THE EFFICACY OF FISCAL POLICY IN SOUTH AFRICA

Fiscal Multipliers and the financing of a Basic Income Guarantee

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1. INTRODUCTION

The debate about the efficacy of fiscal policy has remained unresolved in economics for almost a century. This paper will provide a brief overview of international and South African debates and research about fiscal multipliers, which measure the efficacy of fiscal policy. Internationally, there were 734 cash-based measures implemented in 186 countries in the wake of the pandemic-induced recession in 2020 (Gentilini et al. 2021). There has been renewed interest in the concept of Universal Basic Income (UBI). This paper's objective is to inform South African debates about the feasibility of introducing a Basic Income Guarantee (BIG). Over the past year, there has been a proliferation of research reports about how to finance and implement a BIG. All the reports have proposed various taxes to pay for the BIG.

This is the third of three research papers produced by the Studies in Poverty and Inequality Institute (SPII). The first paper looked at international case studies. The second focused on South Africa and investigated the feasibility of implementing an unfunded BIG, which would provide a significant stimulus to an economy that is reeling from the effects of a "lost decade" in terms of economic development between 2009 and 2019 during which GDP per capita did not grow and a once-in-a-century recession in 2020 that decimated the livelihoods of millions of people. Therefore, this paper seeks to understand the factors that could reduce or increase the stimulus that the BIG could provide to the economy.

National Treasury and the Reserve Bank, drawing from the neoclassical school of economics, have resorted to an extreme position that the fiscal multiplier has fallen to zero and even become negative in recent years. Through various transmission mechanisms, government spending, including on a BIG, can result in the "crowding out" of private investment. According to this view, a BIG would provide no stimulus to the economy. It would result in soaring levels of public debt. However, the alternative Keynesian view says government spending has a multiplier effect on the economy. it can result in an increase in Gross Domestic Product (GDP) and "crowd in" private investment. A BIG can partly pay for itself as higher GDP growth contains the debt ratio and results in an increase in tax revenues.

2. THE EVOLUTION OF THE KEYNESIAN MULTIPLIER

John Maynard Keynes invented modern macroeconomics in 1936 when he published *The General Theory of Employment, Interest and Money* (Keynes, 1964). He led a revolution in economic thinking that overturned the then prevailing idea that free markets would automatically provide full employment – that everyone who wanted a job would have one if workers were flexible in their wage demands (Jahan et al. (2014) The consensus view at the time was that an economy would eventually - "in the long run" - recover on its own, automatically, without government action (Nelson, 2006)

Jahan et al. (2014) say the main plank of Keynes' theory is that aggregate demand – the sum of spending by households, businesses and the government – is the most important driving force of the economy. An economy's output is the sum of consumption, investment, government purchases and net exports – the difference between what a country sells to and buys from other countries. Any increase in demand had to come from one of these components. An economy could languish indefinitely with high unemployment if aggregate demand was inadequate. "In the long run we are all dead," Keynes said to economists who said there was no need for public spending to increase aggregate demand.

According to Keynesian economics, state intervention is necessary to moderate the booms and busts of economic activity, through countercyclical fiscal policies that act against the direction of the business cycle. During a boom, the government can raise taxes to cool the economy and prevent inflation. During a recession, due to a decline in aggregate demand to below the economy's productive capacity, the remedy is to increase demand and run a budget deficit. Public spending on labour-intensive infrastructure projects can be used the stimulate the economy and employment (Jahan et al. 2014). The government can also cut taxes to increase disposable income and spending. Monetary policy – lower interest rates – can be used to encourage consumer spending and investment by businesses. But it becomes powerless during a depression with interest rates that are close to zero.

Keynesian economics dominated economic theory after World War 2 until the 1970s when advanced economies suffered from stagflation, a combination high inflation and slow growth. Keynesian theory's popularity waned because it had no policy response for stagflation. Monetarist economists doubted the effectiveness of fiscal policy. The focus shifted towards the role of monetary policy. The Global Financial Crisis and Great Recession of 2007 - 2009 caused a resurgence of Keynesian thought according to Jahan et al. (2014) as the United States and China implemented large fiscal stimulus packages worth $787 billion and $586 billion respectively. Although there was a brief Keynesian moment after the crisis, many countries, especially in Europe, reverted to austerity after the Greek debt crisis of 2010. But world stimulus packages soared to $16 trillion or 17% of world GDP in the wake of the pandemic-induced recession of 2020, which far exceeded the size of the responses in 2007-2009

Keynesian models include a multiplier effect. The great economist (Keynes, 1964) wrote that Richard Kahn, his student, introduced the concept of a multiplier in economic theory in a journal article in 1931. If the propensity to consume was given and the government took steps to stimulate or retard investment, the change in employment would be a function of the net change in investment. The article laid down general principles by which to estimate the relationship between an increase in net investment and the increase in employment. While Kahn had developed an employment multiplier, Keynes developed what he called an investment multiplier. "It tells us that, when there is an increment of aggregate investment, income will increase by an amount which is k times the increment of investment." (Keynes 1964:115).

The formula was: Δ Y = k Δ I, where Δ is the change, Y is income, K is the investment multiplier, and I is investment. For a business, the portion of income that is not invested is consumption. For a household, the portion of income that is not saved is consumption. Poor households spend a higher portion of income. The marginal propensity to consume (MPC) is the portion of income that is not invested or saved. It determines the size of the fiscal multiplier. As Keynes wrote: "the greater the marginal propensity to consume, the greater the multiplier." (Keynes 1964:125).

