

Producer Price Indices

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Summary

The system for observing producer prices is old: it is largely the successor of the “wholesale price indices” calculated in France for industry since 1911, which became the “industrial sales price indices” in 1977. The survey part of the system was renamed OPISE (“Observation des Prix de l’Industrie et des Services” [observation of prices in industry and services]) in the late 1990s when the first producer price indices for business-to-business services were added to the producer price indices for industry.

The legal framework for producer price indices is defined by Regulation [No 1165/98](#) of 19 May 1998 concerning short-term statistics (STS), which was amended several times between 1998 and 2020, with a view to improving consistency and broadening the coverage of these indicators. Regulation [No 1158/2005 of the European Parliament and of the Council of 6 July 2005](#) added the monitoring of developments in import prices for industrial products and producer prices for services. Regulation [No 2019/2152](#) of the European Parliament and of the Council of 27 November 2019 on European Business Statistics (EBS Regulation), followed by Commission Implementing Regulation (EU) [No 2020/1197 EBS \(European Business Statistics\)](#) of 30 July 2020, which laid down its technical specifications and arrangements (General Implementing Act), broadened the scope of the monitoring of producer price indices, particularly in the services sector, and required that they be published more quickly.

Over the last ten years, the OPISE system has also absorbed surveys from the observation and statistics department (Service de l’observation et des statistiques, SOeS, which has since become the Statistical Data and Studies Service (Service de la donnée et des études statistiques, SDES)) – the statistical service of the Ministry of Sustainable Development – dedicated to transportation price indices (including the road freight transport index, RFTI) and construction price indices (building maintenance and improvement price index, IPEA).

Although the producer and import price indices meet the needs of the European authorities, they are also and above all used within the French Official Statistics system, notably as deflators, in particular for the volume/price split of the national accounts and for the main activity indicators, such as industrial production and services production volume indices. Economic agents from the private and public spheres, such as business leaders and professional unions, make regular use of these indices to obtain information on changes to the sales prices of products in their sectors of activity. Finally, these indices are also used by company managers or decision-makers in the public sphere (local authorities, administrations, etc.) in indexation clauses in private or public sector contracts.

The National Council for Statistical Information (CNIS) issued a favourable opinion on the appropriateness of the OPISE system (the opinion in force covers the period from 2019 to 2023). The system was also awarded the general interest and statistical quality label during the business surveys meeting of the [Quality Label Committee on 17 October 2018](#) for a duration of five years. The Minister of the Economy, Finance and Recovery granted it mandatory status for the same period.

This survey system has two distinct collection phases, which are conducted in parallel: the continuous renewal of the sample of products and services being monitored, and the monthly or quarterly collection of price changes from the companies for the sampled products and services.

I. Continuous resampling of products and services monitored by OPISE

The sampling phase is carried out continuously over a five-year cycle such that each branch of activity is being sampled once every five years on average (this rate can be adjusted to take account of technological, product or market developments). For the companies included in the sample, face-to-face interviews are conducted by survey engineers for the purpose of the identification of “representative products”, the prices of which will be monitored in order to identify the price changes to the indices in the branch of activity in question; the sampling frame is established by branch of activity based on the production declared for each legal unit.

In order to prioritise the branches of activity to be resampled in the industrial sector each year, several criteria are taken into account, such as the length of time since the last sampling, the response rates, the attrition of the sample, the proportion of incoming and outgoing companies, etc. In the services sector, only the length of time since the last sampling of the branch of activity is taken into account when deciding which branches to resample.

Since 2017, the sampling frames and samples have been built on the basis of the entire scope of dissemination, whereas previously they were based solely on the scope of the renewed branches of activity. This makes it possible, on the one

hand, to have a complete sample and, on the other hand, to identify and process companies covering multiple branches of activity that have the potential to be interviewed multiple times during the resampling of different branches of activity, as well as to launch grouped resampling of different branches of activity involving the same legal units so as to avoid them being interviewed too frequently by INSEE's survey engineers.

For building maintenance and improvement, sampling does not take place according to branches of activity, but according to the last digit of the [SIREN identification numbers](#) of the companies: each year, one fifth of the total sample is renewed on the basis of a draw using the last digit of the SIREN number of the companies (0 and 5 one year, 1 and 6 the following year, etc.). This particular method is linked to the characteristics of the units surveyed, primarily craftspeople in the construction sector, who more often than not provide several of the categories of service monitored at the CPF4 level.

Sampling of legal units (outside the scope of building maintenance and improvement)

The calculation of producer price indices is regulated within the European Union by the EBS Regulation. In that regulation, Eurostat prescribes the collection of indices from “kind-of-activity units” according to the NACE rev. 2.1. classification². The details of the calculations are provided in a methodological manual dating from 2012³. France therefore collects data from legal units at the level of each branch of activity (NAF rev.2.1 classification), i.e. the production of a set of products falling under the CPF rev. 2.1. classification.

Three sources are used to draw the samples of legal units in the industrial sector: the Annual Output Survey (*Enquête annuelle de production* – EAP), data provided by the Customs Directorate General (DGDDI) and, in order to provide coverage for the agri-food industry, the Annual Survey by Sector (*Enquête sectorielle annuelle* – ESA). Conversely, in the services sector, only the ESA is used.

Samples are primarily drawn by means of “cut-off” methods⁴, which consist of sorting the units from the largest to the smallest (in this case in terms of turnover), and only retaining the largest ones to ensure that the quality criteria are met. Those criteria are defined on the basis of a minimum coverage rate, a minimum number of legal units and a maximum number of legal units.

In the services sector, in branches in which the activity is very poorly concentrated (which is a relatively frequent situation in the services and construction sectors), probabilistic sampling is carried out to better cover the branch. The use of sampling weights then improves the overall coverage rate, since the turnovers of the companies drawn, which are used as aggregation weights for the results, are adjusted to take account of the relative weight of their sampling stratum.

Around 8,200 companies participate in the OPISE survey, including:

- 4,800 for producer and import price indices in the industrial sector;
- 2,100 for producer price indices in the services sector;
- and around a thousand companies for residential and non-residential IPEA price indices.

Sampling of the “representative products”

Interviews are conducted by INSEE's survey engineers or by surveyors from the business surveyor network (for building maintenance and improvement). The survey engineer works together with the interviewee from the company in

1 The kind-of-activity unit (KAU) groups together all of the parts of a company contributing to the performance of an activity at the (four-digit) class level of the NACE classification and corresponds to one or more operational subdivisions of the company. As a minimum, the company's IT system must be capable of indicating or calculating the production value, intermediate consumption, manpower costs and operating surplus for each KAU, together with gross fixed capital formation and use. See [Council Regulation \(EEC\) No 696/93](#) of 15 March 1993 on the statistical units for the observation and analysis of the production system in the Community.

2 Up to the 4-digit level, the French classification of activities (NAF) is identical to the European NACE classification, with the exception of class 21.21 (manufacture of corrugated paper and paperboard and of containers of paper and paperboard), which is broken down into three classes in France. The NAF coding is directly derived from the NACE coding.

3 <https://ec.europa.eu/eurostat/web/products-manuals-and-guidelines/-/ks-ra-12-020>

4 The article by Beneditti *et al.* entitled “A Framework for Cut-off Sampling in Business Survey Design”, Journal of Official Statistics, Vol. 26, No 4, 2010, pp. 651–671 sets out the general framework for cut-off sampling methods used in business surveys. The sampling performed to create the producer and import price indices is based on these methods, which are applied in a simplified manner.

question to define the most appropriate “representative products” in the industrial sector or “representative services” in the services sector for each area in which price monitoring is required (prices of French products sold on the domestic market, export prices, import prices).

These “representative products” are chosen so as to be representative of price changes in the company’s main product or service ranges and easily available within the timeframe of the survey. During the interview, the survey engineer also requests information regarding the associated turnover, which is then used to weight the responses when aggregating the results.

II. Collection of the price changes for the “representative products” from the companies

The companies are then invited to report, monthly in the industrial sector and quarterly in the services and building maintenance and improvement sectors, the price changes for their “representative products”. A personalised questionnaire (reminding the company of its “representative products” according to the various markets in which it is present) and the last three associated prices that it has reported are sent to the companies participating in the OPISE survey during each survey period. It is therefore the same companies that are questioned over the five-year cycle extending between resampling of the branch of activity for which the company is being surveyed.

Within a renewal cycle for a branch of activity, discussions may take place that go beyond the simple collection of prices via the OPISE survey, either following a specific request for information issued by an Insee survey clerk to the company being surveyed or at the initiative of the company (to report the removal and creation of replacement “representative products”, to provide ancillary data or to report the cessation of activity or of production of the good or service being monitored).

All of the responses regarding the “representative products” are integrated period by period into the information system and form what is denominated as “response series”, which are price level series and which will then be converted into index series known as “elementary series”.

Online collection:

The platform for collecting data from companies via the internet (Coltrane) allows interviewees to respond online rather than by post. This platform allows them to identify themselves and to respond to the majority of surveys sent to them by Official Statistics bodies (INSEE and the Ministerial Statistical Offices) using a common ergonomic framework. For survey designers, Coltrane is a complete service offer that allows them to collect responses via the internet, to hold and manage a repository of company contacts and to send letters, emails and paper questionnaires to companies that want them, while also having a dedicated support system.

In the industrial sector, collection takes place every month of the year. The questionnaires are sent out at the very beginning of month M+1 and relate to the prices during months M, M-1, M-2 and M-3. The companies then have around three weeks to submit their responses. The results of the campaign conducted in month M+1 with regard to month M are disseminated by no later than the final working day of month M+1 (deadline set by the EBS Regulation).

In the services and building maintenance and improvement sectors, collection begins at the very beginning of the first month of quarter T+1 (T being the reference quarter). The companies surveyed have just over a month and a half to submit their responses for the indices for quarter T. These are published by no later than the final working day of the second month of T+1, i.e. at T+60 days.

More than 9 in 10 questionnaires are filled in online in both the industrial sector (95%) and the services sector (90%).

For each index campaign (monthly for the industrial sector and quarterly for the services sector), the companies surveyed have the option of declaring the price for the current reference period (P) and correcting the prices that they submitted for the three previous periods (P-1, P-2 and P-3).

III. Calculation of indices

Response series, elementary series and synthetic series

The “response series” for a “representative product” or service is the series of the price levels provided by the firm. The aim is to measure price changes at constant quality, so any permanent change in quality or to the product itself must eventually be taken into account in the associated index series. Let us take the example of a product for which the volume sold is suddenly doubled and therefore packaged in twice as much packaging and with twice the volume as before. Its price should not reflect the change to this quantity (by multiplying it by two), but should reflect the price of the product at constant quantity. Account is taken of such changes via so-called quality coefficients ($=0.5$ in this simple case where the quantity has doubled). However, these quality effects can be more difficult to estimate. In cases where products are replaced, it is indeed difficult to distinguish between the quality effect and the voluntary price increase applied by the supplier.

