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HICP Compliance Monitoring Report - Lithuania

1. Introduction

In April 2023, Eurostat reviewed the compilation of the harmonised index of consumer prices (HICP) for Lithuania. 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 (CPI).

The current report is based on:

- The 2022 inventory containing details of data sources, definitions and methods used in the HICP for Lithuania.
- The discussions at the compliance monitoring meeting with the State Data Agency, hereinafter referred to as Statistics Lithuania (SL), which was held on 5 April 2023.
- The information note on the previous compliance monitoring exercise published in [March 2014](#).

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

2. Coverage and classification

The target universe of the Lithuanian HICP follows 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 of Regulation (EU) 2020/1148 (implementing regulation).

In line with this concept, the HICP reflects consumption expenditure by all individuals. These definitions follow the national accounts concepts in the European System of Accounts ([ESA 2010](#)).

The HICP comprises all purchases by households within the economic territory of the country by resident and non-resident households (i.e. domestic concept). The HICP covers actual prices paid for goods and services in monetary transactions.

The product categories listed in Article 5(8) of the framework regulation 2016/792 as well as owner-occupied housing expenditures are excluded from coverage in the Lithuanian HICP.

The HICP covers the entire area of Lithuania, represented by 18 territorial units selected for the price survey. In addition, 10 villages are surveyed for food, non-alcoholic and alcoholic beverages, and tobacco.

SL classifies products and calculates the HICP according to the European Classification of Individual Consumption according to Purpose (ECOICOP), implemented in January 2016.

SL includes in the HICP all ECOICOP categories whose expenditure share lies above the one part per thousand threshold defined in Article 5(7) of the framework regulation.

Compliance

The coverage and classification in the Lithuanian HICP are in line with the legal requirements.

Weights

The weights in the Lithuanian HICP are updated annually. In 2023, the main source for the weights at ECOICOP 4-digit level are quarterly national accounts (NA) data referring to the three first quarters of year t-1. The fourth quarter is assumed to be equal to the third quarter.

The breakdown to the ECOICOP 5-digit level is done using NA values of year t-1 and the expenditure shares of NA year t-2. Some sub-index weights are estimated using information from other statistical domains such as retail, tourism, and transport statistics. The weight for insurance is based on the service charge.

Below the ECOICOP level, expenditures are distributed to representative products using the household expenditure structure from the Household Budget Survey (HBS), most recently conducted in 2019. As the HBS is conducted every five years, SL attempts, if possible, to use more timely data sources during the annual weight update (e.g., tourism or transport statistics). The representative products are generally the lowest level for which weights are derived, i.e., they constitute the elementary aggregates.

The representative products weights are price-updated to the previous year's December price level (price reference period).

The elementary aggregates price indices at the national level are obtained using population weights. Although expenditure weights can provide more accurate results, data are not available at this detailed level. Thus, the use of population weights is the best option currently available.

Compliance

The compilation of weights in the Lithuanian HICP is in line with the legal requirements.

Recommendation

- SL should estimate NA expenditure values for the fourth quarter of the year t-1 according to the guidance given in '[Guidance on the compilation of HICP weights in case of large changes in consumer expenditures](#)'.

3. Sampling and representativity

Regions

Prices are collected in 18 territorial units selected in two steps. First, towns with fewer than 5 500 inhabitants are rejected using cut-off sampling. Then, purposive sampling is used. The geographic sample includes small and medium towns and big cities, with a population from 5 500 (in small towns) to 540 000 (in cities). The sample of territorial units was last updated in 2013, when one territorial unit was excluded.

Prices for food products, non-alcoholic and alcoholic beverages, and tobacco are observed in 10 additional villages selected based on population, proximity to larger cities, and price differences relative to cities. The sample of villages is reviewed every five years.

Outlets

The sample of outlets is updated each year. Outlets are selected through purposive sampling based on turnover values. Currently, 4 000 outlets are selected as representative in terms of size, specialisation, and types (e.g., supermarkets, marketplaces, etc.), location, and ownership (e.g., small businesses or chains).

National online outlets are included in the sample since 2016, while foreign online outlets are not yet included. Cross-border outlets may have a significant weight, however, and should be included.

For central price collection, outlets are sampled by the staff of the Price Statistics Division. The outlets for local price collection are selected by price collectors.

In general, the number of selected outlets per product are 8–10, 6–8 and 4–6 in big, medium and small cities, respectively.

A new shop that opens during the year will be included in the sample only from January of the following year. Therefore, it may take almost a year for a new representative outlet to be included in the index. New outlets that for due reasons, such as belonging to a known brand or chain, are deemed to be representative and remain in business for several years, should be included in the index in the month after opening.

