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Export and Import Unit Value Indices: Sources and Methods

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Export and Import Unit Value Indices: Sources and Methods / Statistics South Africa

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Preface

The export and import unit value indices (XMUVI) form an essential component of the suite of price statistics compiled by Statistics South Africa. The XMUVI are derived from the official recording of goods entering and leaving South Africa. The XMUVI provide insight on inflationary dynamics in the economy and are used to deflate nominal estimates of exports and imports in the national accounts. This manual replaces the 2024 edition.

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1. Introduction to the South African export and import unit value indices (XMUVI)

1.1. Introduction

This manual is designed to provide users with a comprehensive understanding of the sources and methods used in the compilation of the XMUVI for South Africa. Statistics South Africa (Stats SA) publishes these indices monthly in the *Export and import unit value indices* statistical release (P0141.7). Over time, significant improvements in the compilation of the XMUVI resulted in better coverage and comparability of products, and enhanced accuracy of the data. This document provides an overview of the processes employed and data used to calculate the XMUVI.

1.2. Definition of the XMUVI

Export and import price (unit value) indices measure the overall change in the prices of transactions in goods between the residents of an economic territory and residents of the rest of the world (*Export and Import Price Index Manual* [XMPI Manual], IMF, 2009). Export and import unit value indices are based on data from customs documentation and are so named because they take as their building blocks, for individual commodity classes, the ratio of the unit value in the current to the previous period. They measure, for individual commodity classes, the change over time in the total value of shipments divided by the corresponding total quantity[1], as opposed to a price being collected. These elementary-level unit value ratios are subsequently aggregated across commodity classes using standard weighted index number formulas where the weights are the relative shares of the commodity group in total exports/imports (IMF, 2009).

1.3. Uses of the XMUVI

The XMUVI are used for a variety of different purposes, including:

- a deflator in the compilation of national accounts;
- an indicator of inflationary trends; and
- to calculate terms of trade.

1.4. Alignment with international best practice in XMUVI compilation

The XMPI manual identifies three main methods used to compile export and import price indices. These methods are:

- unit value indices derived from customs data;
- establishment-based survey price indices; and
- a hybrid approach that combines both methods.

Unit value indices and the hybrid approach are the most widely used methods. The manual further highlights the importance of noting that unit value indices are not true price indices as they can be affected by price, quality and compositional quantity changes. The IMF guidelines suggest that unit value indices are suitable for countries with tight budgets, while advocating that they should ultimately expand to at least compile the indices based on a hybrid method. It also acknowledges that advances in technology and improved commodity descriptions used by customs will help to improve the quality of the data used for unit value indices.

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[1] Unit value = Value/Quantity (for a unique transaction based on the month).

1.5. History and changes in the South African export and import indices

Prior to 2014, Stats SA compiled export and import price indices on a gross industry basis, that is, each index related to goods imported and exported by specific South African industries. Prices were collected directly from exporters and importers.

In January 2014, Stats SA discontinued the export and import price indices publication and introduced the XMUVI, which are calculated from customs data provided by the South African Revenue Service (SARS). The indices are compiled on a gross product rather than an industry basis, allowing for a more comprehensive coverage of goods. The main principle of the XMUVI is to get as close as possible to the actual price changes based on the customs data.

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. The following changes were introduced from January 2016:

- The use of moving averages to calculate the XMUVI was discontinued. It made the movements in the XMUVI less pronounced, which affected the timing of the changes in the indices.
- The use of a geometric mean was implemented as per international best practice (previously an arithmetic mean was used).
- Unit values were calculated on the tariff-trader-partner-country level rather than at the tariff-trader level.

From the January 2023 statistical release further methodological improvements were made to the compilation of the XMUVI. The XMUVI continued to use customs data, but introduced the implementation of machine learning clustering algorithms to further improve the comparability of products. Additional variables are used to define unique products on a monthly basis.

Due to the nature of the improvements in the methodology, the new series was not linked to the previous XMUVI series. Indices using the new method were computed from January 2016.

1.6. Methodology changes for XMUVI implemented from January 2025

The basket and weights for the XMUVI were updated with effect from the January 2025 statistical release, published in March 2025. At the same time the indices were re-referenced (rebased) so that December 2024 =100.

