

IssuesPaper

The Economic Impact of Taxation of Sugar Sweetened Beverages in South Africa



A report by:



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EXECUTIVE SUMMARY

The South African soft drinks industry makes an important contribution to the national economy.

For this study the industry is defined to include manufacturers and those selling soft drinks through retail outlets (e.g. modern retail outlets, informal spaza stores and petroleum food marts). The industry directly supports a R17.2 billion contribution to South Africa's GDP, equivalent to 0.5 percent of the national economy. It also directly provides jobs for between 86,000 and 133,000 people, depending on assumptions about the size of the informal economy. But its impact does not end there: the effects of manufacturing activity ripple out through the economy, through supply chains and wage spending, in total supporting a contribution to GDP of R62.3 billion and between 260,000 and 306,000 jobs across the formal and informal sectors.

The government has announced that the industry will face a new sugar-sweetened beverages (SSB) tax. This new tax is due to be introduced in April 2017, and will be applied to soft drinks that contain any added caloric sweeteners. The government is introducing the tax in an effort to cut down excessive sugar intake by reducing the consumption of drinks with added sugar. Beverages that contain sugar naturally built into their structure, such as pure fruit juices and milk, are excluded from the tax.

On average, the tax can be expected to increase the price of SSBs sold by 25 percent. The amount of tax levied will be based on the absolute sugar content of the drink, so consumers of certain types of drinks—most notably cordials and colas—should

anticipate price increases in excess of 30 percent. This compares to the government estimate that the effective SSB tax rate equates to around 20 percent tax incidence for the most popular soft drink (i.e. Coca-Cola).

The SSB tax can be expected to reduce the volume of SSBs sold by 33 percent and the size of total soft drinks market by 26 percent. These results are based on detailed economic modelling, which draws on published estimates of the responsiveness of the demand for soft drinks to price changes. The results also take into account the extent to which consumers may switch from taxed to untaxed beverages once the levy is introduced.

Our analysis suggests that lower soft drinks sales could reduce the industry's total contribution to GDP by R14.6 billion, and could lead to between 61,000 and 71,000 job losses across the industry's total economic footprint. This impact would be felt across the wider economy, including among firms supplying goods and services to soft drinks manufacturers, and among retailers, including informal spaza stores.

Implementing the SSB tax could raise R4.3 billion in net tax revenue for the government. We estimate that R7.5 billion could be raised in gross terms, with R6.6 billion raised from the tax itself, and an additional R0.9 in the form of VAT payable on the SSB tax. However, lower GDP and employment across the industry's total economic footprint would lead to income tax, corporation tax and VAT revenue declining by R3.1 billion.

1. INTRODUCTION

1.1 The Government's Proposal

In his budget speech on 24 February, Finance Minister Pravin Gordhan announced that a tax on sugar-sweetened beverages (SSBs) will be levied with effect from 1 April 2017. The aim of the tax, as stated in the National Treasury's Policy Paper, is to help reduce excessive sugar intake.¹ The announcement is set against a backdrop of rising obesity rates in South Africa, which is a major risk factor linked to the growing burden of non-communicable diseases (NCDs), including heart disease and type 2 diabetes.

The SSB tax will be applied to non-alcoholic beverages that contain added caloric sweeteners. Beverages that only contain sugars that occur naturally within their ingredients, such as milk products and 100 percent fruit juice, are excluded from the tax.

The amount of tax levied will be based on the absolute sugar content of the drink. The government has proposed an effective tax rate of R0.0229 per gram of sugar. We assumed that this is equivalent to a R0.02 tax rate per gram excluding VAT at the prevailing rate of 14 percent.

According to the government, the effective SSB tax rate will roughly equate to a 20 percent tax incidence on the most popular soft drink (i.e. Coca-Cola, averaging 35g of sugar per 330 ml).²

1.2 The South African Drinks Industry

For the purposes of this report, the South African soft drinks industry is defined to include soft drinks manufacturers (including their head office functions in South Africa) and those selling soft drinks through retail outlets (e.g. modern retail outlets, spaza stores and petroleum food marts). Consistent with previous Oxford Economics research in this area, we only count that proportion of activity within retail distribution channels which relates to the sale of soft drinks. For example, sales of soft drinks account for around four percent of total turnover in modern retail stores, so we only count that proportion of the economic activity for this distribution channel within our estimates of the soft drinks industry.

On this basis, we estimate that soft drinks manufacturers and headquarters directly supported a R14.8 billion contribution to South African GDP in 2015, while the sales of soft drinks through retail outlets directly supported a further R2.4 billion of GDP.

In addition to the activity supported by the soft drinks industry itself, further economic activity is generated by the soft drinks manufacturers' supply chain purchases, and through the spending of workers. Once these 'multiplier' effects are included, the South African soft drinks industry is estimated to support a total GDP contribution of R62 billion and between 260,000 and 306,000 jobs, depending on assumptions about the size of the informal economy.

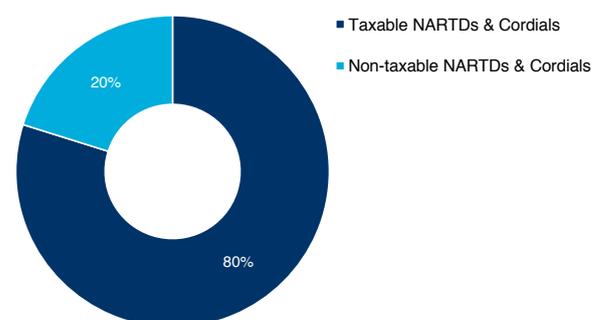
Further details of the 'economic footprint' of the South African soft drinks industry are presented in section three of this report.

1.3 Proportion of the Soft Drinks Market Affected by the Tax

To consider how the economic contribution of the soft drinks industry could be affected by the proposed tax, we first need to understand which parts of the soft drinks market will fall within the scope of the new policy.

To assess this, we used information provided by the industry that identifies the sugar content in each soft drink product. Our analysis suggests that 80 percent of the soft drinks market, by volume, could be subject to the proposed tax.

Fig. 1. Taxable sales volumes³



Source: Oxford Economics, BevSA

Combining the results above with the actual volume of each type of drink sold in 2015 allows us to estimate that 4.4 billion litres of soft drinks could be subject to the SSB tax. This is 80 percent of the soft drinks market, by volume, in 2015.

Data Sources

The analysis in this paper is based on four main sources of data:

- i) **Nielsen:** sales volumes and value by type of drink and distribution channel
- ii) **BMI:** data on the total volume of the NARTD market by category of drink
- iii) **BevSA and BevSA members:** company-specific financial and employment data supplied to Oxford Economics by soft drink manufacturers. Data also provided on grams of sugar per litre of soft drink.
- iv) **Statistics South Africa:** including:
 - *Input-output table for South Africa 2012*, Statistics South Africa, March 2015
 - *2015 Tax Statistics*, joint publication between National Treasury and SARS, Nov 2015⁴
 - *Retail Trade 2012, Statistical Release 6201*, Statistics South Africa, November 2012⁵
 - *Quarterly employment survey P0277*, Statistics South Africa, March 2016⁶

Glossary

Cordials: squashes, cordials, powders and other concentrates for dilution to taste by consumers. Volume and price figures are expressed in concentrate terms.