The multiplier theory means that government spending has a ripple effect throughout the economy whose impact exceeds the initial expenditure. It sets off a chain reaction of spending, more incomes and more spending. Additional spending boosts the incomes of the sellers of goods and services who, in turn, spend more on other goods and services. The simple formula is that the increase in GDP is:

$$\frac{1}{1 - mpc}$$

Therefore, if the MPC is 0.8, and a household saves 0.2 of its income, the multiplier is

$$\frac{1}{1 - 0.8} = \frac{1}{0.2} = 5$$

In an open economy with trade, Keynes pointed out that leakages through imports could reduce the size of the multiplier. "On the other hand, our own country may recover a portion of the leakage through favourable repercussions due to the action of the multiplier in the foreign country in increasing its activity." He also recognised that expansionary fiscal policies could have adverse effects in the other direction. There could be an increase in inflation and interest rates that reduces the size of the multiplier.

2. EXPENDITURE, REVENUE AND EMPLOYMENT MULTIPLIERS

2.1 Expenditure Multipliers

There are three types of multipliers. The **expenditure multiplier**, the focus of this paper, measures the additional GDP that is generated by each rand of additional government spending. The formula is: Δ GDP/ Δ GS, where GS is government spending. Therefore, if the expenditure multiplier is more than one, the additional government spending has crowded in other spending. If the government cuts expenditures through austerity policies there can be a negative multiplier. In other words multipliers also work in reverse. Pettifor (2012) cites an IMF paper, which found that a reduction of 1% in public expenditure will lead to a reduction in national income of 1.5%.

The IMF found that multipliers used in growth forecasts in 28 countries were too low at about 0.5. A low multiplier means that austerity does less damage to the economy. It also means that GDP forecasts were repeatedly wrong because they underestimated the damage they were causing to the economies of the 28 countries in terms of lower GDP growth. "The baseline estimate suggests that a planned fiscal consolidation of 1 percent of GDP is associated with a growth forecast error of about 1 percentage point. This result indicates that the multipliers underlying growth projections have been too low by about 1." (IMF 2012: 41)

Different types of government spending have different multipliers. The IMF (2020) estimates in its Fiscal Monitor publication that a 1% of GDP increase in public investment, in advanced economies and emerging markets, has the potential to push GDP up by 2.7 percent and private investment by 10%. Izquierdo et al. (2019) cite studies which found that the public investment multiplier can be quite large, especially when compared to the government consumption multiplier. The argument is that public investment directly improves the economy's productive capacity unlike government consumption.

Over time, this generates positive effects on private investment and consumption. They find that public investment multipliers are higher in developing countries when compared with advanced economies due to their lower initial stock of public capital. They also find that the effect of public investment on output falls when efficiency is low. Efficiency is broadly defined to include cost overruns, implementation delays, institutional weakness, corruption and the wasteful use of resources.

The authors cite studies, which show that the size of multipliers depends on the state of the economy. They are larger during recessions than during expansions and when monetary policies are loose and closer to the zero lower bound (ZLB). With loose monetary policies, the central bank accommodates the increase in GDP. Multipliers are larger in countries that are less open to foreign trade and those that have low debt ratios. They are larger in countries that fix their exchange rates than those with flexible exchange rates. This is because a central bank can respond to an increase in GDP by raising interest rates to reduce inflationary pressure. An appreciating currency results in lower net exports which offset the increase in GDP. With a fixed exchange rate, there is no currency appreciation. Such studies imply that government policies can influence the size of multipliers. They should be studied by National Treasury and the Reserve Bank to understand the effect of fiscal and monetary policies.

Calculating multipliers is an arduous task. And estimates are all over the map (Marglin and Spiegler, 2013). They range from negative, according to the South African Reserve Bank and National Treasury, to as high as four in the United States under certain conditions. Batini et al. (2014) cited studies which showed large multipliers at the ZLB when monetary policy is constrained. Many macroeconomic models have a Taylor rule, a formula that guides a country's monetary policy response to changes in GDP growth and inflation. Under a Taylor rule, according to Christiano et al. (2011), the nominal interest rate rises in response to an expansionary fiscal policy shock that puts upward pressure on output and

inflation. This monetary policy response can reduce the efficacy of fiscal policy and the size of the multiplier.

However, at the ZLB, central bankers are constrained. They do not respond to an expansionary fiscal policy and inflationary pressures. Therefore, Batini et al. (2014) cited three studies of the United States economy (Erceg and Linde, 2010; Christiano et al. 2011; and Eggertson 2010) that found multipliers of 4, 3.7 and 2.3 respectively. They also cited three papers that found multipliers during recessions of: 2.4 in Japan (Auerbach and Gorodnichenko, 2014); 2.25 in the United States (Canzoneri et al. 2012); and 2.08 in the United States, Europe and Japan (Batini et al. 2012). In all the above studies, fiscal multipliers were much lower without the ZLB and during periods of economic expansions.

Batini et al. (2014) say economists do not use multipliers widely in their work because it is so tricky to estimate them. It is difficult to isolate the direct effect of fiscal measures on GDP because of the two-way relationship between the two variables. For example, during a recession a government will automatically spend more on unemployment benefits and collect less taxes from companies and individuals without a change in policy. When the economy recovers, the government will pay less on social security and collect more taxes. The authors say other technical challenges include the availability of high-frequency data and long-time series.

However, the wide variation in estimates is not just due to technical issues. Estimating multipliers is loaded with ideological assumptions that influence the results. Right-wing economists produce estimates that have low multipliers, which are used to support austerity policies. Left-wing economists produce research that has higher multipliers, which illustrate the self-defeating nature of such policies. Asatryan et al. (2020) have studied the biases in multiplier estimates and shed light on subjective reasons behind the observed variance of estimates that relate to factors such as author's ideology. They show that a researcher's economic policy orientation correlates with her estimated multipliers. They also cite evidence, which shows that almost half of members of the European Economic Association admitted to presenting empirical findings selectively to confirm one's argument.

