

The South African Government Vehicle Fleet must be Local

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Abstract

South Africa is fast approaching a “fiscal cliff” owing to rising government expenditure on civil service remuneration, social security grants and interest payments on government debt. The fiscal cliff is defined as the point where civil service remuneration, social security grants and interest payments on government debt account for 100 per cent of government tax revenue. Currently these three items account for some 70 per cent of the government’s tax revenue. The South African government has already increased the value-added tax (VAT) rate from 14 per cent to 15 per cent, but a reduction in government expenditure must also be considered to avert the fiscal cliff. Unnecessary government expenditure must, therefore, be identified and eradicated. One example where savings can be recorded is expenditure on imported vehicles purchased for the government vehicle fleet at central and provincial government level. These vehicles can easily be substituted by the purchase of locally-produced vehicles. Research in this paper shows that a policy of exclusive purchases of locally-produced vehicles for the government fleet at central and provincial government level would (based on 2017-figures) lead to fiscal relief, higher employment in the automotive manufacturing sector and a once-off positive economic growth impact for the South African economy. This matter has also found some support amongst members of Parliament.

Keywords: South African automotive industry; South African government vehicle fleet; economic stimulus; fiscal cliff; trade balance; economic growth



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Introduction

South Africa is on the verge of a “fiscal cliff” owing to rising government expenditure on civil service remuneration, social security grants and interest payments on government debt. The fiscal cliff is defined as the point where civil service remuneration, social security grants and interest payments on government debt account for 100 per cent of government tax revenue (Mbeki, Rossouw, Joubert and Breytenbach 2018). Currently these three items account for some 70 per cent of the government’s tax revenue (Mbeki et al. 2018).

Annual increases in civil service remuneration expenditure and social grants, above inflation since 2008, have significantly contributed to government expenditure increases, and form a growing part of the annual national budget allocation (Rossouw, Joubert and Breytenbach 2016).

An increase in the value-added tax (VAT) rate from 14 per cent to 15 per cent from 1 April 2018 was announced by the (then) Finance Minister, Mr Malusi Gigaba in the February 2018-budget (Gigaba 2018). This increase is estimated to raise R22.5 billion per annum in additional tax revenue. Additional tax increases such as fuel levy and luxury goods duty tax, were also announced to raise additional government revenue. Despite these tax increases, the government’s fiscal position remains precarious (Gigaba 2018).

There is scant literature on the matter under consideration in this paper, namely locally-produced vehicles for the government’s vehicle fleet. Rossouw and Rossouw (2017) briefly address this matter in the context of averting a fiscal cliff in South Africa. Rossouw and Rossouw (2017) use the context of the Keynesian fiscal multiplier and argue for local purchases, thus increasing the gross domestic product (GDP) and economic growth from increased domestic government expenditure. Other than the paper by Rossouw and Rossouw (2017), nothing has been published on this topic.

No literature about any policy of local vehicle production procurement could be found in public online search domains such as Google Scholar, Google Search, Bing Search and Yahoo Search. Further research included observing publicly available government policy databases of the USA, UK and Japan, which are all major vehicle manufacturing countries. These countries do not apply a policy of exclusively procuring locally-produced vehicles for their government fleets. German and South Korean databases are not publically available.

Research also consisted of contacting the South African embassies of France, Germany, South Korea, Japan and the USA with a request for information on vehicle purchase policies of the respective governments. Only the embassies of Germany, France and the USA proved helpful. Through e-mail, the German Embassy confirmed that the German government does not exclusively purchase vehicles manufactured in Germany for the

government fleet (Kahler 2018). Ms Jenny Kilp, a representative of the Deutsche Bundesbank at the German Embassy in South Africa, also confirmed that there is no policy that only German vehicles should be purchased for the government fleet in that country. A considerable number of police vehicles are sourced from Toyota, which does not manufacture in Germany (Kilp 2018).

The French, South Korean, Japanese and the USA embassy officials were unable to ascertain whether policies of domestic exclusive vehicle purchases for their government vehicle fleets are in use. The analysis shows in all probability that these countries do not have policies in place for exclusive purchases, with imports included in their government vehicle fleets, as such policies would otherwise have been known to these officials.

In addition, attempts were made to obtain information from other vehicle-producing countries such as China, India, Spain and Russia, but no information could be obtained.

The conclusion is, therefore, drawn that no country has a policy of exclusive purchase of domestically-produced vehicles for government vehicle fleets. This is, therefore, a unique study and can be used as a benchmark for future research concerning this policy topic.

The rest of this paper is structured as follows: The next section provides a brief overview of the reaction of some other countries to the occurrence of a fiscal cliff. Section 3 provides an overview of the current fiscal and economic crisis that South Africa faces. Section 4 assesses vehicle purchasing behaviour of the South African central and provincial governments. Section 5 reports on the analysis of the data. The conclusions follow in Section 6.

Fiscal Cliffs Reached in other Countries

A number of countries have had to deal with the occurrence of a fiscal cliff, where government expenditure got completely out of hand compared to government revenue. In many of these instances, the shortfall in government revenue was caused by external factors, such as the international financial crisis in the case of the Irish Republic in 2009.

The Irish Republic suffered a severe economic crisis in the aftermath of the global financial crisis of 2008. The Irish government introduced a sharp cutback in expenditure between 2009 and 2014 (Watt 2015). Government expenditure was reduced by approximately €19 billion, which included a reduction in transfer payments such as social support. The spending reduction also included a revision of the remuneration of civil servants. The remuneration of senior civil servants was reduced by 28 per cent, while the reduction in average civil service remuneration (over all levels) amounted to 19 per cent (Watt 2015).