2. Classification

2.1. Introduction

The XMUVI uses two classification systems. The first classification system is the Harmonised Commodity Description and Coding System, commonly known as the Harmonised System (HS). The HS is a globally standardised system used to classify traded products that enter or leave a country's point of entry or exit. The HS uses a product-based approach anchored on a 6-digit code that identifies the general characteristics of the product. SARS further expands the HS codes to 8-digit codes that identify the physical characteristics of the products. Stats SA uses the 8-digit HS tariff code as the basis of sampling the products that will be included in the XMUVI basket.

The second classification system is the Central Product Classification (CPC) system. The CPC is used for aggregation and is based either on the physical characteristics of goods or on the nature of the services rendered. It covers products that are an output of economic activities. The CPC is a 5-digit system, consisting of sections, divisions, groups, classes and sub-classes.

The XMUVI links the 6-digit HS code to the 5-digit CPC, then aggregates the elementary indices based on the CPC.

2.2. The structure of classification in the South African XMUVI

Table 1 explains the hierarchy of product descriptions for what is commonly referred to as "vehicles".

Table 1 – XMUVI hierarchy of classifications

Product hierarchy		Product description
CPC section	4	Metal products, machinery and equipment
CPC division	49	Transport equipment
CPC group	491	Motor vehicles, trailers and semi-trailers; parts and accessories thereof
CPC class	4911	Motor vehicles
CPC sub-class	49113	Motor cars and other motor vehicles principally designed for the transport of persons (except public-transport type vehicles, vehicles specially designed for travelling on snow, and golf cars and similar vehicles)
HS code (Indicator product)	870321	Motor cars and other motor vehicles principally designed for the transport of persons (excluding those of heading 87,02), including station wagons and racing cars: of a cylinder capacity not exceeding 1 000 cm³
HS code (Product)	87032123	Vehicles of the open body tubular frame type, with an engine capacity not exceeding 250 cm³ and a vehicle mass not exceeding 250 kg
HS code (Product)	87032160	Vehicles with motorcycle-type handlebars and hand-operated controls

3. Weights and indicators

3.1. Source and derivation of weights

Customs data obtained from SARS are used to derive the annual weights. The weights are calculated as follows:

1. Select the HS chapters (2-digit HS codes) which comprise a cumulative 80% of exports and imports for a particular year, ensuring consistency over time.
2. Within each of the selected HS chapters, select the top 80% 6-digit HS codes (indicator products).
3. Redistribute the remaining 20% at each step according to the CPC.

The tariff chapters that constitute the top 80% in terms of value in 2024 are included in Annexure A.

3.2. Updating of weights

The weights of the XMUVI are updated annually using the previous year's customs data. Therefore, the XMUVI for January each year includes new weights based on the previous calendar year (e.g. the weights for 2025 are calculated using customs data for 2024).

The publication weights from 2018 to 2025 are shown in Annexure B.

3.3. Sampled products

The selection of sample products is a crucial aspect of the methodology used in the XMUVI. The goal is to ensure that the basket of goods included in the XMUVI is representative of South Africa's trade of goods with the rest of the world. It is therefore necessary to update the sampled products in the basket annually.

The XMUVI for 2025 includes 118 indicator products for exports and 222 for imports.

3.4. Special case – Gold

Gold in the XMUVI is not estimated from the customs data of SARS, but rather from information supplied by the South African Reserve Bank (SARB). SARS measures physical movement, whereas the SARB measures changes in ownership. Changes in the XMUVI for gold will reflect quarterly (March, June, September and December) when the SARB's data become available.

4. Unit value and index calculation

4.1. Unit value calculation

Unit values in the XMUVI are calculated per transaction in a specific month by dividing the customs transactions value (sales) by its quantity. To ensure the accuracy of the XMUVI, certain criteria are required for the data to be used. These are:

- the value, quantity, quantity unit of measure and the description of goods variables of the transaction must be provided;
- the transaction must have a specific 8-digit tariff code; and
- the transaction must be linked to a unique trader (exporter or importer) and partner country.

