

Clearing out the sales:

Removing a downward bias in a clothing and footwear price index

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Abstract

Criticism of the downward trend in the clothing and footwear index in the Consumer Price Index (CPI) put Statistics South Africa under severe pressure to review its method of measurement. The aim of this paper is to give an overview of the experience of clothing and footwear in the Consumer Price Index (CPI). The paper will focus on two areas of concern: transition of the old method of measuring the clothing and footwear index to the new, with respect to timing and the attempt to find a practical approach in the absence of quality adjustments.

Introduction

The method of measurement created a downward bias in the index of clothing and footwear. The bias was due to the fact that non-discounted prices were spliced onto discounted prices. No adjustments for quality changes are made in the South African CPI, and the effect, therefore, was to suppress price increases.

A decision was made to exclude clearance sale prices from the index calculation. This decision was also based on the international recommendation not to include in the CPI prices of goods with limited availability.

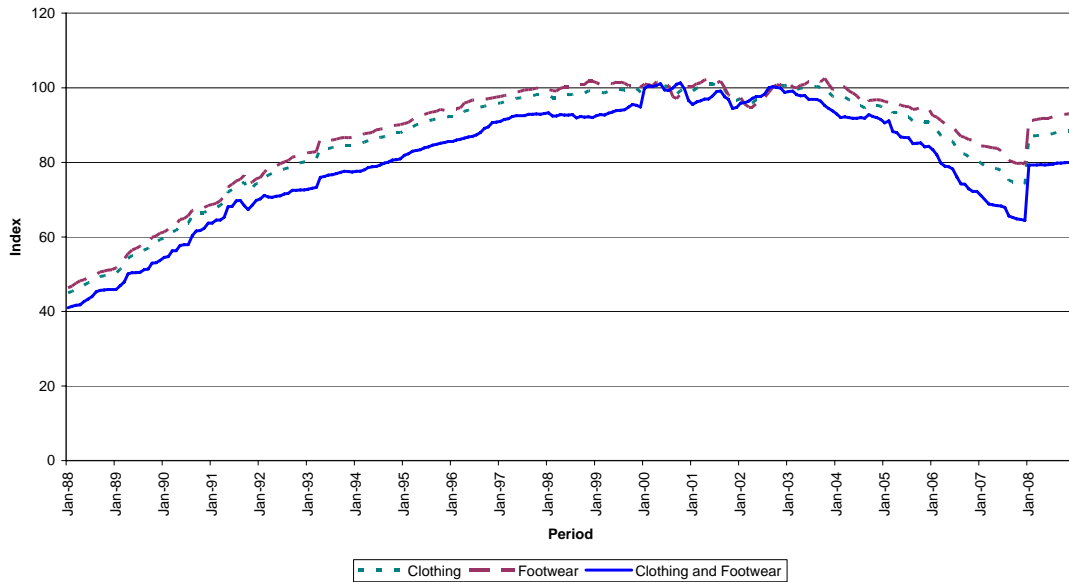
In making the change to remove 'clearance sales' figures from the CPI a downward bias in the index was removed. Without making the change, the bias would have continued indefinitely. The result is a more stable index. However, the approach used to change from the old method to the new one created a temporary upward bias in the CPI. An estimate of this bias was published in each monthly CPI publication.

Overview of the clothing and footwear trends in South Africa

Clothing and footwear has a weight of 4,1%¹ in the South African CPI. Figure one shows a 20-year trend in clothing and footwear prices. The index has an upward trend from the starting point in 1988, is steady from about January 1997 and enters a downward trend in September 2002. The aggregate index declined from 100,3 in September 2002 to 64,4 in December 2007.