Batini et al (2014) say there are two main methods to derive fiscal multipliers – empirical estimation and model-based approaches. The empirical literature focuses on G20 countries, with most studies available for the United States. They use vector autoregressive models (VARs), which are based on the assumption that variables of interest (eg spending, output, interest rates and inflation) are interrelated and have multiple causal relationships. A challenge was to isolate exogenous (external) fiscal shocks (changes). The solution was to develop structural VAR (SVAR) models that extract structural shocks and estimate their impact on GDP. SVAR models have their own shortcomings. They fail to capture purely exogenous fiscal shocks such as asset and commodity price movements. They estimate average multipliers based on past information that may not be relevant to current conditions. The models are linear and do not capture the fact that multipliers vary according to the state of the economy. Various techniques have been employed to address these shortcomings.

Capaldo (2021) says macroeconomic policy has been captive to the "evil twins" of economic modelling. These are the hegemonic Dynamic Stochastic General Equilibrium (DSGE) and Computable General Equilibrium (CGE) models, which are mostly used for macroeconomic and trade analysis, respectively. These models are disconnected from economic realities and have dismal records in guiding policy choices, he says. The so-called New Keynesian DSGE models describe the behaviour of the economy as a whole by analysing the interaction and combination of many microeconomic decisions. By comparison, VAR models look at the interaction of only a few variables of interest.

Marglin and Spiegler (2013) say the theoretical base of DSGE models is essentially neoclassical theory with a few adjustments that relate to the behavior of wages and prices. Therefore, the models are Keynesian only in name and are also loaded with absurd ideological assumptions, which reduce the size of the multiplier. For example, under the improbable assumption of Ricardian Equivalence, when the government implements an expansionary fiscal policy, households with perfect foresight expect higher future taxes, after doing calculations of their intertemporal budget constraints.

The rational agent who receives a tax cut, transfer or grant will take into account the debt the federal government incurs to finance the stimulus. If she does her arithmetic she will, according to Ricardian Equivalence, put the stimulus money into a bank account to repay her share of the new taxes that will be required to pay off the debt. "How many of us actually do the calculations implied in Ricardian Equivalence? Most people simply do not know enough about their future needs and wants, much less their future incomes, for the framework of standard theory of consumer choice to make sense. Instead, people fall back on habit, rules of thumb, and other perhaps less elegant but more realistic ways of coping than what the economist's ideas of optimal planning dictate" Marglin and Spiegler (2013: 826)

Also implausibly, the Taylor rule applies in every situation and always reduces the effect of an expansionary fiscal policy. As a result, there has been a scathing critique of the mainstream NK-DSGE models. Storm (2021) says the idea, central to all DSGE models, that inter-temporal trade-offs are the essence of economic decision-making is simply ridiculous. He says It is no secret that the predictive power of DSGE models is a joke. No DSGE model predicted the financial crisis of 2008. He says mainstream macroeconomics can only progress if it gets rid of the DSGE albatross around its neck.

"The profession has to put DSGE models, once and for all, in the museum of implausible economic Models." Stiglitz (2018:76) says "most of the core constituents of the DSGE model are flawed – sufficiently badly flawed that they do not provide even a good starting point for constructing a good macroeconomic model." Krugman (2016) asks: "Were there any interesting predictions from DSGE models that were validated by events? If there were, I'm not aware of it. Yet even while failing to offer any measurable gains in insight, DSGE had the effect of crowding out the stuff that actually did work."

Capaldo (2021) says the prevailing type of CGE model assumes away unemployment and inequality and, often, productivity growth – some of the most critical features of economic reality. Isaacs and Storm (2016) say CGE models comprise a large number of mathematical equations that aim to represent the complex ways in which an economy works. "In neoclassical CGE models, these equations and assumptions are based on neoclassical economic theory. It is assumed that the economy behaves as neoclassical theory predicts, rather than consciously relating the model to empirical reality. "Typically, these assumptions include the idea that markets are perfectly competitive and that all markets clear."

2.2 Revenue Multipliers

The **revenue multiplier** measures the change in GDP that is generated by changes in tax revenues. The formula is Δ GDP/ Δ GT, where GT is government tax revenues. The multiplier can measure the impact of tax increases or decreases on GDP. In SA, Intellidex (2021) argues that wealth taxes that have been proposed to pay for the BIG could result in capital flight. Other large tax increases proposed to pay for the BIG would have adverse macroeconomic effects. At one extreme, supply-side economists in the Republican Party in the United States have long argued that large tax cuts would increase GDP growth. Such views have been dismissed as "trickle down" or "voodoo" economics. Most studies have shown that expenditure multipliers are much larger than revenue multipliers. In an analysis of the "bang for the buck" of various fiscal stimulus measures in the United States, Bivens (2017) finds that tax cuts have very low multipliers when compared with spending increases such as infrastructure.

<u>2.3 Employment Multipliers</u>

The **employment intensity of GDP growth**, or elasticity of employment with respect to output, is a numeric measure of how employment varies with output – for instance, of how much employment growth is associated with economic growth of one percentage point. In other words, a given employment outcome can be achieved through different combinations of GDP growth and employment intensity. The lower the employment intensity the more GDP growth is required to achieve a desired outcome. Employment intensity can be calculated at the level of the whole economy or sectors within it.

According to Tregenna (2016) **employment multipliers** essentially indicate what increase (decrease) in economy-wide jobs would be associated with a given increase (decrease) in final output of a sector. More specifically, employment multipliers project how many additional jobs would be required economy-wide in order to meet a R1 million increase in final demand for a given sector. Tregenna (2015) says employment multipliers are a broader measure of employment intensity that also take into account indirect employment absorption. A sector employment multiplier captures not only that sector's own direct employment intensity, but also how it utilises outputs from other (supplier or upstream) sectors as inputs, which have their own similar linkages with other input sectors. For example, the employment multiplier for the motor-vehicle manufacturing would measure not only the direct employment intensity

of the industry itself. It would also capture the indirect employment intensity of other industries that supply inputs to motor-vehicle manufacturing such as steel, glass, rubber and paints.

