

Prices

Consumer price index for Germany



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Summary

1 General information on the statistics Page 5

- *Statistical population:* The prices of all goods and services purchased for consumption purposes by households in the domestic territory.
- *Statistical unit:* The prices of unvarying products or product offers and also quantities, discounts and other characteristics that are crucial for the quality of the products offered are observed.
- *Reference area:* Consumer price indices are compiled for the Federal Republic of Germany as a whole and for all Länder.
- *Frequency of data collection:* Prices are collected and results are published every month.
- *Legal acts and other agreements:* Act on Statistics for Federal Purposes, Price Statistics Act, European Regulation.

2 Content and user needs Page 6

- *Statistical presentation:* Price index series are provided for household final consumption expenditure in Germany in the form of totals and for individual aggregates.
- *Statistical concepts and definitions:* The prices paid by households are recorded, including all other excise duties.
- *User needs:* The consumer price index is used especially as inflation measure, as compensation benchmark (stable-value clauses in private-law contracts) and for deflation purposes for adjusting nominal aggregates of economic statistics.

3 Methodology Page 8

- *Source data:* While prices are collected to identify price trends, secondary statistics are used to calculate the relevant weighting patterns.
- *Data collection:* Different forms are used for data collection, for example databases, data collection from the internet.
- *Data compilation:* A Laspeyres index is calculated from the prices collected. Enclosed, differences by product type, outlet-type and Land are considered by weighting.

4 Accuracy and reliability Page 11

- *Overall accuracy:* An accuracy of 0.1 percentage points is sought for the overall consumer price index, while inaccuracies are larger at finer levels.
- *Data revision:* At every method change-induced revision (normally every five years) the results are analysed and published.

5 Timeliness and punctuality Page 13

- *Timeliness:* Generally, provisional results are published shortly before the end of a month. Final results are published around the middle of the month following the reference month.
- *Punctuality:* As a rule, the announced release dates are adhered to.

6 Comparability Page 13

- *Comparability -geographical:* In geographical terms, the indices of the individual Länder are fully comparable.
- *Comparability over time:* Comparability over time is fully ensured between two method change-induced revisions.

7 Coherence Page 14

- *Coherence - cross domain:* The Consumer price index, the Harmonised index of consumer prices and the Retail price index are derived from the same database by different methods.

8 Dissemination and communication

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- *Dissemination format:* The results of the CPI are available to all users at the same time on the website of the Federal Statistical Office.

9 Comment

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- None.

1 General information on the statistics

1.1 Statistical population

The statistical population of the consumer price index (CPI) comprises the prices of all goods and services purchased for consumption purposes by households in the domestic territory. The national consumer price index also includes imputed rents of households for owner-occupied housing. However, the statistical population does not include, for instance, social contributions (like statutory health insurance premiums), transfers (such as donations or fines) and purchases from other households (for instance second-hand goods).

1.2 Statistical unit

Survey unit: Prices are collected from representatively selected retail stores or service units (for example companies, stores, outlets) including public and state providers. Private households which let one (or more) flat(s) to other private households are considered service providers (companies) and thus equal to survey units.

Observation unit: The prices of unvarying products or product offers and also quantities, discounts and other characteristics that are crucial for the quality of the products offered are observed. A product selected for price observation is replaced by other offers if it is sold either seldom or no longer. The prices paid by households are recorded, including all excise duties on them. These are usually sales prices (offer prices and actual prices), but partly also rents, fees or surcharges.

Presentation unit: The consumer price index results are published as totals and in a technical (subject-related) breakdown of roughly 700 types of goods (purposes of use) at the finest publication level of detail. All results are shown in the form of price indices (index numbers). In addition, rates of change compared to the same month of the previous year or the previous month are shown.

1.3 Reference area

Consumer price indices are compiled for the Federal Republic of Germany as a whole and for all Länder. As regards the federal territory, the overall index and individual sub-indices are published down to the finest level of technical (subject-related) detail and also for special groupings. For the Länder, the Federal Statistical Office publishes the overall consumer price index and the index of net rent. Generally, the statistical offices of the Länder publish additional Länder results.

1.4 Reference period

The reference period is the relevant calendar month. Around the middle of the month, prices are collected over a period of at least one week. However, the price collection period is longer for products whose prices fluctuate considerably during the month. This applies, for instance, to mineral oil products, fresh fruit and vegetables, and clothing. In addition, results are calculated and published for the calendar year.

1.5 Frequency of data collection

Prices are collected and results are published every month.

1.6 Legal acts and other agreements

At national level, for the consumer price index the according national legal bases for price statistics are of importance:

- Act on Statistics for Federal Purposes (Federal Statistics Act - BstatG)
- Price Statistics Act (PreisStatG)

The up-to-date wording of the relevant national legislation can be found at <https://www.gesetze-im-internet.de/>.

As the consumer price index and the harmonised index of consumer prices calculated for European purposes are derived from the same data basis, European legislation is of relevance to the German consumer price index, too. Regulation (EU) 2016/792 and implementing regulation (EU) 2020/1148 should be mentioned in this context.

The EU legal acts in their up-to-date version and in the German language are available on the website of the Publications Office of the European Union at <http://eur-lex.europa.eu/>.

