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HICP Compliance Monitoring Report

Sweden

1. Introduction

In October 2021 Eurostat reviewed the compilation of the harmonised index of consumer prices (HICP) for Sweden. The review was done against the existing legal framework, established HICP recommendations and other guidelines and good practices in the field of consumer price indices.

The current report is based on:

- The 2021 inventory containing details of data sources, definitions and methods used in the HICP for Sweden.
- The discussion at the compliance monitoring meeting with Statistics Sweden, which was held via videoconference on 26 October 2021.
- The information note on the previous compliance monitoring exercise, which was published in [August 2013](#).

For all main methodological topics related to the HICP, this report briefly summarises the Swedish compilation practices followed by Eurostat's appraisal of compliance and, if applicable, requirements and recommendations for improvement. The report concludes with Eurostat's overall assessment of compliance of the HICP for Sweden.

2. Coverage and classification

The target universe of the Swedish HICP is broadly in line with the household final monetary consumption expenditure (HFMCCE) concept as it is defined in Article 2(20) of Regulation (EU) 2016/792 (framework regulation) and in the Annex to Regulation (EU) 2020/1148 (implementing regulation).

The Swedish HICP reflects household consumption on the territory of Sweden, including the consumption incurred by institutional households. The domestic principle

is applied by covering expenditures made by both resident and non-resident households, while excluding expenditures made by resident households abroad.

However, the Swedish HICP does not fully take into account purchases made by residents from foreign internet shops, which constitute approximately one percent of total consumption expenditures (2016 estimate). Although prices for airfares, a small number of shops and some prices of digital services are collected from foreign internet shops, the coverage of these by the Swedish HICP could be done more extensively and systematically. According to the HICP recommendations on the treatment of cross-border internet purchases in the HICP ⁽¹⁾, the expenditure and the prices for goods purchased through the internet shall be recorded in the HICP of the country where the goods are delivered. Similarly, the expenditure and the prices for digital services shall be recorded in the HICP of the country where the consumer usually resides.

Financial intermediation services (FISIM), games of chance ⁽²⁾, and the remaining product categories listed in Article 5(8) of the framework regulation are excluded from the coverage of the Swedish HICP.

Imputed rentals of owner-occupiers are precluded from HFMCE figures. However, remuneration in kind (i.e. benefit for employees to use the employer's car), and consumption of own products (i.e. food products such as game meat, wild berries, eggs), are included in weights and not excluded from the scope of the index. These non-monetary expenditures are estimated to respectively account for 0.37 and 0.1 percent of total 2021 HFMCE.

The Swedish HICP classifies products and is structured around the European Classification of Individual Consumption according to Purpose (ECOICOP).

Compliance

The target universe of the Swedish HICP is not fully compliant with the HFMCE concept. In particular, the Swedish HICP includes income in kind and consumption of own products estimates in its scope, which is not in accordance with paragraph 2 of the Annex to the implementing regulation.

Requirement

Statistics Sweden should exclude income in kind and consumption of own products and ensure that the scope of the Swedish HICP is fully in line with the HFMCE concept.

(1) The [recommendations](#) are available in the HICP dedicated section on Eurostat's website.

(2) The Swedish CPI includes games of chance in its basket of products. This is not the only difference to the HICP, since the CPI is built using the cost-of-living framework as reference. In line with this concept, certain forms of non-monetary expenditures, such as services of owner-occupied dwellings and own production, are also covered in the CPI.

Recommendation

Statistics Sweden should more extensively and systematically include purchases made on the internet by resident households on foreign websites in the HICP in line with the HICP recommendations on cross-border internet purchases.

3. Weights

The weights in the Swedish HICP are updated annually based on national accounts data on household consumption expenditure for the year t-2, which are also used to derive the weights of the national consumer price index (CPI). These data is available at the 4-digit ECOICOP level.

The consumption expenditure data is adjusted to align with the HFMCE concept (e.g. imputed rentals for housing and games of chance are excluded) and split into elementary aggregates, which is generally defined at the 6-digit COICOP level. As pointed out in the previous section, the consumption expenditure used in HICP weights is not corrected from remuneration in kind and consumption of own products. Dwelling allowances, which are identified in the Annex of the implementing regulation as part of HFMCE, are included in the weights of the Swedish HICP.