The “elementary series” are derived from the “response series”, after applying the quality coefficients. They are then aggregated into “synthetic series” according to an aggregation tree (grouping together several indices) specific to each branch of activity.

The synthetic series represent an intersection between a domain (for example, products produced and sold in France, imports from the euro area, etc.) and a product classification item: this could be an item in the official CPF rev. 2.1. classification⁵ (from 1 digit up to 4 digits as a general rule, occasionally up to 5 or 6 digits in cases representing specific indexing needs), but it could also be *ad hoc* groupings required by Eurostat, such as the main industrial groupings⁶ ([Commission Regulation \(EC\) No 586/2001 of 26 March 2001, as amended](#)), or an *ad hoc* grouping to meet specific needs expressed by the public authorities or professional federations for the purpose of indexing contracts.

In general, producer (or import) price indices are Laspeyres price indices, regardless of the classification of the products to which they relate, with chain-linking to the dates on which the weights are changed.

Series aggregation weights

The weight assigned to an elementary series in the aggregation process is proportional to the company's turnover within the product class it is supposed to represent for the last known accounting year of the company. This information is gathered by the survey engineers during their visits to companies when they are resampling the branches of activity and is only updated when the branch to which it refers is resampled, so every five years in principle. However, it can be updated without having to wait for the next resampling in the event of a change of product.

An adjusted weight (following the rule of 3) is also calculated for each of the elementary series such that the total of the adjusted weights for the elementary series making up a synthetic series at or below the CPF4 level is equal to the weight of the latter.

The weights for the synthetic series at the CPF4 level are turnover figures estimated on the basis of structural surveys (the annual output survey (EAP) for the industrial sector and the annual survey by sector (ESA) for the services sector) and the most recent and robust annual customs data possible. They are then adjusted by means of a rule of three to the amounts for production and foreign trade at the A128 level of the national accounts. The weights of the synthetic series above level CPF4 are obtained by aggregating the weights of the level CPF4 synthetic series of which they are composed.

The weights of the synthetic series that follow the CPF but are at CPF6 (products) or CPF5 (sub-classes) level are calculated, for the industrial sector, on the basis of survey sources and, for the services sector, on the basis of the structure of the weights of the elementary series.

In the industrial sector, the weights of a particular edition are updated twice a year. The first update is based on the data from EAP N-2, customs data from N-2, an initial, semi-definitive version of the national accounts for N-2 and the definitive ESA N-2, integrated with effect from the publication of the index in January of year N. These weights are then updated in May on the basis of the finalised versions of the semi-definitive results of the national accounts and the

⁵ <https://www.insee.fr/fr/information/2399243>

⁶ More commonly referred to as MIGS

ESA N-2. The indices for January to March, which are still subject to revision, may be revised in the light of this update to the weights.

In the services sector, the weights of a particular edition are only calculated once per year, using the semi-definitive results of the national accounts and the definitive results of the ESA N-2. This calculation is integrated in July; the indices for the first quarter can then be revised.

Review and validation of the series

The OPISE survey questionnaires are processed by INSEE survey clerks.

Some questionnaires are systematically processed as soon as the supplier has declared changes to representative products, requested contact, etc.

The other questionnaires are subjected to an in-depth examination by means of “selective editing”: only those questionnaires for which an examination is deemed the most useful are appraised. There are several criteria that allow questionnaires or response series to be highlighted, such as the contributions of response series to the aggregated indices and the contributions of imputations in the event of non-response.

In addition to the systematic and in-depth reviews, automatic processing is provided for the response series and applied by default. For expert appraisals, the clerk can always do away with the automatic processing in favour of manual processing. Three estimation methods are used to estimate non-responses or correct responses that are considered to be outliers:

- **“Change in the parent series”**: an estimate of the price change to the elementary series based on the price change to the synthetic series of the level directly above that to which the series is linked;
- **“Carry-over from the previous period”**: the index level of the elementary series from the previous period is carried over to the reference period;
- **“Change in a different synthetic series”**: estimate of the change in the elementary series based on the change seen in a different synthetic series * domain, regardless of the level in the CPF classification.

Two approaches are then used to validate the changes to the series:

- **The bottom-up approach**: all of the elementary series prioritised for analysis are checked; levels CPF4 and CPF2 are systematically checked and changes are commented on from an economic standpoint. This approach allows the quality of all of the CPFs to be improved;
- **The top-down approach**: the changes are analysed from the A10 level of the classification down to the CPF2 or CPF4 level, particularly for the series that contribute the most to each level of the classification. This is the approach taken in order to comment on the changes described in the “Informations Rapides” (Quick Information) published each period.

The revisions themselves are analysed over all of the revisable periods: P-1, P-2, P-3, and for all synthetic series at the CPF4 level and below with at least a 3 percentage point revision in terms of absolute value, as well as at the CPF2 level with at least 0.2 percentage point revision. The analysis concentrates on the series disseminated on the insee.fr website (search for indices and time-series), as well as on the series that are disseminated to Eurostat only, for which the threshold is set at 10 points. Revisions to these series must then be explained with a return to the elementary series level (top-down approach) by checking whether they are linked to responses received late from suppliers or changes to imputed or adjusted values or to calculation methods (chain-linking to another series, selection of a new method for imputations).

IV. Dissemination

Producer and import price indices for the industrial sector are disseminated by no later than the last working day of the month following the month under review (M+30 days). The publication schedule is announced four months in advance and, for organisational reasons, is drawn up a year in advance.

The results include revisions to previous periods. These revisions are primarily the result of the processing of late responses from companies, error corrections and, once per year, the updating of the weights used for the aggregations of the indices for the higher levels.

The producer price indices for services and the improvement and maintenance of housing are disseminated by no later than the last working day of the second month following the quarter under review (T+60 days). The publication schedule is announced three months in advance.

For the same reasons as in the industrial sector, the results include revisions to previous periods. These revisions are primarily the result of the processing of late responses from companies, error corrections and, once per year, the updating of the weights used for the aggregations of the indices for the higher levels (CPF class indices and higher levels).

INSEE takes care to ensure that the rules of statistical confidentiality are respected when disseminating producer price indices based on the OPISE system. Save for some exceptions, the indices published must include responses from at least three companies (from different groups) and none of these should account for 85% or more of the turnover in the area of activity (production, export or import) of the branch in question. The composition of the samples of companies responding to the OPISE survey constitutes confidential information: INSEE undertakes to keep the fact that a company has participated in an OPISE survey confidential.

Introduction

The system for observing producer prices is old: it is largely the successor of the “wholesale price indices” calculated in France for industry since 1911, which became the “industrial sales price indices” in 1977. The survey part of the system was renamed OPISE (“Observation des Prix de l’Industrie et des SErVICES” [observation of prices in industry and services]) in the late 1990s when the first producer price indices for business-to-business services were added to the producer price indices for industry.

The legal framework is defined by [\(EC\) No 1165/98](#) of 19 May 1998 concerning short-term statistics (STS), which was amended several times between 1998 and 2020, with a view to improving consistency and broadening the coverage of these indicators. Regulation [No 1158/2005 of the European Parliament and of the Council of 6 July 2005](#) added the monitoring of developments in import prices for industrial products and producer prices for services. Regulation No [2019/2152](#) of the European Parliament and of the Council of 27 November 2019 on European Business Statistics (EBS Regulation), followed by Commission Implementing Regulation (EU) No [2020/1197 EBS \(European Business Statistics\)](#) of 30 July 2020, which laid down its technical specifications and arrangements (General Implementing Act), broadened the scope of the monitoring of producer price indices, particularly in services, and required that they be disseminated more quickly.

Over the last ten years, the OPISE system has also absorbed surveys from the observation and statistics department (Service de l’observation et des statistiques, SOeS, which has since become the Statistical Data and Studies Service (Service de la donnée et des études statistiques, SDES)) – the statistical service of the Ministry of Sustainable Development – dedicated to transportation price indices (including the road freight transport index, RFTI) and construction price indices (building maintenance and improvement price index, IPEA).

Although the producer and import price indices meet the needs of the European authorities, they are also and above all used within the French Official Statistics system, notably as deflators, in particular for the volume/price split of the national accounts and for the main activity indicators, such as industrial production and services production volume indices. Economic agents from the private and public spheres, such as business leaders and professional unions, make regular use of these indices to retrieve information on changes to the sales prices of products in their sectors of activity. They are eventually used by company managers or decision-makers in the public sphere (local authorities, administrations, etc.) in indexation clauses in private or public sector contracts.

The National Council for Statistical Information (CNIS) issued a favourable opinion on the appropriateness of the OPISE system (the opinion in force covers the period from 2019 to 2023). The system was also awarded the general interest and statistical quality label during the Business survey meeting of the [Quality Label Committee on 17 October 2018](#) for a duration of five years. The Minister of the Economy, Finance and Recovery granted it mandatory status for the same period.

This INSEE-Méthodes provides a full description of the OPISE survey system by breaking down the process relying on the [Generic Statistical Business Process Model \(GSBPM\)](#). This model was formally adopted by the United Nations Economic Commission for Europe (UNECE), Eurostat and the OECD (Organisation for Economic Co-operation and Development) in June 2015 as a means of describing and defining the production activities of statistical bodies. INSEE had already been using this model for almost a decade.

The **first part** therefore describes the phase in which the needs are specified and describes the needs expressed by Eurostat, the UN, the European Central Bank and users in the public and private domain. The **second part** describes the design of the collection process: the coverage of the indices, the methods used for their aggregation, the implementation of the OPISE survey and the sampling methods used.

The **third part**, which focuses on the development of the collection process for the OPISE survey, describes the internet-based collection platform for companies (Coltrane). The collection of the OPISE survey (questionnaires, reminder operations, etc.) is then described in the **fourth part**.

The **fifth part** provides details of the data processing phase and the examination, prioritisation and validation of the data, together with imputation methods to be used in the case of non-response or outliers. The **sixth part** explains the data analysis phase focusing on two approaches: a bottom-up approach and a top-down approach. Finally, the **seventh part** deals with the dissemination of the producer and import price indices in the industrial and services sectors.

1 Specification of needs: why producer and import price indices in the industrial and services sectors?

1.1 Indices under European legislation

In order to provide the European Central Bank (ECB) with short-term economic indicators, in 1998 the European Union adopted a regulation on short-term business statistics establishing a harmonised framework for measuring supply and demand, factors of production and producer prices. The dissemination of producer price indices for the industrial and services sectors is therefore covered by Regulation [No 1165/98](#) concerning short-term statistics (STS)⁷.