Diet: NARTDs or cordials with no added sugar.

Fruit Juice: 100 percent fruit content equivalent, sometimes referred to as pure juice or 100 percent juice. Chilled juice comprises four main types: freshly squeezed juice; not from concentrate juice; chilled from concentrate (may be from concentrate or part from concentrate); smoothies. Ambient or long-life juices are mainly from concentrate.

NARTDs: non-alcoholic beverages in ready to drink form (e.g. cola, water, energy drinks), but excluding cordials.

SSBs: are beverages that contain added caloric sweeteners such as sucrose, high-fructose corn syrup, or fruit juice concentrates, which include but are not limited to: (i) soft drinks and cordials (ii) sports and energy drinks, (iii) sweetened iced tea, (iv) flavoured water, and (v) lemonade, among others. Any beverage that only contains sugar naturally built into the structure of the ingredients is excluded from the definition of SSBs. This includes 100 percent fruit juice, bottled water and diet drinks.

SSDs: are sugar-sweetened drinks and are a sub-set of SSBs that includes colas, mixers, and flavoured carbonated drinks. It is the largest drinks category by volumes sold.

Water: still, sparkling and lightly carbonated; natural mineral waters; spring waters; bottled drinking waters.

2. THE IMPACT OF THE SSB TAX ON CONSUMERS AND THE MARKET

2.1 Impact on Prices

2.1.1 Assumptions

The key determinant of the impact of the SSB tax on purchases of soft drinks is the extent to which the introduction of the tax leads to changes in the prices faced by consumers. This, in turn, is determined by the extent to which manufacturers and retailers of soft drinks pass on the tax in the prices they charge. Experience in other countries suggests that companies do not always simply increase prices by the amount of the levy. In some cases, the full cost of a tax on soft drinks has not been passed on to consumers⁷, while in others, retailers or manufacturers have used the introduction of a tax as an opportunity to increase prices by more than the amount of the tax.⁸

Different types of retailer typically charge different prices for soft drinks, reflecting differences in business model and the service provided. In light of this, it is possible that the introduction of the levy could have different effects, depending on where drinks are sold. We therefore base our results on three separate models for different types of retailer:⁹

- Large modern retail outlets (i.e. supermarkets and discount stores)
- Small modern retail outlets (i.e. petroleum food marts)
- Local and traditional stores (e.g. spaza stores)

While it is difficult to be certain exactly how South African companies will respond to the levy, we assume in our modelling that 100 percent of the levy is passed on to consumers in sales made by local and traditional stores and smaller modern retailers (i.e. petroleum food marts). This approach is broadly consistent with evidence from France, Denmark and the US, where the cost of a taxes on soft drinks has generally been passed on in full to consumers.¹⁰ This approach means unit margins remain fixed for these sellers and hence gross margins decline.

For larger modern trade retailers however, gross margins are maintained and therefore there is over-shifting of the tax to consumers—i.e. prices are increased by more than the tax increase itself.¹¹ This slightly different approach for larger retailers is based on advice from the industry in relation to expected responses by different types of retailer.

A further uncertainty is whether manufacturers and retailers will choose to adjust the prices of diet drinks once the levy is introduced, even though such drinks are outside the scope of the SSB tax. There is some evidence of this happening in other countries where companies have sought to keep the prices of regular and diet drinks broadly aligned after taxes have been introduced.¹² However, it is unclear whether companies in South Africa will take this approach and so we assume that diet drinks do not increase in price in response to the tax. As such, diet drinks might be expected to become relatively more attractive to consumers since they will become cheaper than regular versions of the same drink, which are subject to the levy.

2.1.2 Estimated Impact on Prices

The table below shows average pre-SSB tax prices for different types of soft drinks sold through the different retail distribution channels, and how these prices are expected to change once the SSB tax is introduced.¹³ This analysis only includes those soft drinks subject to the SSB tax. The precise impact depends on the relative sugar content in each drink within each category. Cordial drinks in particular will be hit hard by the SSB tax due to their high sugar content, with estimated price per litre increases of between R4.28 and R4.72, depending on the type of retail outlet. In SSDs, the largest segment by volume in the soft drinks market, retail prices are estimated to increase between R2.48 and R2.91 per litre. Percentage increases are broadly similar between drinks sold through modern retail and local and traditional stores, reflecting the assumptions for tax pass-through discussed earlier.

Fig. 2. Impact of SSB tax on price per litre of taxed soft drinks

	Local & Traditional	Modern Retail	All	Local & Traditional	Modern Retail	All	Local & Traditional	Modern Retail	All
SSDs	R8.82	R8.38	R8.67	R11.29	R11.29	R11.30	28.1%	34.7%	30.3%
Cordials	R12.59	R13.63	R12.93	R16.87	R18.34	R17.36	34.0%	34.6%	34.2%
Other SSBs	R21.43	R22.80	R21.96	R23.11	R24.78	R23.75	7.8%	8.7%	8.1%
ALL SSBs	R10.45	R10.61	R10.50	R12.94	R13.50	R13.14	23.9%	27.2%	25.1%

Source: Oxford Economics, Nielsen, BMI, BevSA

Note: impacts quoted for cordials reflect the impact per litre of concentrate

2.2 Impact on Consumption Patterns

A second important consideration when assessing the impact of a proposed tax is the potential response of consumers to the resultant price change.

2.2.1 Determining consumer responses: ‘elasticities’

Our analysis of potential responses to changes in the price of soft drinks relies on two main concepts:

- **‘Own-price elasticities’**, which indicate the responsiveness of demand for a product to a change in price of that product, and
- **‘Cross-price elasticities’**, which indicate the responsiveness of demand for a product in response to changes in price of another product.

In this analysis, cross-price elasticities are particularly important, since they enable us to understand the extent to which consumers may switch their consumption to substitute products once the SSB tax is introduced. This could have important implications for the overall impact on the soft drinks industry. For example, if consumers simply switch from regular SSD to diet versions of the same drinks, the impact on the soft drinks industry may be fairly limited, but consumers could enjoy health benefits from consuming products with a lower volume of sugar. On the other hand, if consumers were to switch from a SSD to milk, there would be a larger adverse impact on the soft drinks industry (although this might be partially offset by a positive impact on milk producers which is not modelled in this study).

For this study we draw on the work of Manyema et al. who used price elasticity estimates from a systematic review and meta-analysis of studies undertaken in the USA, France, Mexico and Brazil to estimate the potential impact of a 20 percent tax on SSBs on obesity in South Africa.¹⁴ By using these elasticities, we are able to ensure that the key assumptions underpinning our work are consistent with those reported in the National Treasury’s SSB tax policy paper. The estimates are presented in the table below.

