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Authorised for publication by:

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OBEN 2001* – March 2020

Measuring public sector CPI

*Koketso Mano*¹

Abstract

South African headline inflation has slowed materially in recent years, towards the midpoint of the target range of 4.5%. However, a few price categories have shown stubbornly high inflation. On closer inspection, the majority of high-inflation prices are those either determined or strongly affected by government. We formalise this insight with a public sector CPI measure which shows that since 2014, public sector inflation has averaged 6.1% while private sector inflation has averaged 4.9%. In the recent period, public sector inflation is running over 6%, while private sector inflation is around 3.5%. The headline conclusion of this note is that the public sector is the main driver of inflationary pressure in this economy. Despite high public sector inflation, monetary policy has delivered inflation close to the midpoint of the target range but has presumably been tighter than would have been necessary in a counterfactual scenario of lower public sector inflation.

1. Introduction

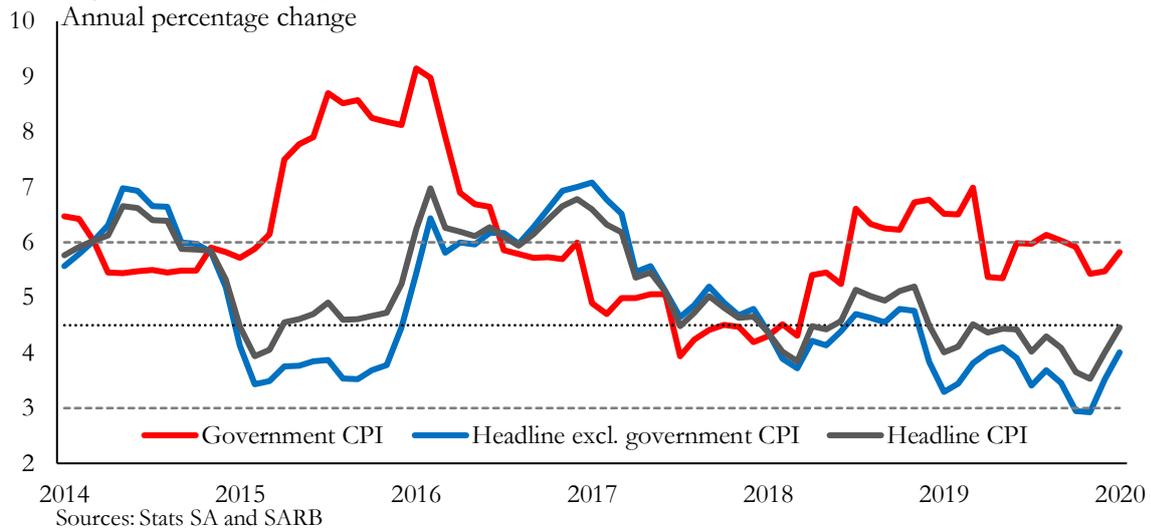
South African inflation has slowed materially in recent years. However, even with headline inflation rates around 4.5%, the midpoint of the target range, a number of price categories have shown stubbornly high inflation. A closer inspection of these high-inflation categories reveals an interesting pattern: the majority are prices set or strongly affected by government. Formalising this insight with a public sector CPI measure shows that over the past year and a half public sector inflation is running over 6%, while private sector inflation is around 3.5%. The headline conclusion of this note is that the public sector is the main driver of inflation pressure in this economy, especially in the most recent time period (Figure 1).²

¹ Special thanks to David Fowkes and Witness Simbanegavi for valuable comments and supervision of this research. Thanks also to Jeffrey Rakgalakane for technical input.

² Perhaps even more important is the fact that most of the public services also serve as inputs into the production process. Thus public CPI is contributing to a higher cost structure of the economy.

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Figure 1: Public and private sector CPI



2. Construction of a public sector CPI

Our public sector CPI measure is based on the administered price (admin.) series as defined by Statistics South Africa (Stats SA), but with several departures (Table 1 and Figure 11). First, we use only the tax portion of fuel prices.³ This means excluding the basic fuel price, which is a function of international oil prices and the exchange rate – neither of which are government-controlled. The weight of taxes in fuel has been changing: from January 2013, it was 40%, but this rose to 60% following the January 2017 re-weighting. So even without including the entire fuel price, the idea of fuel as an important component of CPI remains consequential because the majority of the price is actually taxation.

Second, we treat communications slightly differently. The existing administered price classification includes telephone and cell phone services, on the grounds that these rates are regulated by the Independent Communications Authority of South Africa (ICASA). For consistency, we have opted to include other communication components, data costs and postal services (0.09% of headline CPI), which are similarly influenced by government, either through the South African Post Office, or through fees and licenses for using ICT infrastructure and spectrum.⁴

Third, lotto ticket prices have been included on the basis that the National Lotteries Commission approves all price changes for the National Lottery, whose ticket prices are surveyed. This justifies regarding lotto as an admin price, even though it is currently not defined as such.