This regulation was amended several times before being repealed in 2020 to be integrated into a broader regulation covering all business statistics with a view to improving consistency and broadening the coverage of these indicators. The most notable changes for producer price indices took place in 2005 (Regulation [No 1158/2005 of the European Parliament and of the Council of 6 July 2005](#) amending Council Regulation (EC) No 1165/98 concerning short-term statistics) with the addition of change monitoring:

- of the import prices of industrial products, which, when coupled with the prices of exported products, makes it possible to avoid the use of unit value indices⁸ of foreign trade, which are the default deflators of foreign trade, highly volatile and sources of bias when estimating GDP;
- of producer prices in the services sector, in particular for inter-company services (services provided by companies to other companies on the domestic market: Business-To-Business – BtoB);
- of the euro area and non-euro area breakdown of external market variables.

Finally, since its entry into force on 1 January 2021, the dissemination of producer and import price indices in the industrial sector and producer price indices in the services sector now falls under Regulation No [2019/2152](#) of the European Parliament and of the Council of 27 November 2019 on European business statistics (EBS Regulation) and Commission Implementing Regulation (EU) No [2020/1197 EBS \(European Business Statistics\)](#) of 30 July 2020 laying down technical specifications and arrangements pursuant to Regulation (EU) No 2019/2152 (General Implementing Act). It includes the following amendments to these price indices:

- extension of the coverage of producer price indices, particularly in the services sector (see above);
- extension of the monitoring of price indices for services expanded to cover services sold on all markets (known as “BtoAll”), as the BtoB level is no longer required;
- shorter deadlines. When compared with the previous regulation, the deadline for submitting the producer price indices within the industrial sector has been reduced to 30 days, down from the 35 days stipulated in the STS Regulation. It has been kept at 45 days for import prices. Producer price indices in the services sector (quarterly) must be submitted at T+60 days. Where indices are disseminated sooner than these deadlines at national level, Member States should submit the results to Eurostat on the same day.

INSEE has for the most part been able to anticipate the changes enshrined in the EBS Regulation:

- In 2013, work was commenced on gradually extending the coverage of producer price indices in the services sector to the entirety of the new area requested (BtoAll) and taking account of transactions with all partners. In addition, although it is only BtoAll that is required, INSEE has chosen to monitor transactions by customer category, distinguishing between transactions between business partners, those with households and even transactions with foreign markets. This work was completed in 2019;

⁷ See <https://www.bnsp.insee.fr/ark:/12148/bc6p0716bx7.r=scherrer?rk=42918;4> *Courrier des statistiques* No 2 – June 2019 – Short-term business statistics – Philippe Scherrer

⁸ A unit value index is an approximation of a “price” index that measures the change in the average value of non-homogeneous units that can therefore be influenced by changes in the proportions of the various items, as well as by changes in their prices. Unit value indices are calculated on the basis of commercial value divided by quantities.

- The producer and import price indices for the industrial sector have both been disseminated at M+30 days since 2011.

1.1.1 Producer price indices in the industrial sector

As per the EBS Regulation, INSEE provides Eurostat with producer prices in France for the branches of activity in Sections B to D of the Statistical Classification of Economic Activities (NACE), in force at European Union level, and Division E36 (“natural water; water treatment and supply services”), with the exception of the following activities:

- ✖ B07.21 “Mining of uranium and thorium ores”
- ✖ C24.46 “Processing of nuclear fuel”
- ✖ C25.4 “Manufacture of weapons and ammunition”
- ✖ C30.1 “Building of ships and boats”
- ✖ C30.3 “Manufacture of air and spacecraft and related machinery”
- ✖ C30.4 “Manufacture of military fighting vehicles”

The dissemination of producer price indices in the industrial sector distinguishes between changes in price on the domestic and foreign markets (export prices) and further separates sales within the euro area from those outside of the euro area.

There is also a requirement to disseminate the Section C results (Manufactured products) according to product groups (3-digit activity codes) and classes (4-digit codes), as well as by NACE division and section aggregates, and the main industrial groupings (MIGs⁹) as defined in Annex II.a of the EBS Regulation.

The indices of these various aggregates must comply with the exclusions defined above.

1.1.2 Import price indices in the industrial sector

For import price indices for industrial products, the EBS Regulation covers products in Sections B to D with the same exclusions as defined above for producer price indices, plus the following exclusions:

- ✖ B09 “Mining support services”
- ✖ C18 “Printing and recording services”
- ✖ C33 “Repair and installation services of machinery and equipment”

The Main Industrial Groupings (MIGs) are also required for Sections B, C and D, the divisions of these sections and their aggregate.

1.1.3 Producer price indices in the services sector

In the services sector, the regulation requires producer price indices **at the Division level, covering Sections H, I, J, L, M and N of NACE**, with the exception of:

- Group M701 Activities of head offices;
- Division M72 Scientific research and development;
- Division M75 Veterinary activities.

They must be provided across the range of services provided by companies in all markets (BtoAll).

Where the share of transactions with individuals (Business to Consumers, “BtoC”, also referred to as Business to Households “BtoH”) is negligible, the producer price indices for the services sector can be approximated on the basis of BtoB indicators.

⁹ Intermediate goods, energy, capital goods, consumer durables and consumer non-durables

1.2 The international methodological framework

1.2.1 IMF “Producer Price Index Manual: Theory and Practice”¹⁰

This manual collates and explains the methods and best practices for calculating producer price indices. It acts as a reference for statisticians, as it documents the entire calculation process: weights, sampling, aggregation methods, chain-linking of indices, periodicity of collection, evaluation of a quality effect within a price change ([see 2.1.2.1 Suppliers’ responses to the elementary series](#)).

It was co-authored by the International Labour Organization (ILO), the International Monetary Fund (IMF), the Organisation for Economic Co-operation and Development (OECD), the United Nations Economic Commission for Europe (UNECE) and the World Bank.

This manual replaces the last methodological guide published by the United Nations Statistical Office in 1979.

1.2.2 Eurostat-OECD Methodological Guide for Developing Producer Price Indices for Services¹¹

The objectives of this manual are threefold: to act as a methodological reference guide for the calculation of producer price indices in the services sector, to identify practical solutions to the difficulties encountered by countries compiling these indices and finally to document new methodologies. This guide complements the industry-focused Producer Price Index Manual (see above).

Responsibility for its development has been entrusted to a joint Eurostat-OECD Task Force, which was established in 2011 and was responsible for drafting the methodological chapters. The chapters detailing the practices applied in different countries were drafted by each of the statistical institutes participating in the Task Force.

1.2.3 The Voorburg Group

France is a member of the Voorburg Group, the primary objective of which is to contribute to the improvement and dissemination of good practices in the field of producer price indices in the services sector. It was created at the request of the United Nations in 1986. This group allows for the exchange, discussion and dissemination of good practices within statistical services.

The main objectives are currently as follows:

- To update the methods used to calculate price indices;
- To produce documentation on common methodological issues;
- To hold regular meetings to identify new issues and to allow for the exchange of information;
- To disseminate up-to-date documentation and make it accessible;
- To improve the understanding of concepts.

This group brings together national institutes from a number of countries. In addition to the EU Member States, notable members include the United States, Switzerland, Canada, Chile, Mexico, Japan, Australia, the United Kingdom and Israel.

1.3 Users within and outside of official statistics

Within the French Official Statistics system, producer and import price indices are widely used as deflators, in particular for the volume-price split of the national accounts and for the main economic outlook indicators such as the industrial production (IPI) and services production volume indices calculated largely by comparing the turnover indices with the sale price indices in the services sector.

¹⁰ http://ec.europa.eu/eurostat/ramon/statmanuals/files/Prod_price_index_manual.pdf

¹¹ <http://ec.europa.eu/eurostat/documents/3859598/6485893/KS-04-14-661-EN-N.pdf/f8f5d9d6-50c4-4fa1-9322-c9c00a6377fd>

Economic agents from the private and public spheres, such as business leaders and professional unions, also make use of these price indices, which provide information on changes to sales and cost prices in their sector of activity.

Finally, these price indices can also be used by company managers or decision-makers in the public sphere (local authorities, administrations, etc.) in indexation clauses in private or public sector contracts. INSEE then issues communications with regard to the use of these indices for the purposes of indexation¹².

New user needs are taken into account in particular in the event that feedback is received from partners and users of the indices, as well as during visits by the survey engineers from the professional unions when branches of activity are being resampled ([see 2.4.3. Consultation of professional unions](#)).

12 <https://www.insee.fr/en/information/2491441>

2 Design of the collection process

2.1 Description of the indices

2.1.1 Coverage

The indices are primarily based on the Eurostat regulation and are calculated on the basis of the specific areas set out above ([see 1.1. Indices under European legislation](#)).

However, in order to meet the needs of other users, such as the national accountants or the Industrial Production Index (IPI), or for contract indexation purposes, other indicators are calculated taking account of the different methods used to evaluate prices.

2.1.1.1 *Different price concepts: base price and market price*

Price changes can be measured at different stages of the marketing process. A distinction is drawn between the concepts of “base price” and “market price”:

- base prices are consistent with the national accounts concepts that inspire the European legislation on short-term statistics. They represent the unit revenue received by the producer and **are the prices required by Eurostat**;
- market prices represent the price actually paid by the first buyers of the goods and services produced. They represent the unit price actually paid by the first customer and, from that perspective, provide a better reference for price changes for the purposes of contract indexation ([see 1.3. Users within official statistics](#)).

The following table summarises the main conceptual differences between the two approaches:

<u>At base price</u>	<u>At market price</u>
Production price of the activity (“net” income of the producer): • Excluding taxes on products, excluding VAT • Addition of subsidies on products • Including intra-group transactions	Purchase price of the product (“gross” price the first time it is marketed): • Including taxes on products, excluding VAT • Not including product subsidies • Excluding intra-group transactions

2.1.1.2 *Industrial Producer price indices*

For the industrial sector, four main price indicators are therefore calculated:

- Producer price indices for the industrial sector on the French market, at base price and at market price:

These measure the changes in the price of goods produced by French industry and sold on the French market, “at base price” for the short-term analysis and “at market price” to meet the needs of contract indexation.

- Producer price indices for foreign markets, at base price:

These reflect the changes in the price (converted into euros and therefore including currency effects) of goods and services produced by French industry and sold on foreign markets. They therefore relate to “exported production” rather than “exports” (which would also include re-exports of imported products from trading activities conducted by specialised companies, which may fall into the same group as the producers). All transactions are considered, regardless of whether they are intra-group or not. **For external markets, a distinction is made between the euro area and the rest of the world.**

- The aggregation of the above two indices determines the producer price indices for all markets (French market and foreign markets) of domestic companies.
- Import price indices for industrial products, at base price:

These reflect the changes in the price (converted into euros and therefore including currency effects) of industrial goods produced by foreign companies and sold on the French market. All imports are considered here, regardless of whether they are intra-group or not. The prices are CIF (cost of insurance, freight), i.e. the price of a good at the border of the importing country or the price of a service provided to a resident, but from which taxes and duties on the products and VAT are then excluded.