A wide variety of data sources is used to break down national accounts data into more detailed aggregates. These range from scanner (and other types of transaction data) to business turnover statistics and many surveys carried out by Statistics Sweden. The Household Budget Survey (HBS), which has been discontinued due to increasing non-response rates, is used for detailing weights on clothing and footwear, furniture and household appliances. In practice, this means that the detailed weighting structure for these products has not been updated since 2012, the last time the HBS was conducted. Statistics Sweden is currently developing an alternative to the HBS, which will use a combination of new data sources (e.g. scanner data, food sales survey from business statistics, payment card data) that is expected to be implemented by 2024.

Due to the COVID-19 crisis, which resulted in significant changes in consumption, the weights for 2021 were compiled in line with Eurostat's guidance ⁽³⁾. Statistics Sweden applied a factor to adjust 2019 national accounts data using the changes in expenditure for Q1-Q3 2020 in comparison to Q1-Q3 2019 and applying these changes to the expenditures observed for 2019. For 2022 weights, Statistics Sweden will apply the same procedure. Price-updating takes place at the elementary aggregate level and the weights used in year t are price-updated to December of the year t-1.

The main data sources for the rents item weights is the national accounts data and the annual survey on rent levels ⁽⁴⁾. As mentioned in the previous section, housing allowances are not excluded from the weights for rents. Furthermore, rents usually include not only the cost of renting but also of other utilities, such as heating and water

⁽³⁾ Available in the [HICP dedicated section](#) on Eurostat's website.

⁽⁴⁾ See Statistics Sweden's [website](#).

supply. While a separate weight exists for heating, the weight for water supply (ECOICOP 04.4.1) only includes expenditures incurred by owner-occupiers.

The weight for fees and service charges of brokers and investment counsellors (ECOICOP 12.6.2.2) is estimated indirectly, as the difference between the national accounts estimate on ECOICOP subgroup 12.6.2 and national accounts expenditure on charges by banks (i.e., the weight of ECOICOP subgroup 12.6.2.1), and an estimate on currency exchange fees. The weight of this sub-group may be overestimated since it is more than 20-fold higher than the European Union average.

The weights for insurance are derived based on aggregate expenditure by households on service charges for this product for a single year. However, detailed insurance weights within insurance product groups are sometimes based on gross insurance premiums.

Recommendations

- Statistics Sweden should replace the weights data source for clothing and footwear, furniture and household appliances, for which the split between products below the 4-digit ECOICOP level has been assumed to be the same since 2012.
- Statistics Sweden should explore ways of separating out the weight component of water supply from actual rentals and include it in the ECOICOP weight for 04.4.1, which only covers expenditures incurred by owner-occupiers.
- Statistics Sweden should reassess the weight associated with fees and service charges of brokers and investment counsellors (ECOICOP 12.6.2.2.), which may be overestimated.
- Statistics Sweden should study the possibility of using detailed net (instead of gross) insurance product weights within insurance product groups (ECOICOP 12.5).

4. Sampling and representativity

The Swedish HICP is designed to represent price changes at the national level and not at the regional level. However, geography is taken into account in the design of the samples used in field price collection or when this variable is thought to have an effect on measured product price developments at the country level.

For field price collection, outlets are selected through a two-stage process that apply the five-digit Swedish postal code system and the Business Register as sampling frames. In the first stage, a sample of 800 postal codes are selected from a frame of roughly 10 000 postal codes. The postal codes are drawn through cut-off sampling, where a measure maximizing the commercial importance of the area and minimizing the distance from the closest price collectors, acts as the cut-off measure. In the second stage, outlets are drawn in each one of the selected postal codes using the

Business Register as a sampling frame. Outlets are drawn using a probability proportional to size, in which the size measure is given by a combination of the number of employees and total turnover per outlet.

For central price collection, which comprises of the portion of the prices manually collected through websites, telephone and email enquiries or through the administration of web questionnaires, the design of the samples is usually done purposively. For these products, certain areas of the country may be excluded if they are deemed not to have a significant effect prices. The sample of outlets (and of products) for field and central price collection is drawn centrally and is reviewed annually by Statistics Sweden. The cut-off sampling method is the most common method applied to draw outlet samples for central price collection (cut-off measure based on turnover figures from the previous year, which are taken from the Business Register).