Argentina also faced a fiscal cliff in 2018, which necessitated a drastic government response (Reuters 2018). The Argentinian government expedited emergency borrowing from the International Monetary Fund and increased export taxes on grains. Other measures included a reduction in the number of government ministries and an increase in interest rates to 60 per cent per annum. This was accompanied by a moratorium on new appointments in the civil service, reduced subsidies, for instance on electricity, and a reduction of 27 per cent in planned capital spending, implying delayed infrastructure development (Reuters 2018).

Failing to avert sliding down a fiscal cliff can be noted in countries such as Venezuela (Buxton 2018) and Brazil, where wrong policy choices and failure to act in a timely way have proven catastrophic (Barua 2016). Reducing expenditure has proven to be an effective tool to avert a fiscal crisis over time and finding ways of reducing expenditure, at no cost to government service delivery, should prove an efficient step in the right direction.

This analysis shows that the governments of countries facing the danger of a looming fiscal cliff should rather make timely voluntary adjustments to expenditure programmes, than to be forced into severe cuts in expenditure and other drastic measures. Proven successful fiscal expenditure reduction policies should be considered in the current economic setting of South Africa.

The South African government should learn from the experiences of the governments of the Irish Republic and Argentina, thus changing behaviour voluntarily in a timely fashion to avert a fiscal cliff.

Overview of the Current South African Fiscal and Economic Crisis¹

South Africa's current fiscal and economic crisis commenced—in the aftermath of the global financial crisis of 2008—with the economy suffering a sharp contraction in 2009.

1 This section is based on a paper written by the first author for the 2018 Nedbank Budget Speech Essay competition.

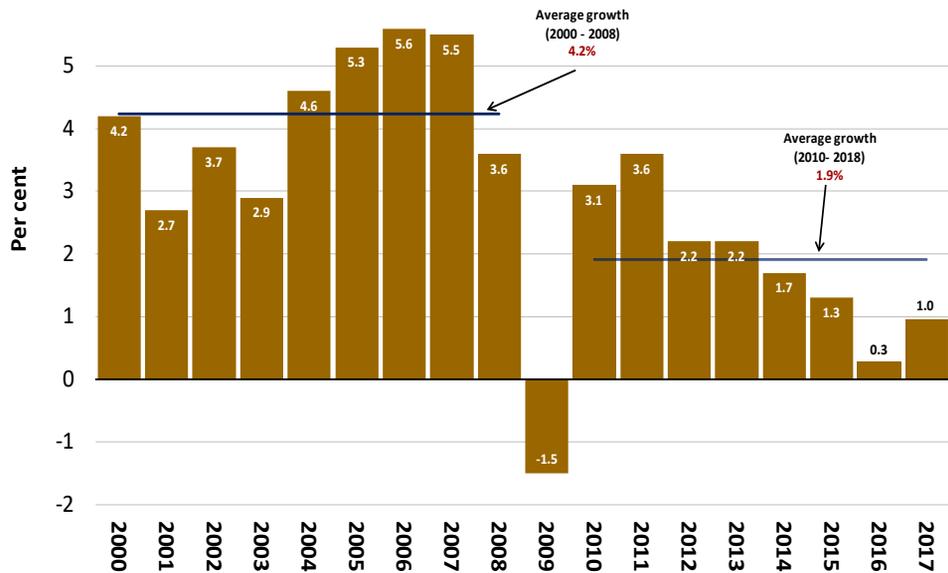


Figure 1: Real economic growth, South Africa, 2000 to 2017

Source: National Treasury 2018(a)

Since 2009 the country’s economic growth rate did not recover to levels recorded before the financial crisis, as is evident from Figure 1.

South Africa made a remarkable recovery in economic growth shortly after the crisis, recording growth of 3.1 per cent in 2010 and 3.6 per cent in 2011. Some of this growth (Figure 1) can be attributed to investment for hosting the 2010 FIFA World Cup, while a fiscal spending stimulus was also a major contributor to the growth. Unfortunately, economic growth has shown a declining trend since 2011. In the first two quarters of 2018, South Africa suffered a recession, i.e., two consecutive quarters of negative economic growth.

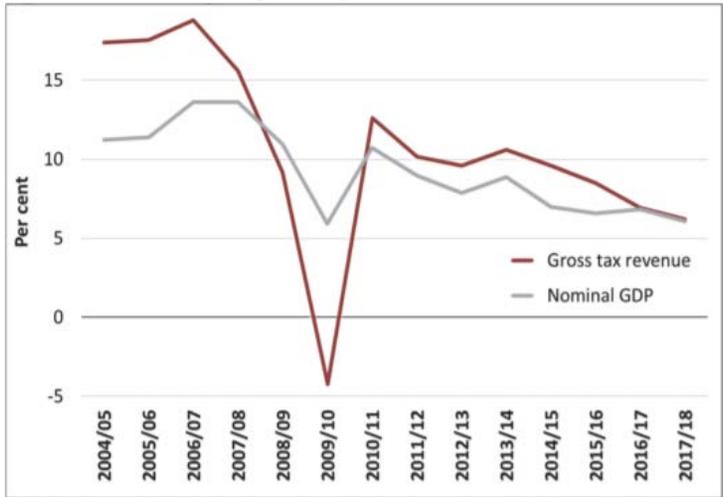


Figure 2: Growth in Tax Revenue and Nominal GDP, 2004/05 to 2017/18

Source: National Treasury 2017

It is evident from Figure 2 that South Africa shows a strong correlation between economic growth and growth in tax receipts. The decline in nominal GDP growth from 2009/10, therefore, corresponds with a declining growth trend in tax revenue.