³ This definition of fuel taxes already includes retail margins that are determined by government.

⁴ Postal services in the CPI comprise post boxes and courier services, and are not included in the administered price series. The rental of postal boxes is largely a function of the South African Post Office, a government subsidiary; the company also provides courier services. There are also private couriers (such as DHL and Fedex), so this category is not purely public. The weights are small, however – post boxes are 0.1% of the CPI, while couriers are 0.2% of the CPI – so the choice of how to assign this component is not very consequential.

Table 1: Public sector CPI basket	2013 weights (Dec2012=100)	2017 weights (Dec2016=100)
Water	1.55 [7.1]	1.08 [4.8]
Rates and taxes	1.30 [5.9]	1.30 [5.8]
Electricity	4.13 [18.8]	3.75 [16.7]
Fuel taxes	2.50 [11.4]	2.55 [11.3]
Education	2.95 [13.5]	2.53 [11.2]
University boarding fees	0.06 [0.3]	0.06 [0.3]
Communication	2.50 [11.4]	2.43 [10.8]
TV licences: SABC	0.06 [0.3]	0.04 [0.2]
Trains	0.09 [0.4]	0.13 [0.6]
Motor licence and registration fees*	0.32 [1.5]	0.35 [1.6]
Lotto	1.03 [4.7]	1.75 [7.8]
Alcoholic beverages and tobacco	5.43 [24.8]	5.82 [25.8]
Total [% of headline CPI]**	21.92 [100]	21.79 [100]
Non-alcoholic beverages: Soft drinks	-	0.73 [3.2]***

*Includes toll fees

**Note: weights may not add up to a hundred because of rounding. See Table 3 for a detailed weights structure.

*** Added from April 2018 to March 2019, making Public CPI weigh 22.52% over that period.

Fourth, we have opted to include alcohol and tobacco in our measure. Although these goods are produced and sold by the private sector, they are subject to sin taxes. Since 2008, average inflation for sin taxes has been 7.9%; by contrast, average inflation of retail prices excluding tax has been just 4.1%. In addition, the full pass-through tax burden on these items are currently over 40% (Figure 2 and 3).⁵

Figure 2: Alcoholic beverages and tobacco (weighted average retail price)

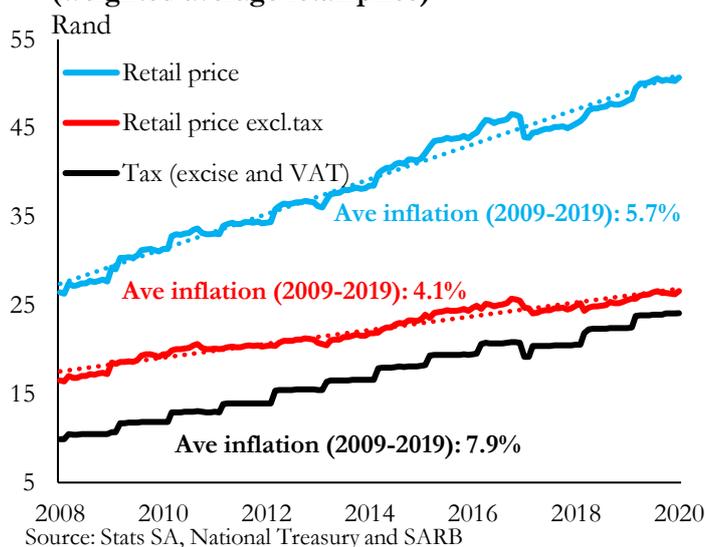
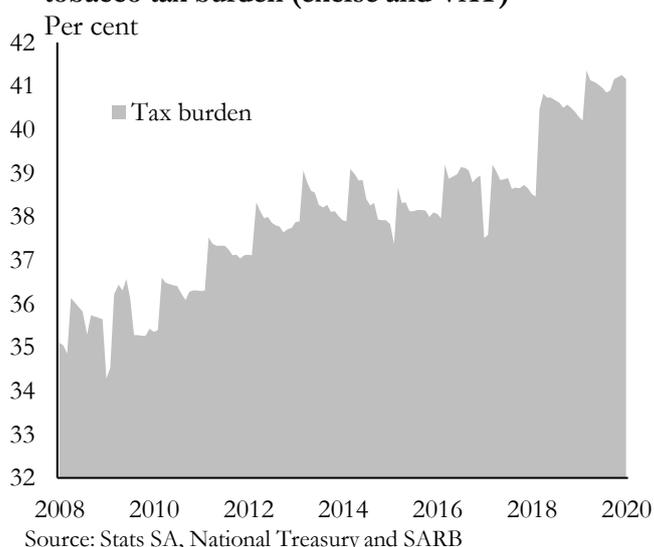


Figure 3: Alcoholic beverages and tobacco tax burden (excise and VAT)



⁵ The retail price excluding taxes measure is hypothetical. It assumes all taxes are passed onto the consumer. Actual pass-through is unknown.