Products

To design the sample of representative products, product groups are created based on existing common properties, serving a common purpose, and being considered equivalent by consumers. For some products, a brand level stratum is created to support the quality adjustments. Next, individual products are selected according to comparative weight in the total consumption expenditure, continued market availability, and demand among consumers.

The list of representative products is reviewed and updated annually. The HBS is the main data source for the product selection, complemented by other sources. The number of price quotes per product will depend on price volatility.

New and innovative products

New products are first identified by expert judgement or price collectors and complemented with information from purchasing power parities (PPP). Prices for these products are observed for 12 months to ascertain whether enough price quotations can be collected and to assess their stability on the market. When a product is deemed to have become significant, it is included in the HICP. This methodology implies that a new product takes more than a year to be included in the sample. Inclusion should be made within one year.

Currently, media streaming platforms are not covered in the sample but are being monitored for inclusion in 2024.

Compliance

The sampling in the Lithuanian HICP is in line with the legal requirements.

Recommendations

- A new shop that opens during the year should be included during the year it becomes representative.
- SL should evaluate the share of cross-border internet purchases and, if representative, include foreign websites in their samples.
- SL should improve the inclusion of new products in the HICP by reducing the time of identifying and including new products.

4. Price collection

Statistics Lithuania obtains price data for the HICP through different sources, such as direct price collection, data received from enterprises, and administrative data. Most price collection is performed by 25 price collectors. They obtain prices by visiting outlets, online or by phone using mobile device software to transmit the data to the central system and to flag replacements, discounts, and outliers.

Products with national pricing, such as telecommunications, electricity, gas, package holidays, new cars, flights, passenger transport by train, information processing equipment, and postal

services are collected centrally from web pages or price lists. Insurance prices are provided via monthly electronic form by insurance companies. Prices for rents are collected via web scraping. SL relies on several sources of administrative data.

Prices are collected between the 1st and 20th day (13 working days) of each reporting month, and prices of seasonal food products and fuels are additionally collected between the 21st and –28th day (3 working days).

The HICP flash estimate is transmitted to Eurostat in a timely fashion and in-line with all requirements. All prices are collected, but not all monitored and validated prices enter the index calculation for the flash estimate due to the time required for those procedures. This does not make a specific product category less representative in the flash estimates, and the differences between the HICP flash estimate and the HICP are insignificant.

SL has begun working on the use of transaction data in the HICP. A new legal framework is in force to regulate electronic data delivery. From 1 January 2023, five large supermarket chains have started to provide transaction data.

Data validation

Monthly checks for errors in the collected price information are carried out by the price collectors, and the central office staff.

For price changes of more than 50% relative to the previous month, the price collector gets a warning to correct or confirm it and provide an explanation. The Price Statistics Division carries out another layer of verification and editing of the statistical data received. Price changes of 20% or less are checked by reference back to the outlet.

The thresholds for price change to be checked could consider the monthly average inflation and the price volatility of the product.

Preliminary price indices of products are cross-checked against producer price indices and data from other sources, such as tax information.

Compliance

The treatment of prices in the Lithuanian HICP is in line with the legal requirements.

Recommendation

- SL should consider the monthly average inflation and the price volatility of the product when defining the threshold for validating.

5. Replacement and quality adjustment

Treatment of missing prices

Prices are estimated when they are missing. Estimations are made using the short-term ratio of other product-offers of the same product or a similar product. In the case of seasonal products, two methods are applied: counter-seasonal estimation and all-seasonal estimation. In rare cases, prices are carried forward from the previous month after consultation with the shop and analysis of historical data.

Replacements

Estimations are made for two months, and after that period, a replacement product-offer is selected. Price collectors select a replacement product-offer that meets the item specifications, namely the consumption characteristics and adherence to the same brand strata. The price collector also registers detailed product characteristics of the replacement product-offer. The decision if the two product-offers are comparable or not is made at the central level.

Quality adjustments

SL uses explicit (expert judgment, hedonic, quantity adjustment) and implicit (bridged overlap) quality adjustment methods for goods such as clothing and footwear, and electronics.

The hedonic method, which expresses the price of a product as a function of its qualitative characteristics, is used to determine the change in the product price. It is used for books and is currently being investigated to process bulk web-scraped data for TVs.

Rents, health services, education, flights, package holidays and telecommunications are not quality adjusted. According to Article 11 (1) of Implementing Regulation 2020/1148 *'if there is no quality difference between a replaced product and its replacement, Member States shall compare the observed prices directly. Otherwise, Member States shall make a quality adjustment.'*

Discounts

Currently, discounted prices are included in the index when they are available for all consumers. However, according to Article 6 (1) of Implementing Regulation 2020/1148 *'discounts that are available only to a restricted group of consumers'* should be reflected in the HICP.

Prices on special sales (products which will normally be of a lower quality or quantity or are near the expiration date) are not collected. Price deductions for bulk or off-peak purchases and loyalty cards are not included in the index.