Once this is established, the unit value is calculated for the specific month. Unsupervised machine learning clustering techniques are applied to improve the comparability of products. Furthermore, a unique product is defined as a concatenation of the following variables[2]:

- trade type;
- tariff;
- county of destination/origin;
- trader ID;
- district office code;
- procedure category code;
- requested procedure code;
- previous procedure code;
- procedure measure;
- description of goods; and
- statistical unit.

A clustering algorithm groups similar products together, based on their unit values per unique definition of the products. The optimal number of clusters is determined through an iterative approach. A geometric mean of the unit values is calculated for the individual clusters every month. The geometric means of the clusters are matched for the current and previous months. The method aims to return the least minimum price change by finding the nearest clusters for the two periods.

4.2. Index calculation

The calculation of price indices follows two stages. Firstly, price indices are calculated for the elementary aggregates. Secondly, these elementary price indices are averaged to obtain higher-level indices using the relative sales values of the elementary aggregates as weights.

4.2.1. Elementary indices

An elementary index is compiled using the Jevons index. The Jevons index is defined as the unweighted geometric mean of the price ratios (p^t/p^{t-1}), which is identical to the ratio of the unweighted geometric mean prices.

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[2] Please see https://www.sars.gov.za/wp-content/uploads/Ops/Policies/SC-CF-55-A03-CPC-Combination-Matrix-External-Annexure.pdf.

The formula is:

$$I_J^{0:t} = \prod \left(\frac{p_i^t}{p_i^0} \right)^{1/n} = \frac{\prod \left(p_i^t \right)^{1/n}}{\prod \left(p_i^0 \right)^{1/n}}$$

The average price ratios are chained together monthly through successive multiplication with the previous month's index. As a result, the Jevons index is transitive, which means the chained monthly indices are identical to the corresponding direct indices, which compare prices in each successive month directly with those of the reference month.

4.2.2. High-level indices

The second stage of calculating the XMUVI does not involve individual prices or quantities. Instead, a higher-level index is calculated as a Young index in which the elementary price indices are averaged using a set of predetermined weights.

The formula is:

$$I^{0:t} = \sum w_i^b I_i^{0:t}, \sum w_i^b = 1$$

Where:
$I^{0:t}$ is the overall XMUVI, or any high-level index, from period 0 to t;
w_i^b is the weight attached to each of the elementary price index; and
$I_i^{0:t}$ is the corresponding elementary price index.

The elementary indices are identified by the subscript i, whereas the higher-level index carries no subscript. The weights are derived in period b, which in practice has to precede period 0, the index reference period.

An important aspect of index compilation is consistency. Consistency in aggregation means that if an index is calculated stepwise by aggregating lower-level indices to obtain indices at progressively higher levels, the same overall result should be obtained as if the calculation was made in one step.

4.3. Imputation and outliers

Although the XMUVI is published every month, certain price observations are not available in each period. This may be due to the seasonal nature of the product or the infrequent trade of the product. In these cases, an imputation method is used, whether at an aggregated or disaggregated level.

4.3.1. Imputation methods

Stats SA uses two methods to impute movement in the XMUVI when there are no price observations available. First, indices are kept constant when the prices are not due for collection in a particular month. For example, gold is collected quarterly from the SARB (see Section 3.4).

Second, for other 6-digit HS code elementary indices, a k-nearest neighbour (KNN) class mean imputation method is used. This approach involves using the mean value of "k" nearest class observations in the dataset to estimate the geometric mean price relative of the elementary aggregate. The nearest observations are determined by applying an iterative method that starts with 5-digit HS codes and iteratively looks for neighbours at 4, 3 and 2-digit HS codes.

4.3.2. Outliers

Outliers are identified every month using the Interquartile Range (IQR) method. The IQR method is based on the geometric mean unit value ratios per 6-digit HS codes. Ratios that are identified as extreme may indicate a potential data error or a significant price change of a particular product. These outliers are investigated and appropriate adjustments are made to the data if necessary.

4.4. Linking of the XMUVI and rebasing

The XMUVI weights are updated annually in March for the January reference period. The price reference period for the new index will be the last period of the old index; the old and the new indices are linked together at this point.

The introduction of new weights is a complex and resource-intensive process. It provides an opportunity to introduce new sampled products, new compilation practices, new elementary aggregates, new higher-level indices or new classifications. These tasks are often undertaken simultaneously at the time of reweighting to minimise overall disruption to the time series and any resulting inconvenience to users of the indices.