Statistics Sweden obtains scanner data from five retail chains representing 80 percent of the market. These data covers the entire ECOICOP division on food and non-alcoholic beverages and other daily necessity goods (e.g. non-prescribed pharmaceutical products sold in supermarkets). Statistics Sweden also receives transaction data covering the entire market of alcoholic beverages, prescribed pharmaceutical products and dental care. The samples on passenger transport by railway, package holidays, home electronics products, mobile telephone equipment, and motor fuel products, are also available in the form of transaction data covering 70 to 90 percent of the respective markets.

The Swedish HICP covers e-commerce and mail order purchases. Online outlets that are located inside the Swedish borders are included in the sample of outlets. However, apart from some online clothing stores located in other European countries, no other outlets are considered in the Swedish HICP to represent cross-border online transactions.

The concrete product-offers included in the index basket are defined using a classification key, which provide detailed product categories that are located at or below the elementary (i.e. 6-digit of the product nomenclature) level of the Swedish HICP. Varieties are sampled differently according to available information. For some products, notably those in which scanner or transaction data is available, it is possible to implement probability sampling schemes. For products for which information is not available, varieties are purposively chosen based on market knowledge, information from price collectors.

Newly significant goods and services are identified through annual reviews of product specifications and product groups. The process of including newly products in the basket is done centrally and is supported by information taken from price collectors, industries, and any other sources considered relevant for the identification of these products.

The price index covering actual rentals paid by tenants is compiled on the basis of a sub-sample of 700 dwellings taken from an annual survey comprising of approximately

15 500 dwellings in multi-dwelling buildings and one- or two-dwelling buildings, which is used to calculate national rents levels. The sample of the annual survey, from which the HICP sub-sample is drawn, is stratified by main geographical areas (Stockholm and Gothenburg metropolitan areas, and 'Other large municipalities' and 'Other small municipalities'), completion year and dwelling type.

Compliance

The sampling and representativity in the Swedish HICP are in line with the legal requirements.

5. Price collection

Statistics Sweden obtains prices from a variety of sources, which can be broadly grouped into three main approaches. Field price collection accounts for 9.9 percent of HICP weights. Transaction data sources represent 35.8 percent of the indicator. Most of this share corresponds to scanner data (32.1 percentage points), with the remaining prices (3.7 percentage points) are sourced from administrative files covering products such as pharmaceuticals, dental service prices, and fuels. Central price collection accounts for the majority of the prices, with 54.3 percent of the HICP basket obtained through manual internet collection (22.6%), telephone and e-mail enquiries (13.4%), the administration of web questionnaires (11.9%) and web-scraped prices (6.4%).

Around 20 price collectors visit shops using tablets with a self-developed web-based data-entry software, which includes data checks to minimize registration errors. Central price collection is also subject to data quality checks, where price collection and validation is carried out in two different steps and by different staff.

Field price collection is organized around the week of the 15th of the month as well as in its preceding and ensuing weeks. Central price collection is also carried out at or around the middle of the month as it is done in the week that contains the 15th of the reference month of the index. Scanner data refer to weekly unit prices for each of the first three weeks of the month. Other transaction data sources, which are obtained from governmental and other administrative sources either cover the entire month (e.g. pharmaceuticals and train tickets) or almost the entire month (e.g. transaction data regarding fuel products, which cover the first 25 days of a month).

For products traditionally exhibiting a more volatile price pattern within the month, prices are collected more frequently (e.g., airfares, which are collected twice per month) or are collected from data sources reflecting monthly averages. For some products whose prices are considered not to change much throughout the year, the collection is done less frequently than monthly. These refer to ECOICOP sub-class 11.2.0.2 (Holiday centres, camping sites, youth hostels and similar accommodation services) and parts of other sub-classes (e.g., ECOICOP 09.4.1.1, with spectator entrance to sporting events).

The price quotes for actual rents paid by tenants are obtained through a web questionnaire on rented dwellings. All dwellings are surveyed in December, where 20 percent of the sample is renewed following a panel rotation scheme. The rental market in Sweden is quite regulated, where about 90 percent of all housing rents in Sweden are established through an (usually) annual collective bargaining process between the Swedish tenant association and the landlords. This process establishes the maximum limits to new rent levels. As rentals are very unlikely to change after this agreement, the price collection is only carried out until the moment this negotiation is finished. The rents that are collected include not only the cost of renting, but may also include additional charges such as water supply, electricity, gas and heating. According to Statistics Sweden, in most of the cases it is not possible to separate these charges from the prices obtained from the web questionnaire on rents. Electricity and (most likely) gas utility bills are rarely included in rents as a bundle. However, these points should be further analyzed and corroborated by data analysis.