The own-price elasticity of SSBs is -1.3, so a one percent increase in the price of an SSB would be expected to lead to a 1.3 percent reduction in demand for SSBs. The positive 0.39 percent SSB cross-price elasticity with 100 percent juice indicates that a one percent increase in the price of an SSB would be expected to lead to 0.39 percent increase in demand for 100 percent juice. The SSB tax is also expected to increase demand for milk.¹⁵

Of particular note in the table is that Manyema et al. report that drinkers of SSBs are unlikely to switch to bottled water or to diet drinks (e.g. from regular cola to diet cola). While other studies have not found statistically robust evidence that people switch from SSBs to water when the price of SSBs increase, there is evidence of consumers switching from SSBs to diet drinks.¹⁶ The Manyema et al. study reports a negative cross-price elasticity on diet drinks. This suggests that demand for diet drinks would decrease following an increase in the price of an SSB. The reason for this seemingly counter-intuitive result is unclear and is not explained by Manyema et al, so there would be value in further research to explore this issue.

Fig. 3. Own- and cross-price elasticities of demand for soft drinks

Parameter	Coefficient
SSBs - Own price elasticity	-1.30
SSBs - Cross price elasticity with 100% juice	0.39
SSBs - Cross price elasticity with diet drinks	-0.42
SSBs - Cross price elasticity with milk	0.13

Using the values from the Manyema et al. study, and aligning them to the categories of product consumed in South Africa, we can estimate how changes in the prices of taxed soft drinks are likely to affect demand for both those products, and other substitute products. We have used:

- Elasticities for SSBs to analyse SSDs (e.g. cola, sports and energy drinks), cordials, and still and juice drinks which are subject to the SSB tax;
- The equivalent diet elasticities for non-taxed items; and
- Elasticities for 100 percent juice for their respective detailed drink category.

We can then estimate how the volume and value of sales of different categories of drink are likely to change, either in response to changes in their own price (if they are subject to the levy), or in response to the price of another beverage for which they are a substitute.¹⁷

This approach means that we do not do not consider the effects of consumers switching from SSBs and instead purchasing other non-modelled beverages such as tea, coffee and alcohol, or food items. While such behavioural responses seem plausible, they are difficult to quantify in a statistically robust sense¹⁸, and so in keeping with the work of Manyema et al. and other authors, switches into other food and beverage categories are excluded from our analysis.¹⁹

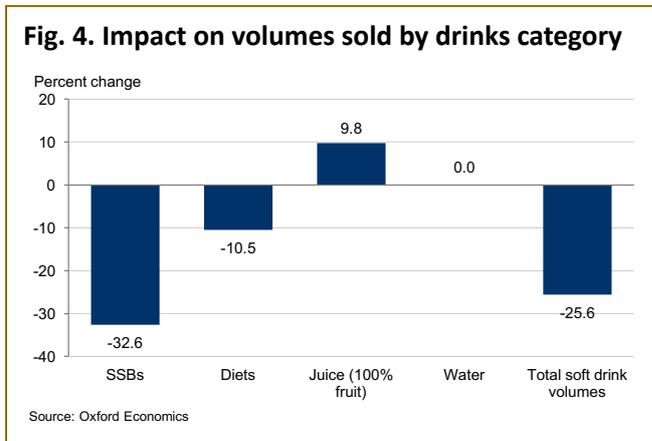
2.2.2 Impact on the Volume of Soft Drinks Consumed

Figure 4 shows the estimated impact of the introduction of the levy on the volume of each broad category of drink consumed. It includes both the impact of price changes on the sales of each product, and the range of substitution effects suggested by the elasticities in the previous section. These results include drinks sold through modern retail and local and traditional retail outlets.

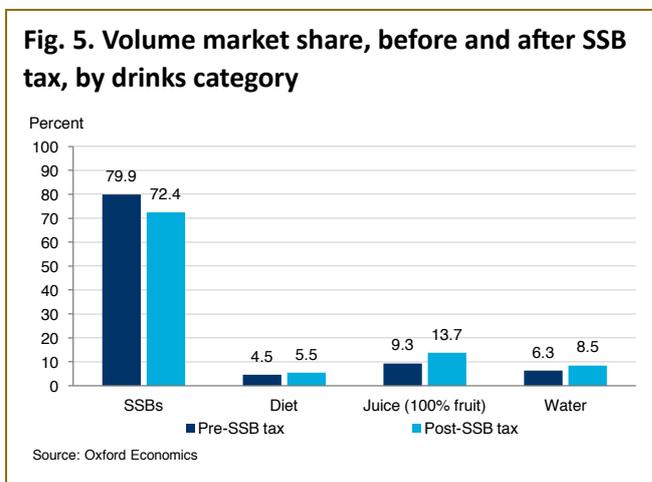
In total, we estimate a 25.6 percent reduction in the volume of soft drinks sold. This overall change does, nonetheless, conceal a number of larger changes as consumers switch away from taxed products and towards those which will not be subject to the levy, as is the intent of its introduction.

The analysis suggests that the largest reduction in sales volumes will be in the SSB category, which is predicted to decline by almost 33 percent, in response to the price increase of 25.1 percent combined with an own-price elasticity of demand of -1.3. And in line with the cross-price elasticity data reported by Manyema, consumption of diet drinks is estimated to decrease by 10.5 percent.

In other categories, however, sales volumes are estimated to increase as consumers switch from drinking taxed drinks towards those in non-taxed categories. This is particularly the case for 100 percent juice, where volumes are forecast to increase by almost 10 percent. Consumption of bottled water is unchanged as no cross-price elasticity is reported in the Manyema et al. study.



Overall, the tax will change the composition of the soft drink market. The market share of SSBs falls from 80 percent to 72 percent. While diet drinks also see a decline in volumes, this is proportionately smaller than for the decline in volumes for the market as a whole, meaning that diet drinks increase their share of the soft drinks market. 100 percent juice drinks are the only category of drink expected to experience an increase in volumes sold, based on the elasticity assumptions outlined above.



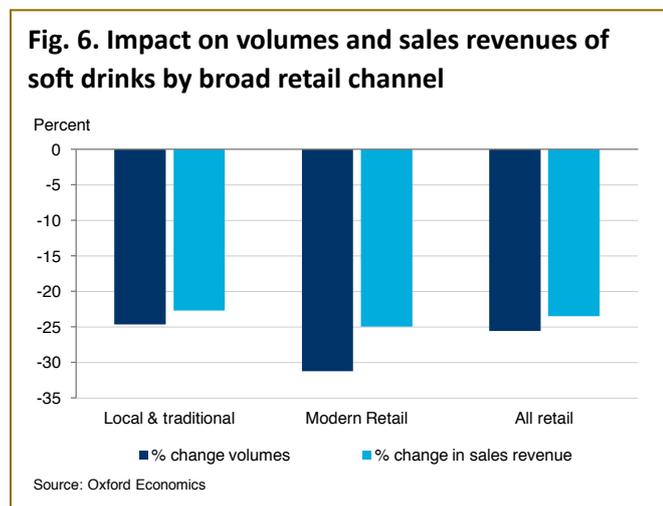
2.3 Impact on Sales Revenues

The analysis above discussed the potential changes in the consumption of soft drinks which could result from the SSB tax. This part of the report assesses how changes in consumption patterns might affect the volume and value of soft drinks sold by modern retail outlets and local & traditional stores.