1.7 Confidentiality

1.7.1 Confidentiality - policy

The individual data collected are always kept confidential in accordance with Section 16 of the Federal Statistics Act (BStatG). Only in exceptional cases explicitly regulated by law may individual data be passed on. Pursuant to Section 16 (6) of the Federal Statistics Act, institutions of higher education or other institutions tasked with independent scientific research may, for the purpose of carrying out scientific projects, be provided:

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- with individual data if attributing the anonymised individual data to the relevant respondents or persons concerned requires unreasonable effort in terms of time, cost and manpower (de facto anonymised individual data),
- with access to individual data not including name and address (formally anonymised individual data) within specially protected areas of the Federal Statistical Office and the statistical offices of the Länder, if effective measures are in place to safeguard confidentiality.

The obligation of confidentiality also applies to those persons who are recipients of individual data.

1.7.2 Confidentiality - data treatment

At the finest level of detail, too, only highly aggregated results are published. The sampling technique ensures that the results published are based on a sufficient number of price observations.

Information that could be attributed to individual companies is also kept confidential (primary confidentiality). If results are mathematically related, so-called secondary locks must be applied in addition to the primary locks.

1.8 Quality management

1.8.1 Quality assurance

The consumer price index (CPI) for Germany is compiled in accordance with both comprehensive provisions in the relevant legal bases and methodological guidelines and requirements documented i. a. in methodological manuals, which are largely derived from the European requirements concerning the harmonised index of consumer prices (HICP). Differences regarding the national consumer price index are documented and explained to users. The delivery and publication dates for the consumer price index are coordinated and agreed between the statistical offices of the Federation and the Länder before the start of each year. The dates are publicly announced and are subject to special monitoring.

A processing program is used for computation purposes. It controls the individual process steps from price collection through to the calculation of results and carries out, and documents comprehensibly, (nearly) all calculations. Plausibility checks are built into each stage of processing to prevent data entry errors by issuing warnings if implausible data are entered. Critical data that have been entered by price collectors must be confirmed and/or be specified by specially trained staff of the statistical offices. Additionally, the processing program computes indicators as a basis for further quality checks. Among other things, the most peculiar results must be listed for each product type and be checked by appropriately trained staff of the statistical offices after the computation of the Länder results. Furthermore, specially trained staff of the Federal Statistical Office again compares the results of the various Länder. Data that differ considerably will be checked once more.

The working group on "Price collection for consumer price statistics", which comprises representatives of the Federal Statistical Office and the statistical offices of the Länder, regularly analyses weaknesses in the process of statistical production and develops quality improvement methods.

Eurostat, the Statistical Office of the European Union, carries out its own data checks for HICP purposes. It regularly requests reports on national computation practices and monitors compliance with European standards in the context of Compliance Monitoring. The [results](#) are published on the Eurostat website. Due to the common data basis, they are relevant to quality assurance activities in relation to the national CPI, too.

1.8.2 Quality assessment

The German consumer price index distinguishes itself especially by its high relevance for inflation measurement, its accuracy and very good timeliness. Special importance is attached to the transparency of data collection and computation methods. Fulfilling the relevant requirements, the consumer price index serves as a central indicator of inflation trends in Germany. It is also used as a benchmark, for instance, in wage negotiations or in contract clauses regarding the level of recurring payments (so-called stable-value clauses). Its sub-indices are an important source for deflating consumption expenditure in national accounts.

2 Content and user needs

2.1 Statistical presentation

2.1.1 Data description

As regards the consumer price index, price index series are provided for household final consumption expenditure in Germany in the form of totals and for individual aggregates (compare with presentation units under 1.2). Year-on-year and month-on-month inflation rates are also available. Furthermore, the weights of the individual sub-

indices in the overall index are published, too. On that basis, users can calculate inflation rates for any periods and product aggregates.

2.1.2 Classification system

The technical (subject-related) breakdown of the units of presentation is based on a version of the [Classification of Income and Expenditure of Households \(SEA, 2013 edition\)](#) - only available in German - that has been adapted to the needs of consumer price statistics and been broken down even further. The SEA 2013 structure is based on the [European Classification of Individual Consumption by Purpose \(ECOICOP, 2012 edition\)](#).

2.1.3 Statistical concepts and definitions

Central concepts and definitions of the consumer price index:

- The statistical population comprises the prices of all goods and services bought for consumption purposes by households in Germany. The final consumption expenditure of non-profit institutions serving households is not included. Imputed rents for owner-occupied housing are estimated, taking the development of the price index for net rent exclusive of heating expenses (rental equivalence method) as a basis.
- The underlying approach is the domestic concept, that is, all expenditure in Germany - including, for instance, that of foreign tourists - is taken into account.
- The prices paid by households are recorded including turnover tax and all other excise duties on them. General price reductions and reductions that can be assigned to the products concerned are taken into account.
- Intra-sectoral flows (for instance a household's second-hand purchases from another household without involving resellers) are not covered. An exception is the rental of dwellings of private households to other private households (a private household as landlord belongs to the enterprise sector).
- As the focus is on determining inflation, pure price changes are measured. Changes in the structures of product offers or in the consumption patterns are not to be reflected in the index (Laspeyres concept). At the same time, the consumer price index (CPI) is often used as a compensatory measure (see 2. 2). For this reason, supply structures or consumption patterns are generally maintained for at least three years or implemented retroactively in the context of revisions to ensure comparability over time.