¹ Reference period 2008=100

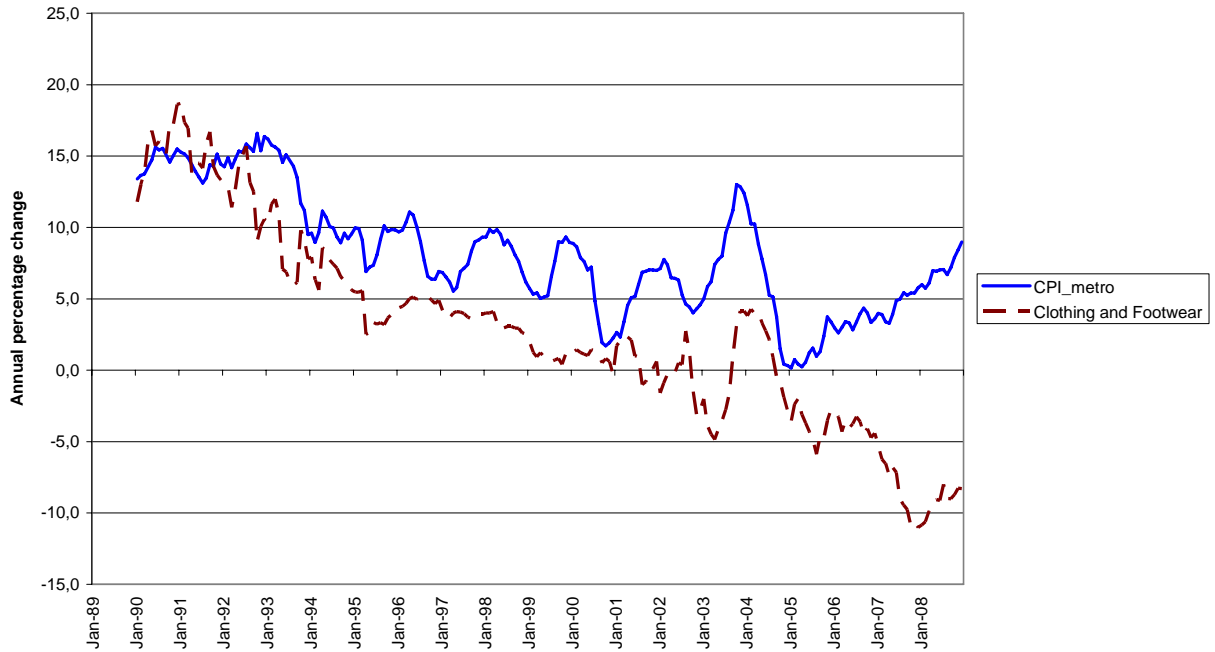
Clothing and Footwear Index 1988-2008
2000 = 100



For most of this period, it was believed that the downward trend was caused by an influx of cheap clothing imports from the East, particularly China and India. This was also a period in which overall inflation was relatively low. Major clothing retailers confirmed both these views.

However, by mid 2006, overall inflation started gather speed but clothing and footwear continued to show a downward trend. At this stage, clothing retailers were beginning to report that they were experiencing inflation in their inputs.

Headline CPI and Clothing and Footwear CPI - annual percentage changes



Stats SA was asked critical questions as to why our figures showed a very different picture when compared to the retailers, and why clothing and footwear was not following the general inflationary trends, as it had done in earlier periods. The answer to this question lay in the general pricing behaviour of clothing and footwear, as well as the impact of the change in method of collecting all product prices for the CPI.

Introduction of the direct price collection method

During 2005 and 2006, Stats SA made a fundamental change to its collection methods for items commonly purchased from retail stores (including clothing and footwear).

Prior to this point, questionnaires were dispatched to the head offices of the major retail chains and the management of smaller stores (the postal method); asking them to provide the prices of set of items of clothing. The items were specified fairly tightly. For example, *Woman's summer blouse, short sleeves, made from 100% synthetic fabric*. However, the brand or style was never specified and no description was provided. Rather than providing the price for a specific item, retailers tended to provide an average price for a number of items fitting the description. By so doing, the retailers would have included any upward price changes that occurred when styles or models changed.