The technique to calculate these employment multipliers uses input-output (I-O) tables generated by national statistical agencies, which are presented as matrices that show the complex relationships (or transactions) between industries with columns that have expenditures and rows that capture revenues. The column and row totals are equal since the values of inputs are the same as those of outputs. The I-O tables are a statistical representation of the economy that show the linkages between productive sector and sources of demand in an economy. The Leontief inverse is an algebraic function that is applied to I-O tables to generate Leontief tables, which show how an increase or decrease in one industry has a multiplying effect on other industries. Wasily Leontief won the Nobel Prize in Economic Science in 1973 for his work on I-O tables, which are used for macroeconomic modelling. Social Accounting Matrices (SAMs) are an expansion of I-O tables and typically include additional social statistics on labour and households, such as revenues and uses of incomes.

3. THE EFFICACY OF FISCAL POLICY IN SOUTH AFRICA

South Africa's economy has performed dismally since its miracle transition to democracy in 1994. Between 1994 and 2020, GDP per capita increased by only 16.1%, an annual average of 0.65%. The economy's performance since 1994 has followed a trend identified by Coe and Pettifor (2012) who conducted an analysis of the United States and United Kingdom economies over a century. They found that public debt had declined in both countries in periods associated with expansionary fiscal policies.

It had gone up when spending was cut and matters were left to the market. The experience of the United Kingdom was telling. The country's debt ratio peaked at 250% of GDP at the end of the second world war in 1946. "The following year under a labour government programme that included the introduction of the welfare state and the National Health Service, national debt began to fall. Over the era commonly associated with pro-public sector and anti-private sector policies, when contemporary belief would lead us to conclude that the public debt must have steadily risen, it actually fell just over 200 percentage points to 50%, roughly 7 percentage points a year" Coe and Pettifor (2012:10).

There were three phases in terms of South Africa's macroeconomic performance between 1994 and 2019. GDP growth was low and unemployment soared when there were contractionary macroeconomic (fiscal and monetary) policies. GDP growth increased and unemployment declined when macroeconomic policies were expansionary. Although it is difficult to isolate the effect of fiscal policies alone, the economy performed poorly when government spending was weak and grew rapidly during the one period when it started spending again. There was a multiplier effect. During the first phase (1996 to 2003), the government implemented the Growth, Employment and Redistribution Programme (Gear) programme, a neoliberal stabilisation plan although there was no inherited apartheid debt crisis. In 1996, the debt to GDP ratio was 49.5%. The foreign debt ratio was 1.9% (National Treasury, 2021).

During this period, government final consumption spending increased by 2.6% a year. There was a public sector investment strike. Public Investment by general government and public corporations declined by 24.9% between 1998 and 2001. It returned to 1998 levels in 2004. Between 1997 and 2001, investment by general government declined by 15.2%. It returned to 1997 levels in 2003. Between 1998 and 2001, investment by public corporations collapsed by 41.9%. It returned to 1998 levels in 2006. There were punitive, usurious annual nominal and real interest rates of 17.3% and 8.5% respectively during the Gear period. Nominal and real interest rate peaked at annual averages of 21.8% and 13% in 1998. GDP grew by 2.33% a year. GDP per capita grew by 0.69% during this period. (SARB, 2021). The number of unemployed South Africans almost doubled to 8 million people (an expanded unemployment rate of 40.6%) in March 2003 from 4 million (33%) in 1996. (Stats SA 1996; 2009).

During the second phase (2004 to 2008) the economy grew rapidly after the end of Gear as the government implemented expansionary macroeconomic policies. Government final consumption spending increased by 4.8% a year between 2004 and 2008. Public investment increased by 14.2% a year between 2003 and 2008. Investment by general government increased by 11.2% a year during the same period. Investment by public corporations increased by 19.2% a year. Gross Fixed Capital Formation (GFCF) increased from a low of 14% of GDP in 2002 to a high of 21.6% in 2008. Nominal and real interest rates declined to annual averages of 12.2% and 4.8% respectively during this period. GDP grew by 4.82% a year. GDP per capita grew by 3.72% a year. (SARB, 2021). The economy created 3.1 million jobs. The number of unemployed people declined to 5.9 million (an unemployment rate of 28.7%) in December 2008 from 8m (40.6%) in March 2003. (Stats SA, 2009).

During the third phase (2009 to 2019) South Africa had a "lost decade" during which GDP per capita did not grow. Government final consumption grew by 1.8% a year during this period. In 2009, GDP declined by 1.5% in the wake of the Global Financial Crisis (GFC) and Great Recession of 2007 – 2009. There were two stages during this phase. The economy performed better during the first stage (between 2010 and 2013) due to mildly expansionary (and countercyclical) macroeconomic policies. Final government consumption spending increased by 3% a year. Public investment increased by 3.9% a year. Investment by general government increased by 2% a year Investment by public corporations increased by 5.9% a year. Interest rates declined by 700 basis points between December 2008 and July 2012. GDP increased by 2.8% a year. GDP per capita increased by 1.2% a year (SARB, 2021). There were budget revenue surpluses – defined as in-year budget revenues compared with budget forecasts – of R28.9bn during this period. (National Treasury 2020).

During the second stage (2014 to 2019), there was a collapse in the trend GDP growth rate due to contractionary macroeconomic policies. The growth of government final consumption expenditure declined to 1.1% a year. It declined in per capita terms. There was a second post-apartheid public sector investment strike. Between 2013 and 2019, public investment declined by 35.5%. Between 2016 and 2019, investment by general government declined by 27.3%. Between 2013 and 2019, investment by public corporations collapsed by 54.7%. Interest rates increased by 200 basis points between 2014

and 2016. Therefore declining per capita government consumption spending, a public sector investment collapse and higher interest rates reduced the trend GDP growth rate to 1% a year between 2014 and 2019. GDP per capita declined by 0.47% a year during this period (SARB, 2021). There were budget revenue shortfalls of R250bn between 2014/15 and 2019/20 (Treasury 2020e).