When applying the relevant approaches, some special aspects have to be borne in mind. As the focus is on measuring pure price changes, quantity and quality changes to the products covered are excluded from measurements of price development. This is done using internationally recognised methods and, in most cases, the results obtained are satisfactory (also see 3.3). In some cases, however, statisticians face challenging problems in assessing quality or quality differences, for instance, if the quality of a book, PC game or concert performance is to be evaluated. An objective „quality measurement“ is not feasible in those cases. Official statistics have agreed on the application of the so called „best-seller approach“. Here the prices for the currently best-selling books, CDs, DVDs or concerts are directly compared without quality adjustment. However, extreme price fluctuations can occur in this type of price measurement, which can be explained by the method itself and background knowledge. Moreover, this best-seller approach only applies to goods with a very low overall weighting.

Currently, generally recognised, recommended or agreed methods are not in place for price measurements in a number of consumption expenditure segments. This applies, for instance, to life insurance services that are presently not included in the German consumer price index. However, part of the financial services is measured in an indirect manner. Practical data collection problems prevent the inclusion of illegal and grey area transactions, too. For example, prices for the illegal arms trade or the black market for domestic services, which are theoretically part of the statistical population, cannot be considered. Also the prices for drugs and prostitution services are not included either at the moment.

2.2 User needs

The consumer price index is used by various user groups especially for the following three purposes:

- Inflation measure: The consumer price index is a central indicator of inflation trends in Germany. That kind of an inflation measure is of special interest to ministries, central banks, economic research institutes, economic departments of large enterprises (for example commercial banks), academic and research institutions, trade unions and employers, and the media.
- Compensation benchmark: The consumer price index is also used to adjust regular payments to the general trend of prices in Germany in accordance with relevant stable-value clauses in private-law contracts. A compensation benchmark is above all required by tenants (lessees) and landlords (lessors), payers and recipients of company pensions or life annuities and by other people with payment obligations or recipients of regular payments. Furthermore, the consumer price index is often used to calculate compensation or adjust-

ment payments (for example inheritance or divorce-related payments). A price index derived from the consumer price index - in combination with the development of wages and salaries - forms the basis for annual adjustments of the level of standard needs in accordance with the German Social Code, Book II and Book XII.

- Deflation: Furthermore, the consumer price index and its components are used as a basis for adjusting nominal aggregates of economic statistics for inflation effects, for instance, in national accounting.

2.3 User satisfaction

The following activities are designed to involve main users and other known users concerned in basic decisions on the further development of consumer price statistics:

- regular working group and task force meetings (particularly at Eurostat),
- as part of annual meetings or meetings held as required with users (in particular with the statistical offices of the Länder and responsible ministries),
- user conferences (specialist committee meetings) at longer intervals,
- Federal Statistical Office's participation in scientific conferences, and
- special user surveys in preparing planned changes.

3 Statistical processing

3.1 Source data

Various forms of data collection are used to construct the consumer price index for Germany. While prices are collected to identify price trends, secondary statistics are used to calculate the relevant weighting patterns.

Price collection:

CPI calculations are based on a basket which is representative of all goods and services purchased by households in Germany. The basket could be said to have two levels of content.

At the upper level the basket contains approximately 700 types of goods (10-digit level). This includes goods such as salt, towel and mobile phone. To the same extent, the basket of goods includes services ranging from cinema visits to bus and train tickets to net rent. These types of goods are assigned weighting shares (weights), with which the various price trends are included in the computation of the total consumer price index. At this level the basket including the weights remains unchanged over a time period of five years.

From the different types of goods of the basket's the upper level, individual products are then selected for price collection purposes in each of the selected shops, for example a 500 g package iodised salt. These individual products represent the lower level of the basket. At this level of individual price representatives, the basket is continuously updated as products which are no longer offered or become less important in the market need to be replaced, or completely new product variants need to be added. For example, seasonal goods in the clothing sector are subject to regular changeovers. Irregular but more frequent changes affect technical products such as cell phones.

At the lower level of the basket, several hundred thousand individual prices are recorded manually at retail stores and service units. This until now usual price collection includes on the one hand the decentralised price collection by price collectors in shops all over Germany and on the other hand the central price collection, which takes place mainly as a survey on the internet.

The additional use of digital data sources allows the statistical offices to increase the number of monthly price observations significantly. For example, for sectors with particularly complex pricing, such as flights or premiums for motor vehicle insurance, additional data sources with a high number of observations are used. In addition, modern survey methods such as Web Scraping are utilised, which are gradually replacing manual surveys. Web Scraping is an automated extraction of internet data. Using such procedures, the number of monthly price observations for online trade and for selected services - such as rental cars - has been extended considerably in the light of dynamic price changes.

Since the changeover to the base 2020, additional transaction data has been used for price collection with retroactive effect from January 2020. This leads to a qualitative improvement in the collection of package holidays, since only the actual trips are taken into account in the index calculation. At the same time, the publication could be extended to different destinations.

Further information can be found in the WiSta article Blasius, A.: „[Digitalisierung in der Preisstatistik – Nutzung von Reisebuchungsdaten](#)“, WiSta 04/2023.