Annual linking has the advantage that changes (such as the inclusion of new goods) can be introduced on a regular basis, although every index needs some ongoing maintenance, whether annually chained or not.

4.4.1. Features of a linked index

There are several important features of a linked index:

- Linking an index allows weights to be updated, and facilitates the introduction of new items and sub-indices and the removal of obsolete ones.
- In order to link the old and the new indices, an overlapping period is needed in which the index has to be calculated using both the old and the new sets of weights.
- A linked index may have two or more links. Between each link period, the index may be calculated as a fixed weight index using any index number formula.
- Linking is intended to ensure that the individual indices on all levels show the correct development through time.

Linking results in non-additivity of the new, linked index. In other words, if elementary indices are multiplied by their weights and aggregated to higher levels, the results may not be the same as those published. The divergence depends on the extent of differences between the old and new weights. The greater the differences, the greater the degree of non-additivity.

4.4.2. Re-referencing (rebasing)

When the XMUVI is rebased, all indices are reset to 100 in the latest available December. When the indices for January are computed, there is no risk that the new weights will distort the month-on-month changes between December and January, since all of December's indices must equal 100 regardless of which set of weights is applied to December.

When new weights are introduced without rebasing the indices, the index with new weights (starting in January) must be linked to the index with old weights (ending in December). If there is no linking, the month-on-month percentage changes between December and January would reflect both price changes and weight changes. Linking ensures that the month-on-month index changes between December and January are driven by price changes only, based on the new weights[3].

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[3] Refer to the Producer Price Index: Sources and Methods (2025) for more detail.

5. Dissemination

The XMUVI release, excel time series files and relevant metadata are published monthly, within two months of the reference period.

The XMUVI release is available in PDF format here:
https://www.statssa.gov.za/?page_id=1854&PPN=P0142.7.

The time series data for the XMUVI are accessible in Excel format here:
https://www.statssa.gov.za/?page_id=1847.

An advanced schedule of future XMUVI publications is available at:
https://www.statssa.gov.za/?page_id=1874.

This report and other methodological notes and metadata can be found at:
https://www.statssa.gov.za/?page_id=2528.

Abbreviations

CPC	Central Product Classification
HS	Harmonised Commodity Description and Coding System
IMF	International Monetary Fund
IQR	Interquartile Range
KNN	K-Nearest Neighbours algorithm
OECD	Organisation for Economic Co-operation and Development
PPI	Producer Price Index
SARB	South African Reserve Bank
SARS	South African Revenue Service
Stats SA	Statistics South Africa
XMUVI	Export and Import Unit Value Indices

Annexures

Annexure A – Top 80% tariffs in 2024

Trade type	HS code (D2)	Description
Exports	08	Edible fruit and nuts; peel of citrus fruit or melons
Exports	10	Cereals
Exports	22	Beverages, spirits and vinegar
Exports	26	Ores, slag and ash
Exports	27	Mineral fuels, mineral oils and products of their distillation; bituminous substances; mineral waxes
Exports	28	Inorganic chemicals; organic or inorganic compounds of precious metals, of rare-earth metals, of radioactive elements or of isotopes
Exports	29	Organic chemicals
Exports	38	Miscellaneous chemical products
Exports	39	Plastics and articles thereof
Exports	71	Natural or cultured pearls, precious or semi-precious stones, precious metals, metals clad with precious metal and articles thereof; imitation jewellery; coin
Exports	72	Iron and steel
Exports	73	Articles of iron or steel
Exports	74	Copper and articles thereof
Exports	76	Aluminium and articles thereof
Exports	84	Nuclear reactors, boilers, machinery and mechanical appliances; parts thereof
Exports	85	Electrical machinery and equipment and parts thereof; sound recorders and reproducers, television image and sound recorders and reproducers, and parts and accessories of such articles
Exports	87	Vehicles other than railway or tramway rolling-stock, and parts and accessories thereof

Annexure A – Top 80% tariffs in 2024 (concluded)