In considering the impact on the value of sales we only

consider revenues which ultimately accrue to businesses. This means that the analysis excludes that part of soft drinks revenues which comprises the SSB tax itself, and the VAT associated with those sales. The impact on the government's tax receipts is discussed in Section 2.4.

The estimated percentage change in the volume of soft drinks sold, and the value of soft drinks sales across all retailers is shown in the chart below.



Consistent with the analysis in the previous section, the total reduction in the volume of soft drinks sold is 25.6 percent. This equates to a 23.5 percent reduction in the value of sales revenue across all types of retailer.

The modelling suggests that the greatest proportionate effect, in terms of both sales volume and sales revenue, will fall on modern retailers. This reflects that price increases are on average proportionately higher for modern retailers compared to the price rises anticipated in local & traditional stores. It is worth noting, however, that SSBs are typically a much smaller proportion of total sales for modern retailers than for local and traditional retailers.

One important result of our modelling is that the elasticities used give rise to an overall reduction in consumer spending on soft drinks in South Africa. This will mean that disposable income is freed up for saving or spending on other goods or services. However, as discussed in section 2.2.1, research suggests negligible consumer switching into other beverages and foods following the rise in the price of SSBs. In light of these uncertainties, there would be value in further research to explore this issue through sensitivity analysis around the assumed elasticities.

2.4 Government Revenues from the Levy

Based on the estimated volumes of different types of soft drinks that will be consumed after the SSB tax is introduced, we calculate that the tax could raise R6.6 billion in revenue for the government, excluding the effect of the VAT liable on the levy. This is broadly in line with the R7 billion estimate reported in various media channels in South Africa attributed to Priceless SA, a research institute at the University of the Witwatersrand's School of Public Health.²⁰ We had been unable to verify these estimates at the time of writing.

In addition to our estimate of R6.6 billion of revenue from the SSB tax itself, our understanding is that VAT will be liable on the value of the SSB levy, raising a further R0.9 billion. This assumption is consistent with the proposed basic rate of R0.02 per gram of sugar and a VAT-inclusive R0.0229 effective tax rate per gram once VAT at the prevailing rate of 14 percent is included.

The report has shown how introducing the SSB tax could affect not only the overall volume and value of soft drink sales, but also the mix of soft drinks within that total as consumers switch away from SSBs to non-taxed products. Despite this, we estimate that SSB tax could raise in excess of R7 billion of gross revenue for the government.

These changes will also have wider economic impacts for manufacturers and distributors of soft drinks, and other associated economic activity. Changes in sales volumes, for example, have an impact on the economic health of companies which sell soft drinks. In Section Three we explore how the change in sales revenues estimated could affect the economic contribution of these sectors, in terms of the value of GDP and number of jobs they support.

2.5 Summary

This section of the report has shown how introducing the SSB tax could affect not only the overall volume and value of soft drink sales, but also the mix of soft drinks within that total as consumers switch away from SSBs to non-taxed products. Despite this, we estimate that the SSB tax could raise R7.5 billion of gross revenue for the government.

These changes will also have wider economic impacts for manufacturers and distributors of soft drinks, and other associated economic activity. Changes in sales volumes, for example, have an impact on the economic health of companies which sell soft drinks. In Section Three we explore how the change in sales revenues estimated could affect the economic contribution of these sectors, in terms of the value of GDP and number of jobs they support.

3. THE ECONOMIC IMPACT OF THE SSB TAX

This section of the report explores the potential impact on the South African soft drinks industry of changes in the volume and value of soft drink sales. We start by considering the industry's current economic contribution,

and then go on to consider the potential impact of the SSB tax on the industry's contribution to GDP, jobs and government tax revenues.

Introducing Economic Impact Analysis

The economic impact of a company or industry is measured using a standard means of analysis called an economic impact assessment. In this report we model the contribution of the South African soft drinks industry, defined to include soft drinks manufacturers (the 'core industry'), and the activity supported by those companies selling soft drinks through retail outlets (distributors). In this report we quantify the four 'core' channels of impact that comprise the industry's overall 'economic footprint':

- **Direct impact:** the economic activity supported by the core soft drinks industry itself;
- **Indirect impact:** the economic benefit and employment supported in the core industry's supply chain as a result of the procurement of domestically produced goods and services;
- **Induced impact:** the wider economic benefits that arise when employees of the soft drinks industry and its supply chain spend their earnings, for example in local retail establishments; and
- **Distribution impact:** the activity supported in South Africa among formal and informal retail outlet. This includes modern retailers and local & traditional stores, including spaza stores.

From these channels, the industry's total South African economic footprint is presented, using three key metrics:

- **GDP**, or more specifically, the soft drinks industry's gross value added (GVA) contribution to GDP;
- **Employment**, measured as the number of people employed; and
- **Tax**, representing the income tax, corporation tax and VAT payments made to the South African government.²¹

Calculation of these quantifiable impacts is on a gross basis. They therefore make no allowance for what the people and the other resources deployed by the soft drinks industry would have contributed to the economy if the SSB tax was not implemented, or account for redeployment of spending by consumers outside of the soft drinks industry.

The modelling upon which this report is based computes the economic footprint of the soft drinks industry in 2015, the latest full year for which economic data were available at the time of modelling. Further detail about the economic impact methodology is included in the technical appendix.

3.1 Impact on the Core Soft Drinks Industry

3.1.1 Current economic contribution of the core soft drinks industry

Based on company accounts data from BevSA members, we estimate that the core soft drinks industry directly employed almost 14,500 people and contributed R14.8 billion to South Africa GDP in 2015. In addition, our modelling suggests that the core industry paid R1.8 billion in corporation tax and almost R1.1 billion in income tax payments.

The total economic impact of the core industry extends far beyond this direct impact. The industry supports a further R28.6 billion of GDP through its R40 billion of domestic supply chain purchases, and R16.3 billion

of GDP as workers in the industry and its supply chain spend their wages (the induced impact).

The indirect and induced impacts also support jobs across the economy. Using industry specific productivity estimates derived from Statistics South Africa data and published by Oxford Economics²², the core industry is estimated to support around 107,500 jobs indirectly and a further 66,500 via the induced impact channel.

On this basis, the total economic footprint of the core soft drinks industry in 2015 is estimated to have been R59.7 billion in GDP (equivalent to 1.6 percent of South African GDP), 188,500 in jobs (1.2 percent of total employment) and almost R10 billion in income tax and corporation tax payments to government. Consumers pay a further R7.56 billion in VAT when purchasing soft drinks at retail outlets.