All recorded data are aggregated for the types of goods (upper level) which are included in the weighting pattern for goods and services with their relevant shares within household final consumption expenditure (see also Data sources for weighting). The weighting pattern at least considers all types of goods whose shares within the total consumption expenditure of households in Germany are above 1 per mill. A stricter rule applies to seasonal goods. These are already included if their share of expenditure during the offer period - which in extreme cases can be as little as one month - is 2 per mill. The requirements for the limit values result from the European regulations for the HICP.

For the purpose of price collection, the territory of the Federal Republic of Germany in a first step is divided into 16 Länder with just under 100 regions. In each of those regions, generally representative cities, towns and municipalities and afterwards representative outlets are selected, using a purposive sampling procedure. The different market shares of the outlet types (for example department stores, supermarkets, specialised outlets, online shops) are taken into account by explicit weighting. All outlet types whose market shares amount to at least 5% for a certain type of good are covered. The Federal Statistical Office has very detailed specifications for selecting individual products, which are supplemented with information about specific regional characteristics that is available at the statistical offices of the Länder and from price collectors. On that basis, price collectors collect the prices of the most frequently sold products from the relevant reporting units. The number of products selected is especially based on the share of a given type of goods within the total household consumption expenditure.

Data sources for weighting:

An essential precondition for determining reliable price trends is the availability of very precise information about the shares of the individual transactions within the survey population. It is only in this way that the individual changes in prices can be appropriately included in the respective calculations. For this reason, the Federal Statistical Office has invested a great deal in the calculation of the various weighting patterns used to construct the consumer price index. The prices of the goods and services are aggregated to obtain sub-indices for 700 types of goods, using the weighting pattern for outlet types and for Länder. The sub-indices of all types of goods are then aggregated to obtain the overall index, applying the weighting pattern for goods and services. Actually, various secondary data sources are used to calculate the individual weighting patterns:

- **Outlet-type weighting:** The calculation of the outlet type weights is based on market research data on private household expenditure or on sales distributions in the retail trade and on official trade statistics. For the regionalisation of the outlet type weights at the Länder, knowledge from the statistical offices of the Länder is also used.
- **Länder weighting:** Länder weights are derived from the information on household final consumption expenditure in the domestic territory that is provided in the national accounts of the Länder. As these are not broken down to the types of goods (SEA-CPI 10-digit level), the Land weights are the same for all types of goods.
- **Weighting of goods and services:** In order to determine the weights of the higher levels in the weighting pattern, from base 2020 onwards, the results of the National Accounts (NACC) for private consumption expenditure will be used. The fine weights of the weighting pattern for goods and services are based on household surveys. For this purpose, some 80,000 participants in the sample survey of household income and expenditure record their income and expenditure for a few months every five years. However, the results of the sample survey are only available at the federal level and their detail is not as fine as that of the consumer price index. Also, the sample survey of household income and expenditure is conducted two years before the year that is taken as the consumer price index base. For this reason, the results have to be updated and supplemented, using the continuous household budget surveys that are carried out annually. Regarding the further refinement and breakdown of the weighting pattern, results of other statistics are used, for example statistics from other authorities such as registration statistics of the Federal Motor Transport Authority and also results from market research institutes. Overcoverage and undercoverage known in several statistics must be rectified in order to calculate the weighting pattern. For instance, the consumption of alcohol and tobacco indicated in the sample survey of household income and expenditure and in the continuous household budget surveys is too low. Therefore, the data are adjusted using the results of excise duty statistics. Furthermore, the household budget surveys include sales within the private sector (for example of used cars). As the respective data are not to be included in the consumer price index, they have to be adjusted using other data, for instance, of the Federal Motor Transport Authority. The same weighting pattern for goods and services is applied across the country as a whole.

3.2 Data collection

Price collection:

The most efficient of the following forms of data collection is used for each of the given product types:

- In the individual survey units, the prices are collected by price collectors from the statistical offices of the Länder.

- As regards retail chains with a uniform pricing structure, a central survey is conducted by specially trained price collectors in one branch of the retail chain concerned.
- Catalogues, price systems, fee scales, laws and administrative regulations are analysed and evaluated.
- Manual and automated survey on the internet.
- Special databases are searched or data are purchased from private providers.
- Data are transmitted by respondents using the IDEV online reporting procedure or survey units are called on the telephone regarding selected products.

Price collectors from the statistical offices collect the prices of a large part of goods and services directly in the survey units. To measure the price movement, they every month collect the prices of the same products in the same outlets across the whole country, mostly using mobile data capture devices with integrated plausibility checks. The principle of always observing the prices of the same products applies to other forms of data collection, too. An item once selected for price observation is however replaced by another item if it is sold either seldom or no longer. As a rule, the survey programme is basically reviewed before changing over to a new base year. This refers both to selecting the observation units and determining the variables to be collected and to adjusting the standards for the distribution of survey units across regions and outlet types.

Data sources for weighting:

Please note the quality reports on the official statistics indicated under 3.1 for information on preparing data collection and collecting data from the basic sources used to compile the weighting patterns. The quality reports are available at www.destatis.de > Methods > Quality.