Trade type	HS code (D2)	Description
Imports	10	Cereals
Imports	15	Animal, vegetable or microbial fats and oils and their cleavage products; prepared edible fats; animal or vegetable waxes
Imports	27	Mineral fuels, mineral oils and products of their distillation; bituminous substances; mineral waxes
Imports	28	Inorganic chemicals; organic or inorganic compounds of precious metals, of rare-earth metals, of radioactive elements or of isotopes
Imports	29	Organic chemicals
Imports	30	Pharmaceutical products
Imports	33	Essential oils and resinoids; perfumery, cosmetic or toilet preparations
Imports	38	Miscellaneous chemical products
Imports	39	Plastics and articles thereof
Imports	40	Rubber and articles thereof
Imports	48	Paper and paperboard; articles of paper pulp, of paper or of paperboard
Imports	61	Articles of apparel and clothing accessories, knitted or crocheted
Imports	62	Articles of apparel and clothing accessories, not knitted or crocheted
Imports	64	Footwear, gaiters and the like; parts of such articles
Imports	72	Iron and steel
Imports	73	Articles of iron or steel
Imports	74	Copper and articles thereof
Imports	84	Nuclear reactors, boilers, machinery and mechanical appliances; parts thereof
Imports	85	Electrical machinery and equipment and parts thereof; sound recorders and reproducers, television image and sound recorders and reproducers, and parts and accessories of such articles
Imports	87	Vehicles other than railway or tramway rolling-stock, and parts and accessories thereof
Imports	90	Optical, photographic, cinematographic, measuring, checking, precision, medical or surgical instruments and apparatus; parts and accessories thereof

Annexure B – Historical publication weights from 2018 to 2025

Trade type	Product code	Product	2018	2019	2020	2021	2022	2023	2024	2025
Exports	**UVI10000**	**Exports**	**100,00**	**100,00**	**100,00**	**100,00**	**100,00**	**100,00**	**100,00**	**100,00**
	UVI31000	Exports excluding gold	93,98	93,86	94,62	92,41	93,70	95,53	94,00	92,30
	UVI32000	Exports excluding ores and minerals	76,41	78,06	77,14	77,15	76,69	72,78	75,42	76,56
	UVI33000	Exports excluding basic metals	75,56	74,32	75,26	71,21	65,65	72,47	73,87	73,95
	UVI40000	**All items**	**100,00**	**100,00**	**100,00**	**100,00**	**100,00**	**100,00**	**100,00**	**100,00**
	UVI41000	Agriculture	5,74	5,40	5,36	5,85	4,82	6,00	6,92	6,83
	UVI42000	Beverages	7,50	7,86	7,60	7,78	6,52	5,90	6,55	7,19
	UVI43000	Ores and minerals	23,59	21,94	22,86	22,85	23,31	27,22	24,58	23,44
	UVI43100	Coal	8,02	7,77	6,16	5,24	5,79	12,56	7,96	6,46
	UVI43200	Metal ores	15,57	14,17	16,70	17,61	17,52	14,66	16,62	16,98
	UVI43210	Iron ores and concentrates	6,72	5,25	7,54	9,06	9,42	6,03	6,83	6,19
	UVI43220	Non-ferrous metal ores and concentrates	8,85	8,92	9,16	8,55	8,10	8,63	9,79	10,79
	UVI44000	Other transportable goods, except metal products, machinery and equipment	17,80	17,94	17,22	16,28	14,74	16,58	16,14	15,56
	UVI44100	Coke oven and refined petroleum products	4,59	4,61	4,81	3,49	2,91	4,30	4,76	4,75
	UVI44200	Basic chemicals	6,08	6,52	5,99	5,86	5,81	7,09	5,87	5,39
	UVI44300	Other chemical products	3,78	3,55	3,56	4,36	4,68	3,70	4,08	4,06
	UVI44400	Waste and scrap	1,79	1,73	1,44	1,24				
	UVI44500	Rubber and plastic products	1,56	1,53	1,42	1,33	1,34	1,49	1,43	1,36
	UVI45000	Metal products, machinery and equipment	45,37	46,86	46,96	47,24	50,61	44,30	45,82	46,98
	UVI45100	Basic metals	24,44	25,68	24,74	28,79	34,34	27,53	26,13	26,05
	UVI45110	Basic iron and steel	5,01	4,74	4,32	3,68	3,88	4,06	4,89	4,40
	UVI45120	Products of iron and steel	2,46	2,62	2,23	1,40	1,43	1,41	1,38	1,08
	UVI45130	Basic precious metals and metals clad with precious metals	13,94	15,01	15,26	20,82	26,28	18,90	16,32	17,17
	UVI45140	Other semi-finished metal products	3,03	3,31	2,93	2,89	2,75	3,16	3,54	3,40
	UVI45200	General purpose machinery	3,76	3,68	3,76	3,65	3,45	3,17	3,07	2,53
	UVI45300	Special purpose machinery	2,18	2,27	2,01	1,84	1,50	1,73	1,97	1,82
	UVI45400	Transport equipment: motor vehicles	11,78	12,13	13,40	10,28	9,07	9,34	11,98	13,46
	UVI45500	Other machinery and equipment	1,76	1,66	1,61	1,49	1,12	1,39	1,55	1,94
	UVI45600	Fabricated metal products	1,45	1,44	1,44	1,19	1,13	1,13	1,12	1,18