Compliance

The treatment of discounts is not fully in line with Article 6(1) of Implementing Regulation 2020/1148. SL should include all discounts that can be attributed to a specific product and are known in advance.

The quality adjustments are not fully in line with Article 11(1) of Implementing Regulation 2020/1148. SL should investigate the need for quality adjustments for rents, health services, education, flights, package holidays and telecommunications.

6. Treatment of seasonal products

Prices for out-of-season seasonal products are estimated using counter-seasonal estimation and all-seasonal estimation.

Compliance

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

7. Index calculation

The Lithuanian HICP is structured according to the ECOICOP. A 5-digit sub-class is further disaggregated into representative items which represent the elementary aggregates. In general, SL uses a Dutot index to compile an elementary price index. An arithmetic average price is calculated by representative item and collection area. Population weights are used to combine the average price by collection area into a national average price for that representative item.

A chained version of the Dutot index is applied in practice, the average price in the current month compared to the average price in the previous month. These successive month-on-month price changes are linked together starting with December of the previous year, which corresponds to the price reference period.

A limitation of the Dutot price index is that the price changes are implicitly weighted by the price levels in the base period. This disadvantage can be overcome with the Jevons index formula, which uses the ratio of geometric means.

A Laspeyres-type index is applied to obtain the sub-indices for the different ECOICOP levels. The sub-indices are chain-linked via December and are expressed in the index reference period 2015=100.

Compliance

The index calculation in the Lithuanian HICP is in line with the legal requirements.

Recommendation

- SL should consider using the Jevons index instead of the Dutot index to compile elementary price indices if the price levels within an elementary aggregate are not sufficiently homogeneous.

8. HICP at constant tax rates and administered prices

SL transmits the HICP at constant tax rates (HICP-CT) following the methodology defined by Eurostat. Tax changes in the HICP are generally included from the month when the tax comes into force. New tax rate changes introduced later than the first day of a given month are reflected in the HICP-CT of the following month.

Some products, such as cigarettes, may be sold with the new and the old tax rates during the same month. In practice, the new tax rate is implemented in the calculation of the HICP-CT at the time of its introduction, although some of the prices of such products available in outlets may still be based on the old tax rate.

The classification of administered prices (HICP-AP) is reviewed and updated annually. The list for the compilation of the HICP-AP is delivered to Eurostat in line with the established transmission practice.

Compliance

SL compiles and transmits regularly the HICP-CT and provides information on administered prices in line with the legal requirements.

9. Special products

Clothing and footwear

The product groups on clothing and footwear were defined after market analysis to select the most popular store chains and brands represented country-wide. Clothing and footwear brands are distributed into four strata. Brands are assigned to a particular brand stratum taking into account brand stratification used in for Purchasing Power Parities (PPPs) and considering the particularity of the national clothing and footwear market. The following characteristics are taken into account:

- Price level
- Country of origin
- Quality of the products.

Sales prices are included in the HICP if they are not discriminatory and if the variety, quality, and other aspects of the offered products remain the same. Characteristics such as brand, filling, lining, and the material of a product are taken as quality features that may trigger quality adjustments during replacements.

Rents

The rents sub-index is split in five elementary prices indices: apartments with one, two and three bedrooms, houses, and social rents. The rents subindex is compiled in the five biggest cities of Lithuania. In addition, each elementary index for apartments is tied to a range of square meters. The elementary price indices are aggregated with data from the Census and from the HBS. Data for prices are collected weekly from websites, and monthly from the municipalities (social rents). The rent prices collected are considered new contracts in the current month and existing contracts for the next 12 months. It is assumed that existing contracts do not change rent price for the representative period of 12 months. Data are also collected quarterly from a statistical questionnaire to the real estate agencies. Moving averages are used to obtain monthly data from the quarterly survey. Hence, not all prices are included in the HICP in the month in which the consumption of the service takes place, as required by Article 8 (2) of Regulation 2020/1148.

Replacements with quality adjustments are not made.

The use of a rolling sample of dwellings, with a survey addressed to the tenant, allows for the coverage of bigger samples using the same resources. This can help overcome the issue of quality changes in the index because more details on the dwellings are available.

New and second-hand cars

Prices for both new and used cars are collected centrally.

For new cars, list prices and data on characteristics such as type of fuel, engine power, engine size, and number of doors, are collected from websites or by phone. The sample of new cars is updated every year using a database received from a government agency that has data on car make, models, and quantities registered for the first time in the reporting year. New cars are stratified into seven segments. The prices of the same make, model, and sub-model are monitored throughout the year.

Replacements for new cars are selected according to the model belonging to the same segment. The direct comparison method is used when, after consulting the car sellers, changes between the replaced and the replacement car are minor. Otherwise, option pricing is used. When there is a fundamental change between the two sub-models and the use of the option pricing method would be impossible, the bridged overlap method is used.

