



stats sa

Department:
Statistics South Africa
REPUBLIC OF SOUTH AFRICA

METHODOLOGICAL CHANGES TO THE EXPORT AND IMPORT UNIT VALUE INDICES (XMUVI)

9 March 2023

1. Introduction

Statistics South Africa (Stats SA) has published the Export and import unit value indices (P0141.7) since January 2014. The XMUVI measures the change in the prices of goods transacted between residents of South Africa and those in the rest of the world. Over time, significant improvements in the compilation of XMUVIs resulted in better coverage and comparability of products, and enhanced the accuracy of the data.

Stats SA will introduce a new XMUVI series with effect from the January 2023 release, to be published on 23 March 2023. Due to changes in the methodology of calculating the XMUVIs, there will be a break in the historical time series and a new series will begin in January 2023. This document provides an overview of the new methodology.

2. Background of the South African export and import indices

The main principle of the XMUVI is to track, as closely as possible, actual price changes based on customs data provided by the South African Revenue Service (SARS). Since 2014, the indices have been compiled on a gross product basis, which allows for comprehensive coverage of goods. The XMUVIs were initially calculated by matching products using only the tariff code as a descriptor of each product to identify comparable products.

From 2016, the XMUVI underwent several methodological changes to improve the accuracy of the indices. A more detailed customs dataset allowed methodological improvements to the XMUVI calculations. From the January 2016 statistical release, the XMUVIs were calculated by matching products using country and trader in addition to the tariff code, which improved the comparability of products.

3. Methodology changes for XMUVI implemented from January 2023

From the January 2023 statistical release, the XMUVI will continue to be calculated using customs data provided by SARS, but introduces machine learning clustering algorithms to further improve the comparability of products. In addition, the introduction of new variables including the description of the product will be used to define unique products on a monthly basis.



The clustering algorithm will group similar products together based on their unit values per unique definition of the products. A geometric mean of the unit values will be calculated for the individual clusters every month. Once the geometric means of the clusters are calculated, they will be matched for the current and previous months. The matching process aims to return the least minimum price change by finding the nearest clusters for the two periods.

This methodological change will accompany the usual annual reweighting of the indices.

4. Comparison between the previous and new indices

Figures 1 to 3 show the comparison of the XMUVIs using the previous and new methodologies. A number of product groups (including machinery) showed deflation over time when the previous methodology was used. This resulted in the import UVI showing a long-term downward trend. The new methodology shows a more realistic trend over the six-year period.