There is a view that the boom in world commodity prices was the reason for the increase in GDP during second phase. But during the 2001 to 2008 commodities boom, the world's top 20 mining countries achieved an average mining GDP growth rate of 5% a year, while SA's mining sector GDP shrank by 1% a year, according to the Minerals Council of South Africa (MCSA, 2011). It appears that the strong rand wiped out the benefits of booming world commodity prices. There was a sharp increase in mining investment between 2006 and 2008. But it only accounted for about 9.7% of total investment during this period (SARB 2021). Finally, all sectors of the economy increased employment during the mini-boom. But the mining sector shed 110 000 jobs. Another view (Sachs 2012) is that the end of the commodity boom in 2011 was the reason for the decline in the GDP growth rate during the third phase. But mining's direct contribution to the economy is very small. The annual average contribution of mining to GDP growth between 2014 and 2019 was -0.1% (Stats SA, 2020).

4. FISCAL MULTIPLIERS IN SOUTH AFRICA

Like the rest of the world, estimates of multipliers in South Africa are also all over the map. They reflect the biases of the people making the estimates and the ideologies and methodologies that are embedded in their models. Schroder and Storm (2020) say many studies on fiscal multipliers in South Africa assume from the outset that the supply-side of the economy is constrained. They predictably find that only interventions, which increase the supply potential of the economy lead to positive multiplier impacts. However these models ignore the obvious – that the economy has significant demand constraints and has been performing considerably below its potential for a very long time.

In other words, there is a large output gap and spare capacity within the private sector, which creates the conditions for a significant non-inflationary stimulus for the economy. National Treasury and the Reserve Bank have used such models to argue for austerity and structural reforms, which refer to measures to improve the functioning of the supply side of the economy by removing institutional and regulatory impediments to the functioning of free markets. Structural reform is code for privatisation, deregulation, liberalisation and the withdrawal of the state of from network industries - electricity, transport, telecommunications and water. The extreme position of National Treasury and the Reserve Bank is that the fiscal multiplier is zero or even negative. This has two political implications. There is no cost to austerity. And since fiscal policy is off the table – because public debt is too high and higher spending will not generate GDP growth – the only option is to have structural reforms.

There have been relatively few studies about fiscal multipliers in South Africa. Burrows and Botha (2013) used closed input-output tables to estimate multipliers for the economy at five-year intervals between 1980 and 2010. They found a declining trend starting with a multiplier of 1.8 in 1980 and ending with a multiplier of 1.6 in 2010. The average for the seven estimates was 1.72. They attributed the declining trend to the increasing openness of the economy, especially during the 1990s when there was a 50% increase. The authors speculated that the unbundling of large apartheid conglomerates resulted in weaker inter-industry links as companies had the option of investing in related industries abroad.

The Reserve Bank (SARB, 2020) published a brief overview of eight multiplier studies after 2013 in its *Monetary Policy Review* publication as is shown in appendix one below. Most of them used the "twin evils" of economic modelling, the orthodox DSGE and CGE models, many of which predictably resulted in low estimates of multipliers. Jooste, Liu and Naraidoo (2013) found that the size of the multiplier depends on many factors such as the methodology, the degree of openness of the economy, the liquidity of households and the stage of the business cycle. Using three methodologies, the authors concluded that fiscal policy had been effective in stimulating output and consumption. The multiplier was larger than one in countercyclical periods, where fiscal policies acted against the direction of the business cycle, for example increasing spending when the economy is slowing. There were effective expenditure outcomes. Multipliers were lower in procyclical periods, where when fiscal policy acted in the same direction as the business cycle, increasing spending when the economy was expanding.

Jooste and Naraidoo (2017) used a closed DSGE model to evaluate the efficacy of fiscal policy under the outlandish assumption of fiscal foresight, where some agents have information about future spending and tax policy changes, *before* they are implemented. It supposedly arises due to pre-announced policy changes or lags (delays) in passing laws or implementing policies. Fiscal foresight obviously reduces output multipliers and consumption. But the number of non-Ricardian households limits this effect. The other scenario is an equally bizarre negative wealth effect after a stimulus. The rational agent reduces consumption, which induces her to supply more labour resulting in a decrease in the real wage. Sticky wages that do not respond to this effect preserve the Keynesian multiplier effect.

Makrelov et al. (2018) developed a stock-and-flow-consistent model that captured financial sector dynamics, including financial flows and balance sheet effects. It modelled financial instruments (such as equities, bonds, loans and cash) and their returns and the balance sheets of the central bank, households, the financial sector and the foreign sector. Stock and flow consistency means that changes to the balance sheet of one institution must match those of other institutions.

The authors say this representation is richer than that which is found in other DSGE models. It also amplified the effect of a fiscal stimulus. They found that there was a multiplier of 2.5 in the period immediately after the 2008 financial under certain conditions, which included a negative output gap, a low government debt-to-GDP ratio, the health of the financial sector and the large inflow of foreign savings into the economy. Other assumptions included the absence of Ricardian households, the lack

a response from the central bank from a closing output gap and the absence of supply-side constraints. The stimulus effect increases to 3.5 in the absence of a domestic savings constraint.

Schroder and Storm (2020) used a closed input-output model for 2018 to estimate GDP and employment multipliers. The finding is that a stimulus of R1 will raise GDP by R1.5, after only taking into account its effect on household consumption. However, higher consumption will induce higher demand and Investment. Taking into account the consumption and investment effects of the stimulus, the authors find that a stimulus of R1 will raise GDP by R1.87. Due to data limitations, the study used total investment because it could not distinguish between private and public investment.