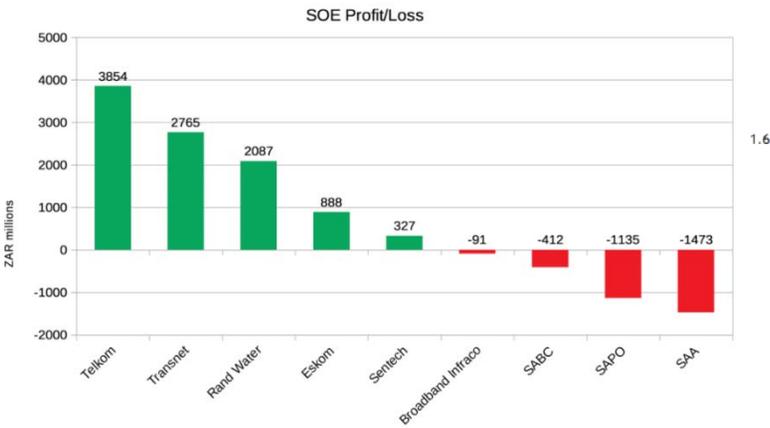


Figure 3: Profit/Loss of South African state-owned enterprises, 2017

Source: Business Tech 2017

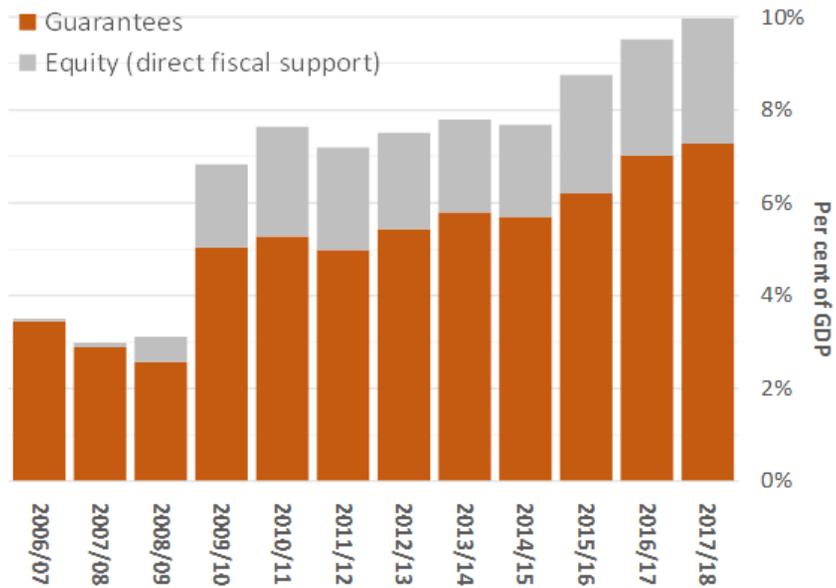


Figure 4: Government guarantees and equity invested in state-owned enterprises, 2006/07 to 2017/18

Source: National Treasury 2018(a)

The deterioration in the government’s revenue collection owing to subdued economic growth, corresponded with a deterioration in the financial positions of major state-owned enterprises (SOEs), as is evident from Figure 3. Owing to these losses, the government had to provide substantial financial guarantees and equity support to these SOEs, as is evident from Figure 4.

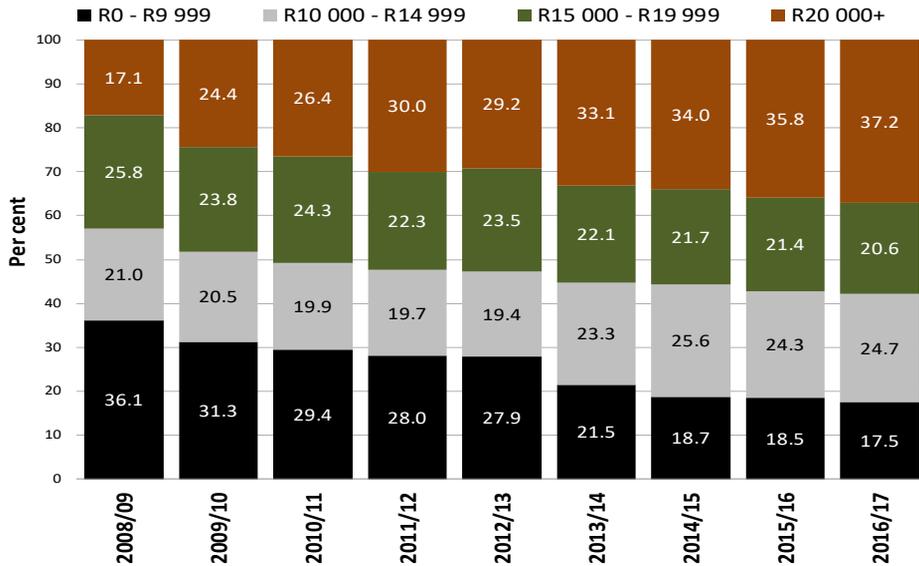


Figure 5: Remuneration of government employees (monthly average in 2016 prices), 2008/09 to 2016/17

Source: National Treasury 2017

Another significant contributing factor to growth in government expenditure and South Africa’s current fiscal crisis is the increase in public employment and large compensation increases for government employees. Figure 5 shows that government employees earning more than R20 000 per month in real terms increased from 17.1 per cent of total employment in the 2008/09 fiscal year to 37.2 per cent in 2016/17 fiscal year. This growth in the top structure of the civil service exacerbates the burden placed by the civil service remuneration bill on the South African economy.

Table 1: Compensation as a share of total budget, selected departments, 2008/09 and 2016/17

Department/Sector	2008/09 % of Total	2016/17 % of Total
National	57.7%	67.7%
Correctional services	63.0%	66.9%
Defence	38.2%	57.3%
Justice	54.1%	55.9%
Police	70.0%	76.6%
Provincial health departments	57.0%	63.2%
Eastern Cape	58.0%	65.6%
Free State	64.7%	64.1%
Gauteng	52.0%	62.2%
KwaZulu-Natal	58.9%	63.1%
Limpopo	58.9%	71.0%
Mpumalanga	58.5%	63.2%
North West	56.6%	62.0%
Northern Cape	51.1%	53.1%
Western Cape	56.3%	58.9%
Total consolidated expenditure	32.4%	35.3%

Source: National Treasury (budget data)

Table 1 shows the increase in compensation as a share of the budget of government departments. This increase is the result of the appointment of more senior staff members, compensation increases and growth in staff numbers. Total consolidated compensation expenditure as a share of the total expenditure has increased from 32.4 per cent in 2008/09 to 35.3 per cent in 2016/17. Remuneration expenditure is equal to 46 per cent of the tax revenue of the South African government (Mbeki et al. 2018).