During a review of the CPI in 2004 (reference) it was pointed out that the method adopted ran the risk of creating major inaccuracies other than the bias. For example:

- 'Postal' collection was a source high respondent burden and this may have led to low response rates
- Inability to observe regional price variation since prices are collected centrally

In 2005, a process was started to deploy price collectors (field workers) in all CPI collection areas – the direct collection method. These price collection teams have provided the price information for most of the goods in the CPI since 2006. As far as clothing and footwear was concerned, this method required physical identification of exactly the same item of clothing or footwear (variation of colour at the same price was allowed, but no variation of cut or style) to be priced on a monthly basis.

Pricing patterns in clothing and footwear

Clothing items can be divided into two basic groups. Fashion items, which are usually outerwear consisting of pants, shirts, skirts, dresses etc, and non-fashion items which are usually underwear, socks and the like. Fashion items make up the biggest proportion of the South African clothing basket. The typical price behaviour of fashion clothing items is that they come onto the market at a particular price level, which remains constant for a period of approximately four to six months during which the item is generally available. At the end of the season, the item is only or mostly available at a discounted price.

There are two stages to the discount period. The first is a general end of season sale. Usually all seasonal fashion items would be put on sale. Any stock remaining may then be marked as a clearance sale. This is the second stage and usually consists of very few garments and has the aim of clearing all remaining stock.

The South African CPI does not employ any method to account for changes in quality². Only clearance sales were excluded from the index. Once a specific item disappeared from the normal racks (clearance sale was indicated), an alternative item was selected to replace it. The new item would be spliced into the index so that in effect it assumed the same price level of the item it had replaced.

Even though the intra season index numbers reflected what was happening, the season-to-season comparisons were obviously flawed as the new prices were always set at the level of the discounted prices of the previous season. The overall result of this situation was a deflationary trend in the clothing and footwear index.

In the data, at a time when retailers were reporting overall inflation, Stats SA's results raised concern from economic analysts. Newspaper reports started to question the validity and credibility of the CPI figures, especially regarding clothing and footwear components of the CPI.

² This is not the route that Stats SA wants to follow, but due to certain constraints, there are not enough elements to adjust for quality reliably.

Consideration of possible solutions

The CPI manual published by the ILO states that:

“Sale or special offer prices should be recorded if these are either temporary reductions on goods that are likely to be available again at normal prices...Special purchases of end-of-range, damaged, shop-soiled or defective goods should not normally be priced, as they are likely not to be the same quality as, or comparable with, goods previously priced and are unlikely to be available in future. If the special offer is limited to the first customers, the item should not be priced, as the offer is not available to everyone.....”
(ILO Manual Chapter 6, Pg92, 2007)

In reviewing the practices of other countries, it emerged that many national CPIs include sale prices only if the items are available in sufficient quantities for lengthy periods. See Table 1.

Table 1 Conditions set on inclusion of discounted prices.

Country	Conditions
Australia	<ol style="list-style-type: none"> 1. The style name is available to be repurchased from the supplier 2. A full size and colour range is available 3. The 'special' requires no reciprocal commitment from the customer (e.g. make a bulk purchase) 4. The promotional price applies for the full day on which the field officer visits. (Eligibility rule)
Canada	<ol style="list-style-type: none"> 1. The item must be regular merchandise (i.e. not merchandise procured for promotional purposes. (Eligibility rule) 2. A reasonable quantity of the item must be available for sale
FIJI	<ol style="list-style-type: none"> 1. The items concerned should be of normal quality (not damaged or shop-soiled) (Eligibility rule) 2. The items should be offered for sale in reasonable quantities
Malta	<ol style="list-style-type: none"> 1. The items concerned should be of normal quality (that is, not damaged or shop-soiled) (Eligibility rule) 2. Items will continue to be available after the sales period 3. Items should be available to all customers (Eligibility rule)
Singapore	<ol style="list-style-type: none"> 1. If genuine markdown on price 2. If sufficient quantities are available
Thailand	<ol style="list-style-type: none"> 1. The discount should be offered for at least two weeks within the month.