Fig. 7. Economic footprint of the core soft drinks industry in 2015

	Jobs	GDP (billions)	Income tax* (billions)	Corporation tax (billions)	VAT** (billions)
Direct	14,466	14.78	1.06	1.82	
Indirect	107,539	28.59	2.63	1.81	
Induced	66,490	16.30	1.75	0.88	
Total	188,494	59.67	5.44	4.50	7.56

Source: Oxford Economics

* Includes PAYE and UIF only, ** = VAT receipts on NARTDs plus cordials to end consumers

The indirect and induced multiplier effects of the South African soft drinks industry support GVA and jobs across a range of sectors, as shown in Figure 9.

Figure 8 shows that 30 percent of the indirect impact of the core soft drinks industry accrues to the manufacturing sector (excluding soft drinks manufacturers). By contrast, a broader range of sectors benefit from the ripple effects of consumer spending by those employed in the core soft drinks industry and in its supply chain.

The results presented in Figure 8 have been adjusted to remove double-counting. For example, in the case of indirect impacts, some of the economic activity supported by the supply-chain spending of retailers will be with soft drinks manufacturers, and so will already be captured within the direct economic impact figure for manufacturers. Similarly, in the case of induced

impacts, some of workers' spending will be on soft drinks purchased at retail outlets. This spending is removed as it is captured in the direct impact of soft drinks distributors.

3.1.2 Impact of the SSB tax on the economic contribution of the core soft drinks industry

To assess the potential impact of the SSB tax on the industry's contribution to GDP we re-scale the direct GDP contribution of the core soft drinks industry in proportion to the estimated change in the value of sales estimated in Section 2.3. The industry's multiplier impacts are then re-estimated on the basis of the new direct contribution. The impact on both GDP and employment are used to derive the impacts on corporation tax receipts and income tax payments. The results from this analysis are shown on the next page.

Fig. 8. Sector level footprint of the core soft drinks industry in 2015

	GDP (Rand, millions)				Employment			
	Direct	Indirect	Induced	Total	Direct	Indirect	Induced	Total
Agriculture, forestry and fishing	0	1,174	563	1,737	0	12,129	5,819	17,948
Mining and quarrying	0	1,664	462	2,126	0	2,645	734	3,379
Soft drinks	14,776	0	0	14,776	14,466	0	0	14,466
Manufacturing (excl. soft drinks)	0	8,685	2,205	10,890	0	32,246	8,189	40,435
Utilities	0	1,592	850	2,442	0	1,600	854	2,454
Construction	0	60	28	88	0	581	267	848
Wholesale, retail, hotels & catering	0	3,079	2,169	5,249	0	18,058	12,723	30,782
Transport and communications	0	4,490	1,667	6,157	0	11,037	4,097	15,134
Financial and business services	0	5,709	4,605	10,314	0	16,978	13,697	30,674
Public admin, health and education	0	434	1,557	1,991	0	1,877	6,735	8,612
Other services	0	1,705	2,196	3,901	0	10,387	13,376	23,762
Total	14,776	28,592	16,302	59,671	14,466	107,539	66,490	188,494

Source: Oxford Economics

Fig. 9. Impact of the SSB tax on the economic footprint of the core soft drinks industry in 2015

	Jobs	GDP (billions)	Income tax* (billions)	Corporation tax (billions)	VAT** (billions)
Direct	-3,394	-3.47	-0.25	-0.43	
Indirect	-25,232	-6.71	-0.62	-0.42	
Induced	-15,601	-3.82	-0.41	-0.21	
Total	-44,227	-14.00	-1.28	-1.06	-0.85

Source: Oxford Economics

* Includes PAYE and UIF only, ** = VAT receipts on NARTDs plus cordials to end consumers

The analysis suggests that once the multiplier impacts are considered, the contribution of the core soft drinks industry to South Africa GDP could decline by R14 billion. Figure 10 shows how the decline in GDP is distributed across different sectors of the economy through the indirect and induced impact channels.

To estimate the impact on employment after the introduction of the tax, we use the post-SSB tax GDP impacts in conjunction with productivity estimates

for each sector of the economy. This suggests that the direct employment contribution of the core soft drinks industry could fall by almost 3,400, or by 44,200 once the multiplier impacts are considered.

The lower GDP and job estimates translate into lower corporation tax payments of almost R1.1 billion and lower income tax receipts for government of R1.28 billion. In addition, the lower value of sales of soft drinks reduces VAT receipts from soft drinks by R0.85 billion.

Fig. 10. Impact of the SSB tax on the sector level footprint of the core soft drinks industry

	GDP (Rand, millions)				Employment			
	Direct	Indirect	Induced	Total	Direct	Indirect	Induced	Total
Agriculture, forestry and fishing	0	-275	-132	-407	0	-2,846	-1,365	-4,211
Mining and quarrying	0	-391	-108	-499	0	-621	-172	-793
Soft drinks	-3,467	0	0	-3,467	-3,394	0	0	-3,394
Manufacturing (excl. soft drinks)	0	-2,038	-517	-2,555	0	-7,566	-1,921	-9,487
Utilities	0	-374	-199	-573	0	-375	-200	-576
Construction	0	-14	-6	-21	0	-136	-63	-199
Wholesale, retail, hotels and catering	0	-722	-509	-1,231	0	-4,237	-2,985	-7,222
Transport and communications	0	-1,053	-391	-1,445	0	-2,590	-961	-3,551
Financial and business services	0	-1,339	-1,081	-2,420	0	-3,984	-3,214	-7,197
Public admin, health and education	0	-102	-365	-467	0	-440	-1,580	-2,021
Other services	0	-400	-515	-915	0	-2,437	-3,138	-5,575
Total	-3,467	-6,709	-3,825	-14,001	-3,394	-25,232	-15,601	-44,227

Source: Oxford Economics

3.2 Impact on the Soft Drinks Distribution Sector

The previous section presented estimates of the direct, indirect and induced impacts of the core soft drinks industry (i.e. soft drinks manufacturers). These calculations excluded the impact of the economic activity supported in the retail sectors from the distribution of soft drinks to consumers throughout South Africa.

This section considers the jobs and GDP supported by the retail distribution of soft drinks, which we define to include large modern retail outlets (i.e. supermarkets and discount stores) and local and traditional stores.²³ It then estimates the impact of the SSB tax on direct GDP and employment amongst these two retail channels. The results of separate analysis of the tax impact on employment among informal spaza stores are then presented.

3.2.1 Formal retail outlets

We identify economic activity amongst formal retail enterprises engaged in the sale of soft drinks through published retail trade statistics for sales values, GDP and employment.²⁴ This government dataset also includes data by firm size, which facilitates the estimation of the likely split of activity between large modern retail stores and smaller, local and traditional stores.

Our analysis of these official data suggests that employment in modern retail in 2015 is around 262,600, with a further 95,000 employed in local and traditional stores. However, these estimates are based on the retail sales of all goods sold through these outlets, so we use information from Nielsen to determine the value of sales revenue that relates solely to the sales of soft drinks. This shows that around 4 percent of total revenue in modern retail is from the sale of soft drinks, while in local and traditional the share is around 12 percent.