In some branches of activity, these four indicators are supplemented with price indices for the domestic supply of industrial products. These indicators result from the aggregation of producer price indices for the industrial sector in the French markets at base price and the import price indices at base price. Aside from changes in taxes and subsidies on products, these indices reflect changes in the supply prices of industrial products marketed in France, regardless of their place of production or origin.

2.1.1.3 *Producer price indices for the services sector (excluding building maintenance and improvement)*

Although the EBS Regulation only requires the submission of price indices for BtoAll services (services sold to all markets), INSEE establishes three sub-categories of indices, components of the BtoAll indices:

<u>European short wording</u>	<u>Long wording</u>
BtoB	<u>Base price</u> of services sold to French companies <u>Market price</u> of services sold to French companies
BtoC	Base price of services sold to households in France
BtoX	Price of services destined for foreign markets

The price indices for services sold to French companies (more precisely to resident legal entities) can be further broken down into two variants to meet the needs of other users (for contract indexation in particular):

- the first is the base price, as per the national accounts concepts that inspire the European legislation on short-term statistics. The “BtoAll” aggregate is therefore obtained by combining the base price “BtoB”, “BtoC” and “BtoX” market indices¹³;
- the second is the market price, used for contract indexation.

2.1.1.4 *Price indices for building maintenance and improvement*

The price indices for building maintenance and improvement (IPEA) are not required by the European EBS Regulation. Their calculation was initiated by the Ministry for Sustainable Development, taken over by INSEE and integrated into the OPISE system.

The aim is to establish quarterly price indices (excluding VAT) used by construction companies for maintenance and improvement work on existing buildings.

The index covers the following NAF rev. 2 groups: “43.2 – Electrical, plumbing and other construction installation activities”, “43.3 – Building completion and finishing ” and “43.9 – Other specialised construction activities”. However, within NAF class “43.21 – Electrical installation ”, sub-class “43.21B – Installation works of electrical wiring and fittings on public thoroughfare” is not monitored by IPEAs, as is the case for sub-classes “43.99B – Assembly works of metal structures”, “43.99D – Other construction works involving special trades” and “43.99E – Renting of construction equipment with operator” within class NAF4 43.99. By definition, such work does not constitute maintenance or improvement work on existing buildings.

13 The following terminology is used in the “Informations Rapides” publication on producer prices in the services sector: “BtoC”, which stands for Business to Consumers and encompasses “BtoH” for Business to Households, and “BtoX” for Business to Export. In both cases, we will give preference to the terminology used in the “Informations Rapides” in the remainder of the document.

These indices are used for the short-term analysis of the sector (Division “43 – Specialised construction activities”, with the exception of group “43.1 – Demolition and site preparation”) and as “deflators” for the national accounts.

For the 2010 base year, the IPEA indices only relate to housing. For the 2015 base year, the dissemination of the indices has been extended by distinguishing between work on residential and non-residential buildings. The switch to the 2015 base year for the IPEA indices provided an opportunity to publish an IPEA “All works” maintenance and improvement index for all types of buildings, as well as detailed non-residential IPEA indices.

2.1.1.5 *Summary tables of price indices in the industrial sector*

- **Indicators observed**

Domain	Description	Base price/market price	Generating event	Type of companies surveyed	Origin of the good	Destination of the good	Sale price/purchase price
C	Production sold in France	Base price	1 st sale (including intra-group)	Producing companies	Produced in France	Sold on the French market	Sale price
CM	Production sold in France	Market price	1 st marketing (outside the group)	Producing companies	Produced in France	Marketed on the French market	Sale price
E1	Production exported to the euro area	Base price	1 st sale (including intra-group)	Producing companies	Produced in France	Exports	Sale price
E9	Production exported outside the euro area	Base price	1 st sale (including intra-group)	Producing companies	Produced in France	Exports	Sale price
W1	Imports from the euro area	Base price	1 st sale (including intra-group)	Importing companies	Imports	All uses	Purchase price
W9	Imports from outside the euro area	Base price	1 st sale (including intra-group)	Importing companies	Imports	All uses	Purchase price

- **Calculated indicators**

Domain	Description	Base price/market price
E = E1 + E9	Exported production all areas	Base price
W = W1 + W9	Imports all areas	Base price
P = C + E	Production sold	Base price
M = C + W	Domestic supply	Base price

- **Coverage**

NAF rev. 2			Monitored coverage*	Eurostat coverage	
A21	A88	Headings	Producer and import prices in the industrial sector	Producer prices in the industrial sector	Import prices in the industrial sector
B – Mining and quarrying	05	Mining of coal and lignite	x	x	x
	06	Extraction of crude petroleum and natural gas	x	x	x
	07	Mining of metal ores	x	Except B07.21	Except B07.21
	08	Other mining and quarrying	x	x	x
	09	Mining support service activities	x	x	Except B09
C – Manufacturing	10	Manufacture of food products	x	x	x
	11	Manufacture of beverages	x	x	x
	12	Manufacture of tobacco products	x	x	x
	13	Manufacture of textiles	x	x	x
	14	Manufacture of wearing apparel	x	x	x
	15	Manufacture of leather and related products	x	x	x
	16	Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials	x	x	x
	17	Manufacture of paper and paper products	x	x	x
	18	Printing and reproduction of recorded media	x	x	Except C18
	19	Manufacture of coke and refined petroleum products	x	x	x
	20	Manufacture of chemicals and chemical products	x	x	x
	21	Manufacture of basic pharmaceutical products and pharmaceutical preparations	x	x	x
	22	Manufacture of rubber and plastic products	x	x	x
	23	Manufacture of other non-metallic mineral products	x	x	x
	24	Manufacture of basic metals	x	Except C24.46	Except C24.46
	25	Manufacture of fabricated metal products, except for machinery and equipment	x	Except C25.4	Except C25.4
	26	Manufacture of computer, electronic and optical products	x	x	x
	27	Manufacture of electrical equipment	x	x	x
	28	Manufacture of machinery and equipment n.e.c.	x	x	x
	29	Manufacture of motor vehicles	x	x	x
	30	Manufacture of other transport equipment	x	Except C30.1, 30.3, 30.4	Except C30.1, 30.3, 30.4
	31	Manufacture of furniture	x	x	x
	32	Other manufacturing	x	x	x
	33	Repair and installation of machinery and equipment	x	x	Except C33
	35	Electricity, gas, steam and air conditioning supply	x	No	No
D – Electricity, gas, steam and air conditioning supply	36	Water collection, treatment and supply	x	x	x
	37	Sewerage	x	No	No
	38	Waste collection, treatment and disposal activities; materials recovery	x	No	No
	39	Remediation activities and other waste management services	x	No	No
E – Water supply; sewerage, waste management and remediation activities					

* coverage monitored by the OPISE survey, delegated surveys or imputed on the basis of changes to the other index levels. For example, NAF rev. 2 B07.21, C24.46, C25.4, etc. are imputed using the changes to other index levels. Conversely, 30.1, 30.2 and 30.3 are monitored in the OPISE survey, and 36 and 37 are primarily chained to the Consumer Price Indices.

2.1.1.6 Summary tables of price indices in the services sector

- Indicators observed**

Domain	Description	Destination market	Base price/market price	Generating event	Type of companies surveyed	Sale price/purchase price
C	Production sold in France	Companies	Base price	1 st sale (including intra-group)	Producing companies	Sale price
CM	Production sold in France	Companies	Market price	1 st marketing (outside the group)	Producing companies	Sale price
H	Production sold in France	Households	Base price	1 st sale (including intra-group)	Producing companies	Sale price
E1	Production exported to the euro area	Any	Base price	1 st sale (including intra-group)	Producing companies	Sale price
E9	Production exported outside the euro area	Any	Base price	1 st sale (including intra-group)	Producing companies	Sale price

- Calculated indicators**

Domain	Description	Base price/market price
E = E1 + E9	Exported production all areas	Base price
P = C + E + H	Production sold	Base price

- Coverage**

		NAF rev. 2	
A21	A88	Headings	
			Monitored coverage* Eurostat coverage
<i>H – Transportation and storage</i>	49	Land transport and transport via pipelines	x x
	50	Water transport	x x
	51	Air transport	x x
	52	Storage and auxiliary transport services	x x
	53	Post and courier activities	x x
<i>I – Accommodation and food service activities</i>	55	Accommodation	x x
	56	Food and beverage service activities	x x
	58	Publishing	x x
<i>J – Information and communication</i>	59	Motion picture, video and television programme production, sound recording and music publishing activities	x x
	60	Broadcasting and programming activities	x x
	61	Telecommunications	x x
	62	Computer programming, consultancy and related activities	x x
	63	Information services	x x
	68	Real estate activities	x x
	69	Legal and accounting activities	x x
	70	Activities of head offices; management consultancy activities	Except 70.1 Except 70.1
	71	Architectural and engineering activities; technical testing and analysis	x x
	72	Scientific research and development	NO NO
<i>Real estate activities</i> <i>M – Professional, scientific and technical activities</i>	73	Advertising and market research	x x
	74	Other professional, scientific and technical activities	x x
	75	Veterinary activities	NO NO
	77	Rental and leasing activities	x x
	78	Employment activities	x x
	79	Travel agency, tour operator and other reservation service and related activities	x x
	80	Security and investigation activities	x x
	81	Services to buildings and landscape activities	x x
	82	Office administrative, office support and other business support activities	x x
	94	Activities of membership organisations	NO NO
<i>N – Administrative and support service activities</i>	95	Repair of computers and personal and household goods	x NO
	96	Other personal service activities	NO NO
<i>S – Other service activities</i>			

* coverage monitored by the OPISE survey or imputed on the basis of changes to the other index levels

2.1.1.7 Summary tables for IPEAs

- Indicators observed

Domain	Description	Destination market	Base price/market price	Generating event	Type of companies surveyed	Sale price/purchase price
C	Production sold in France	Non-residential	Base price	1 st sale (including intra-group)	Producing companies	Sale price
H	Production sold in France	Residential	Base price	1 st sale (including intra-group)	Producing companies	Sale price

- Calculated indicators

Domain	Description	Base price/market price
P = C + H	Production sold	Base price

- Coverage

NAF rev. 2				
A21	A88	Headings	Monitored coverage*	Eurostat coverage
<i>F – Construction</i>	41	Construction of buildings	NO	NO
	42	Civil engineering	NO	NO
	43	Specialist construction work	Except 43.21B, 43.99B, 43.99D, 43.99E	NO

2.1.2 Principles for aggregating results

The calculation of producer price indices is regulated within the European Union by the EBS Regulation. In that regulation, Eurostat prescribes the collection of indices from “kind-of-activity units¹⁴” according to the NACE rev. 2.1. classification¹⁵. The details of the calculations were provided in a methodological manual in 2012¹⁶. France therefore collects data from legal units at the level of each branch of activity (NAF rev. 2.1. classification), i.e. the production of a set of products falling under the CPF rev. 2.1. classification.