	2. The prices should not be temporary bargain prices or short-term promotions
Office for National Statistics (United Kingdom)	1. The sales price recorded should not be due to end of line sales prices as these products on sale will be not be generally available and might be of lower quality
Bureau of Labor Statistics (United States of America)	1. The discount is included only if 50% or more of sales for the affected item are discounted. 2. If the discount is in effect for more than one collection period and the discount applies to 5% or more of the dollar sales of the item in the outlet, a probability selection is made to determine if the discount should be collected
Spain	1. The discount should be on items which are expected to be available again at their usual prices 2. All customers should be able to acquire the items (Eligibility rule) 3. Discounts should be effective at the time of purchase (Eligibility rule)

Following this analysis, we concluded that clothing and footwear items are typically not available again at normal (pre-sale) prices after the sale period. Generally, once the garment has been sold, the outlet does not restock the exact same garment again, hence the item is unlikely to be available again in future. Garments on sale are often associated with end of ranges, being available in limited quantities. In addition, garments on sale are often limited in quantity, and therefore not available to the majority of consumers. Since the criteria set by the ILO manual are generally not met, it is recommended that clothing and footwear items on sale be excluded from the CPI. The remaining items in the CPI basket do, however, meet the criteria and therefore their sale prices should be included.

Implementing the exclusion of sale prices

Once Stats SA had decided to exclude sale prices from the calculation of the clothing and footwear index, the following procedure was put in place for price collection. When a clothing or footwear item goes on sale, the price is recorded, but it is flagged that it is on sale. This flag sparks two events. Firstly, a request to identify a new item is dispatched to the data collector the following month. Secondly, the sale price is excluded from all index compilation.

Method of introduction

A decision was made to introduce the changes in the January 2008 release of the CPI. Because of the constraint of not revising past CPI numbers, the 2008 annual rates of changes were based on the 2007 index (which included the sale prices and was deflationary, and the 2008 numbers, which did not have the sale prices and were slightly inflationary). This created a jump of 17,5% in the index between December 2007 and January 2008.

This jump led to an outcry amongst certain analysts who now complained that the switchover was creating an upward bias in the overall CPI numbers. Stats SA issued an explanatory note and committed to publishing an estimate of the upward bias on a monthly basis. In order to quantify the bias, it was first necessary to create a non-discounted index for 2007. By comparing the annual increase in the clothing and footwear index based on the non-discounted on discounted with the index based on non-discounted on non-discounted, and calculating the respective contributions to the total increase in prices, it was possible to estimate the impact on the overall CPI of using the one method over the other.

Table 2 shows that the increases in the annual rate increased from 0,13% in January 2008 to 0,28% in December 2008 where overall annual inflation was 9,3% and 9,5% respectively.

Table 2: Calculation of upward bias in CPI from change in clothing and footwear

Period	Contribution of clothing to all items % y/y	Contribution of clothing to all items % y/y	Upward bias to all items % y/y from clothing
	Non-discounted on discounted	Non-discounted on non-discounted	
Jan-08	0,174	0,016	0,158
Feb-08	0,186	0,014	0,172
Mar-08	0,201	0,012	0,189
Apr-08	0,205	0,014	0,191
May-08	0,209	0,014	0,195
Jun-08	0,218	0,011	0,207
Jul-08	0,239	0,018	0,221
Aug-08	0,289	0,025	0,264
Sep-08	0,296	0,024	0,271
Oct-08	0,309	0,029	0,280
Nov-08	0,307	0,028	0,279
Dec-08	0,318	0,035	0,283

Conclusion

The method of measurement created a downward bias in the index of clothing and footwear caused by splicing non-discounted prices onto discounted prices. By removing 'clearance sales' figures from the CPI the downward trend was removed. Without making the change, the bias would have continued indefinitely. However, this is not an ideal solution; but the only option that Stats SA is able to use, since Stats SA is short of the required elements to adjust quality unfliningly.