The price index for new cars is based on list prices, which are provided from a market analysis company. For second-hand cars, prices are also given by a third party, which collects asking prices from online marketplaces. According to Statistics Sweden, the data provider estimates approximate transaction prices using a model, taking into account for example how long the car has been available for purchase. A second-hand car that has been on the market for a long time is assumed to be sold for a lower price than initially asked (due to bargaining). For motor cycles, prices are collected manually directly from dealer's webpages.

Health care and education are to a large extent subsidised or financed by government. However, when the prices for these services incur a cost to households, they are included in the Swedish HICP net of reimbursements (e.g., transaction data on pharmaceuticals and dental services provide prices net of subsidies).

Compliance

The price collection in the Swedish HICP is in line with the legal requirements.

Recommendation

- Statistics Sweden should further explore the separation of the cost for renting and other costs.

6. Replacement and quality adjustment

Statistics Sweden attaches considerable attention to the review, analysis and improvement of replacement and quality adjustment practices. The quality adjustment approaches applied in the compilation of the Swedish HICP cover a mix of implicit and explicit methods, which are studied, reviewed and subject to improvement.

For clothing and footwear products (ECOICOP 03), the hedonic regression is used to estimate a quality adjustment factor that updates a new base price for the replacement item. The hedonic method is also used for second-hand motor vehicles (ECOICOP

07.1.1.2). However, quality adjustments are carried out by the external provider of the data used for the compilation of the index.

For new motor cars (ECOICOP 07.1.1.1), the option pricing or the expert judgement method are used to cope with minor quality adjustment changes (e.g. a change in equipment), and the bridged overlap with major quality changes (e.g. the appearance of a new model). Furthermore, for computer games, console games, books and other cultural media, which are covered under ECOICOP 09.3.1 and ECOICOP 09.5.1, Statistics Sweden uses the best-seller list approach.

For mobile telephone equipment (ECOICOP 08.2.0.2) and personal computers (ECOICOP 09.1.3.1), the monthly chaining and replenishment method (MCR) is applied. For these products, which exhibit high rate of replacements and experience continuous quality and technological improvements, the application of this method – which is similar to bridged overlap –, may lead to a downward drift in the sub-indices ⁽⁵⁾.

Following an assessment of the impact of this method, Statistics Sweden will replace the MCR applied for mobile telephone equipment and computers by a fixed basket approach in which replacements and quality adjustments are going to be made through hedonic quality adjustment method.

For many of the remaining products included in the basket of the HICP, Statistics Sweden applies a supported judgmental approach when carrying out replacements and quality adjustments. This approach involves the assessment by Statistics Sweden's staff of replacement and quality adjustment situations from a consumer's perspective (e.g. how much money is a quality change worth to a consumer). These assessments, which can be supported by external information (e.g. taken from the internet or from outlets), are either done by local price collectors (e.g. for some household goods) or staff at the central office (e.g. rents and electronics, with the exception of mobile telephone equipment and computers).

For scanner data, month-on-month individual price and quantity changes are controlled at Global Trade Item Number (GTIN) level to identify potential packaged size changes and relaunches, which may lead to a manual replacement and adjustment of sampled data.

The system compiling the Swedish consumer price index produces statistics associated with the compilation of the HICP such as the number of missing prices and number and type of imputations. In addition, implicit quality indices (IQIs), which translate the effect of the operational adjustments that have been made to raw price data to obtain published indices, are produced annually.

Compliance

The application of quality adjustment methods in the Swedish HICP is in line with the legal requirements.

Recommendation

- Statistics Sweden should replace the monthly chaining and replenishment method with explicit quality adjustments in the compilation of the price indices for mobile telephone equipment and computers.

7. Treatment of seasonal products

Statistics Sweden applies the strict annual weights seasonal estimation method in the compilation of the price indices covering clothing and footwear (ECOICOP 03.1 and 03.2) and package holidays (ECOICOP 09.6.0).