The **response series of prices** within a level that correspond to the prices of each of the representative product or services are converted into **elementary series** (SE) of indices. **The elementary series are aggregated into synthetic series** according to an aggregation tree (grouping together several indices) specific to each branch of activity.

The synthetic series represent an intersection between a domain (for example, production sold in France, imports from the euro area, etc.) and a classification item: this could be an item in the official CPF rev. 2.1. classification¹⁷ (from 1 digit up to 4 digits as a general rule, occasionally up to 5 or 6 digits in cases representing specific indexing needs), but it could also be *ad hoc* groupings required by Eurostat, such as the main industrial groupings¹⁸ ([Commission Regulation \(EC\) No 586/2001 of 26 March 2001, as amended](#)), or an *ad hoc* grouping to meet specific needs expressed by the public authorities or professional federations for the purpose of indexing contracts.

In general, producer (or import or export) price indices are Laspeyres price indices, regardless of the classification of the products to which they relate, the weights of which are updated more or less frequently according to the level of the classification, with chain-linking to the dates on which the weights are changed. By way of a reminder, in its most generic form, a Laspeyres price index at date t , relating to date 0, and relative to goods n , $k = 1, \dots, n$, is expressed according to the formula:

$$(1) \quad I_k^{t;0} = \frac{\sum_{k=1}^n q_k^0 p_k^t}{\sum_{k=1}^n q_k^0 p_k^0},$$

noting with the letter q the quantities traded of good k on dates 0 and t , and using p to indicate the corresponding prices. Therefore, if on date t all prices are twice as high as on date 0, the index for date t would be 2.

The above expression can be rewritten in another form, which involves turnover rather than quantities traded. If:

$$w_k^0 = \frac{q_k^0 p_k^0}{\sum_{k=1}^n q_k^0 p_k^0}$$

it is easy to demonstrate that the index can be rewritten as follows:

14 KAU The kind-of-activity unit (KAU) groups together all of the parts of a company contributing to the performance of an activity at the (four-digit) class level of the NACE classification and corresponds to one or more operational subdivisions of the company. As a minimum, the company's IT system must be capable of indicating or calculating the production value, intermediate consumption, manpower costs and operating surplus for each KAU, together with gross fixed capital formation and use. See [Council Regulation \(EEC\) No 696/93](#) of 15 March 1993 on the statistical units for the observation and analysis of the production system in the Community.

15 Up to the 4-digit level, the French classification of activities (NAF) is identical to the European NACE classification, with the exception of class 21.21 (manufacture of corrugated paper and paperboard and of containers of paper and paperboard), which is broken down into three classes in France. The NAF coding is directly derived from the NACE coding.

16 <https://ec.europa.eu/eurostat/web/products-manuals-and-guidelines/-/ks-ra-12-020>

17 <https://www.insee.fr/fr/information/2399243>

18 More commonly referred to as MIGS

$$(2) \quad I^{t;0} = \sum_{k=1}^n w_k^0 i_k^{t;0}$$

where:

$$i_k^{t;0} = \frac{p_k^t}{p_k^0}$$

The Laspeyres price index is therefore expressed as a weighted arithmetic average of the elementary price indices for goods n , with the weights being the shares of each good in the turnover achieved during the reference period. In practice, this means of expression is of more use to the statistician in the (usual) situation in which there is a large number of goods, the traded prices and quantities of which cannot all be observed: in this case a “representative” basket of goods is used and the elementary price index of each good is weighted by the turnover (during the reference period) of the class of products that it represents.

Rather than having to recalculate the entire index series every period, it is more practical to express the index as a recurrence relation. Replacing t with $t-1$ in formula (2) gives:

$$I^{t-1;0} = \sum_{k=1}^n w_k^0 i_k^{t-1;0}$$

and therefore, dividing (2) by the identical expression on date $t-1$ gives:

$$(3) \quad I^{t;0} = I^{t-1;0} \frac{\sum_{k=1}^n w_k^0 i_k^{t;0}}{\sum_{k=1}^n w_k^0 i_k^{t-1;0}}$$

One well known disadvantage associated with using a Laspeyres index is that the turnover shares of the various goods used in its calculation tend to become distorted over time: in short, taking fairly standard assumptions, the goods whose prices increase the most see their share of turnover fall. As a result, the original weights reflect the structure of trade less and less well over time. To remedy this, the indices are chain-linked, i.e. the weights are revised from time to time and the Laspeyres indices are calculated with a new base period corresponding to the date on which the new weights are measured, while continuing to ensure that the index is expressed using 100 as a reference for the date of origin (date 0). In doing so, the reference period (date 0, for which – by convention – the value of the index is fixed at 100) must be uncoupled from the date on which the weights are measured (ideally: date $t-1$ should be used to calculate the index on date t).

Therefore, if (in an extreme case) we chain-link at all dates, the chain-linked index (marked as $\hat{I}$) is defined as indicated in formula (4) below:

$$(4) \quad \hat{I}^{t;0} = I^{t;t-1} \cdot I^{t-1;t-2} \cdot I^{t-2;t-3} \dots I^{1;0}$$

Using relation (2), it is possible to rewrite (4) in the form of a recurrence relation that involves the chain-linked index on date $t-1$ and the updated weights on that same date $t-1$:

$$(5) \quad \hat{I}^{t;0} = \hat{I}^{t-1;0} \sum_{k=1}^n w_k^{t-1} \frac{i_k^{t/0}}{i_k^{t-1;0}}$$

In practice, in the case of producer price indices¹⁹:

¹⁹ And therefore, of course, import and export prices.

- The samples of products for which the prices are observed are updated over a five year cycle. In addition, not all products are renewed in the same year: 1/5th of the branches of activity are resampled each year;
- Between two resamplings, the goods that are used to calculate the index may cease to be produced, in which case a “replacement” product must be found for the purposes of calculating the index or recalculating the weights at the elementary level to take account of the absence of the product;
- At the 1, 2, 3 and 4-digit levels of the CPF product classification, only annual – calendar year – turnover data are available (and not monthly or quarterly data) based on annual sector-based surveys and the national accounts, and with a two-year delay in relation to the current year (in 2021, we have turnover data for each branch of activity for the year 2019);
- At the finer levels of the product classification, turnover data are only available at the time of resampling of products on the basis of the Annual Production Survey (in the case of the industrial sector) or by asking the sampled companies for information in this regard (in the case of the services sector).

The following paragraphs describe the adaptations made to the above formulae to take account of these limitations in the data. More specifically, they summarise the following:

1. The indices at levels 1, 2 and 3 of the classification are chain-linked once per year: these indices are expressed as an arithmetic average of the indices at level 4 of the classification, with weights expressed as an annual average and relating to the calendar year N-2 to which the index relates. When the weights are being changed, priority is given to the newly calculated weight;
2. The indices at level 4 of the CPF classification are chain-linked every five years (at the same time as the product sample is updated) and are expressed as a weighted arithmetic average of the elementary indices of the goods involved in the calculation;
3. All of the indices are expressed with 2015 as the reference year, i.e. the arithmetic average of any index for the year 2015 is set at 100 by convention, regardless of the classification item to which it relates.

2.1.2.1 Suppliers’ responses to the “elementary series”

- **From price levels to indices:**

The “**response series**” is the series of declarations received from the supplier for a single “representative product or service”. A response series is generally a series of price levels, but it is also necessary to collect other information.

Indeed, some of the response series provided need to be reprocessed before they can be used. Let us look, for example, at a price series collected from a supplier in dollars. In this case, auxiliary information (in this instance the dollar exchange rate), which has previously been integrated, will be used as a calculation intermediary to obtain our response series of interest: the price series in euros. Other examples of response series that are integrated for calculation purposes are the oil price and commodity price series.

Several types of calculation are therefore carried out on response series, ranging from simple sums (addition, subtraction, multiplication or division between response series) to more complex formulae that may allow product discounts and margin rates, etc. to be taken into account.

The “**elementary series**” is the series of producer price indices collected from the supplier *via* the response series, the changes of which follow those of the “**response series**”, with the exception of quality effects.

If:

- SR_t : Level of the response series for the reference period t ;
- SR_{t-1} : Level of the response series for the previous period $t-1$;
- SE_t : Index of the elementary series for the reference period t ;

- SE_{t-1} : Index of the elementary series for the previous period t-1.

Then:
$$\frac{SE_t}{SE_{t-1}} = \frac{SR_t}{SR_{t-1}}$$

When creating an elementary series, the index value of the synthetic series that is directly above it is used to initialise the very first index. This rule applies in particular when a good used in the calculation of the index ceases to be produced and is replaced with a good with similar characteristics for the purposes of calculating producer price indices.

- **Measuring price changes at constant quality**

The aim is to measure price changes at constant quality. A permanent change to quality or a product must therefore be taken into account in the elementary series. Let us take the example of a product for which the package size is suddenly doubled. Its price should not reflect the change to this quantity (by multiplying it by two), but should reflect the price of the product at constant quantity. These changes are integrated via so-called quality coefficients (=0.5 in this simple case where the quantity has doubled). However, these quality effects can be more difficult to estimate. In cases where products are replaced (see 5.1.1.2. [Replacement of a “representative product”](#)), it is indeed difficult to distinguish between the quality effect and the voluntary price increase applied by the supplier²⁰.

If:

- CQ_t : quality coefficient of the response series in t;
- CQ_{t-1} : quality coefficient of the response series in t-1.

Then:
$$\frac{SE_t}{SE_{t-1}} = \frac{SR_t * CQ_t}{SR_{t-1} * CQ_{t-1}}$$

By default, the quality coefficient is 1.

2.1.2.2 ***From the “elementary series” to the “synthetic series”***

Synthetic series are all of the index series at a higher level than the elementary series. They can be calculated by aggregating the elementary series (level directly above) or on the basis of the synthetic series of which they are comprised, or – in the absence of elementary series – by chain-linking to another synthetic series. As a general rule, synthetic series are calculated as a minimum for all CPF4 items and sometimes – more exceptionally – at finer levels (CPF 5 or 6). In order to provide a simpler explanation, the method used to calculate the synthetic series at level 4 of the classification is described below, but a similar calculation is used for levels 5 and 6, where applicable.

- **Calculation of the synthetic series (CPF4 * domain) on the basis of the elementary series**

Price indices are calculated according to the French classification of products (CPF). While CPF4 (product class level) is calculated in full, this is not the case for CPF5 (product subclass level) and CPF6 (product level)²¹, as their estimation would not be robust enough if they did not incorporate enough companies (at least 3) or elementary series (at least 5). In contrast, the levels above CPF4 are all calculated.

All of the **elementary series** included in the aggregate directly above are used to estimate the change to the series.