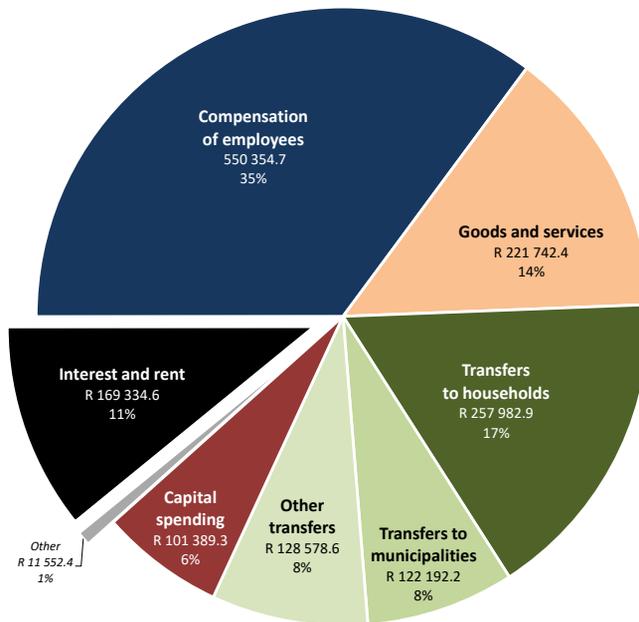


Figure 6: Salaries and interest payments are crowding out other spending elements, 2017

Source: National Treasury 2017

From Figure 6 it is evident that compensation of government employees amounted to R550 billion in 2017, i.e. the largest expenditure item.

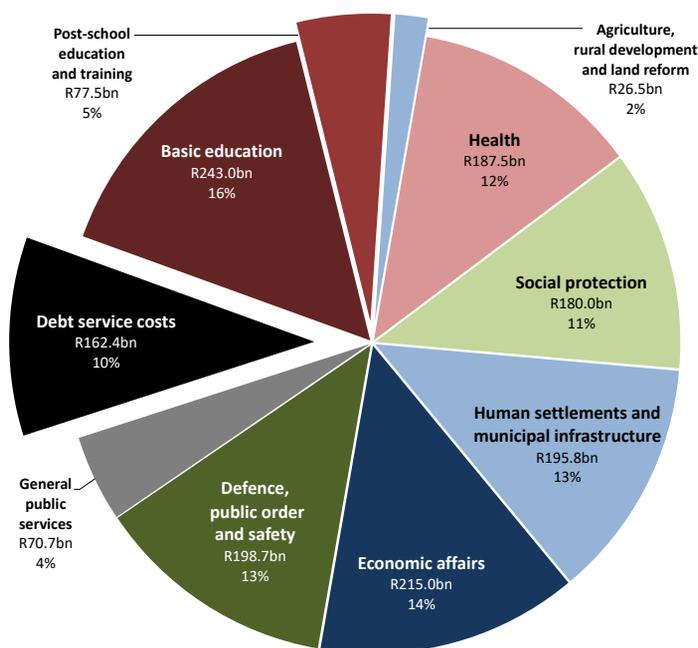


Figure 7: Consolidated Spending, 2017/2018

Source: National Treasury 2017

Owing to increasing government debt levels through borrowing to fund annual budget deficits since 2008, debt service costs and interest on debt have increased sharply. In Figure 7, the pie chart shows that debt service costs account for 10 per cent of allocated budget costs, amounting to R162.5 billion. With a growing budget deficit, debt service costs will continue to grow.

Continued growth in government expenditure and inadequate revenue to cover expenditure, place the South African government in a precarious fiscal position. One initiative to improve the government’s fiscal position was the announcement of tax increases in national budgets. These tax increases included a combination of increases in direct and indirect taxes.

The most important increase in direct taxation was the announcement of an additional marginal tax bracket of 45 per cent on taxable personal income above R1.5 million per annum (Gordhan 2017).

The most significant increase in indirect taxes was the announcement of an increase in VAT. From 1 April 2018 the VAT rate was increased from 14 per cent to 15 per cent; the first increase since 1993. This increase is estimated to raise an extra R22.5 billion per annum (Gigaba 2018). The decision was not taken lightly, as there was fear of backlash from the South African public, since the question was raised whether the tax increase would be regressive.

Ultimately the decision was made to raise VAT, as studies showed that the VAT increase would place a higher burden on the top income bracket (10th decile), having to pay 59.56 per cent of the additional amount of R22.5 billion, i.e. R13.64 billion (Valodia 2018).

The decision to increase a new marginal tax rate and to raise the VAT rate from 14 per cent to 15 per cent was largely based on the need to increase revenue, owing to a sustained budget deficit since 2009 to present, with government spending increasing more than revenue.

The analysis in this section leaves no doubt that South Africa is in the grip of a fiscal crisis, despite tax increases aimed at averting such a fiscal cliff.

Vehicle Purchasing Behaviour of the South African Central and Provincial Governments

At central and provincial government level, vehicles are annually purchased for the government vehicle fleet. These purchases are recorded and reported by Lightstone Auto, the official data provider for the National Association of Automobile Manufacturers of South Africa (NAAMSA). The question whether Lightstone Auto also records and reports this data for South African municipalities is outside the scope of this paper, but is an area for further research on the topic of procuring locally-produced vehicles for government fleets.