3.3 Data compilation

Price index calculation:

The price index calculations are largely carried out by a processing program. As a first step, data that are temporarily missing (for instance due to seasonal effects) are estimated using appropriate methods, that is, generally on the basis of the price development of comparable products. In addition, quantity and quality adjustment procedures ensure that 'like is compared with like' when measuring prices, despite changes in the products offered. As a result, price changes can be interpreted as pure price movements. Different methods are used for quality adjustment. In many cases, an old product offered can be replaced by a new one with at least roughly comparable quality. Here a direct comparison of prices will be feasible. Sometimes, however, it is not possible to find products in the market that are comparable in terms of quality and are representative at the same time. In those cases, the quality difference between the products replaced and the relevant replacement products is determined using appropriate methods of calculation. That difference is then deducted from the total price change. Hedonic quality adjustment is for instance used for desktop PCs, notebooks and used cars, while option pricing (feature adjustment), as it is known, is one of the techniques applied to new cars.

As a next step, the processing program computes an elementary index typically based on the Dutot formula for each product type in an outlet type in a Land. To this end, the ratio is calculated of the average prices between the reference and the base period. The individual prices observed within an elementary aggregate are added together to obtain the average price observed which can be compared with the average price of the base period.

The elementary indices determined in this way are aggregated using the Laspeyres formula which is largely applied in German price statistics. This type of index measures price movements over time while taking into account neither quantity nor quality changes. As regards the product types for which outlet-type weights are available, the processing program calculates from the elementary indices a sub-index for a given product type in a Land, using the product-specific outlet-type weights. As a next step, the Länder results for the respective product types are added up using the Länder weights to obtain federal results. To construct the overall consumer price index, the sub-index for a given type of good weighted by outlet types and Länder is weighted according to the German households' spending on that type of goods. Rates of price change, such as the inflation rate measured by the consumer price index, are derived from the price index series at the end of processing.

Calculation of weights: see 3.1

3.4 Adjustment

In addition to unadjusted series, calendar and seasonally adjusted series are provided of the overall consumer prices index and the "Food and non-alcoholic beverages" sub-index. The latter sub-index has been selected as it includes the largest seasonal effects. The Federal Statistical Office uses the Berlin method - BV4.1 to adjust the consumer price indices for seasonal variations.

3.5 Cost and burden

The response burden on survey units can be regarded as small because qualified price collectors carry out mainly survey on their own. Survey (reporting) units are only affected in cases of written or telephone interviews or when questions come up during data collection (for example because of insufficient price labelling). In most cases, the survey units only have to allow data collection in their enterprises, establishments or branches. There is no burden on the survey unit in case of internet survey or the use of digital data sources.

4 Accuracy and reliability

4.1 Overall accuracy

The key target of constructing a consumer price index is to identify the development of prices regarding household final consumption expenditure in Germany. Since prices cannot be directly measured or collected for the aggregate as such, the prices of a sample of individual products are collected and taken as a basis for subsequent calculations and analyses. As sampling is based on mainly purposive selection, the sampling error cannot be formally calculated or estimated. To keep the unknown sampling error as low as possible, however, the very high number of prices are collected every month and a highly sophisticated stratification model is applied (see 3.1). Non-sampling errors are not quantified in consumer price index construction. Activities such as continuously improving the methodology and taking a wide range of quality assurance measures at different levels (see 1.8.1 and 4.3) are however intended to reduce non-sampling errors to a minimum. An accuracy of 0.1 percentage points is sought for the overall consumer price index, while inaccuracies are larger at finer levels of detail regarding, in particular, the expenditure on products with a small importance for consumption.

The generally high accuracy of the consumer price index has also been confirmed by the relevant analyses made during method change-induced revisions (see 4.4.3) where, in most cases, noteworthy revision differences have only been the result of methodological improvements.

Discrepancies between provisional and final results have been small (a maximum of +/-0.1 percentage points to date).

4.2 Sampling error

Constructing the consumer price index, a random sample is used for the rent survey. A sampling frame is not available from which a random sample could be drawn either directly or with reasonable effort. Purposive selection, mostly in combination with the cut-off principle, is instead used in drawing the sample. For this reason, a sampling error cannot be formally calculated or estimated although there are sampling-related errors. The better the survey population is reflected in the sample, the better the quality of purposive sampling combined with the cut-off principle. Therefore, special importance is attached to the quality of the computation basis for sample stratification. To keep the unknown sampling error as low as possible, the very high number of prices are collected every month and a highly sophisticated stratification model is applied. It can be assumed that the monthly development of prices is reflected very accurately in both the overall index and aggregated sub-indices using this non-random procedure.

4.3 Non-sampling error

Non-sampling errors are not quantified in CPI construction. Continuously improving the methodology is however intended to reduce non-sampling errors to a minimum. This refers to the following types of errors, in particular:

- Systematic errors due to deficiencies in the sampling frame: An individual sampling frame is not available. For consumer price statistics, this is compiled from different sources. Gaps are closed by estimates.
- Errors because of non-response (units and variables/items): Compared to other surveys, non-response is very low because, typically, individuals or enterprises are not questioned or interviewed. Instead, prices are collected by specially trained price collectors. It may nonetheless happen that information is justifiably missing, for instance, because a survey unit is closed for holidays or an observation unit cannot be visited as it only operates on a seasonal basis. Regarding such temporary phenomena, estimation/updating procedures are integrated in the processing program to prevent biases. The relevant automated calculations are initiated by specific code-based routines. In cases of permanent non-response (if, for instance a unit ceases to operate or a product is no longer offered), the price collectors have to look for substitutes without delay. They are appropriately trained to comply with the general rules for replacing observation and survey units. Each case will finally be transmitted to a specially qualified staff member of the competent statistical office to take a final decision or determine the further procedure. Special situations such as floods or pandemics can also lead to price falls - even on a larger scale. In addition to the usual update methods, imputation procedures are used in this case, the qualitative limitations of which are flagged.