The indices calculated at the CPF4 level (as well as those calculated for CPF 5 or 6 items where applicable) are Laspeyres indices with constant weights over a five-year cycle, with those weights dating from the most recent resampling of the branch of activity to which they belong. Weights can sometimes be updated without waiting for the next renewal in the event that a product is discontinued without any possibility of it being replaced (see 2.1.4. [Aggregation weights](#)).

If:

²⁰ Details on the methods for replacing a product are set out in Part 7 of the IMF manual:

<https://www.imf.org/en/Publications/Manuals-Guides/Issues/2016/12/30/Producer-Price-Index-Manual-Theory-and-Practice-16966>

²¹ In a very small number of infra-CPF4 cases, other levels of aggregation are preferred.

- $SS_{CPF_i,t}$: the price index of the synthetic series at the level of the CPF_i * domain for reference period t, where i = 4, 5 or 6;
- $SS_{CPF_i,t-1}$: the price index of the synthetic series at the level of the CPF_i * domain for reference period t-1, where i = 4, 5 or 6;
- $(SE) \subset SS_{CPF_i}$: all of the elementary series SE included in the synthetic series at the level of the CPF_i * domain, where i = 4, 5 or 6, present at both t and t-1;
- $p_{SE,renouv}$: the share of the weight of the elementary series in the CPF_i * domain used to calculate the value of the index on date t, i.e. the year in which the branch of activity was resampled ([see 2.1.4. Aggregation weights](#)).

$$\text{Then: } SS_{CPF_i,t} = SS_{CPF_i,t-1} \frac{\sum_{(SE) \subset SS_{CPF_i}} p_{SE,renouv} * SE_t}{\sum_{(SE) \subset SS_{CPF_i}} p_{SE,renouv} * SE_{t-1}}$$

This formula is simply a reformulation of formula (3) above with different notations. The change in a synthetic series calculated on the basis of elementary series between periods t-1 and t is equal to the ratio between:

- the sum of the indices for period t of the elementary series making up the synthetic series, weighted in accordance with their turnover for reference period t (i.e. the year in which the branch of activity was renewed or the base year of the elementary series);
- and the sum of the indices for the period t-1 of those same elementary series, weighted in accordance with their turnover for the reference period t (i.e. the year in which the branch of activity was renewed or the base year of the elementary series).

Where a level of the CPF * domain needs to be calculated, but is not covered by elementary series, it will be estimated on the basis of the change of another synthetic series.

2.1.2.3 Calculation of all of the synthetic series for levels 1, 2 and 3 of the CPF

This time, we use all of the **synthetic series** making up the aggregate immediately above to estimate its change. The indices calculated at levels 1, 2 and 3 of the CPF classification are Laspeyres indices with annual weights ([see 2.1.4. Aggregation weights](#)).

If:

- $SS_{CPF_j,t}$: the price index for the series at the level of the CPF_j * domain for reference period t, where $1 \leq j \leq 3$;
- $SS_{CPF_j,t-1}$: the price index for the series at the level of the CPF_j * domain for the previous period t-1, where $1 \leq j \leq 3$;
- $SS_{CPF_i,t}$: the price index of the series at the level of the CPF_i * domain for reference period t, where $i = j-1$;
- $SS_{CPF_i,t-1}$: the price index of the series at the level of the CPF_i * domain for the previous period t-1, where $i = j-1$;
- $SS_{CPF_i,b}$: the price index of the series at the level of the CPF_i * domain for base year b (which corresponds to the year to which the weights apply, i.e. A-2), where $i = j-1$;
- $(SS_{CPF_i}) \subset CPF_j$: all of the synthetic series SS at the level of the CPF_i * domain included in the CPF_j * domain, present at both t and t-1;
- $P_{SS_{CPF_i,b}}$: the weight of the synthetic series SS at the level of the CPF_i * domain used to calculate the value of the index on date t, i.e. the weight of the turnover of the CPF_i * domain within the turnover of the CPF_j * domain in year N-2, i.e. base year b ([see 2.1.4. Aggregation weights](#)).

Then:

by applying formula (3) above.

$$SS_{CPFj,t} = SS_{CPFj,t-1} \frac{\frac{\sum_{(SS_{CPFi}) \subseteq CPFj} p_{CPFi,b} * SS_{CPFi,t}}{SS_{CPFi,b}}}{\frac{\sum_{(SS_{CPFi}) \subseteq CPFj} p_{CPFi,b} * SS_{CPFi,t-1}}{SS_{CPFi,b}}}$$

The change in the synthetic series between periods t-1 and t is equal to the ratio between:

- the sum of the indices in base *b* for the period t of the synthetic series of which it is comprised, weighted according to their turnover in year N-2, where N is the year of period t;
- and the sum of the indices in base *b* for the period t-1 of those same synthetic series, weighted according to their turnover in year N-2, where N is the year of period t;

2.1.2.4 ***Calculation of synthetic series using classifications other than the CPF***

Aggregations other than those of the CPF are also calculated for Eurostat purposes (MIG²²) along with other bespoke aggregations established for the national accounts, the IPI, etc.

The synthetic series of these groupings are calculated in the same way as for the CPF, but using a different “aggregation tree”. This represents all of the links between the elementary and synthetic series, which may follow an official classification such as the CPF or MIGs or another aggregation established to meet specific needs. The upper level of a tree is then calculated using all the series in the level directly below, in the same way as for the CPF.

2.1.3 **Reference 100 indices in 2015**

The reference period corresponds to the period in which the average of the indices is set at 100 by convention. Since January 2018, the producer price indices in the industrial and business service sectors have been disseminated according to the reference 100 in 2015.

The base year represents the period in which the weights used at the various levels of aggregation were calculated;

- For the indices relating to the elementary series, the base year is the year selected during the visit by the survey engineer. The weights are the turnover figures collected from the companies visited. They change every five years on average, at the same time as the samples are renewed for the sector of activity in question;
- For the more aggregated indices (level CPF4 and above), the weights are taken from the national accounts and updated each year. The weights used for dissemination in year N relate to year N-2. These are the most recent and robust data available as at this date ([see 2.1.4. Aggregation weights](#)). In 2021, the weights used correspond to the 2019 results. This is the year that is selected to define the base year for the indices at level CPF4 and above;
- However, for aggregations of European indices, Eurostat calculates its indices with fixed weights, amended every five years, with the base year being the same as the reference year. The indices published by Eurostat since January 2018 are therefore base 2015, reference 2015 indices and therefore differ from those published by INSEE with the same coverage.

With each change of reference year, any changes to methods or classifications can also be integrated. For producer and import price indices, reference 2005 served as an opportunity to switch from CPF rev. 1 classification to CPF rev. 2 classification, reference 2010 provided an opportunity to publish chain-linked indices with annual weights, and reference 2015 was used to switch from CPF rev. 2 to CPF rev. 2.1. The switch to reference 2015 did not give rise to any significant changes, since the revision to the classifications was minor.

²² Main industrial groupings (MIG)

2.1.4 Aggregation weights

The French indices are calculated by updating the aggregation weights of the synthetic series calculated at the CPF4 level and above each year in order to follow the changes in the productive structure as closely as possible. Indices calculated in this manner are referred to as chain-linked. When chain-linking to the period corresponding to the change in aggregation weights, preference is given to the updated weight for chain-linking.

2.1.4.1 Weights for the chained Laspeyres indices at CPF4 level

- **The sources relate to the year N-2**

The weights for the synthetic series at the CPF4 level are turnover figures estimated on the basis of structural surveys (the annual output survey (EAP) and the annual survey by sector (ESA)) and the most recent and robust annual customs data possible. These databases are described in the section on survey sampling ([see 2.3.1. Description of databases](#)).

The weights are then adjusted by means of a rule of three to the amounts for production and foreign trade at the A128 level of the national accounts.

- **Periods for updating the weights**

In the industrial sector, the weights are estimated twice a year. The first update is based on the data from EAP N-2, customs data from N-2, an initial, semi-definitive version of the national accounts for N-2 and the definitive ESA N-2, integrated with effect from the publication of the index in January of year N. These weights are then updated in May on the basis of the finalised versions of the semi-definitive results of the national accounts and the ESA N-2. The indices for January to March, which are still subject to revision, may be reviewed in the light of this update to the weights.

In the services sector, the weights are only calculated once a year at the end of the first quarter, together with the semi-definitive results of the national accounts and the definitive results of the ESA N-2. This calculation is integrated in July for the first quarter indices.

2.1.4.2 Weights for the levels below and above CPF4

- **The weights of synthetic series at the level above CPF4**

To obtain the weights of the synthetic series made up of level 1, 2 or 3 indices of the CPF * domain classification, the weights of the series at the level of the CPF4 * domain of which it is comprised are added together.

- **The weights of synthetic series at the level below CPF4**

The weights of the synthetic series that follow the CPF but are at the CPF6 (products) or CPF5 (sub-classes) level are calculated, for the industrial sector, on the basis of survey sources at the CPF5 and CPF6 level and, for the services sector, on the basis of the structure of the weights of the elementary series.

These CPF6 (products) or CPF5 (sub-classes) weights are then adjusted by a rule of three such that their sum is equal to the weight at the CPF4 level.

This method makes it possible to maintain the structure of the weights at the level below CPF4 * domain, while still ensuring that the weights are added together at each level.

- **Gross and calibrated weights of the elementary series**

The gross weight of an **elementary series** corresponds to the turnover of the product range represented by the “representative product” in the industrial sector or the “representative service” in the services sector for the last known accounting year of the company. This information is gathered by the survey engineers during their visits to companies when they are resampling the branches of activity and is only updated when the branch to which it refers is resampled, so every five years in principle. However, they can be updated without waiting for the next resampling in the event that

a product is discontinued without the possibility of replacement (re-allocation of the weight to the other products belonging to that branch of activity).

Once the weights for the synthetic series at and below CPF4 have been adjusted, an adjusted weight (still following the simple rule of three) is also calculated for each of the elementary series such that the total of the adjusted weights for the elementary series making up a synthetic series is equal to the weight of the latter.

An elementary series is linked to a single main tree (a tree that follows the CPF classification) and may not be linked to any other secondary trees or several secondary trees (other classifications required or other aggregation needs). The calibrated weight is obtained according to the structure of the main tree and will then be applied to the secondary trees.

2.1.5 Coverage rate

The coverage rate is calculated as follows for each domain:

- the numerator is made up of the sum of all of the weights of the synthetic series that have been estimated on the basis of the elementary series. This excludes synthetic series chained from other series;
- the denominator is made up of the sum of the weights for all of the CPFs required in order to provide the coverage required by Eurostat (and in the industrial sector, the calculation for the full coverage is also added).

In both the industrial and services sectors, the full coverage requested by Eurostat is provided to it, but some branches of activity may not be monitored *via* the OPISE survey and chain-linked on the basis of changes in other branches of activity or other sources. They are then excluded for the calculation of the coverage rate, with the exception of the series that make use of the consumer price indices in BtoC, which are included.