According to the “About Us” section on the website of Lightstone Auto, the company provides “data-driven insight, online market intelligence and new vehicle sales data to the South African motor industry. Building on our core capabilities in analytics and our deep understanding of big data we offer a suite of products, systems and services” (Lightstone Auto 2018a).

Lightstone Auto reports the vehicles purchased at central and provincial government level in considerable detail, i.e. full detail of the number of imported and locally-produced vehicles purchases for the government fleet for the years 2012, 2013, 2014,

2015, 2016 and 2017 according to manufacturer, make, type,² model and body shape. This information is summarised below.

In this paper, the total cost of annual fleet purchases of imported and locally-produced vehicles for 2017, is used to show the economic impact of a change in purchasing behaviour. In the calculation of government spending on imported and locally-produced vehicles, the market prices of the vehicles are used. Actual expenditure might deviate, as the government exempts itself from tax liability.

The South African government uses a tender system in the procurement of vehicles. As these tender prices are not published, the market prices of vehicles are used in this analysis. In addition, as a major fleet owner, the South African government also qualifies for special purchase price discounts. Such tax benefits and discounts, however, are not disclosed or published by the South African government and are, therefore, not reported by Lightstone Auto. However, if it is assumed that tax exemption such as no VAT payments on vehicles purchased by the government (central and provincial) and tender prices have an impact of lowering actual prices paid by some 20 per cent, the impact calculated in this paper has to be adjusted by 20 per cent. This is an area for further research.

Table 2: Total number of annual government fleet purchases of imported vehicles, 2012 to 2017

<i>Market</i>	<i>2012</i>	<i>2013</i>	<i>2014</i>	<i>2015</i>	<i>2016</i>	<i>2017</i>
<i>PAS</i>	5 453	4 955	6 549	5 061	1 628	2 571
<i>LCV</i>	2 501	1 851	2 467	1 894	1 712	1 303
<i>MCV</i>	487	582	794	748	364	541
<i>HCV</i>	6	0	15	1	33	5
<i>XHV</i>	25	43	25	4	42	90
<i>BUS</i>	31	53	5	2	10	6
<i>TOTAL</i>	8 503	7 484	9 855	7 710	3 789	4 516

Source: Lightstone Auto 2018b

2 PAS: Passenger Vehicles
 LCV: Light Commercial Vehicles
 MCV: Medium Commercial Vehicles
 HCV: Heavy Commercial Vehicles
 XHV: Extra Heavy Commercial Vehicles
 BUS: Buses

From Table 3 it is evident that there has been a decline in the number of annual government fleet purchases of imported vehicles since 2014. In the six year period since 2012, 2016 recorded the lowest annual purchases of imported vehicles for the government fleet.

Table 3: Total cost of government fleet purchases of imported vehicles per category, 2017

<i>Market</i>	<i>2017 (R)</i>
<i>PAS</i>	1 389 359 230
<i>LCV</i>	640 772 219
<i>MCV</i>	416 119 798
<i>HCV</i>	4 100 626
<i>XHV</i>	172 157 898
<i>BUS</i>	8 387 892
<i>TOTAL</i>	2 630 897 663

Source: Lightstone Auto 2018b

It can also be seen that passenger vehicles comprised the largest proportion of imported vehicles between 2012 and 2017, followed by light commercial vehicles, medium commercial vehicles and extra heavy commercial vehicles. From Table 3 it is also evident that spending on passenger vehicles proportionally has the highest share of the total cost of imported vehicles, with light commercial vehicles recording the second highest proportional share.

Table 4: Total number of annual government fleet purchases of locally manufactured vehicles, 2012 to 2017

<i>Market</i>	<i>2012</i>	<i>2013</i>	<i>2014</i>	<i>2015</i>	<i>2016</i>	<i>2017</i>
<i>PAS</i>	4 756	2 975	3 106	3 076	2 773	4 038
<i>LCV</i>	11 975	9 689	12 448	15 535	5 269	8 639
<i>MCV</i>	192	233	280	201	129	358
<i>HCV</i>	366	394	295	139	126	287
<i>XHV</i>	149	92	125	137	39	98
<i>BUS</i>	10	1	3	1	7	7
<i>TOTAL</i>	17 448	13 384	16 257	19 089	8 343	13 427

Source: Lightstone Auto 2018b

From Table 4 it is evident that there has been a similar declining trend in the total number of government fleet purchases annually from local manufacturers, as is recorded in respect of imported vehicles. It is also evident that light commercial vehicles comprised of the largest proportion of locally manufactured vehicle purchases between 2012 and 2017, followed by passenger vehicles.

Table 5: Total cost of government fleet purchases of vehicles locally manufactured per category, 2017

<i>Market</i>	<i>2017 (R)</i>
<i>PAS</i>	1 085 784 088
<i>LCV</i>	4 504 909 800
<i>MCV</i>	210 511 012
<i>HCV</i>	261 219 719
<i>XHV</i>	156 878 890
<i>BUS</i>	15 327 300
<i>TOTAL</i>	6 234 632 826

Source: Lightstone Auto 2018b

In Table 5 it is evident that light commercial vehicles have the highest proportional share of the total cost of government fleet purchases of vehicles locally manufactured.

This analysis shows that the South African government (central and provincial government) spent some R2.6 billion on imported vehicles in 2017, while spending some R6.2 billion on locally-produced vehicles.

NAAMSA (2018) reported the total number of locally produced vehicles in South Africa for 2017 as 601 178. Additional demand of 4 516 vehicles can, therefore, easily be absorbed by the local industry.

Data Analysis

In the analysis for this paper, substitution in respect of the amount spent on vehicles is used to analyse the economic impact, rather than vehicle-for-vehicle substitutions. To restate: It is assumed that the central and provincial governments spend the full amount currently used to purchase imported vehicles on domestic vehicle purchases. To the degree in which cheaper local alternatives are available, there might be a saving in vehicle purchases. Vehicle-for-vehicle substitution as an alternate policy approach is beyond the scope of this research paper, but could be covered in further research on this topic. Such research has to include a broad series of assumptions on actual substitution.