For second-hand cars, average prices and data on characteristics are collected from a private institution. Second-hand cars have four strata according to different consumption purposes: small, compact, medium-sized, large. Model, sub-model, age, and make are considered for product specification. Quality adjustments and replacements are not made, since the data provider always has a price for a specific product description.

Flights

The sample for flights is updated every year with data on average flights prices, total number of passengers carried by each airline company, and destination. The sample includes foreign carriers and low-cost carriers and excludes seasonal flights (number of passengers carried by these flights is less than 10%), weekend travel, and indirect flights. Prices are centrally collected on the internet over a two-week period every month. Prices are collected when airline tickets are bought by customers in advance and included on the month the travel takes place. Seasonal flights are not considered, nor are connection flights.

Quality adjustments are not applied.

Package holidays

Resampling for package holidays is done yearly using data from the tourism statistics of year t-1. Data on prices for package holidays are collected centrally online. The sub-index is further stratified into four strata: leisure holiday tours; sightseeing tours; exotic tours to distant lands; skiing tours. All-seasonal estimation is used for seasonal packages.

The package includes travel, food, accommodation, and other services. Prices are collected over a two-week period each month when package holidays are bought by customers in advance. They are entered into the index calculation for the month in which the holiday commences. Ship cruises are not included as they are not representative in Lithuania.

Telecom services

The sample is drawn on information on the representativeness of each product from service providers.

The subclass weights are estimated with data from reports of the Communications Regulatory Authority on the structure of revenue of the electronic communications sector. Prices are collected centrally online.

The consumer profiles approach is used for the telecommunication index calculation. One or more profiles are defined. Selected tariff packages are followed until they are no longer representative. It is assumed that the profiles are evenly distributed in the population. Replacement is done when a new tariff package becomes more popular than the old one.

Bundled telecommunication services include television and internet packages. The sample includes one bundle for each of the seven providers. Segment weights are calculated using the total number of subscribers of the bundled package and the average price of the service. The sub-index (5-digit level ECOICOP) is obtained using the service-provider weights.

Quality adjustments are not made; direct comparison is used instead. When a replacement is needed and the characteristics differ significantly between the old and the new package, an estimation, even if not perfect, will provide a more accurate result than ignoring the difference.

Health

All providers of goods and services in the health sector, such as government and private institutions, non-profit institutions serving households, or private self-employed persons, are covered independently of their status. The sample of pharmaceutical products is updated annually with information from The State Medicines Control Agency on the most purchased products in the previous year. As regards the treatment of medical products in the HICP, expenditure includes amounts paid by consumers net of reimbursements.

Insurance

National accounts data on service charges for insurance are used to estimate the weights. The weights reflect the average aggregate expenditure over three years. The prices used for the compilation of the insurance price sub-index are the gross insurance premiums.

Compliance

SL compiles the sub-indices for special products in line with the legal requirements, except for rents where not all prices are included in the HICP in the month in which the consumption of the service takes place, as required by Article 8 (2) of Regulation 2020/1148.

Recommendations

- SL should improve the methodology for rents.
- SL should investigate the importance of indirect flights.
- SL should use migration rates for the introduction of new packages and tariffs for telecom services.
- SL should investigate the share of the different packages (that correspond to profiles) with the telecom service providers.

10. Follow-up from the previous compliance report

The main findings from the previous compliance monitoring exercise were published in [March 2014](#). SL has since reviewed the treatment of income-dependent prices. The service of care homes for the elderly, where prices are linked to the pension value, is the only example of income-dependent prices in the Lithuanian HICP. Currently, the price of care homes services is adjusted when a new amount of the base pension is set.

Since 2016, the consumer profile approach is used for telecommunication services, but quality adjustments and replacement are not made, and migration rates are not used.

Newly significant products are still included in the sample with a lag of at least 12 months. Nevertheless, some improvements have been made. A new data source for pharmaceutical products is used in accordance with Eurostat's recommendation. An average of 3% of the overall HICP sample is updated every year since 2015, with 2% products entering the sample and 1% leaving the sample, leading to a consistent increase in sample size.

Currently, the Dutot formula is used to calculate elementary price indices, based on the average price for the current and reference months. SL has plans to move to the use of a Jevons formula.

11. Overall assessment

Based on the information listed in section 1 and further obtained during the compliance monitoring visit, Eurostat assesses that the Lithuanian HICP is in line with most legal requirements. SL should improve compliance by implementing the requirements formulated in section 6 and section 10. Notwithstanding these issues, Eurostat assesses the HICP for Lithuania to be comparable to that of the other EU Member States. If SL follows up on the recommendations given, the comparability of the Lithuania HICP will improve further.