Table showing the coverage rates of the OPISE survey in the industrial sector according to the coverage requested by Eurostat and according to the full coverage:

	Domain	Coverage rate of the OPISE survey in 2020	
		Eurostat coverage	Full coverage for the industrial sector (sections B to E)
Producer price indices	C – Production sold in France	99.8%	94%
	E – Exported production all areas	96.2%	89%
	P – Production sold	99.3%	93%
Import price indices	P – Production sold	99.5%	92%

Reading Note: In the industrial sector in 2020, according to the coverage of the EBS Regulation, the survey system covers 99.8% of branches of activity in terms of value for the price of production sold in France indicator, 96.2% for the price of production sold on foreign markets and 99.3% for all markets. For the full coverage of the industrial sector (sections B to E), the coverage rates of the OPISE survey are 94%, 89% and 93%, respectively. For the import price indices, the OPISE survey covers 99.5% of the scope required by the EBS Regulation and 92% of the full coverage for the industrial sector.

Table showing the coverage rates of the OPISE survey in the services sector in 2020 according to the coverage requested by Eurostat:

	Domain and destination market	Eurostat coverage
Service price indices	“BtoB”: Production sold in France to companies	83%
	“BtoC”: Production sold in France to households	92%
	“BtoX”: Exported production all areas	78%
	“BtoAll”:	85%

Reading Note: In the services sector, in 2020, the OPISE survey covered 84% of production within the coverage required by the EBS Regulation for sales in France on the business market (“BtoB”), 94% for services sold to households (“BtoC”) with integration of consumer price indices, 69% for exports (“BtoX”) and 86% for all markets (“BtoAll”).

2.2 Collection design: sources

2.2.1 The OPISE survey (price observations in the industrial and services sectors)

2.2.1.1 A brief history

The survey was launched in its current form in 1977, but was conducted on a quarterly basis. Monthly producer price indices for the industrial sector were rolled out in 1989.

In May 1998, [Regulation \(EC\) No 1165/98](#) concerning short-term statistics (STS) introduced the monthly provision of producer indices for the industrial sector.

Monitoring of industrial sector producer price indices for foreign markets commenced in 2001. Import purchase prices have also been monitored on a monthly basis since 2004 following an update to the STS Regulation (No 1158/2005).

Work commenced on producer prices for business services in 1992 and led to the publication of the first indices in 1994. The collection and dissemination of producer price indices for business services has taken place quarterly since the inception of the survey.

Regulation No [2019/2152](#) of the European Parliament and of the Council of 27 November 2019 on European Business Statistics (EBS Regulation) and Commission Implementing Regulation (EU) No [2020/1197 EBS \(European Business Statistics\)](#) of 30 July 2020 laying down technical specifications and arrangements pursuant to Regulation (EU) No [2019/2152](#) (General Implementing Act) require an extension to the coverage provided by the indices to all market services in Sections H to N, excluding K (financial services), from an all-markets perspective (“BtoAll”), and therefore beyond business services alone (“BtoB”). The implementation of this regulation is the result of negotiations that started at the European level in the early 2010s (“STS Package”).

2.2.1.2 A two-phase survey

The survey system has two separate collection phases, which are conducted in parallel:

- **Continuous resampling of the branches of activity monitored by OPISE**

The sampling for the OPISE survey takes place in two stages: first, companies are selected according to a “cut-off” rule²³, then a selection of products (in the industrial sector) or services (in the services sector) is chosen.

The resampling phase is carried out continuously such that each branch of activity is resampled once every five years on average (this rate can be adjusted to take account of technological, product or market developments). It consists primarily of face-to-face interviews with companies, the branches of activity of which are defined by the declared production of their legal units drawn from the sample. These interviews are conducted by INSEE’s survey engineers or by surveyors from the INSEE business surveyor network (for the building maintenance and improvement).

The survey engineer then works together with the interviewee from the company in question to define the most appropriate “representative products” in the industrial sector or “representative services” in the services sector for each area in which price monitoring is required (prices on the domestic market, export prices, import prices). For the sake of simplicity, we will use the term “representative products” for both the industrial and the services sector in the remainder of this INSEE-Méthodes.

These “representative products” are chosen so as to be representative of price changes in the company’s main product or service ranges and easily available within the timeframe of the survey. During the interview, the survey engineer also requests information regarding the associated turnover, which is then used to weight the responses when aggregating the results.

- **Questioning of companies on the changes to the prices of their “representative products”**

The companies are then questioned, monthly in the industrial sector and quarterly in the services and building maintenance and improvement sectors, with regard to the changes to the prices of their “representative products”.

23 The “cut-off” methods consist of arranging the units from the largest to the smallest (in this case in terms of turnover) and selecting the largest.

A personalised questionnaire (reminding the company of its “representative products” according to the various markets in which it is present) and the last three associated prices that it has declared are sent to the companies participating in the OPISE survey during each survey period.

The same companies are surveyed during each campaign until such time as INSEE resamples the branch of activity for which the company is being surveyed²⁴.

Within a renewal cycle for a branch of activity, discussions may take place that go beyond the simple collection of prices via the OPISE survey, either following a specific request for information issued by an INSEE survey clerk to the company being surveyed or at the initiative of the company (to report the removal and creation of replacement “representative products”, to provide ancillary data or to report the cessation of activity or of production of the good or service being monitored).

All of the responses regarding the “representative products” are integrated period by period into the information system and form what is called “**response series**”, which are price level series and which will then be converted into index series, elementary series ([see 2.1.2.1 Suppliers’ responses to the elementary series](#)).

2.2.1.3 *Method and frequency of collection*

The geographic coverage of the survey is the whole of France (metropolitan France and the overseas territories²⁵). Legal units are sampled and the collection unit is the supplier. A single supplier can represent several companies and a single company can be represented by several suppliers.

For the industrial sector, the questionnaires are issued on a monthly basis.

For the services and building maintenance and improvement, the questionnaires are issued on a quarterly basis.

All of the questionnaires are available online, but paper questionnaires are still sent out to around 7% of “suppliers” in the industrial sector and 9% of “suppliers” in the services and building trades sectors.

2.2.1.4 *A mandatory, general interest survey*

In application of [Council Regulation \(EC\) No 1165/98](#) of 19 May 1998 concerning short-term statistics, the statistical monitoring of producer prices is mandatory in all European countries. The French survey, “Observation des Prix de l’Industrie et des Services” [observation of prices in industry and services] is conducted to this end.

The most recent favourable opinion on the appropriateness of the survey was issued on [5 April 2018 by the “Business Surveys”](#) Section of the National Council for Statistical Information (CNIS) and was granted for the period from 2019 to 2023.

The general interest and statistical quality label was obtained for the OPISE survey system during the [Business Surveys Session of the Label Committee meeting of 17 October 2018](#) for a period of five years. The Minister of the Economy, Finance and Recovery granted it mandatory status for the same period.

2.2.2 *Delegated surveys and other sources*

2.2.2.1 *Delegated surveys*

As provided for by Article 4 of Law [No 51-711 of 7 June 1951](#) on legal obligation, coordination and confidentiality in statistical matters, professional or interprofessional bodies may be approved by the public authorities to act as intermediaries in conducting statistical surveys among companies. Approval is granted or withdrawn by a joint order from the Minister for the Economy and the Minister for the branch of activity in question. The terms and conditions of this are set out in agreements.

When a certified questionnaire is circulated by an approved organisation in this way, the persons involved can choose to send their responses *via* that organisation or directly to the investigating public authority.

24 Except for companies that may – at the time of resampling of the branch of activity – be allowed to be surveyed at different frequencies (for example quarterly in the industrial sector).

25 In view of the sampling technique (cut-off) used, [see 3.3.3.1. Main selection stage for legal units](#), no companies are sampled in the overseas territories.

The approved bodies send the information that they have collected to the investigating authority within the time limit set out in the deed of approval.

- **Study Centre for the Wood Economy (Centre d'études de l'économie du bois – CEEB)**

INSEE has delegated the performance of the OPISE survey on industrial wood to the CEEB²⁶. The CEEB provides INSEE with price indices for branch of activity (class level) 16.10 “Sawmilling and planing of wood” on a quarterly basis.

- **The FFA (French Steel Federation) – now A3M²⁷.**

The survey has been delegated to the FFA for its branch of activity and it provides INSEE with indices on a monthly basis that feed into class 24.10 “Manufacture of basic iron and steel and of ferro-alloys”.

2.2.2.2 Additions from other surveys

- **Consumer price indices**

Consumer price indices (CPIs) are, of course, the main source of base prices for services sold directly to households in France. CPIs are compiled and disseminated including VAT and taxes and net of product subsidies. In order to calculate price indices for services sold to households at “base prices”, where appropriate, CPIs are adjusted to correct for changes in “tax measures”. The last significant adjustment is linked to the recasting of VAT rates in January 2014.

Conceptual differences between consumer price indices and producer price indices explain why the OPISE survey sometimes collects the prices of services sold to households directly. Indeed, consumer prices are calculated on the basis of “consumption items” (linked to the Classification of Individual Consumption by Purpose (COICOP)) rather than by “product classes” (French classification of products (CPF)), as required for the calculation of producer price indices. The consumer price indices can also relate to services without distinction as to their origin (produced in France or imported) and are therefore “homogeneous” with the domestic supply prices to households rather than with the price indices for services sold to households by French companies alone. Consumer price indices therefore cannot always be used directly as producer price indices.

- **The Regional Directorates for Food, Agriculture and Forestry (DRAAF) and the cross-professional wine unions**

The Regional Directorates for Food, Agriculture and Forestry (Directions régionales de l'alimentation, de l'agriculture et de la forêt – DRAAF) and the cross-professional wine unions provide monthly transaction prices that feed into class 11.02 “Manufacture of wine from grape”.

2.3 Sampling of legal units

In the industrial and services sectors (but not for building maintenance and improvement), a sample of companies is drawn that will be visited by the survey engineers when the branch of activity is resampled.

Since 2017, the sampling frames and samples have been built on the basis of the entire scope of dissemination, whereas previously they were based solely on the scope of the renewed branches of activity. This makes it possible, on the one hand, to have a complete sample and, on the other hand, to identify and process companies covering multiple branches of activity that have the potential to be interviewed multiple times during the renewal of different branches of activity, as well as to launch grouped resamplings of different branches of activity involving the same legal units so as to avoid them being interviewed too frequently by INSEE's survey engineers.

26 Decree of 15 October 2008 approving a professional body to conduct the Survey on observation of prices in industry and business services: https://ceeb-71.webself.net/file/si588467/download/081015_Arrete%20Minist%C3%A9riel%20agr%C3%A9ment%20CEEB-fi8859776.pdf

27 In January 2021, the French Steel Federation (Fédération française de l'acier – FFA) and the Federation for minerals, industrial minerals and non-ferrous metals (Fédération des minerais, minéraux industriels et métaux non ferreux – FEDEM) merged. The decree delegating the OPISE survey for monitoring producer prices in branch of activity 24.10 to the A3M professional union is currently being updated to reflect these institutional changes.