PPI producer (wholesale) inflation for beverages and tobacco has averaged 8% since 2016, so it appears that wholesale prices have inflated with just excise taxes (Figure 8).⁶ This indicates an absorption of price pressures on both the wholesale and retail levels. Thus, without tax-related pressures, price increase could have been lower. The fact that the alcohol and tobacco category has inflation over 4.5% is largely due to government policy, not private-sector pricing. Given its relatively large weight in the CPI – close to 6%, or roughly double education – this is an important inclusion.

Added together, our measure accounts for 21.79% in total CPI, based on 2017 weights. We follow Stats SA in reweighting and rebasing every four years, so our measure has a slightly higher weight for the period 2013-2016, at 21.92%. By contrast, the normal admin price measure has a weight of 16.17% in the current CPI basket (also lower relative to the previous weight of 18.48%).

3. Incorporating one-off taxes

A further consideration is one-off tax changes, specifically VAT and the new sugar tax. These are clearly a source of government-induced inflationary pressure, but it would be inappropriate to record them as government prices: in most years, price determination for these goods and services is a private sector activity. To resolve this problem, we augment our measure with an estimate of the tax effects for the relevant years only.

The VAT increase took effect in April 2018, with the tax increased from 14% to 15%. To calculate the inflationary consequences of this change, we use the Disaggregated Inflation Model data to identify price movements for affected items. We start by identifying the VAT-eligible items, and removing any already included in our public CPI measure to avoid double-counting. We then contrast the 2018 month-on-month change following the VAT increase with the change observed in non-VAT years, represented by an average of the 2012-2017 period. To control for front-loading, in which firms implement a larger price change at the same time as the VAT adjustment, we consider not only the month of the change but also the next two months. (In other words, we compare monthly inflation for April, May and June 2018 against the average of April, May and June for 2012-2017).⁷

The cumulative VAT effect is calculated at 0.7pp on public sector inflation and 0.3pp on headline inflation. The estimated impact is smaller than the 0.6pp estimate in Fowkes, Janse van Rensburg and Visser (2019), probably because we include May and June as well as April in our comparison.⁸ Our methodology is also different because we use data from existing indices, rather than constructing a new VAT index from fine-grained data.⁹ As our impact is smaller, this may be treated as a relatively conservative estimate of inflation pressure arising from the VAT increase (Table 2). We see from Figure 4 that, had it not been for the VAT increase, Government CPI would have stayed within the inflation target band throughout 2018.¹⁰

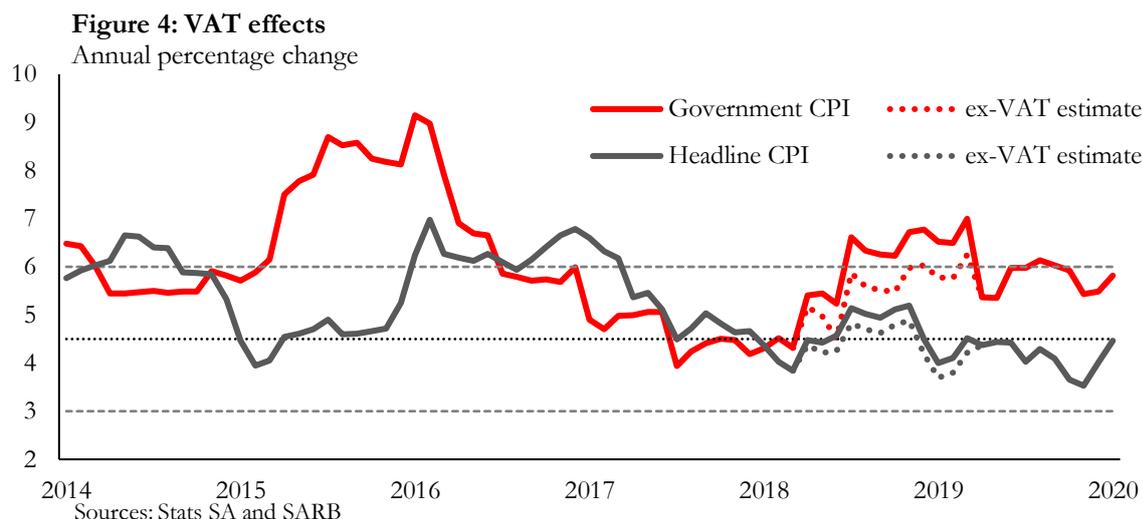
⁶ Sin taxes are charged to producers.

⁷ For robustness, we also contrast 2018 April-May-June inflation with the equivalent average for 2017 and 2019, the other two years in the current disinflation period. The results are much the same as those for the longer, 2012-2017 average. This exercise was conducted on both categories that are affected by VAT and those that are not, it is encouraging that the majority of non-VAT items (except volatile items like fuel) did not experience monthly changes that were significantly different from non-VAT years.