Annexure B – Historical publication weights from 2018 to 2025 (concluded)

Trade type	Product code	Product	2018	2019	2020	2021	2022	2023	2024	2025
Imports	**UVI20000**	**Imports**	**100,00**	**100,00**	**100,00**	**100,00**	**100,00**	**100,00**	**100,00**	**100,00**
	UVI34000	Imports excluding crude petroleum	87,85	84,54	86,38	89,92	91,41	93,62	92,86	92,23
	UVI50000	**All items**	**100,00**	**100,00**	**100,00**	**100,00**	**100,00**	**100,00**	**100,00**	**100,00**
	UVI51000	Crude petroleum	12,15	15,46	13,62	10,08	8,59	6,38	7,14	7,77
	UVI52000	Food products	7,43	6,80	6,94	8,32	6,89	5,97	5,90	6,66
	UVI52100	Fats and oils	4,32	3,96	3,94	4,48	3,99	3,49	3,05	3,41
	UVI52200	Grain mill products	3,11	2,84	3,00	3,84	2,90	2,48	2,85	3,25
	UVI53000	Clothing and footwear	5,30	5,23	5,45	5,55	5,14	4,71	4,39	5,12
	UVI53100	Clothing	3,31	3,34	3,56	3,75	3,46	3,07	2,89	3,30
	UVI53200	Footwear	1,99	1,89	1,89	1,80	1,68	1,64	1,50	1,82
	UVI54000	Other transportable goods, except metal products, machinery and equipment	27,64	28,96	28,82	31,37	35,81	41,87	37,11	36,24
	UVI54100	Paper and paperboard	1,95	1,98	1,97	1,95	1,70	1,81	1,60	1,75
	UVI54200	Coke oven and refined petroleum products	6,05	6,61	6,85	6,92	11,61	21,13	18,99	16,28
	UVI54300	Basic chemicals	6,26	6,91	6,45	7,36	8,26	8,57	6,32	6,91
	UVI54400	Pharmaceutical and other chemical products	7,81	7,69	7,90	9,57	8,65	7,00	7,03	7,86
	UVI54410	Pharmaceutical products	4,96	4,94	5,08	6,12	5,63	3,39	3,28	3,60
	UVI54420	Other chemical products	2,85	2,75	2,82	3,45	3,02	3,60	3,75	4,26
	UVI54500	Rubber and plastic products	3,32	3,18	3,25	3,38	3,30	2,85	2,92	3,26
	UVI54600	Other transportable goods	2,25	2,59	2,40	2,19	2,29	0,52	0,25	0,18
	UVI55000	Metal products, machinery and equipment	47,48	43,55	45,17	44,68	43,57	41,08	45,46	44,21
	UVI55100	Basic metals	4,43	4,33	4,17	4,37	5,34	4,49	4,25	4,80
	UVI55200	Fabricated metal products, except machinery and equipment	2,12	1,96	1,99	2,34	2,15	1,88	1,72	1,94
	UVI55300	General purpose machinery	6,40	5,62	5,88	6,01	5,48	5,15	5,59	6,42
	UVI55400	Special purpose machinery	6,78	6,72	6,73	7,01	6,64	6,24	7,26	6,57
	UVI55410	Machinery for mining, quarrying and construction, and parts thereof	2,60	2,62	2,85	2,78	2,25	2,54	3,13	2,77
	UVI55420	Agricultural or forestry machinery and parts thereof	0,89	0,75	0,79	1,00	0,94	1,07	1,39	0,85
	UVI55430	Other machinery and parts thereof	3,29	3,35	3,09	3,22	3,45	2,64	2,74	2,95
	UVI55500	Office, accounting and computing machinery	2,98	2,94	3,12	3,19	3,20	2,70	2,69	2,84
	UVI55600	Electrical machinery and apparatus	4,52	3,79	4,23	4,58	3,69	3,79	4,97	4,62
	UVI55700	Radio, television and communication equipment and apparatus	6,20	6,13	6,17	6,42	6,08	6,03	7,59	5,76
	UVI55800	Medical appliances, precision and optical instruments, watches and clocks	3,31	3,06	3,22	3,49	3,03	2,54	2,76	3,00
	UVI55900	Transport equipment	10,74	9,00	9,66	7,27	7,96	8,25	8,63	8,26
	UVI55910	Vehicles	9,99	8,29	8,94	6,61	7,26	7,71	8,00	7,65
	UVI55920	Bodies and parts of vehicles	0,75	0,71	0,72	0,66	0,70	0,54	0,63	0,61