Applying the soft drinks shares in each type of outlet suggests that the distribution of soft drinks through formal retail outlets supports around 11,200 jobs in local and traditional stores, and a further 10,700 jobs in modern retail outlets. Productivity estimates for each type of store are then used to translate that employment into a GDP contribution, which totals R2.4 billion.

The impact of the SSB tax on employment and GDP in each formal retail distribution channel is estimated using store specific estimates of the tax impact on sales revenue as discussed in section 2.3. This approach assumes that employment and GDP supported by soft drinks sales falls in proportion to the estimated reduction in revenue for each type of store. On this basis employment in formal local and traditional stores could fall by 2,500, while employment in modern retail could fall by 2,900. These results also imply a decline in GDP from the lower soft drinks sales of R0.59 billion.

Fig. 11. Impact of the SSB tax on formal retail outlets

	Local & Traditional	Supermarket & discount stores
Total employment	94,947	262,648
% of revenue from soft drinks	12%	4%
Jobs supported by soft drink sales	11,222	10,747
GDP supported by soft drink sales (R billion)	1.17	1.23
Impact of SSB tax		
Impact on jobs	-2,463	-2,923
Impact on GDP (R billion)	-0.26	-0.33

Source: Oxford Economics, Nielsen, Statistics South Africa

3.2.2 Informal spaza stores

The basis of our estimates of the impact of the SSB tax on employment in informal spaza stores draws on previous research by PwC which estimated that around 150,000 small business enterprises (SBEs) distributed Coca-Cola products in 2010, with each store employing two people on average.²⁵ Since then, consultation with industry suggests that the sector has grown further and that by 2015 there were around 180,000 such stores, employing some 360,000 people.

To estimate the proportion of the 360,000 spaza jobs supported by soft drinks sales we draw on industry surveys provided to us by the soft drinks industry. These suggest that approximately 17 percent of the turnover of informal local and traditional stores (i.e. spaza stores) is attributable to soft drink sales. The data also suggest these sales are responsible for approximately 30 percent of the retail margin in these same outlets. If employment supported by soft drinks sales is proportionate to soft

drinks revenue, this would suggest soft drink sales support approximately 61,200 spaza jobs.²⁶ If jobs were instead estimated on a margin basis, then the job estimate increases to approximately 107,300 jobs.

The impact of the SSB tax on employment in spaza stores is based on the revenue impact of the tax estimated for local and traditional stores. This suggests that revenue from soft drinks sales could fall by around 22 percent in spaza stores due to the SSB tax. On that basis, soft drinks sales could support between 13,400 and 23,500 fewer jobs in spaza stores following the tax, depending on whether jobs are estimated based on soft drinks' share of revenue or margins.

Due to uncertainties about the coverage of the underlying datasets used to estimate spaza and local & traditional jobs, we cannot be certain that there is no overlap between the two estimates. Therefore, to avoid possible double counting, spaza and local & traditional jobs should not be added together.

Fig. 12. Impact of the SSB tax on informal retail

	Spaza stores
Total employment	360,000
% of revenue from soft drinks	17%
% of margins from soft drinks	30%
Jobs supported by soft drink sales	
- revenue based estimate	61,200
- margin based estimate	107,280
Impact of SSB tax on jobs	
- revenue based estimate	-13,434
- margin based estimate	-23,548

Source: Oxford Economics, Nielsen, PWC

3.3 Total Impact of the SSB Tax

Together the soft drinks manufacturing and soft drink distribution industries make a substantial contribution to the South Africa economy. This section brings together the findings from sections 3.1 and 3.2 to present our estimates of the total economic footprint of the soft drinks industry, and the impact the SSB tax could have on that contribution.

In total, our analysis suggests that the soft drinks industry supports between 260,400 and 306,500 jobs in the South African economy, depending on how jobs in the informal economy are estimated. This includes the direct and multiplier impacts of the core soft drinks industry, and the direct impact of soft drinks sales for both formal and informal retail distributors. The footprint of the industry contributes R62 billion to GDP, and generates around R10 billion in income tax and corporation tax payments. In addition, consumers pay R7.56 billion in VAT when purchasing soft drinks at retail outlets.

Fig. 13. Total economic footprint of the South African soft drinks industry

	Jobs	GDP	Income tax	Corporation tax	VAT
Total Core impact	188,494	59.67	5.44	4.50	7.56
Large formal retail	10,747	1.23	-	-	-
Small formal retail	11,222	1.17	-	-	-
Spaza stores	61,200-107,300	-	-	-	-
Total footprint *	260,400 - 306,500	62.1	5.4	4.5	7.6

* Due to uncertainties in the underlying datasets, we cannot be certain that there is no double counting between spaza jobs and our estimate of jobs in local & traditional stores. Therefore, the employment estimate excludes employment in local & traditional stores

The table below summarises our estimates of the impact of the SSB tax on the soft drinks industry's economic footprint. Our analysis suggests that the SSB tax could lower the GDP contribution of the soft drinks industry by R14.6 billion, and could lead to a reduction of between 60,600 and 70,700 jobs compared to the situation prior to the tax. We estimate that this reduction in economic

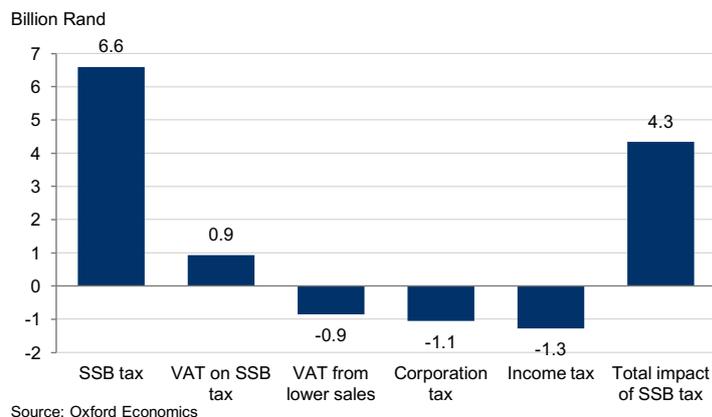
activity could reduce the industry's contribution to tax revenues by R3.1 billion, including VAT due to lower sales volumes. This could mean that the R7.5 billion that the SSB tax is expected to raise (including VAT) only generates R4.4 billion in net terms for the Treasury once the impact on the industry is considered.