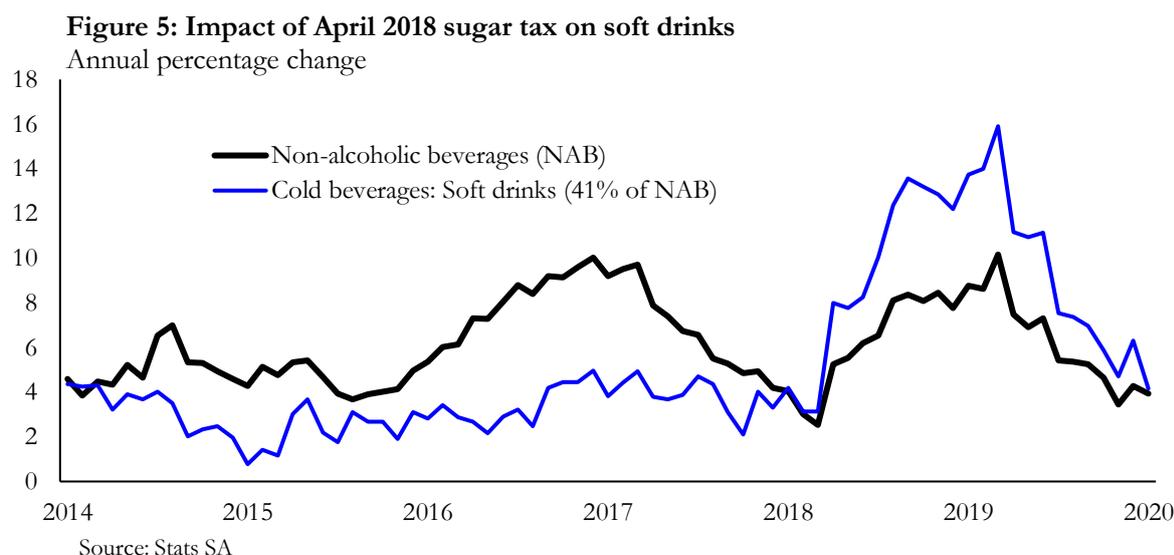
⁸ We compare post VAT month-on-month changes, Fowkes, Janse van Rensburg and Visser focus on the pre-VAT trends. Fowkes, D., Janse van Rensburg, T., & Visser, E. (2018). The meat of the matter: quantifying VAT effects. South African Reserve Bank economic note EN1834.

⁹ Had we focussed solely on April 2018, we would have gotten a higher full headline impact, especially when compared to the disinflation period. See Table 2 in the Appendices for all VAT impact estimates.

¹⁰ Figure 11 in the Appendices plots our public sector CPI and the official admin CPI. Our measure correlates reasonably well with the admin CPI (excl. fuel). It should be noted however that our measure has a larger weight than the admin CPI since we have included additional sources of public inflation over and above those captured in the official admin CPI.



Following a similar logic, we also include the effects of the sugar tax by adding sugary drinks to our measure in April 2018.¹¹ The contribution to government CPI was 0.2pp (Figure 5). Other categories have either remained flat or moderated during this period and a major input, sugar, experienced a large downward base effect so the soft drinks category was the outlier (Figure 9). We attribute most of this development to sugar taxes. As this tax was not raised further in 2019, this item has – to date – generated inflationary pressure for just 12 months, with a zero contribution subsequently (Figure 10).



4. Dynamics of public sector CPI

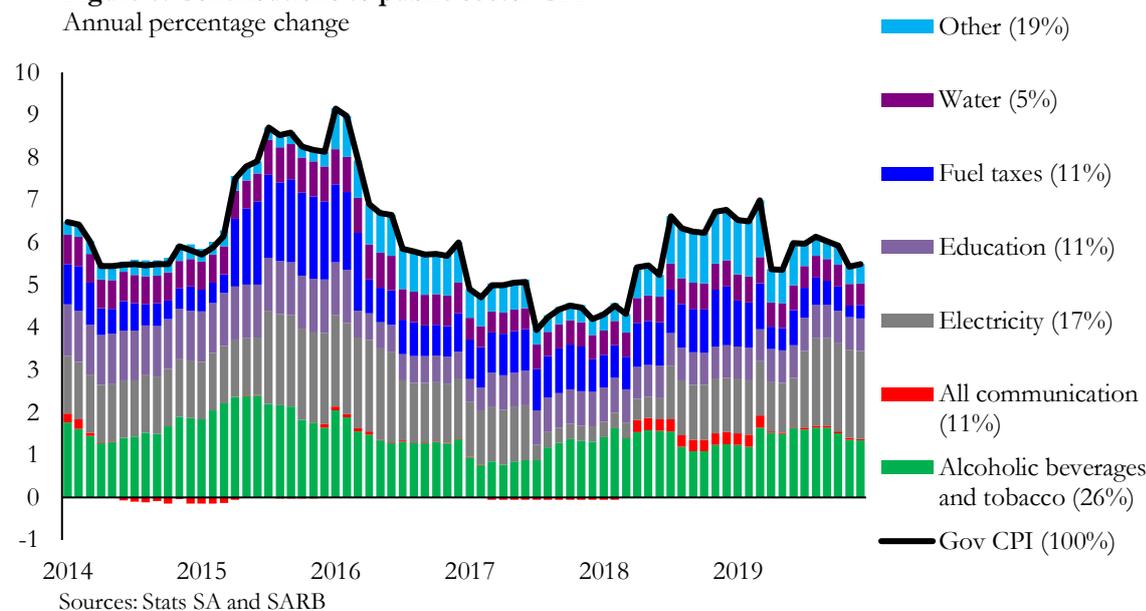
Public sector inflation has been above the upper band of 6% for 30 of the past 72 months, while private sector inflation has been above 6% for only 16 of the past 72 months. Since 2014 public sector inflation has averaged 6.1%, which is over one percentage point above the average for private sector inflation (which has averaged 4.9%). During 2019, private sector inflation remained below the midpoint of the inflation target range, while headline inflation has fluctuated around the midpoint.