Because of this limitation, the authors concluded that the multiplier of R1.87 could be an over-estimate. After averaging the two multipliers – of R1.5 and R1.87 – they arrived at an estimate of R1.68. Such a multiplier also illustrates the self-defeating nature of austerity policies. A decrease in spending of R1 has a negative multiplier effect - a decrease in GDP of R1.68, which results in an increase in the debt to GDP ratio. The conclusion is that a well-designed fiscal stimulus that targets infrastructural weaknesses in the economy as well as redistribution of income towards lower income groups would have high-pay-offs, including the lowering of the debt to GDP ratio.

Van Rensburg et al. (2021) used a quarterly macroeconomic model that is similar to those used by the Reserve Bank, the publishers of the paper, and the Bureau for Economic Research at the University of Stellenbosch. The authors sought to calculate multipliers under different conditions – three periods after the start of the GFC. The first period (2009 - 2010) was immediately after the GFC during which there was a falling risk premium, a large negative output gap. There were large capital inflows. The risk premium measures the difference between South African and United States bond yields. It is the premium that foreign investors demand for investing in an emerging market such as South Africa. At the time, South Africa had a low debt to GDP ratio.

During the second period (2011 - 2013) the government started to increase taxes to reduce deficits and the economy suffered from supply-side shocks such as strikes, droughts and load shedding. There was also a fall in international commodity prices. The third period (2014 - 2019) saw an increase in the risk premium and the introduction of taxes to reduce debt. The authors calculated fiscal multipliers – the change in GDP divided by the change in real government consumption spending - for each year between 2009 and 2019. Initially, the multiplier increased to 1.5 in 2010 after the GFC, but then gradually declined towards zero as the fiscal situation deteriorated and the country suffered from a series of supply-side shocks. There were negative multipliers between 2015 and 2018.

The authors then reach a political conclusion that is in line with Reserve Bank and National Treasury policies to implement austerity and structural reform policies. "Our conclusion shows that the space for generating strong positive growth effects from a fiscal expansion have long gone. The multiplier was close to zero by 2015. Yet, government has been growing expenditure, increasing taxes and growing

debt. The outcome of this policy has been declining growth and limited fiscal space to respond to the Covid-19 crisis. Our results suggest that the costs of fiscal consolidation will be less harmful to growth than generally perceived as the multiplier is currently very small."

Kemp and Hollander (2020) developed an open economy DSGE model, which the authors say has a more detailed fiscal block to measure the impact of fiscal policy. The conclusion is that: "Output multipliers are positive for both government spending and investment shocks. Importantly the positive output multipliers are smaller than 1 across the board, although the public sector investment multiplier is significantly larger than the spending multiplier." But the model's questionable assumptions result in the following conclusion: "Government spending and investment shocks crowd out private consumption and investment, resulting in relatively small multipliers." Van Rensburg et al. (2021) are critical of this methodology: "Does it make sense to assume that government and household consumption are substitutes? How would the result change if this feature was modified?"

Storm (2020:114) is equally critical of CGE models. "Like DSGE models, neoclassical CGE models generate implausible outcomes. For instance, according to a CGE model by the South African Treasury, an increase in the (low) minimum wage by 29% would depress the real GDP of South Africa in the long run by 7.5% (compared to the base run with unchanged minimum wages). If one were to take this prediction seriously (please don't) it would mean that the economic damage of higher minimum wages would be larger than the damage to the South African economy of the Covid-19 crisis (due to which South Africa's real GDP declined by 7%, according to IMF data). The implausible CGE model results are completely caused by the neoclassical model assumptions built into the model – which are at odds with South African reality."

5. EMPLOYMENT MULTIPLIERS IN SOUTH AFRICA

Table: National Treasury output and Employment Multipliers, 2016

	Domestic output multiplier	*Employment multiplier*
Agriculture, forestry and fishing	1.7	4.9
Mining and quarrying	1.4	1.6
Manufacturing	1.4	2.6
Electricity, gas and water	1.6	1.4
Wholesale, retail and motor trade, catering and accommodation	1.9	4.9
Transport, storage and communication	1.6	5.3
Finance, real estate and business services	1.6	2.9
Community, social and personal services	1.5	4.1

National Treasury (2016) published estimates of output and employment multipliers in its Budget Review publication. The estimates, which used 2012 supply and use tables that are published by Statistics South Africa, did not include the effects of higher employment on consumption and therefore growth. This implies that the actual output and employment multipliers were higher than National Treasury estimates. The construction (1.9), agriculture, forestry and fishing (1.7) and finance, real estate and business services sectors (1.7) had the highest output multipliers. Mining (1.4) and mining had the lowest. The wholesale, retail and motor trade, catering and accommodation (5.3), agriculture, forestry and fishing (4.9) and construction (4.9) sectors had the highest employment multipliers. The electricity, gas and water (1.4) and mining and quarrying (1.6) had the lowest multipliers.

Table: PWC regression of the relationship between real GDP and employment growth.

	% Change in employment as a result of a 1% change in real GDP	*Proportion of the change in employment explained by the change in real GDP*
2010 Q1 to 2019 Q4	1.01	0.74
2010 Q1 to 2020 Q1	1.02	0.73
2010 Q1 to 2020 Q2	0.95	0.71
2010 Q1 to 2020 Q3	0.95	0.70
2010 Q1 to 2020 Q4	0.82	0.68
2010 Q1 to 2021 Q1	0.92	0.68
2010 Q1 to 2021 Q2	0.91	0.67

PWC applied regression modelling using GDP and (formal & informal) employment data. It found that there had been a diminishing relationship between real GDP growth and job creation since the fourth quarter of 2019. At the end of 2019, a one percentage point increase in real GDP generated a 1.01 percentage point increase in employment. In addition, real GDP change during the fourth quarter of 2019 explained 74% of the change in employment. Extending the regression period to the second quarter of 2021, a one percentage point increase in real GDP generated only a 0.91 percentage point change in job creation. The change in real GDP only explained 67% of the change in employment

5. CONCLUSION

The international literature on multipliers has been dominated by the "twin evils" of economic modelling – the hegemonic DSGE and CGE models. The same applies in South Africa where National Treasury and the Reserve Bank has weaponised these models to justify austerity and structural reforms. This is even though the evidence clearly shows that the economy performed poorly and unemployed soared during the two periods when the growth of government spending was low. GDP and employment grew rapidly during the one period when government started spending again. However, the two organisations

have consistently made the same mistake the IMF (2012) made when it conceded that it had underestimated the damage austerity policies had on GDP growth through a negative multiplier effect.