Fig. 14. Impact of the SSB tax on the total economic footprint of the South African soft drinks industry

	Jobs	GDP	Income tax	Corporation tax	VAT
Total Core impact	-44,227	-14.00	-1.28	-1.06	-0.85
Large formal retail	-2,923	-0.33	-	-	-
Small formal retail	-2,463	-0.26	-	-	-
Spaza stores	-13,400 to -23,500	-	-	-	-
Total footprint	-60,600 to - 70,700	-14.6	-1.28	-1.06	-0.85

* Due to uncertainties in the underlying datasets, we cannot be certain that there is no double counting between spaza jobs and our estimate of jobs in local & traditional stores. Therefore, the employment estimate excludes employment in local & traditional stores

Fig. 15. Total impact of the SSB tax on government tax revenues

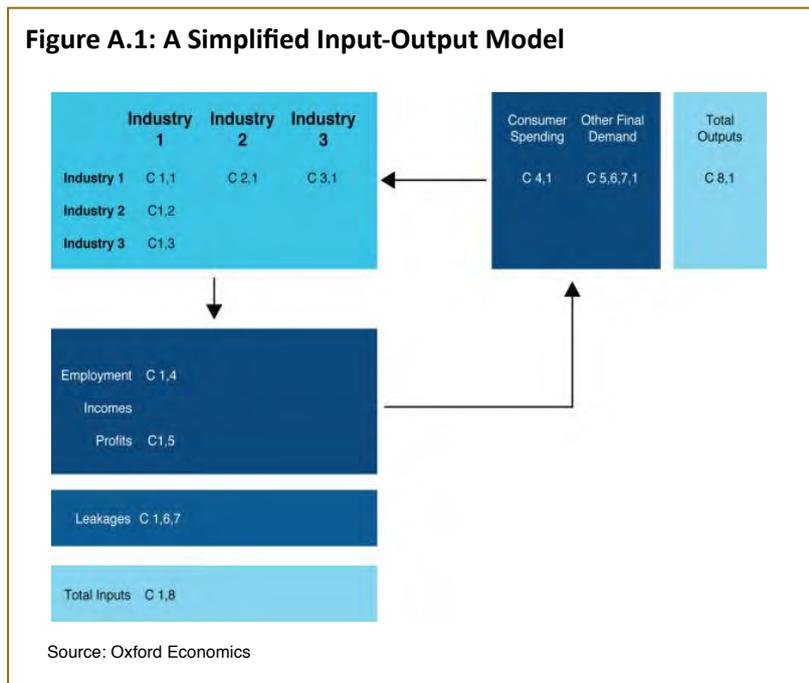


APPENDIX 1: ECONOMIC IMPACT METHODOLOGY

Input-output tables are designed to give a snapshot of an economy at a particular time, showing the major spending flows. These include “final demand” (consumer spending, government spending and exports to the rest of the world); intermediate spending (what each sector buys from every other sector – the supply chain); how much of that spending stays within the economy; and the distribution of income between employment income and other income (mainly profits). Input-output tables are

therefore particularly useful when estimating indirect and induced economic impacts.

The idea behind the input-output table is that the economy can be divided into a number of producing industries, and that the output of each industry is either used as an input into another industry, or in final consumption. In essence an input-output model is a table that shows who buys what from whom in the economy.



Reading across horizontally illustrates the distribution of each industry’s output, split between intermediate demand from other industries (used as an input to production) and final demand (consumer spending, exports and other government consumption). Therefore, Industry 2 in Figure AA.1 purchases an amount, C2,1 from Industry 1 as an input to its production process. Thus, reading down vertically indicates what each industry purchases from other industries in the national economy by way of inputs which, when combined with imports from abroad (leakages), employment costs, operating surplus and any additional taxes or subsidies to production, give total inputs, which will equal total outputs. In the simple model illustrated in Figure AA.1, C8,1 will equal C1,8.

To calculate the indirect and induced impacts for the soft drinks manufacturers, we built a bespoke input-output model using input-output tables from Statistics South Africa. The raw input-output tables were adjusted to reflect only domestic purchases by industry sectors and households using data on imports by type of good and service available from the input-output tables dataset. This allowed us to estimate the domestic multiplier impacts which occur across the sectors of the South African economy due to supply chain purchases and consumer spending by those in employed in the industry and in its direct supply chain.

APPENDIX 2: SSB TAX MODEL

Methodology

This section describes the approach adopted to estimate the impact of the SSB tax on the economic footprint of the soft drinks industry in South Africa.

Overview

Our approach assesses how the SSB tax might affect the price of soft drinks paid by consumers at the till; how that might in turn influence purchasing behaviours; and subsequently the impact on the sales of soft drinks (taxed and non-taxed) through different distribution channels. Changes in sales revenue due to the tax are used to separately model the overall effect on GDP, jobs and tax contributions of the soft drinks industry; companies supplying goods and services to soft drink manufacturers; and businesses supported as workers in those groups spend their wages.

The South African Tax Model

The national level model is based on Nielsen data on the volume and value of sales (at the final point of sale) by brand and pack size for twenty categories of soft drinks across three distribution outlets: large modern retailers (e.g. supermarkets and discount stores); small modern retailers (e.g. petroleum food marts); and local and traditional stores. The data are used to derive the average price for each category of drink sold at each type of outlet.

The sugar content in each drink category is identified from information supplied by industry representatives. The SSB tax is applied to each drink at the applicable effective tax rate (including VAT) of R0.0229 per gram of sugar. We assume a 100 percent tax pass-through in local and traditional stores and smaller modern retailers. This approach is broadly consistent with evidence from France, Denmark and the US, where the cost of a tax on soft drinks has generally been passed on in full to consumers.²⁷ This approach means unit margins remain fixed for these sellers and hence gross margins decline. For larger modern trade retailers however, gross margins are maintained and therefore there is over-shifting of the tax to consumers.²⁸ This approach was based on advice from the industry regarding the likely responses of different types of retailer.

The 20 drinks categories are aggregated into four broader categories to calculate both the pre-tax volumes and weighted price effect of the SSB tax. The four broad categories—SSBs, diet drinks, 100 percent juice and water—correspond with the elasticity categories set out in a South African study by Manyema et al.²⁹ and cited in the Treasury SSB policy paper.

The response by consumers to the tax-induced price change is calculated based on the Manyema et al. elasticities. The own-price elasticities of demand capture the responsiveness of demand for each drink to changes in its own price, while the cross-price elasticities allow us to estimate how demand for a drink is likely to change in response to changes in the price of other soft drinks. As such, it provides the basis for estimating the extent to which consumers may switch between different categories of soft drinks as relative prices change. The fact that the elasticities are only available for the broader categories means that we cannot estimate switching within these broader categories. For example, we cannot estimate switching from carbonates to sport, or from energy to still and juice. Nonetheless, we are able to account for switching from SSBs into 100 percent fruit juice. Note that the elasticity estimates presented in Manyema et al. suggest that demand for diet drinks could decrease following an increase in the price of an SSB. The reasons for this are unclear, and not discussed by Manyema et al, so there would be value in further research to explore this issue.

The impact of volume changes on sales revenues are calculated in two stages. First, total spend on soft drinks is calculated by applying the post-SSB tax price to the new volumes for each type of drink sold through each retail outlet. Second, we remove the value of SSB tax (and the VAT on the tax), to derive a sales revenue figure for different retail outlets.

