAL TREASURY (2017a). *Budget Review 2017*. Pretoria: National Treasury.

NATIONAL TREASURY (2017b). *Medium-Term Budget Policy Statement*. Pretoria: National Treasury.

NATIONAL TREASURY (2017c). *National Treasury Confirms Imminent Departure of Lungisa Fuzile*. Pretoria: National Treasury.

NATIONAL TREASURY (2017d). *Treasury Confirms The Resignation of DDG: Budget Office, Mr Michael Sachs.* Pretoria: National Treasury.

NELSON, R.M., BELKIN, P., and MIX, D.E. (2011). *Greece's Debt Crisis: Overview, Policy Responses, and Implications*. Washington, DC: Congressional Research Service.

ORTHOFER, A. (2016). Wealth Inequality in South Africa: Evidence from Survey and Tax Data. *Redi3x3 Working Paper 15*.

OSHIKOYA, W.T., and TARAWALIE, A.B. (2010). Sustainability of Fiscal Policy: The West African Monetary Zone (WAMZ) Experience. *Journal of Monetary and Economic Integration*, 9(2): 1–29.

OYELEKE, O.J., and AJILORE, O.T. (2014). Analysis of Fiscal Deficit Sustainability in Nigerian Economy: An Error Correction Approach. *Asian Economic and Financial Review*, 4(2): 199–210.

QUINTOS, C.E. (1995). Sustainability of the Deficit Process with Structural Shifts. *Journal of Business and Economic Statistics*, 13(4): 409–417.

SIEBRITS, K., and van der BERG, S. (2011). Chapter 2 – Social Assistance Reform during a Period of Fiscal Stress. In: *Submission for the Division of Revenue Technical Report 2011/2012*.

STATISTICS SOUTH AFRICA (2014). *Poverty Trends in South Africa: An Examination of Absolute Poverty between 2006 and 2011*. Pretoria: StatsSA.

STATISTICS SOUTH AFRICA (2015). *Methodological Report on Rebasing of National Poverty Lines and Development of Pilot Provincial Poverty Lines*. Pretoria: StatsSA.

STATISTICS SOUTH AFRICA (2017). Poverty on the Rise in South Africa. Online. Available at: http://www.statssa.gov.za/?p=10334 [Accessed 2 October 2018]

STATISTICS SOUTH AFRICA (2018). *Quarterly Labour Force Survey – Quarter 1:2018*. Pretoria: StatsSA.

TREHAN, B. and WALSH, C.E. (1988). Common Trends, the Government's Budget Constraint, and Revenue Smoothing. *Journal of Economic Dynamics and Control*, 12: 425–444.

TREHAN, B., and WALSH, C.E. (1991). Testing Intertemporal Budget Constraints: Theory and Applications to U.S. Federal Budget and Current Account Deficits. *Journal of Money, Credit and Banking*, 23(2): 206–223.

WORLD BANK (1994). *Governance: The World Bank's Experience*. Washington DC: World Bank.

YOUSAF, M., IHSAN, F., and ELLAHI, A. (2016). Exploring the Impact of Good Governance on Citizens' Trust in Pakistan. *Government Information Quarterly* 33 (1): 200–209.