¹¹ NAB also picked-up over 2016/17 when sugar and hot beverage prices rose. Sugar has historically played an important role in how beverage prices evolve given its importance as an input. Unlike in previous periods, sugar decelerated over 2018/19 while soft drinks ticked-up. We believe NAB inflation was kept elevated by the implementation of sugar taxes on soft drinks.

Public sector inflation was above the 6% upper bound of the target range for five months of the year (Figure 1).

Looking at the contributions of the major components (by weight) to public sector inflation (Figure 6), alcoholic beverages and tobacco has contributed on average 1.5 percentage points since 2014, in line with its substantial weight. Electricity and fuel taxes have also been major drivers, contributing 1.4 and 1.0 percentage points respectively. Across the entire sample period, water has been the single-most consistent contributor to public CPI being higher than 4.5%, with an average inflation rate of 10.9% since 2014, and a contribution of 0.7 percentage points.

Figure 6: Contributions to public sector CPI

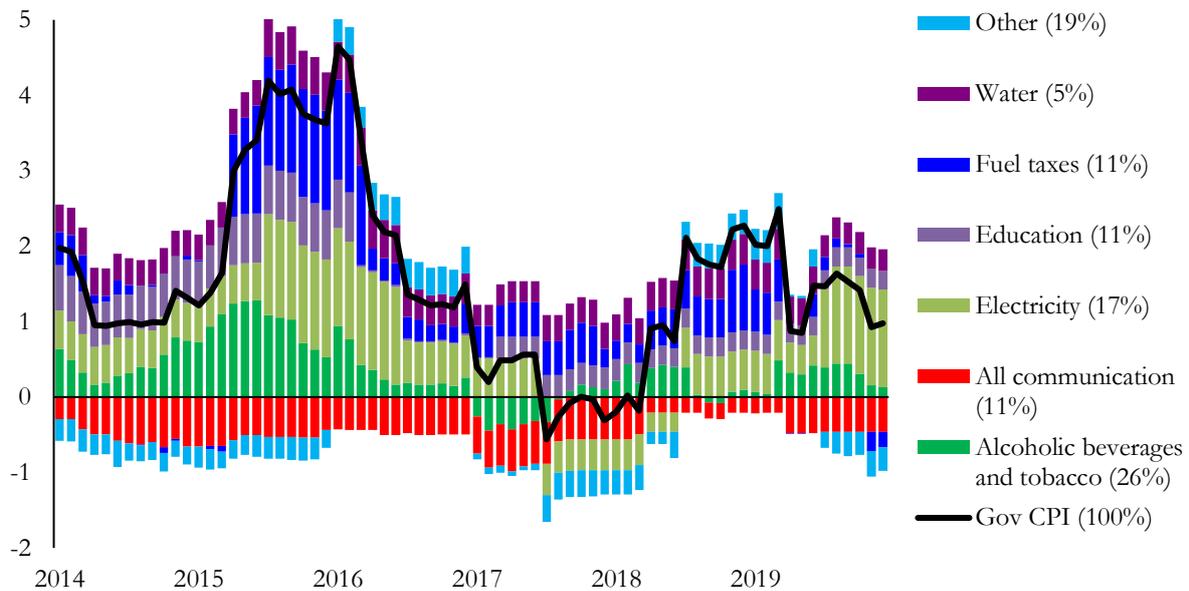


In Figure 7 we see that between mid-2015 and early 2016, public sector inflation was between 4 and 5 percentage points above the midpoint of the target range. For the majority of this period, electricity and fuel taxes were the major inflationary culprits. Electricity inflation rose from 7.2% to 11.4%. Meanwhile, fuel tax inflation rose from lows of around 4.0% to just above 17.0%, as government exploited a period of falling international oil prices to raise fuel taxes without causing an increase in pump prices. By contrast, communication and the “other” components were below 4.5%. Communication, in particular, has consistently lowered public sector inflation towards the 4.5% level.