- **Compilation and processing errors:** As the processing program incorporates consistency and plausibility checks, measurement or data entry errors are largely prevented in the process of data compilation. Inconsistent entries are rejected by the processing program. Owing to the incorporated plausibility checks, warning messages are displayed if, for instance, atypical price or quantity changes occur. If a warning message is ignored, the relevant case will be automatically shown to a specially qualified staff member of the competent statistical office for final assessment or clarification. Processing errors are prevented by automated routines or calculations of the processing program.
- **Effects depending on the model used:** The informative value of price trend measurements using Laspeyres indices is limited. Typically, the weights are kept constant over a relatively long period of time when applying the Laspeyres formula (fixed-base index). Although the structure of household expenditure changes slowly, however, it does so from year to year. To reflect pure price movements (irrespective of changes in expenditure weights) and, at the same time, account for changes in the structure of household expenditure, the weighting pattern is adjusted every five years during a method change-induced revision. Methodological improvements are introduced in the context of such revisions, too. However, the effects of incorporating a new weighting pattern has been rather small in the past. Methodological improvements, on the other hand, tend to have a stronger impact (see 4.4.3).

The calculation models applied in measuring inflation and using the consumer price index as a compensation benchmark correspond to the relevant international standards. Regarding alternative - for instance deflator - purposes, other definitions of the survey population or deviations from the given index formulas may be more appropriate.

4.4 Data revision

4.4.1 Data revision - policy

Routine revisions: In addition to final results, provisional CPI results are published. At the end of a reference month, the provisional results are estimated on the basis of provisional Länder results available by that time. In the middle of the following month, the final results will be published based on the complete range of final data available in place.

Method change-induced revisions: In the consumer price index, these usually take place every five years. A new base year will be introduced and a revised survey catalogue will be used as a basis. In addition, weighting pattern (see 3.1) will also be updated, new methods are introduced and existing ones updated.

4.4.2 Data revision - practice

Routine revisions: see 4.4.1

Method change-induced revisions: The weighting pattern for a new consumer price index is adjusted with a delay of slightly more than two years after the end of a new base year as analysed results of the sample survey of household income and expenditure (EVS) are not available at an earlier time. The indices, which are recalculated back to the new base year, will replace the results previously published for that period.

The method change-induced revisions of the consumer price index are thoroughly prepared. Already before the beginning of a new base year, the sample of survey and observation units is systematically reviewed and, where necessary, updated. Usually, the methodological changes to be introduced are specified before the beginning of the new base year, too. As of the beginning of the new base year, prices are collected on the basis of both old and new standards. After the end of the new base year, the weighting patterns are recalculated (depending on the information available on consumption structures and consumption habits of households). A good two years after the end of the new base year, the results are recalculated from the beginning of the new base year, using the new structural information and methods. Results before that period are not recalculated. Instead they are chain-linked, which means that they are formally converted to the new base year. Typically, the chaining period is the month of December before the new base year, in the case of altered seasonals due to changed methods, however, the annual average of the new base year. That rebasing does not yield new results in terms of content although differences may occur due to rounding.

4.4.3 Data revision - analysis

Provisional results: Comparing provisional and final results shows that there is mostly no discrepancy or a discrepancy of not more than 0.1 percentage points between the provisional and the final result of the consumer price index as a whole.

Method change-induced revisions: Each revision compares the recalculated results (from the beginning of the new base year) with the previous results. The given revision differences are thoroughly analysed, and the results are published. The analysis shows, for instance, what proportion of the revision differences is due to changes in the

consumption and purchasing habits (weighting patterns) of households. Furthermore the effects of larger methodological changes are shown in a separate and detailed manner.

As a result of the recalculation, the price increase for the revision period is subdued compared to the previous base 2015. In 2021, the deviations are small and equalised on the annual average. In 2022, the recalculated results for the base 2020 are consistently lower than the previous results for the base 2015. The recalculated inflation rate for 2022 is + 6.9 %, a percentage point lower than the previous 2015 base.

With the new base year 2020, the weighting pattern were also updated and methodological improvements were introduced in this revision.

The stratification of the rental sample introduced with the base change 2015 is continued and the explicit weighting for district and landlord types has been updated. In addition, the proof of results has been improved. Supplementary weighting information on rents allows it to be shown separately for actual and imputed net rents.

The introduction of methodological improvements may lead to significant deviations in the results. In particular, changes were made to the calculation of the weighting pattern for goods and services during the changeover to the base year 2020. These changes explain a large part of the revision differences. Firstly, due to the pandemic, a three-year average was used to derive the weighting of the base year 2020. Secondly, the national accounts data were used as the primary source for deriving the weighting of goods and services, which is in line with the European standard.

