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CHANGES TO THE CALCULATION AND PUBLICATION DATE OF THE APRIL CONSUMER PRICE INDEX (CPI) DUE TO COVID-19 LOCKDOWN RESTRICTIONS

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1. Introduction

The COVID-19 pandemic and the drastic actions taken to prevent its spread have fundamentally impacted the South African economy and Stats SA's ability to measure it.

Government imposed a restrictive five-week lockdown from 27 March to 30 April. Data collection for the March 2020 consumer price index had been completed before the lockdown and it was possible to release these results in April according to the normal schedule.

This document outlines the changes to be made to enable the compilation and release of the April CPI. Methods to collect data and imputation techniques are the primary elements affected by the April lockdown restrictions.

While this note is specifically concerned with the April CPI, the principles discussed here will apply to subsequent monthly CPI releases as long as some form of restrictions to economic activity are in place.

2. Key points

- Prices of available retail items were collected online during April, comprising 171 products and 20% of the weight of the CPI basket.
- Approximately 26,5% of the weight of the CPI basket will be imputed, mainly using the change in the headline CPI.
- The prices for 34 products, accounting for 41,5% of the CPI weights, were not due to be collected in April and will be carried forward according to the standard method.
- Prices for approximately 12% of the weights (mainly services) were collected directly.
- The April 2020 CPI will be published on Wednesday 24 June 2020 (see section 7 below).



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The South Africa I know, the home I understand



3. The problem

There are three main price collection issues facing almost all countries, including South Africa, during COVID-19 lockdown.

- a. Certain products or services not available for sale at all due to government regulations. For example, air travel, restaurants and hotels. This means that there is no economic activity – zero household expenditure – at all and that it is not possible to measure prices.
- b. Limited outlets are open but these might not be in the CPI sample. This restricts households' ability to purchase goods as well as our ability to collect prices.
- c. Data collectors are prevented from going to outlets because of travel restrictions. This is a serious operational problem for statistics offices which curtails our ability to collect price information even though households are able to make purchases.

These all boil down to the fact that there will be many prices not available and that imputations will be extensive.

4. Imputation guidelines

The aim of imputation is to approximate as closely as possible the price movement of the product for which we do not have a price. It should be noted that the South African CPI imputes at the index level and not for individual prices. In a typical month, the weighted imputation rate of the CPI is approximately 0,2%.

Imputation techniques for the CPI are guided by best international practice. The manuals detailing the standard practices are being supplemented during this period by discussion forums. The standard imputation practices are:

- a. Overall mean – where we use the movement in the index one level of aggregation higher than the one for which there are no prices. This is the most common approach taken in South Africa and other national statistics offices.

For example, if no prices are available for rice in region x, we impute that elementary index by using the average price change for the national index for rice. If no rice is available, we could impute all the rice indices with the change in the next level aggregate – the overall index for bread and cereals.

- b. Targeted imputation – where a specific index is identified to provide the information for imputation. For example, use the change in the index for brown bread to compute the change in the index for white bread.
- c. Carry forward – where the previous index level is used again in the current month. Normally this method applies to annually or quarterly collected prices. This method is also recommended when there is specific knowledge that prices have remained the same. In the current circumstance this method could also be used in the case where the government imposes price controls. We are not aware of any such measures during Levels 5 or 4 of the COVID-19 lockdown.

A further option has been proposed in the current situation:

- d. Use the change in the headline (all items) index to impute specific indices where no prices are available. This approximates the result if we were to exclude those indices from the computation of the CPI. Practically the headline index is calculated using only those products where prices are available. The change from the comparable index in the previous month is then applied to all indices without prices and the headline index is recalculated.

5. Price collection for the April CPI

Due to the strict lockdown in April, the range of products available for purchase in South Africa was severely restricted to a limited range. In addition, no Stats SA staff were able to travel to outlets to collect prices of those retail items that were available. Instead, prices of items in the CPI sample were collected from the online presence of retail chains. Prices were collected for all retail items in the CPI basket that were available for sale at this time.

Online prices were collected at the end of March and these will form the base for comparison with the April prices. This ensures the integrity of the matched model method. Accordingly, online prices will also be collected in May for comparison with the April observations. Prices of food, health, household cleaning and personal care items were collected each week, and other items once during the month. An average price for those items collected weekly will be computed and captured in the CPI database as the April price.

Whereas in-store price collection ensures that region- or store-specific pricing decisions find their way into the calculation of the CPI, online prices are nationally uniform. The national prices will therefore be applied to all regional CPI indices. Any deviation in inflation rates between provinces will therefore only be due to differences in weights and not in prices.

Prices of services were collected by staff working from home.

6. Treatment of different indices for April 2020

- a. Indices to be imputed using the headline CPI

Where no consumer expenditure on a CPI basket item was possible, the index will be imputed using the change in the headline (all items) index based on those products for which prices are available or imputed by other methods. The criteria for inclusion in this list is that sales of the product are banned due to government regulation.

Products that will be imputed using the headline index are:

- Alcohol and tobacco
- Clothing and footwear
- Housing maintenance and repair materials
- Household contents (except for batteries, lightbulbs, cleaning materials and domestic worker wages)
- Transport (except for fuel and those items not surveyed in April)
- Cell phone instrument and courier services

- Recreation and culture (except pet food, television licence, DSTV subscription, lotto ticket, and stationery items)
- Restaurants and hotels (except university boarding fees)

The total weight of items to be imputed by the headline index is 25%.

b. Indices to be carried forward.

The March index level will be carried forward to April for the following indices. Almost all of these items are either quarterly or annual collections and not scheduled for measurement in April. Although use of certain of these services may not have been allowed in April, e.g. education, fees would usually still be payable and therefore expenditure would still be registered.

Product indices that will be carried forward are:

- Actual and imputed rentals
- Maintenance and repair services
- Water supply, electricity and municipal assessment rates
- Sectional title levies
- Domestic worker wages
- Private sector health services
- Vehicle registration fees
- Toll fees
- Drivers' licences
- Taxi fares
- Post box rental
- Education
- University boarding fees
- Crèche fees
- Insurance policies (except funeral policies)

The total weight of items where the index will be carried forward is 41,3%.

c. Other imputations

Diesel – to be imputed using the change in the regulated wholesale price of diesel.

Hairpieces, watches, bags, prams and suitcases – to be imputed by the personal care index. These items may have been available for sale but we were not able to collect prices.

The total weight of these items is 1,3%.

d. Directly or online collected prices

Items not mentioned above either have prices collected directly or online.

Prices for just under half of the CPI basket were collected online (accounting for 20% of the CPI in terms of weight). These mainly include the food, non-alcoholic beverages, health, household cleaning and personal care product categories.

Twelve percent of the weight of the basket will comprise prices collected directly. These are generally products for which the price is provided by an official or administrative source.

7. New publication date for the April CPI

The switch to using online collection and the new imputation methods have required changes to the CPI computer systems. Stats SA's office re-opened on 18 May and we are constrained to operate with one third the normal staff complement. Mindful of the need to protect the quality of the CPI, we have scheduled time for careful checking of the data and redeveloped systems. The CPI for April will therefore be published on Wednesday 24 June.

We do not expect significant delays with subsequent CPI releases and will announce future publication dates in due course.

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