Between mid-2016 and mid-2018, public sector inflation was noticeably lower, in line with the target midpoint (strikingly, this was also the period in which headline CPI first slowed from about 6% to around 4.5%). During this period, education inflation subsided in response to the ‘fees must fall’ campaign, which led to zero increases in tertiary-education fees. Electricity price increases were also unusually subdued, at just over 2%.¹² This period of subdued public CPI inflation was relatively brief, however, with price changes accelerating again from mid-2018. Public sector inflation has subsequently been around 1.5 – 2 percentage points above headline inflation.

¹² Although Nersa had approved annual tariff hikes to the value of 8% between 2013 and 2018, Eskom actually received tariff clawbacks (as per the Regulatory Clearing Account, RCA) of 12.7% in the 2015/16 period and 9.4% in the 2016/17 period. These higher adjustments allowed the 2017/18 adjustment to be lower, and –together with the MYPD3 approval of just below R200 billion in allowed revenue - the result was tariff increases averaging 2.2%.

Figure 7: Deviation from target midpoint
Percentage points



5. Conclusion and areas for future research

Since 2014, public sector inflation has averaged 6.1% while private sector inflation has averaged 4.9%. In 2019, private sector inflation decelerated to 3.5%, while public sector inflation remained at the upper limit of the inflation target range, at 6%. Despite high public sector inflation, monetary policy has delivered inflation close to the midpoint of the target range. Nonetheless, high public sector inflation has been a source of significant inflationary pressure, presumably requiring a tighter monetary policy stance than would have been necessary in a counterfactual scenario of lower public sector inflation.

In addition to this central conclusion, the research presented here suggests two further points. First, were South Africa to shift to a lower inflation target, the easiest way to achieve this would be to coordinate government pricing to lower rates; the private sector has already been delivering inflation around the target midpoint for the past three years. Indeed, lower public CPI – even if unplanned – seems to have played a meaningful role in lowering CPI towards the 4.5% midpoint, back in 2017. Second, there are indications that pricing for categories such as electricity has now passed the peak of their Laffer curves, such that further price increases reduce returns by disincentivising demand. Finally, and as a question for future research, it may be the case that government-induced inflation has now become counterproductive. By raising inflation, it is lifting borrowing costs both at the short and long end of the curve. It is also raising government costs inasmuch as government expenses such as salaries are indexed to CPI. Furthermore public inflation, because of the input nature of the associated services, may be reducing the scope for further disinflation in private CPI.

Appendices

Figure 8: Alcoholic beverages and tobacco (unweighted average wholesale price)