The recommendation that the South African government should only purchase vehicles manufactured in South Africa, has found some support amongst members of the South African Parliament. This policy proposal was discussed at a joint sitting of the Standing and Select Committees on Finance and Parliament, and found support to the extent that a letter was addressed on 15 November 2018 to the President of the Republic on the matter. Subsequently, serious concern was expressed by the Standing Committee on Finance about the fact that no response had been received from the Presidency on the proposal (Report of Committee 2019, 23).

Economic Stimulus

The adoption of a policy that the central and provincial governments should only purchase locally-produced vehicles (thus refraining from purchasing imported vehicles) will stimulate the domestic economy by means of increased government expenditure locally. An increase in domestic government expenditure will impact the GDP and economy and can be measured by means of the Keynesian government expenditure multiplier. Woodford (2011) describes this multiplier as “the determinants of the size of the effect on aggregate output of an increase in government purchases and thus this research confirms positive government expenditure.”

The Keynesian government expenditure multiplier (also known as the fiscal multiplier) is based on the use of the marginal propensity to consume (MPC) and marginal propensity to save (MPS). It can be depicted as:

Initial Expenditure $\times 1 / \text{MPS}$ or Initial Expenditure $\times 1 / (1 - \text{MPC}) \dots$ (ai)

Also: $\Delta Y / \Delta G = 1 + \text{MPC} + \text{MPC}^2 + \text{MPC}^3 + \dots$ (aii)

The expression portrayed in (aii) above is an example of an indefinite geometric series.

Indefinite Geometric Series:

Proof, for $|x| < 1$, let

$$z = 1 + x + x^2 + \dots$$

Times x on both sides:

$$xz = x + x^2 + x^3 + \dots$$

Subtract xz from z :

$$z - xz = 1$$

Recalibrate to find:

$$z(1 - x) = 1$$

Thus:

$$z = 1 / (1 - x)$$

Thus: $\Delta Y / \Delta G = 1 / (1 - \text{MPC}) \dots$ (aiii)

The fiscal government-spending multiplier can algebraically be derived as follows:

$$Y = C(Y - T) + I + G$$

Fix T and I to derive:

$$dY = C' dY + dG$$

Recalibrate to find:

$$dY / dG = 1 / (1 - C')$$

The marginal propensity to consume (MPC) is the ratio change in consumption (ΔC) owing to an increase in income (ΔY). It determines how much of the increased portion of income is used as consumption expenditure. The marginal propensity to save (MPS) is the ratio change in savings (ΔS) owing to an increase in income (ΔY). It determines how much from the increased portion of income is saved. It follows, therefore, that:

$$\text{MPC} = \Delta C / \Delta Y \text{ or } 1 - \text{MPS} \dots \text{ (b)}$$

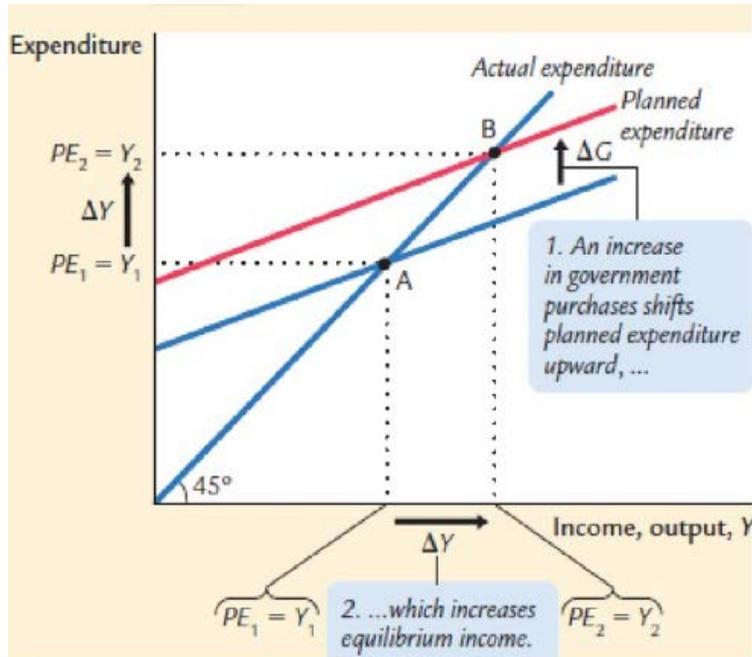
$$\text{MPS} = \Delta S / \Delta Y \text{ or } 1 - \text{MPC} \dots \text{ (c)}$$

It follows, therefore, that:

$$MPC + MPC = 1$$

In South Africa, MPC is assumed at 0.975 and the MPS at 0.025 (Pretorius and Knox 1995).

This principle can also be presented graphically.



An Increase in Government Purchases in the Keynesian Cross

- An \nearrow of G raises PE by that amount for any given level of Y .
- The equilibrium moves from point A to point B , and Y rises from Y_1 to Y_2 .

- Note that the \nearrow in Y exceeds the \nearrow in G .
- \rightarrow fiscal policy has a multiplied effect on Y .

Figure 8: The impact of an increase in government purchases in terms of the Keynesian expenditure multiplier

Source: Mankiw 2013

Figure 8 shows that with an increase in government spending, planned expenditure ($PE_1 = Y_1$) moves up in the graph due to an increase in output (Y). With actual expenditure being stable, movement from A to B happens. This movement shows the increase in income, denoted at the bottom of the graph. The result is an increase in equilibrium income at $PE_2 = Y_2$.

The fiscal multiplier is used to calculate the domestic economic impact of central and provincial governments refraining from purchasing imported vehicles. The calculated

results are used in a fiscal multiplier to determine the effect on aggregate output of an increase in domestic government expenditure.