Finally, the new sales revenue estimates for different retail outlets are used to re-scale the estimated GDP contribution of the soft drinks industry within the economic impact analysis. We also adjust the employment estimates using productivity data, and estimate the impact on corporation and income tax revenues based on the relevant effective tax rates derived from published government sources.³⁰

Endnotes

- ¹Taxation of Sugar Sweetened Beverages. Policy Paper. 8 July 2016. National Treasury. <<http://www.treasury.gov.za/public%20comments/Sugar%20sweetened%20beverages/POLICY%20PAPER%20AND%20PROPOSALS%20ON%20THE%20TAXATION%20OF%20SUGAR%20SWEETENED%20BEVERAGES-8%20JULY%202016.pdf>>
- ²SSBs that do not apply nutritional labelling will be assumed to contain a relatively higher sugar content of 50 grams per 330 ml. This is proposed as an incentive for producers to move towards nutritional labelling until mandatory labelling legislative framework is put in place.
- ³NARTDs are non-alcoholic beverages in ready to drink form
- ⁴<http://www.treasury.gov.za/publications/tax%20statistics/>
- ⁵<http://www.statssa.gov.za/publications/Report-62-01-02/Report-62-01-022012.pdf>
- ⁶<http://www.statssa.gov.za/publications/P0277/P0277March2016.pdf>
- ⁷John Cawley and David Frisvold, “The incidence of taxes on sugar-sweetened beverages: the case of Berkeley, California”, *NBER Working Paper Series*, 21465 (2015).
- ⁸Jeffrey Grogger, “Soda taxes and the prices of sodas and other drinks: evidence from Mexico”, *NBER Working Paper*, 21197 (2015).
- ⁹Sales of soft drinks through the on-trade distribution channel (e.g. pubs and restaurants) are excluded from our analysis due to lack of data to model the effect in a systematic way. Industry estimates suggest that on-trade soft drinks sales volumes account for around 5 to 10 percent of the total soft drinks market.
- ¹⁰Nicolette Berardi, Patrick Sevestre, Marine Tepaut, Alexandre Vigneron, “The impact of a ‘soda tax’ on prices: evidence from micro data”, *Banque de France working paper*, 415 (2012).
- ¹¹Margins for modern retail calculated by BevSA based on an analysis of the price of soft drinks sold by manufacturers to retailers and the final retail selling price paid by consumers.
- ¹²Jennifer Falbe, Nadia Rojas, Anna H. Grummon, Kristine A. Madsen, “Higher retail prices of sugar-sweetened beverages 3 months after implementation of an excise tax in Berkeley, California”, *American Journal of Public Health*, 105 (2015).
- ¹³For ease of presentation the results for modern retail are presented in aggregate even though the underlying analysis is based on separate models for large and small modern retailers.
- ¹⁴Manyema M, Veerman LJ, Chola L, Tugendhaft A, Sartorius B, et al. “The Potential Impact of a 20% Tax on Sugar-Sweetened Beverages on Obesity in South African Adults: A Mathematical Model”, *PLoS ONE* 9(8): e105287. doi:10.1371/journal.pone.0105287 (2014).
- ¹⁵Consumption of milk is not modelled within this study as the focus is on the economic impact of the SSB tax on the soft drinks market.
- ¹⁶Adam DM Briggs, Oliver T Mytton, Ariane Kehlbacher, Richard Tiffin, Mike Raynor, Peter Scarborough, “Overall and income specific effect on prevalence of overweight and obesity of 20% sugar sweetened drink tax in the UK: econometric and comparative risk assessment modelling study”, *British Medical Journal*, 347 (2013).
- ¹⁷In practical terms, we aggregate sales volumes and values for each detailed drink category to the broader Manyema et al. categories (i.e. SSBs, diet and 100 percent juice) and estimate a weighted average of the price increase which results from the SSB tax. This weighted price increase is then used to estimate new consumption volumes for SSBs, diet drinks and 100 percent juice, including the result of consumers switching to alternative products. The new volumes are then shared out across the more detailed drinks categories on the basis of the pre-tax volumes. The fact that elasticities are only available for the broader categories means that we cannot estimate substitution within these broader categories. For example, we cannot investigate switching from a cola to a sports drink, or from energy to still and juice, or switching to a lower sugar content drink within each individual drinks category. Nonetheless, we are able to account for switching from regular drinks to the equivalent diet version, and into non-taxed 100 percent fruit juice, on the basis of the cross-price elasticities.
- ¹⁸Finkelstein EA, Zhen C, Bilger M, Nonnemaker J, Farooqui AM, Todd JE. Implications of a sugar-sweetened beverage tax when substitutions to non-beverage items are considered. *J Health Econ* (2013)
- ¹⁹Adam DM Briggs, Oliver T Mytton, Ariane Kehlbacher, Richard Tiffin, Mike Raynor, Peter Scarborough, “Overall and income specific effect on prevalence of overweight and obesity of 20% sugar sweetened drink tax in the UK: econometric and comparative risk assessment modelling study”, *British Medical Journal*, 347 (2013).
- ²⁰<<http://mg.co.za/article/2016-02-04-tax-on-soft-drinks-could-benefit-obese-sa>>
- ²¹Income tax payments include PAYE and UIF payments only
- ²²Oxford Economics Global Economics Databank, June 2016
- ²³Lack of data meant that we were unable to model the impact of the tax on employment and GDP within small modern retail outlets such as petroleum food marts
- ²⁴*Retail Trade 2012* - Statistical Release 6201, Statistics South Africa, November 2012. We include SIC 6221 - Non-specialised stores with food, beverages and tobacco predominating (i.e. general stores); SIC 6219 - Other non-specialised stores (i.e. department stores); and, 6220 - Food, beverages and tobacco in specialised stores. Data have been updated to 2015 using information from Oxford Economics on retail sales and sectoral productivity.

²⁵The Coca-Cola system's contribution to national development goals in South Africa, PWC, 2012.

²⁶This estimate is broadly consistent with the findings of a 2005 study that used 2003 data to suggest that around 60,000 informal jobs were supported by the activities of Coca-Cola in South Africa. See "The economic impact of the Coca-Cola System in South Africa". The Moore School of Business, University of South Carolina, 2005.

²⁷Nicolette Berardi, Patrick Sevestre, Marine Tepaut, Alexandre Vigneron, "The impact of a 'soda tax' on prices: evidence from micro data", *Banque de France working paper*, 415 (2012).

²⁸Margins for modern retail calculated by BevSA based on an analysis of the price of soft drinks sold by manufacturers to retailers and the final retail selling price paid by consumers.

²⁹Manyema, Hofman, et al. The Potential Impact of a 20% Tax on Sugar-Sweetened Beverages on Obesity in South African Adults: A Mathematical Model, 2014.

³⁰<www.sars.gov.za/Tax-Rates/Income-Tax/Pages/Rates%20of%20Tax%20for%20Individuals.aspx> and <www.treasury.gov.za/publications/tax%20statistics/>

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