In addition, digital survey methods such as web scraping were increasingly used. Furthermore, for package holidays, the use of transactional data has improved both the data base and the calculation method. In the case of flights, more extensive data was used to produce the results.

Additional explanations, in particular on revision differences, can be found in the Wista article Mai, C., Egner, U.: „[Analysen zur Revision 2023 in der Verbraucherpreisstatistik](#)“, WiSta 04/2023 (only available in German).

Further information on the base change in 2023: www.destatis.de/Themes/Economy/Prices/Consumer_price_index/Current_news

5 Timeliness and punctuality

5.1 Timeliness

Provisional results: Generally, provisional results are published shortly before the end of a month. Exceptions are the reference months of December (public holidays) and February (short month). More exceptions due to calendar irregularities can be specified. Those exceptions are included in the release calendars and announced on the internet before the start of a new calendar year.

Final results: Final results of the monthly consumer price index are published around the middle of the month following the reference month.

5.2 Punctuality

As a rule, the announced release dates are adhered to (the provisional result for January 2023 was published 9 days late on 09.02.23 due to technical problems).

6 Comparability

6.1 Comparability - geographical

In geographical terms, the indices of the individual Länder are fully comparable as the same system is applied in all Länder. This means that the same weighting pattern is used in all Länder across the country because the weighting information is not sufficiently detailed or accurate for each of the Länder. To compare the German results with those of other countries, however, the harmonised index of consumer prices should be preferred (see 7.1). The concepts used for calculating the index are identical in all Member States of the European Union.

6.2 Comparability over time

Comparability over time is fully ensured between two method change-induced revisions (see 4.4.1) as methodological changes or changes in the consumption and shopping habits are only incorporated at the time of those revisions. Consumer price indices of different base years are chain-linked in arithmetical terms. As a result of including new weighting patterns and methodological changes when introducing a new base year, the comparability of the consumer price indices linked in long time series is limited.

7 Coherence

7.1 Coherence - cross domain

To some extent, the results of other statistics concerning similar aspects differ from the results of the consumer price index. The differences are mainly due to the fact that price statistics aim to measure price development in the various economic sectors and at the different stages in the economic process.

- Harmonised index of consumer prices for Germany (HICP): Basically, the HICP, like the CPI, is intended to measure the development of prices in relation to household final consumption expenditure in the domestic territory. Both indices are derived from a common database. As a rule, this refers to both calculating weighting patterns and collecting prices at monthly intervals. Hence, the results of the German HICP and the German national CPI are identical on the lowest aggregated level (elementary aggregate indices).

However, the purposes for which the two price indices are used differ to some extent. The focus of the HICP is on international comparison. Calculating comparable indices in the EU Member States that allow aggregation to obtain European price indices is especially important. By contrast, the CPI reflects the framework conditions in Germany and, to some extent, takes into account alternative goals like those of a compensation benchmark and of deflation. Due to the different purposes, both the delimitation and calculation of the indices differ, too. In contrast to the CPI, the HICP does not include imputed rents for owner-occupied housing, games of chance and radio licence fee. In the past, the differences in coverage have been even greater, for example, motor vehicle tax and admission fees were not included until December 2009.

In contrast to the CPI, the HICP is constructed as a chain index with an annually changing weighting pattern. Typically, figures of previous periods are not recalculated when reweighting the expenditure and incorporating methodological changes. Therefore, comparability over time is possibly a bit more limited for the HICP than for the CPI. However, the former takes into account more recent consumption patterns.

To the extent they are compatible with the relevant concepts, new regulations concerning the HICP are also implemented in the CPI. As regards the CPI, however, the aforementioned regulations are only implemented during the next method change-induced revision (usually made every five years), while implementation in the HICP begins immediately once the regulations come into force.

- Retail price index (RPI): The RPI, too, is derived from the same data basis as the CPI and HICP. Unlike the CPI, however, the RPI is a consumer price index with an institutional breakdown rather than a breakdown of individual consumption expenditure by purpose. The RPI covers only the households' retail purchases and is computed both with and without value-added tax to facilitate its use as a deflator for nominal variables (such as retail turnover).
- National accounts: The purpose of national accounts is to provide an overall quantitative picture of a national economy's activity over a given period of time. The picture should be as comprehensive as possible, clearly structured and sufficiently detailed. This includes reflecting the level of household final consumption expenditure in the economic territory. The relevant CPI concept is largely based on the definition of household final consumption expenditure in national accounts. Nonetheless, the two concepts differ in some respects.

Individual CPI results or sub-indices are often used in national accounting for deflating household final consumption expenditure in the domestic territory. However, modifications are carried out to make those results suitable for deflation purposes. As a matter of fact, the consumer price index and the relevant national accounts deflator differ for the simple reason that the underlying concepts are different (chain index and Laspeyres index with a fixed base).

Furthermore, gaps in covering, for instance, illegal transactions or transactions that are difficult to measure (smuggling, illegal work, etc.) are filled with estimates in national accounting. In general, such cases are not included in the CPI although, in individual cases, the development of prices of comparable legal transactions is taken as a basis.