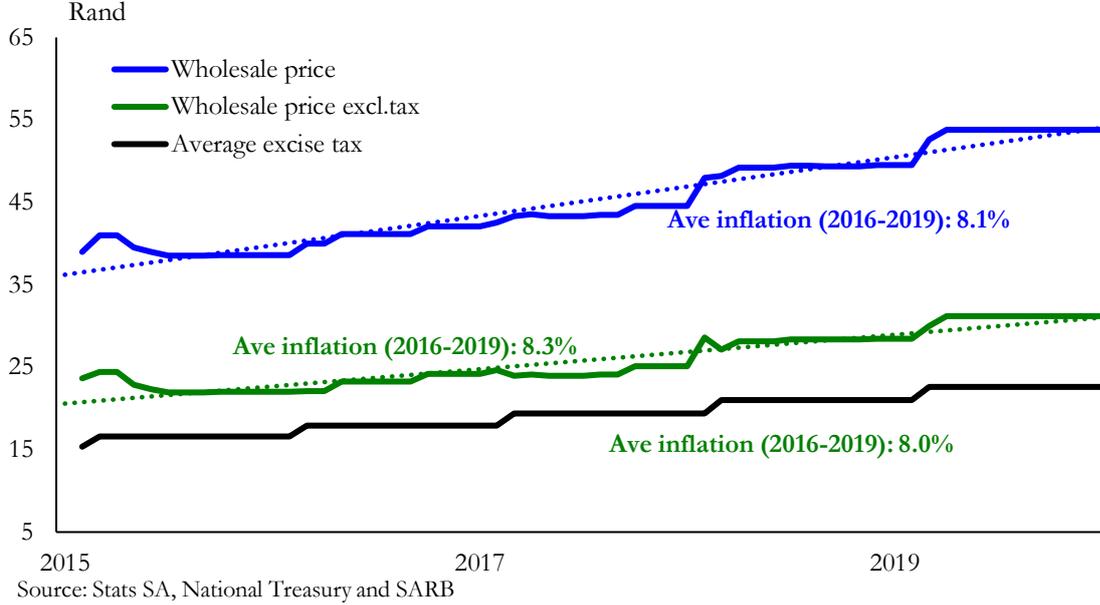


Figure 9: Non-alcoholic beverages and sugar
Annual percentage change

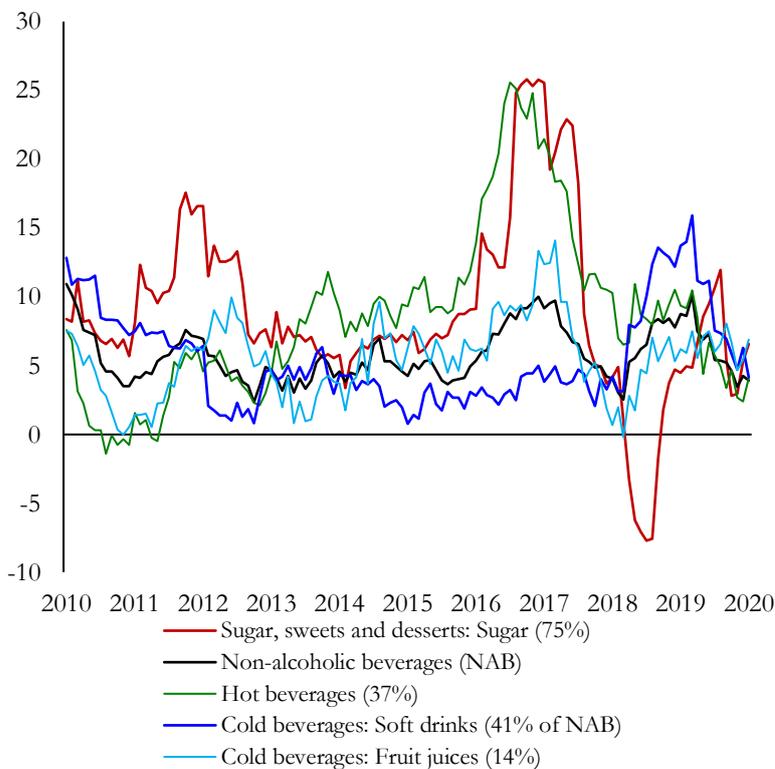
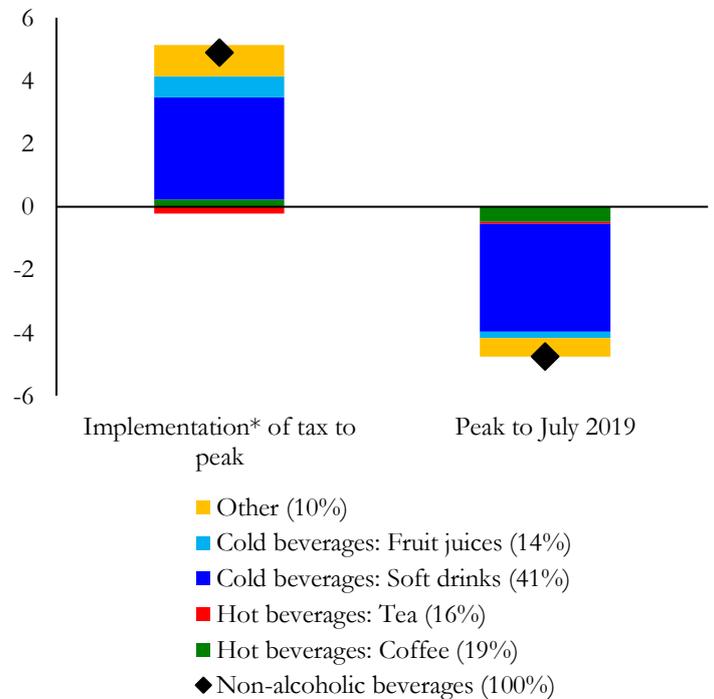