Figure 1 – Exports

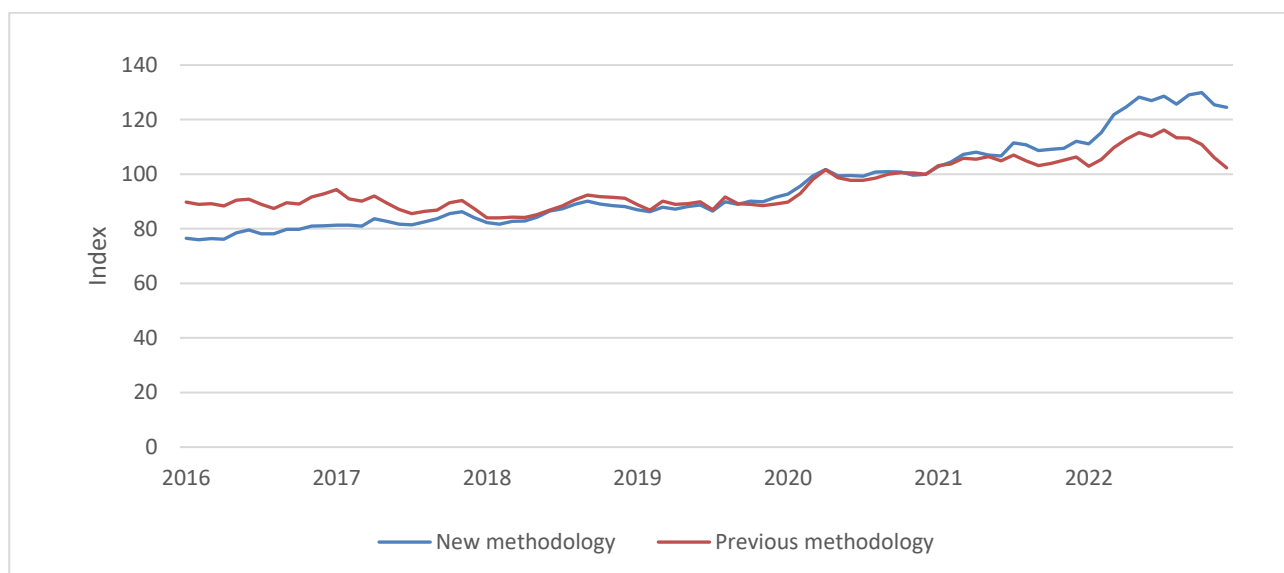


Figure 2 – Imports

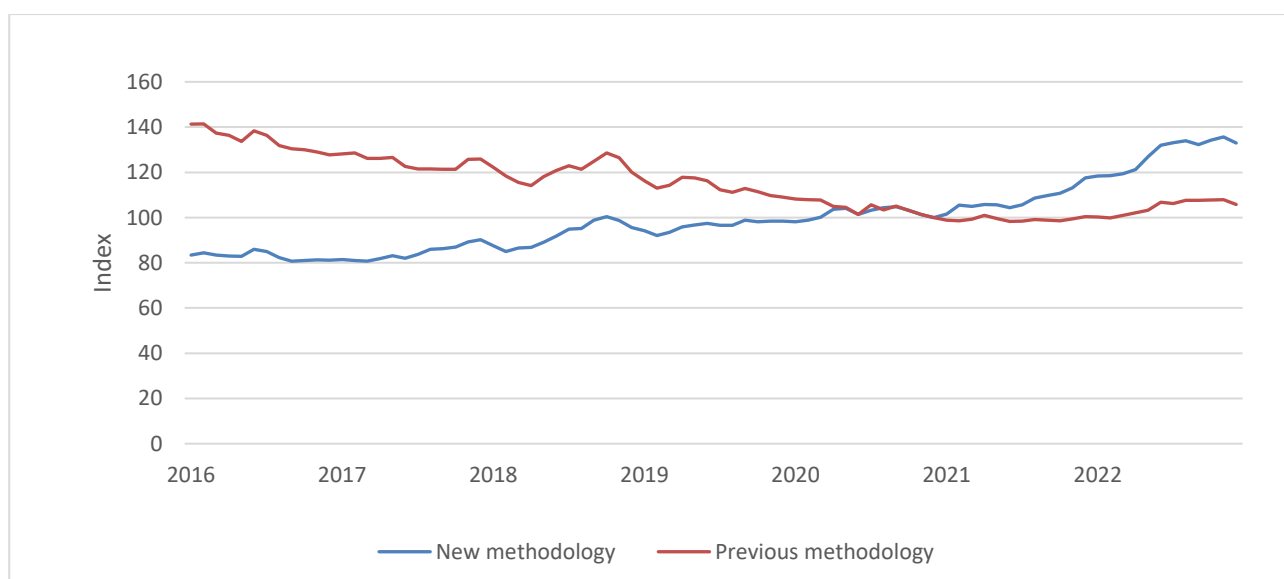
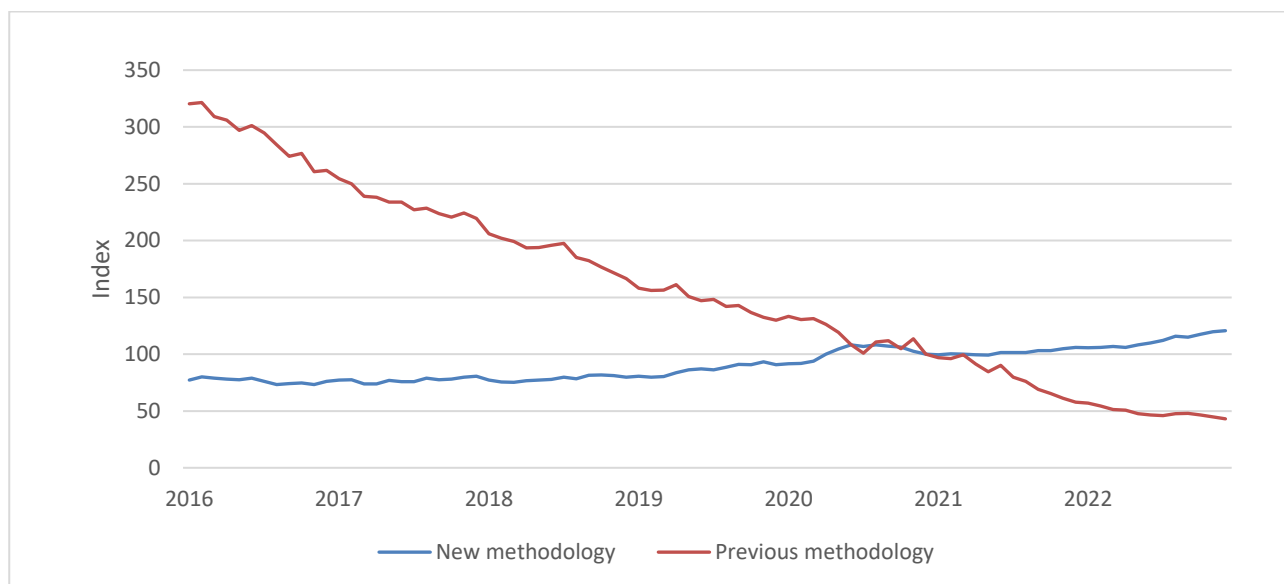


Figure 3 – General purpose machinery



5. Time series

Due to the nature of the improvements in the methodology, there will be a break in the XMUVI time series data. The new XMUVI series will begin in January 2023 and will not be comparable with the previous series. Historical indices, starting from January 2016, will be calculated based on the new methodology. With effect from the January 2023 release, percentage changes (inflation rates) will be calculated using the new series and comparable historical series, all based on the new methodology. The historical indices will be published on 23 March 2023 and can be accessed on Stats SA's website ([click here](#)).

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