Like the HICP, the CPI includes both motor vehicle tax and private health insurance contributions (service proportion only). In national accounts, however, these are treated rather as social contributions than as consumption expenditure. Contrary to the CPI, radio licence fees are not included in the national accounts or the HICP.

- Further price indices for comparisons over time: In addition to the consumer price index, further price indices are available for comparisons over time. They include producer price indices, foreign trade price indices, the wholesale price index, and construction and real property price indices. Like the consumer price index, all those indices are Laspeyres-type price indices. However, they reflect price development at other stages in the economic process and, in contrast to the CPI, do largely not include value-added tax. The prices of the same

products may develop differently at various stages in the economic process as specific services (such as trade-related services) are added at those stages.

- Purchasing power parities (PPPs), price level indices (PLIs): To obtain information about price level differences between the individual countries, the Statistical Office of the European Union (Eurostat) computes so-called purchasing power parities in cooperation with the national statistical authorities. They form the basis for deriving, in a next step, price level indices. PPPs and PLIs are constructed, among other things, for goods and services purchased by households for consumption purposes. Unlike in the CPI, the basket of goods and services for household final consumption expenditure is defined in an international coordination process. The weighting pattern for the PPPs is derived by each participating country from the national accounts. However, the detail of the weighting pattern is not as fine as that of the CPI weighting pattern. The PPP and PLI concepts are designed exclusively for a geographical comparison of prices. Actually, the prices used to calculate PPPs and PLIs are only collected in Berlin. By means of adjustment factors which are derived from average prices of selected goods, the results for Berlin can be extrapolated to all over Germany. The PLI computation further incorporates exchange rate information. Unlike the CPI, PLIs are consequently affected by fluctuations in exchange rates.
- Household budget surveys (sample survey of household income and expenditure, continuous household budget surveys): Household budget surveys provide important information about the structure of household final consumption expenditure in Germany. They form the main basis for establishing the weighting pattern for goods and services in the consumer price index. However, the concepts and definitions of household budget surveys regarding household final consumption expenditure are not fully in line with those of the CPI. Although the classifications of the currently used sample survey of household income and expenditure (EVS) and the CPI are both based on the German Classification of Income and Expenditure of Households (SEA), the breakdown of the results of the sample survey of household income and expenditure is not as fine as that of the CPI. And, typically, the sample survey of household income and expenditure is not carried out in a base year of consumer price statistics. Therefore, the results of the sample survey are supplemented and updated using the more detailed data of the continuous household budget surveys (LWR). Unlike the CPI, the household budget surveys are based on the national concept and record purchases in the private sector, too (like those of used cars). To calculate the weighting pattern for household final consumption expenditure, the results of the household budget surveys are adjusted and supplemented using further statistics. Consequently, the weighting pattern applied in the consumer price index is not fully in line with the given structure of household final consumption expenditure in the household budget surveys.

7.2 Coherence - internal

The consumer price index for Germany is internally coherent. Clear rules based on international standards are in place for sampling and collecting prices and for compiling price series.

7.3 Input for other statistics

The CPI for Germany (and its individual components) is used, among other things, to adjust nominal values of economic statistics (for instance national accounts or wage statistics) for inflation effects.

Furthermore, the index of consumer prices harmonised for European purposes, the retail price index and the index of accommodation and food services are derived from the same data basis as the consumer price index.

8 Dissemination and communication

8.1 Dissemination format

News release

A press release is issued each time results are published. The press release is intended to communicate the most important results in a summarised form. The dates of publication are listed in an annual release calendar that is available publicly (see 8.3).

Publications

Major current results regarding the consumer price index for Germany are published on the consumer price index theme page at www.destatis.de > Themes > Economy > Prices > Consumer price index under "Tables".

At www.destatis.de > Themes > Economy > Prices > Consumer price index > Publications you can download the following products:

- Consumer price index - Weighting pattern: This publication contains the weights for the divisions and the two to five digits of the consumer price index. It also lists the types of goods whose price developments are included in the consumer price index.

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- Data on energy price trends - Long-Times Series: This cross-sectional publication contains prices and price indices for the different types of energy as long series. In addition to consumer price indices, the publication provides import, export and producer price indices.

Online database

In the [GENESIS-Online database](#) (Statistic Code: 61111) the consumer price index results for the roughly 700 types of goods from 1991 onwards (if available) can be retrieved in different file formats. Regarding the individual Länder, the overall indices are available from 1995 onwards and the indices of net rent from 2005 onwards.

The database also contains the weighting pattern for the current base year and for previous base years (from 1995 onwards).

Micro-data access

Micro-data are not accessible.

Other

Länder results at a finer level of detail are available on the homepages of the statistical offices of the Länder.

8.2 Documentation on methodology

Articles on the consumer price index are contained in our *Wirtschaft und Statistik* scientific journal.

Currently relevant documents are available on the consumer price index theme page:
www.destatis.de > Themes > Economy > Prices > Consumer price index > Methods

8.3 Release policy

Release calendar

At the end of a calendar year, the release dates are announced for the following year.

Release calendar access

Publication dates for the Consumer Price Index can be found on the website of the Federal Statistical Office:
www.destatis.de > Press > Annual release calendar.

User access

The results of the CPI are available to all users at the same time on the website of the Federal Statistical Office.

9 Comment

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