Concepts and definitions

Aggregation	The process of combining or adding different sets of price changes to obtain larger sets of price changes. The larger set is described as having a higher level of aggregation than the sets of which it is composed.
Base period	The period in which the index is set to 100 (this is the index reference period).
Basket	A specified set of goods used to estimate the XMUVI.
Chain index	An index number in which the value in any given period is related to a base in the previous period, as distinct from one which is related to a fixed base (OECD, 2008)
Clustering	A technique that involves grouping similar data points together based on their similarities in order to find patterns or structures within a dataset.
Deflator	A price index that is used to divide the value of some aggregate in order to revalue its quantities at the prices of the index reference period.
Elementary aggregates	The smallest aggregate for which expenditure data are available and used for XMUVI purposes. The values of the elementary aggregates are used to weight the price (unit value) indices.
Geometric mean	A method of calculating a type of average by taking the nth root of the product of n items.
Imputation	Data imputation is the substitution of estimated values for missing or inconsistent data items or fields (OECD, 2008).
Index number	An index number is a numerical value comparing a price or quantity or some other variable with a base value.
Index reference period	The period in which an index is set to 100.
Jevons price index	An elementary price index defined as the unweighted geometric average of the sample price relatives.
K-Nearest Neighbours algorithm	K-Nearest Neighbours (KNN) is a non-parametric algorithm that makes predictions by identifying the k-nearest data points in the training set to a given query point, and then using those data points to make a prediction based on their labels or values (Bishop and Nasrabadi, 2006).
Linking	Splicing together two consecutive sequences of price observations, or price indices, that overlap in one or more periods. When the two sequences overlap by a single period, the usual procedure is simply to rescale one or the other sequence so that the value in the overlap period is the same in both sequences and the spliced sequences form one continuous series.
Price index	A price index is a normalised average (typically a weighted average) of prices for a given class of goods or services in a given region, during a given interval of time. It is a statistic designed to help to compare how these prices, taken as a whole, differ between time periods or geographical locations.
Price relative	The ratio of the price of an individual product in one period to the price of that same product in some other period.
Rebasing	This refers to changing the index reference period.
Reweighting	Replacing the weights used in an index with a new set of weights.
Sampling	Selecting elements from a population in such a way that they are representative of the population.

Concepts and definitions (concluded)

Survey	A process which collects, examines, and reports on data concerning variables of interest for a reference period.
Unsupervised machine learning	Algorithm that is used to identify patterns and associations among a set of inputs without any explicit training dataset (Hastie, et al, 2009).
Value	Price times quantity. The value of the expenditures on a set of homogeneous products can be factored uniquely into its price and quantity components.
Weights	A set of numbers summing to unity that are used to calculate weighted averages. Weights represent the relevant importance of the indicator product in a subgroup.
Young index	An index calculated as a weighted arithmetic average of the individual price relatives.

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