The result is that the government's GDP growth forecasts had been too high. National Treasury (2019: 48) made a similar confession in its 2019 medium term budget policy statement, which implied that it was consistently overestimating the positive effects of structural reforms and underestimating the negative effects of austerity and the public sector investment strike on GDP growth. "Over the past nine cycles, government has overestimate GDP growth in its forecasts." But it did not draw the correct conclusion from these incorrect GDP forecasts. "The deviations are not unique to the National Treasury and reflect both domestic risks that materialised and technical revisions to growth outcomes. As economic growth projections have been revised down over time, the gap between forecasts and outcomes has decreased, reducing (but not eliminating) the risk of large unanticipated variance."

Van Rensburg et al. (2021) correctly identified the start of the collapse in trend GDP growth to the period after 2014. But it is not clear how they arrived at the reasons for the lower growth rates, which included higher taxes and bond yields. They did not specify the tax increases they were referring to. The increase in the VAT rate to 15% was only implemented in April 2018. Partial relief for fiscal drag – when income tax brackets are not fully adjusted for inflation – and a one percentage point increase in personal income tax rates were not large enough to cause a collapse in the trend GDP growth rate. The authors refer to a rising tax to GDP ratio, but this reflects the low rate of economic growth due to austerity and not necessarily an increase in the tax burden. All ratios to GDP increase when the economy is not growing.

The authors also refer to an increase in the country's risk premium (of 200 basis points) and the government's higher borrowing costs between 2013 and 2019. However, most of that increase happened after the "taper tantrum" of May 2013 when a United States federal reserve announcement that it would start tapering its purchases of bonds (quantitative easing) resulted in large sales of emerging market assets. Since 2014 bond yields have traded in a band that is between 7.8% and 9.8%. In 2010/2011, government's debt service costs were 6.7% of total debt. In 2019/2020, the figure was 6.3%. The Reserve Bank also increased the repo rate by 200 basis points after 2014, which influenced the yields (interest rates) on all bonds with varying maturities across the yield curve.

One should dismiss the outlandish transmission mechanisms – such as those that relate to the so-called microeconomic foundations of DSGE and CGE models - that result in lower fiscal multipliers. But the literature also shows that the fiscal multiplier should be seen as a policy variable that the government can control or influence if it coordinates its fiscal, monetary and industrial policies. This requires co-operation between National Treasury, the Department of Trade, Industry and Competition and the Reserve Bank to pursue a growth strategy that seeks to increase the efficacy of fiscal policies and the size of the multiplier. There should be comprehensive industrial policies that are properly funded and use a wider range of macroeconomic policy tools that include a competitive exchange rate to expand domestic production and limit import leakages that reduce the size of the fiscal multiplier.

The Reserve Bank can also mute the well-known macroeconomic channels that can limit the efficacy of fiscal policy. It can accumulate reserves to limit the appreciation of the currency if an expansionary fiscal policy results in a higher GDP growth rate, which attracts capital inflows. There are two ways it could reduce the cost of the government's borrowing programme. It could implement a yield curve control policy, as has been practised in countries such as Japan and Australia, where the central bank sets a target for long-term bond yields and commits to purchase as many bonds as is required to meet the target. The Reserve Bank could also directly finance government spending at no cost, or on favourable terms with a payment holiday until the economy recovers.

If there are capital outflows due to a lower risk premium and long-term bond yields, the Reserve Bank can purchase the bonds of exiting investors. This would increase the country's monetary sovereignty by reducing foreign ownership on the bond market. National Treasury could also implement prescribed asset requirements for domestic institutional investors and significantly reduce their limits for offshore investments. Capital controls should always be an option depending on the situation. A dual mandate (employment and inflation) for monetary policy would limit the monetary policy responses to temporary increases in inflation, especially if they are related to supply-side shocks. Until the legislation is in place, an instruction from National Treasury could achieve the same objective.

Therefore, government can increase the size of fiscal multipliers with the right macroeconomic and industrial policies and other measures to improve the efficiency of government spending such as transparency and real-time civil society oversight over public procurement and the implementation of projects. With a multiplier of 1.5, a BIG for adults aged 18 to 59 implemented over three years at the three poverty lines would result in GDP growth rates of 3.4% a year assuming a 60% uptake and 4.2% a year assuming 80% uptake. If the BIG is extended to children, there would be GDP growth rates of 4.5% and 5.2% with uptakes of 60% and 80% respectively. The economy would create millions of jobs using the Schroder and Storm (2020) and PWC (2021) multipliers. The time has come to implement a BIG for adults and extend it to children. With a growing economy, many other things become affordable. South Africans can start to dream again and imagine the country they wanted to create in 1994.