Rossouw and Rossouw (2017) state that the percentage of local content (including labour) in imported vehicles is 35 per cent on average, but that local content of some vehicles can be as high as 70 per cent. Venter (2017) reported that the National Association of Automotive Component and Allied Manufacturers of South Africa (Naacam 2018) estimate the local content of locally-produced vehicles at 38.5 per cent. To err on the side of caution, this research uses the average figure of 35 per cent as vehicle-for-vehicle substitution.

The implication is that the locally-produced vehicles substituting once-imported vehicles will still contain some imported component. For purposes of this research, the ratio of 35/65 between local and imported content is used. Based on this ratio and the assumption that domestic government expenditure will increase by some R2.6 billion—owing to the policy change to limit government vehicle purchases to locally-produced vehicles—the impact on the South African GDP can be calculated. Likewise, an increase in employment in the local vehicle manufacturing industry can also be calculated on the assumption of a linear link between production and employment. Similarly, the impact on the balance of payments can be calculated. The expected increase in VAT revenue for the government from the increase in GDP can also be calculated.

Impact on the South African GDP

The economic impact, measured in terms of the GDP, is measured by means of the fiscal multiplier:

$$\text{Initial expenditure} \times 1 / \text{MPS} \text{ or } \text{Initial expenditure} \times 1 / (1 - \text{MPC}) \dots (a)$$

$$R2\ 630\ 897\ 663 \times 35 \text{ per cent} = R920\ 814\ 182 \dots (1a)$$

$$R920\ 814\ 182 / 0,025 \text{ or } R920\ 814\ 182 / (1 - 0,975) = R36.8 \text{ billion} \dots (1b)$$

The policy implementation would create an economic stimulation impact of R36.8 billion per annum, based on figures for 2017, i.e. a real annual increase of R36.8 billion in the South African GDP.

South Africa's GDP at constant prices in 2017 was R3 125 trillion, or R3 125 billion (SA Reserve Bank 2018, 5–113). An increase in the GDP of R36.8 billion will stimulate GDP growth:

$$36.8 / 3125 \times 100 = 1.18 \text{ per cent ... (1c)}$$

A policy of exclusive purchase of locally-manufactured vehicles for the government fleet would have had a positive (growth) impact of 1.18 per cent on the South African GDP, based on 2017 figures. However, whereas the spending will increase the GDP annually, the growth impact will be recorded only once, i.e. in the year of policy implementation. In subsequent years the growth in the GDP will be measured on the higher base set in the first year.

Direct Employment Impact

According to NAAMSA's Quarterly Review Bulletin (Q4 of 2017), the average monthly automotive industry employment number for 2017 was 30 050 people (NAAMSA 2017). Based on the number of vehicles manufactured in South Africa in 2017, namely 601 178, the ratio of production to employment is:

$$601\ 178 / 30\ 050 = 20.01 \text{ ... (2a)}$$

Thus 20.01 vehicles were produced per worker in 2017 (20.01 units per/worker)

Total number of annual government fleet purchases of imported vehicles for 2017/units per worker for 2017 = Total effect on employment in automotive manufacturing industry for 2017:

$$4\ 516 / 20.01 = 225.69 \sim 226 \text{ ... (2b)}$$

[Assuming a linear ratio between vehicle production and employment]

With 4 516 extra vehicles produced locally for purchase by the government, 226 extra workers will be employed in the automotive manufacturing industry in South Africa.

Balance of Payments Impact

The substitution of imported vehicles by locally-manufactured vehicles will impact the South African balance of payments by means of a reduction in imports. This net decline in imports will have an immediate impact on the trade balance, although the marginal propensity to import can be used for the calculation of subsequent developments. The immediate net impact for 2017 can be calculated as follows, based on net import savings of R920 814 182:

R1 106 billion (merchandise imports 2017) – R0.92 billion (1a)³ = R1 105.08 billion
... (3a)

[R1 105.08 billion (3a) is the revised merchandise import figure for year-end 2017]

R1 108 billion (merchandise exports) + R66 billion (net gold exports) – R1 105.08
billion (revised imports) (3b)

= R68.92 billion ... (3b) (trade balance)

R68.92 billion (3b)-R68⁴ billion / R68 billion x 100 = 1.35 per cent ... (3c)

Implementation of a policy of purchasing only locally manufactured vehicles for the government fleet will, therefore, result in an immediate improvement of 1.35 per cent in the first year of implementation on the trade balance.

3 The amount of the percentage of imported components from spending the amount used to pay for imported vehicles for the government vehicles fleet through substitution by domestically manufactured vehicles.

4 Revised Trade Balance (R billions): 1 108 + 66 = 1174 -1 106 = 68 (Is calculated as 68, not as 69, as Table 6 shows).

Table 6: South Africa: Balance of Payments on current account, 2017Q1-Q4, year, to 2018 Q1

Balance of payments on current account

R billions, seasonally adjusted and annualised

	2017					2018
	Q1	Q2	Q3	Q4	Year	Q1
Merchandise exports.....	1 074	1 089	1 102	1 168	1 108	1 056
Net gold exports.....	50	68	68	79	66	77
Merchandise imports.....	-1 066	-1 106	-1 078	-1 173	-1 106	-1 158
Trade balance.....	58	51	92	74	69	-25
Net service, income and current transfer payments.....	-150	-181	-191	-211	-183	-204
Balance on current account.....	-92	-129	-99	-137	-114	-229
<i>As a percentage of gross domestic product</i>						
Trade balance.....	1.3	1.1	2.0	1.5	1.5	-0.5
Services balance.....	-0.1	-0.2	-0.1	-0.1	-0.1	0.0
Income balance.....	-2.6	-2.8	-3.1	-3.4	-3.0	-3.3
Current transfer balance.....	-0.6	-0.9	-0.9	-0.8	-0.8	-1.0
Balance on current account.....	-2.0	-2.8	-2.1	-2.9	-2.5	-4.8

Components may not add up to totals due to rounding off.