For clothing and footwear, the all-seasonal estimation method is applied, where out-of-season price changes are estimated on the basis of observed prices of all available products. The first-out of season price is estimated using an average of in-season months, where the last month is excluded. As for package holidays, the counter-seasonal estimation method is applied, where out-of-season prices changes are estimated on the basis of price information of in-season products only. Winter and summer first out-of-season prices are estimated as the average of the previous in-season months, multiplied with the price development of the counter season. As the winter and summer seasons overlap in April and October, it is possible to use counter-season price developments in the estimation process of winter and summer first out-of-season prices.

For other products that are only typically available for purchase in significant amounts in parts of the year, such as ski equipment (included in ECOICOP 09.3.2.1) and some plants and flowers (included in ECOICOP 09.3.3.2), Statistics Sweden applies the carry forward method to estimate out-of-season prices. Similarly, since the price index covering holiday centres, camping sites and similar accommodation services (ECOICOP 11.2.0.2) covers services that are mainly available in summer (camping sites and cabin villages), the carry forward method is applied as imputation method to estimate out-of-season prices.

In the Swedish HICP, fresh fruits and vegetables are not treated as seasonal as product specifications are made wide enough to allow for the collection of prices of different variants of the same product all year round (e.g. imported and domestic apples).

Compliance

The treatment of seasonal products is in line with legal requirements.

⁽⁵⁾ See [HICP recommendation on bridged overlap - June 2021 \(europa.eu\)](#).

Recommendation

- Statistics Sweden should analyse whether products that are typically available for purchase in significant amounts in part of the year, such as ski equipment, plants and flowers, camping sites and similar accommodation services, could be treated as seasonal and included in the index through a seasonal method.

8. Index calculation

The Jevons index formula is applied to calculate the overwhelming majority of elementary price indices, which are generally defined at the 6-digit level of the COICOP classification. Depending on available information, the weighted and unweighted formula is used (e.g. for alcoholic beverages, the Jevons index is calculated using weights reflecting the sample design). However, for municipality services and a component of electricity prices, the Dutot price index formula is used as it is considered to better represent situations in which substitution effects are insignificant or inexistent.

The calculation of elementary price indices based on scanner data follow the same lower-level formula. For elementary price indices with both scanner data and non-scanner data, an explicit weighting system is used whenever there is information available (e.g. turnover statistics) to reflect the relative importance of retailers providing the data.

The December month of the previous year is used as price reference period for all elementary indices. From the elementary aggregate level upwards, a Laspeyres-type index is applied. The obtained indices are chain-linked via December and are expressed in the index reference period 100=2015.

Compliance

The index calculations of Swedish HICP is in line with legal requirements.

9. HICP at constant tax rates and administered prices

Statistics Sweden calculates an HICP at constant tax rates (HICP-CT) by using information on tax rates at the elementary product level as parameters in keeping the effect of a tax rate change constant.

Starting from these adjusted product sub-indices, the HICP-CT is then obtained in the same way as the HICP. Changes in tax rates are generally reflected in the first entire month for which the new rate is applicable.

Statistics Sweden reviews and updates annually the list of mainly or partly administered ECOICOP subclasses.

Compliance

The calculation of the HICP-CT for Sweden is in line with legal requirements.

10. Follow-up from the previous compliance report

The main findings from the previous compliance monitoring report were published in [August 2013](#). Part of the recommendations made in the 2013 report were implemented and analysed by Statistics Sweden. Since the publication of this report, Statistics Sweden diversified used data sources with a view to increase sample representativeness, reviewed the treatment of seasonal products, which led to the implementation of the counter seasonal imputation method for package holidays, and analysed possible downward bias effects associated with the use of overlap quality adjustment methods in the Swedish HICP.

11. Overall assessment

On the basis of the information listed in section 1, Eurostat assesses that the HICP for Sweden is in line with most legal requirements. Statistics Sweden should improve the compliance by implementing the requirement formulated in section 2.

Notwithstanding this issue, Eurostat assesses the HICP for Sweden to be comparable to that of the other EU Member States. Furthermore, if Statistics Sweden follows up on the recommendations given in sections 2, 3, 5, 6 and 7 the comparability of the Swedish HICP will improve further.