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APPENDIX ONE ESTIMATES OF SOUTH AFRICAN FISCAL MULTIPLIERS

Authors and Date	Short term expenditure multiplier (Number or range)	Comments
Jooste, Liu and Nairadoo (2013)	0.77	The size of the expenditure multiplier depends on the methodology used, the business cycle, the import intensity of the economy and the share of Ricardian households
Jooste and Nairadoo (2017)	0.6	The results are based on a closed economy dynamic stochastic general equilibrium (DSGE) model and depend on the values of the labour supply elasticity, the foresight of households and the degree of sticky wages. No monetary accommodation and financial dynamics. The long-term multipliers are zero
Mabugu et al. (2013)	0.73 to 0.76	The results are based on Computable General Equilibrium (CGE) model, which is supply and savings constrained. No monetary dynamics or financial dynamics.
Akanbi (2013)	0.82	The results are based on macroeconometric model, which does not distinguish between pre and post 1994 structural differences. Supply constrained multipliers are smaller. No financial dynamics. Long term multiplier close to zero.
Makrelov et al. (2020)	2.5	Result based on stock and flow financial CGE model. The multiplier is large only in the presence of sustainable fiscal outlook.
Kemp (2020)	0.01 to 0.78	Different VAR models. Varies based on length of period, the methodology used, the business cycle and the monetary policy response. No financial dynamics
Kemp and Hollander (2020)	0.31	The results are based on an open economy DSGE model. Household and government consumption are substitutes. No monetary policy accommodation. Differentiation between low and high debt regimes. No financial dynamics or distinctions between different phases of the business cycle. Long-term multipliers are close to zero
Schroder and Storm (2020)	1.87	Input-output model, closed economy, no financing channels, no supply constraints under all economic conditions. Authors urge high-quality spending

Source: South African Reserve Bank Monetary Policy Review, October 2020. p37

22

APPENDIX TWO

1. SIZE OF STIMULUS AS PERCENTAGE OF GDP

		2022/2023	2023/2024	2024/2025	Average
	Baseline forecast	1.8	1.6	1.8	1.7
1	BIG 60 and Stimulus 1.0	1.6	0.7	1.1	1.1
2	BIG 60 and CSG Stimulus 1.0	2.0	1.4	2.2	1.9
3	BIG 60 and Stimulus 1.5	2.5	1.0	1.6	1.7
4	BIG 60 and CSG Stimulus 1.5	3.0	2.1	3.3	2.8
7	BIG 80 and Stimulus 1.0	2.5	1.0	1.6	1.7
8	BIG 80 and CSG Stimulus 1.0	2.9	1.7	2.7	2.4
5	BIG 80 and Stimulus 1.5	3.7	1.5	2.4	2.5
6	BIG 80 and CSG Stimulus 1.5	4.3	2.6	4.0	3.6

Note: The baseline used in the 2021 Medium Term Budget Policy Statement

2. GDP GROWTH AFTER STIMULUS EFFECTS

		2022/2023	2023/2024	2024/2025	Average
	Baseline forecast	1.8	1.6	1.8	1.7
1	BIG 60 and Stimulus 1.0	3.4	2.3	2.9	2.9
2	BIG 60 and CSG Stimulus 1.0	3.8	3.0	4.0	3.6
3	BIG 60 and Stimulus 1.5	4.3	2.6	3.4	3.4
4	BIG 60 and CSG Stimulus 1.5	4.8	3.7	5.1	4.5
5	BIG 80 and Stimulus 1.0	4.3	2.6	3.4	3.4
6	BIG 80 and CSG Stimulus 1.0	4.7	3.3	4.5	4.2
7	BIG 80 and Stimulus 1.5	5.5	2.6	4.2	4.1
8	BIG 80 and CSG Stimulus 1.5	6.1	3.7	5.8	5.2

Note: The baseline used in the 2021 Medium Term Budget Policy Statement

3. STIMULUS EFFECTS

		2022/2023	2023/2024	2024/2025	TOTAL
1	BIG 60 and Stimulus 1.0	101.1	43.0	72.2	216.3
2	BIG 60 and CSG Stimulus 1.0	125.1	89.0	146.5	360.6
3	BIG 60 and Stimulus 1.5	151.7	64.5	108.3	324.5
4	BIG 60 and CSG Stimulus 1.5	187.7	133.5	219.6	540.8
5	BIG 80 and Stimulus 1.0	152.0	64.8	108.4	325.2
6	BIG 80 and CSG Stimulus 1.0	176.0	110.8	182.6	469.4
7	BIG 80 and Stimulus 1.5	228.0	97.2	162.6	487.8
8	BIG 80 and CSG Stimulus 1.5	264.0	166.2	273.9	704.1

4. JOB CREATION

		2022/2023	*2023/2024*	*2024/2025*	*TOTAL*
1	BIG 60 and Stimulus 1.0	697 590	296 700	498 188	1 492 477
2	BIG 60 and CSG Stimulus 1.0	863 190	614 100	1 010 850	2 488 140
3	BIG 60 and Stimulus 1.5	1 046 730	445 050	747 270	2 241 120
4	BIG 60 and CSG Stimulus 1.5	1 295 130	921 150	1 515 240	3 731 520
5	BIG 80 and Stimulus 1.0	1 048 800	447 120	747 960	2 243 880
6	BIG 80 and CSG Stimulus 1.0	1 214 400	764 520	1 259 940	3 238 860
7	BIG 80 and Stimulus 1.5	1 573 200	670 680	1 121 940	3 365 820
8	BIG 80 and CSG Stimulus 1.5	1 821 600	1 146 780	1 889 9104	4 858 290

Note: Estimates based on Schroder and Storm (2020) multipliers

5. JOB CREATION

		Average GDP growth *2022/2023 to 2024/2025*	*Average job growth* *2022/2023 to 2024/2025*	*Estimated job creation* *2022/2023 to 2024/2025*
	Baseline forecast	1.7	1.5	685 175
1	BIG 60 and Stimulus 1.0	2.9	2.6	1 200 683
2	BIG 60 and CSG Stimulus 1.0	3.6	3.2	1 486 571
3	BIG 60 and Stimulus 1.5	3.4	3.1	1 438 691
4	BIG 60 and CSG Stimulus 1.5	4.5	4.1	1 921 678
5	BIG 80 and Stimulus 1.0	3.4	3.1	1 438 691
6	BIG 80 and CSG Stimulus 1.0	4.2	3.8	1 775 803
7	BIG 80 and Stimulus 1.5	4.1	3.7	1 727 364
8	BIG 80 and CSG Stimulus 1.5	5.2	4.7	2 215 962

Note: Estimates based on PWC (2021) multipliers