Sources: Stats SA and SARB

Source: SA Reserve Bank 2018

VAT Increase

South Africa's GDP for 2017 amounted to R4 652 billion. The components of the GDP in 2017 were (SA Reserve Bank 2018):

C (Final Consumption Expenditure):	R2 764 billion
I (Gross Capital Formation, also known as investment):	R863 billion
G (Final Government Expenditure):	R974 billion
X (Exports):	R1 385 billion
M (Imports):	R1 317 billion
Res (Residual)	R17 billion

Restated, this is (in R billion):

$$(\text{GDP}) 4\ 652 = (\text{C}) 2\ 764 + (\text{I}) 863 + (\text{G}) 974 + (\text{X}) 1\ 385 - (\text{M}) 1\ 317 + (\text{Res}) 17$$

To determine the ratio of consumption expenditure to GDP, the following calculation is made (in R billion):

$$2\ 764 (\text{C}) / 4\ 652 (\text{GDP}) \times 100 = 59.4 \text{ per cent ... (4a)}$$

The increase in the GDP owing to the policy change suggested in this research amounts to R36.8 billion. Naturally, this will increase VAT collections by the South African government. The initial purchase price paid by the government is VAT exempt, but the subsequent stimulation of economic activity owing to increased domestic expenditure by the South African government, attracts VAT. This increases the VAT base. To determine the increase in consumption to use as a basis for calculating an increase in VAT receipts, the following calculation is made:

$$\text{R}36.8 \text{ billion (1b)} \times 59.4 \text{ per cent (4a)} = \text{R}21.86 \text{ billion ... (4b)}$$

However, the expected VAT increase cannot be calculated on the full increase in expenditure. Due to tax exempt and zero-rated products, 15 per cent cannot be assumed as the effective VAT rate on the increase in consumption expenditure.

To determine the effective VAT rate on increased consumption, the VAT tax sacrifice rate (4di) owing to VAT exempt and zero-rated items, must be proportionally subtracted from VAT at 15 per cent to establish the effective VAT rate (4e).

To determine the VAT sacrifice rate, the total value of the tax sacrifice on VAT exempt and zero-rated items (4ci) is divided by the total VAT revenue base (4cii) (National Treasury 2018b):

$$\text{R}13\ 645\ 373\ 031 (4ci) / \text{R}299\ 058\ 000\ 000 (4cii) \times 100 = 4.56 \text{ per cent ... (4di)}$$

The proportional VAT income to be raised on additional consumption (i.e., the effective VAT rate) is calculated by subtracting the percentage calculated in 4di above from 1.

$$1 - 0.0456 = 0.9544 \text{ ... (4dii)}$$

This implies that 95.44 per cent of expected VAT levied at 15 per cent is indeed collected owing to VAT exempt and zero-rated items.

$15 \text{ per cent} \times 0.9544 \text{ (4dii)} = 14,316 \text{ per cent effective VAT rate ... (4e)}$

$R21.86 \text{ billion (4b)} \times 14.316 \text{ per cent (4e)} = R3.13 \text{ billion ... (4f)}$

The calculation of the impact on other forms of tax revenue, for instance personal income tax, income raised from the fuel levy or company taxes, or income lost from import taxes, is beyond the scope of this research; as such calculations are heavily dependent on the assumptions used.

The net borrowing requirement of the government for 2017 amounted to R182.5 billion. Additional VAT revenue of R3.13 billion would have reduced the borrowing requirement for 2017 by 1.7 per cent.

Conclusions and Areas for Further Research

This paper considers an area of research not analysed before, i.e. the economic impact of local vehicle purchase exclusivity for the South African government fleet. As such a policy is applied neither in South Africa, nor anywhere else in the world, this paper sets the benchmark for future research on this topic.

This paper measured the impact of this policy change on the South African economy in a number of respects. First, it is shown in terms of 2017 data that the South African GDP would have been higher by R36.8 billion if this policy had been applied in 2017. This would be a recurring increase and would be recorded in each year of application of this policy.

Secondly, the application of this policy will increase GDP growth by 1.18 per cent. However, this is a once-off increase only in the first year of application, as future GDP increases owing to the application of this policy will be measured on the increased base.

Thirdly, South Africa's trade balance would have improved by 1.35 per cent in 2017 with the implementation of local vehicle purchase.

Fourthly, additional VAT revenue of R3.13 billion would be raised if this policy is adopted, which would have reduced the borrowing requirement for 2017 by 1.7 per cent.

The main conclusion is that a relatively small change in expenditure behaviour by the South African government can have a large beneficial impact on the domestic economy. This change in behaviour is so small that it cannot really even be described as a sacrifice, as vehicles of export quality are built in South Africa.

This study does not calculate and analyse the economic impact of local vehicle purchase exclusivity for the South African government fleet for any other period than 2017. The research can be expanded with similar calculations for any other calendar year (government vehicle purchases are reported per calendar year and not per fiscal year) to

reconfirm the findings of this research. Vehicle-for-vehicle substitution can also be applied, which will expand the findings of this study. This study can also be expanded to cover the economic impact of exclusive local vehicle purchases by South African municipalities. Another area for possible expansion of the study is the calculation of the impact of the application of this policy on tax revenue from sources such as personal income tax, the fuel levy, company taxes and income lost from import taxes.

Lastly, the South African government uses a tender system in the procurement of vehicles and does not pay tax, for instance VAT, on its vehicle purchases. As these tender prices are not published, the market prices of vehicles are used in this paper, but this research can be expanded by using actual tender prices, which seem to be about 20 per cent lower than the prices used in this research. The use of actual prices will not invalidate this research, but will merely limit the economic impact as calculated in this paper.

The findings of this first study show important benefits for the South African economy emanating from local vehicle purchase exclusivity for the South African government fleet. The benefits are so obvious that the South African government should adopt this policy recommendation immediately.

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