Figure 10: NAB decelerating on sugar tax base effect
Percentage points



*1 April 2018
Source: SARB

Figure 11: Admin vs public sector CPI

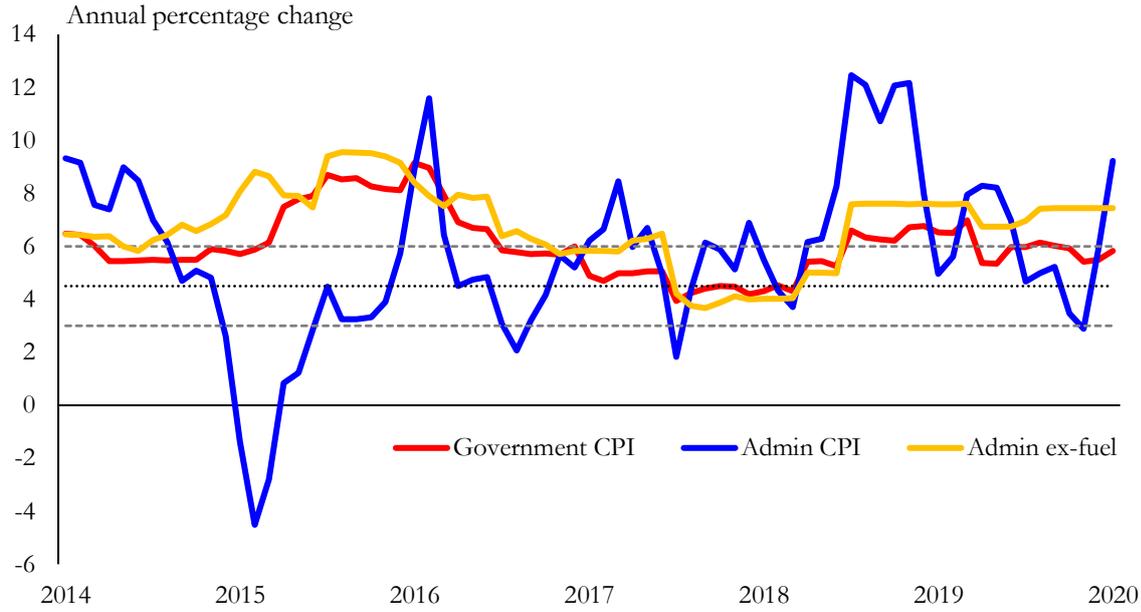


Table 2: VAT effects	Long-term average (2012-2017)		Disinflation period (2017&2019)		Previous year (2017)	
	Headline CPI	Public CPI	Headline CPI	Public CPI	Headline CPI	Public CPI
Alcoholic beverages & tobacco	0.04	0.16	0.03	0.14	0.05	0.20
Communication	0.06	0.26	0.06	0.25	0.06	0.27
Education*	0.00	0.00	0.00	0.00	0.00	0.00
Electricity (extended to July)	0.01	0.02	0.03	0.12	0.01	0.02
Motor licence and registration	0.00	0.01	0.01	0.03	0.01	0.03
Rates and taxes (excl. levies)*	0.00	0.00	0.00	0.00	0.00	0.00
Trains*	0.00	0.00	0.00	0.00	0.00	0.00
TV licence: SABC	0.00	0.00	0.00	0.00	0.00	0.00
University boarding fees	0.00	0.00	0.00	0.00	0.00	0.00
Water (extended to July)	0.02	0.10	0.02	0.09	0.01	0.06
Non-alcoholic beverages: Soft drinks		0.08		0.10		0.08
Lotto		-0.20		-0.20		-0.20
Other	0.08		0.18		0.22	
Sum	0.20	0.64	0.32	0.72	0.35	0.67
One-month check	0.26	0.71	0.62	0.75	0.37	0.77

*CPI items that are not subject to VAT

Table 3: CPI composition and weights		Total CPI	Public CPI	Private CPI	Admin CPI		
Alcoholic beverages and tobacco	5.82	Alcoholic beverages and tobacco	5.82	Clothing	3.83	Communication excl.data and courier	2.31
Clothing	3.83	Communication	2.43	Domestic worker wages	2.45	Education	2.53
Communication	2.43	Education	2.53	Financial services	1.53	Electricity	3.75
Domestic worker wages	2.45	Electricity	3.75	Food	16.53	Motor licence and registration	0.35
Education	2.53	Motor licence and registration	0.35	Household contents	1.9	Paraffin	0.05
Electricity	3.75	Fuel taxes	2.55	Owner's equivalent rent	13.32	Fuel	4.58
Financial services	1.53	Rates and taxes excl,levies	1.3	Insurance	10.06	Rates and taxes excl,levies	1.3
Food	17.24	Trains	0.13	Medical goods	0.53	Trains	0.13
Household contents	1.9	TV licence: SABC	0.04	Medical services	0.87	TV licence: SABC	0.04
Owner's equivalent rent	13.32	University boarding fees	0.06	Other public transport	2.17	University boarding fees	0.06
Insurance	10.06	Water	1.08	Paraffin	0.05	Water	1.08
Medical goods	0.53	Soft drinks	0.73	Fuel	2.03		
Medical services	0.87	Lotto	1.75	Levies	0.78		
Motor licence and registration	0.35			Actual rentals	3.52		
Other public transport	2.17			Residual goods	4.41		
Paraffin	0.05			Residual services	2.43		
Fuel	4.58			Restaurants and hotels	3.03		
Rates and taxes	2.08			Personal vehicle operation	0.45		
Actual rentals	3.52			Spare parts	0.48		
Residual goods	4.41			TV licence: excl.SABC	1.01		
Residual services	4.18			Vehicles	6.12		
Restaurants and hotels	3.03						
Personal vehicle operation	0.45						
Spare parts	0.48						
Trains	0.13						
TV licence	1.05						
University boarding fees	0.06						
Vehicles	6.12						
Water	1.08						
Total	100		22.52		77.5		16.18