By the end of these visits, the companies will have specified the “representative products” for which the prices will be collected every month (for the industrial sector) or every quarter (for the services sector). For the building maintenance and improvement sector, renewals take place by SIREN number rather than branches of activity.

Three sources are used to draw these samples in the industrial sector: the Annual Output Survey (*Enquête annuelle de production* – EAP), data provided by the Customs Directorate General (DGDDI) and, in order to provide coverage for the agri-food industry, the Annual Survey by Sector (*Enquête sectorielle annuelle* – ESA). Conversely, **in the services sector**, only the ESA is used.

2.3.1 Description of databases

The [Annual Output Survey \(EAP\)](#) lists the turnover of **industrial-sector companies by branch of activity, except for those in the food and agriculture sector**. This survey makes it possible to identify the companies contributing to total French industrial production based on a product classification, ProdFra (Production Française [French production]), which is linked to both the CPF (French classification of products) and the ProdCom²⁸ classification (Production Communautaire [community production]). The ProdFra classification is more detailed than the ProdCom classification. In addition, the EAP files comply with the rules for taking account of industrial subcontracting activities excluding, in particular, companies that subcontract all of their production. The latter, which are considered to be commercial companies, are not included in the samples of industrial companies surveyed for the purposes of the producer price indices.

The customs files make it possible to distinguish – within French industrial production – between production destined for foreign markets *via* export values and that destined for the domestic market. These files also make it possible to monitor the value of imports of industrial products. The classification used is the Combined Nomenclature (CN), which is updated annually by Eurostat. A correspondence table makes it possible to link the CN to the CPF (French classification of products). Only those transactions involving the transfer of ownership to resident legal units are retained, with such transactions being evaluated based on a so-called “statistical” value, which corresponds to the value of the goods when crossing the French border, i.e. “CIF” (Cost of Insurance and Freight included).

The [Annual Survey by Sector \(ESA\)](#) aims to identify the various activities carried out by companies by breaking their turnover down into branches of activity²⁹, making it possible to deduce their main activity (APE). This survey allows for the selection of companies in the food and agriculture and services sectors, as well as in the building maintenance and improvement sector.

Additional databases are also used to enrich the survey data:

- The SIRENE and SIRIUS business directories provide the most recent company names, addresses and activity statuses of companies;
- The OCSANE directory, the purpose of which is to update the reference populations for all business statistics, allows for the collection of information concerning contacts;
- The LIFI (financial links) database gathers legal units into groups;
- The CITRUS database (restructuring repository) provides information on the restructuring of companies.

2.3.2 Establishment of sampling frames

2.3.2.1 Observed and calculated indicators

The indicators in domains **C, CM, H, E1, E9, W1 and W9** are referred to as “**observed**”: they are collected from companies on a product-by-product basis at this level of detail. It is necessary to collect representative products or services for each of the **observed indicators** listed above.

28 The ProdCom list is a European product classification issued for the mining and quarrying and manufacturing industries and updated annually based on changes to the Combined Nomenclature for foreign trade (CN). It is nested within the European “Classification of Products by Activity” (CPA).

29 A branch (or branch of activity) groups together homogeneous production units, i.e. units that manufacture products (or produce services) belonging to the same item of the classification of economic activities in question. Conversely, a sector groups together statistical units (companies, legal units), which are classified according to their main activity.

The indicators for domains **P, M, E and W** are referred to as “calculated” as they are the result of adding together the observed indicators.

Ideally, specific samples would be drawn for each of the observed indicators, but the data are not always available.

2.3.2.2 *Sampling frames for the industrial sector*

Domain P: based on the data from the EAP (excluding food and agriculture in the industrial sector) and the ESA (which covers food and agriculture), a sampling frame is obtained directly for production sold, i.e. Domain P.

Domains W, W1 and W9: the DGDDI (Customs Directorate General) data provide sampling frames for the import domains, allowing a distinction to be made between euro area and non-euro area imports (Domains W, W1 and W9).

Domains E, E1 and E9: the DGDDI data also include exports of legal units (LUs) for each branch of activity, but these may differ from “exported production”, which is the variable of interest for Domains E, E1 and E9 of the OPISE system, since an **exporting company is not necessarily the company that produced the good being exported**.

In order to divide the company’s production into its exported production (euro area E1 and non-euro area E9) and the French market (C), this breakdown is estimated by means of a procedure referred to as “customs reclassification”, which aims to bring the amounts for exports by branch of activity of the legal units of the DGDDI into line with those for production by branch of activity of the legal units taken from structural surveys. The total exports (sourced from customs) are compared with the total turnover (sourced from surveys) for all of the branches of activity of the LU.

- Where the total exports are greater than the turnover, it is simply assumed that all production is exported. In this case, the amounts of exports by branch of activity of the LU are estimated based on the turnover for each branch of activity of the LU declared in the surveys.
- Where the total exports are lower than the turnover, several steps must be taken:
 - The export amounts are initialised with the turnovers for each branch of activity declared in the surveys (regardless of the production model);
 - The export amounts to be reallocated to each of these branches of activity are estimated; these are the sum of the following:
 - Customs exports in branches of activity not declared in the surveys;
 - Where the export amounts for a branch of activity declared to Customs are greater than the survey amounts, the difference between these two amounts.
 - These export amounts are redistributed among all of the branches of activity declared in the surveys on a prorata basis according to the Customs amount and the survey amount.
 - Therefore, if the amount declared for a branch of activity is the same as the Customs amount, it is retained.
 - Otherwise, if it is greater than the Customs amount and is retained;
 - If it is lower, it is increased by the redistributed amount on a prorata basis according to the difference between these amounts.
 - The branches of activity of the LU that represent the marketing of a product rather than its production are then excluded.

Finally, for each branch of activity of the LU for which the total exports have been modified, the euro area/non-euro area amounts are recalculated by retaining the initial distribution key as it appears in the customs data (application of the “geographical” structure observed across all exports declared to customs for each LU).

Two samples are drawn (the resampling of the branch of activity can take up to a year) and the most recent sample is retained:

- In the autumn of year N based on data from EAP N-1, the definitive ESA N-2 and DGDDI N-1;
- In the spring of year N+1 based on data from EAP N-1, ESA N-1 and DGDDI N-1.

2.3.2.3 Sampling frame for the services sector

In the services sector, the sampling frame is based purely on the annual survey by sector (ESA). The semi-definitive data are available in April or May of year N for year N-2. This survey provides annual producer data on overlaps between companies (legal units or profiled companies) and the five-digit French Classification of Activities (NAF5) code for branches of activity in the services sector. The ESA data also provide a breakdown of the total turnover:

- On the one hand, according to the “nature” of the customer: companies and the competitive public sector, local authorities or individual customers;
- On the other hand, according to the “residence” of the customer: in France or abroad

This information can be used to establish sampling frames for Domains C, E and P:

- For Domains C (production sold in France, BtoB) and E (production exported to all markets), the ESA provides a breakdown of turnover according to the nature of the customer and their place of residence and by sector rather than by branch of activity;
 - For Domain C, the companies and turnover are used where the nature of the customer is “business customers and competitive public sector” and “government and local authority customers”;
 - For Domain E, the turnover is used where the customer is of foreign nationality. However, there is no breakdown of turnover between the euro area (Domain E1) and the non-euro area (Domain E9);
 - As turnover figures are provided by sector rather than by branch of activity, to avoid out-of-scope data, the bases are limited to companies for which the first four characters of the APE code correspond to the NAF4 branch of activity under consideration. Companies with a turnover in the NAF4 branch of activity that falls below a certain threshold (€4 million in 2021) are also eliminated.
- There is no specific sampling frame for the BtoC domain. This does not pose any problems, as the majority of BtoC indicators are derived from Consumer Price Indices, taking account of possible methodological deviations from producer price index concepts. In the event that one of the branches of activity does not use Consumer Price Indices, the sampling frame for Domain P will be used.
- For Domain P, the sampling frame is derived directly from the ESA results. The sampling frames are restricted to companies for which the turnover in the branch of activity at the level under consideration, NAF4 or NAF5 level, was at least €4 million in 2021. Samples are drawn at both levels to ensure representativeness up to the NAF5 level. This sampling frame allows the samples for Domains C and E to be supplemented, and also enables the drawing of samples in branches of activity that involve large numbers of services sold to households (BtoC) rather than indicators drawn from the consumer price indices.

2.3.2.4 Table summarising the indicators and their sampling frames

	Domain	Type of indicator	Sampling frame
Industry	C	Observed	Sampling frame for Domain P
	CM	Observed	
	E1	Observed	Sampling frame for Domain E1
	E9	Observed	Sampling frame for Domain E9
	W1	Observed	Sampling frame for Domain W1
	W9	Observed	Sampling frame for Domain W9
	E=E1+E9	Calculated	Improvement to the coverage rate (E1 + E9) by drawing from sampling frame E
	W=W1+W9	Calculated	Improvement to the coverage rate (W1 + W9) by drawing from sampling frame W
	P=C+E	Calculated	The coverage rate of the domains is improved with sampling frame P
	M=C+W	Calculated	
Services	C	Observed	Sampling frame for Domain C

(excluding IPEA)	CM	Observed	
	H	Observed	Sampling frame for Domain P and improvement to the coverage rate by tracking certain branches of activity with CPIs
	E1	Observed	Sampling frame for Domain E
	E9	Observed	
	E=E1+E9	Calculated	
	P=C+E+H	Calculated	Improvement of the coverage rate of the domains with sampling frame P

2.3.2.5 ***Building maintenance and improvement (IPEA)***

The sampling frame is based on the specific “Construction” module within the ESA for companies with APE “43 – Specialised construction activities”. The ESA sample has an exhaustive stratum and a random stratum for the smallest companies. In particular, this module provides a breakdown of turnover according to building type: single-family homes, blocks of flats, offices and other buildings. The results of the IPEA survey draw a distinction between residential and non-residential buildings, with residential buildings being considered to include single-family homes and shared housing and non-residential buildings being considered to include offices and other buildings.

The sampling frame is made up of the units present in the ESA if their principal activity (APE) code starts with 43 “Specialised construction activities” and they have declared turnover in one of the branches of activity covered by the IPEA.

The units selected in the sampling frame are those with turnover under the old system of greater than or equal to €500,000 in at least one of the ten branches of activity at level NAF4 of the coverage of the IPEA in 2021.

2.3.3 **Selection of legal units**

The production unit must be identified with as much certainty as possible. Indeed, the survey data contain legal units, profiled companies and units involved in restructuring. Prior to establishing the sampling frames, it is therefore necessary to remove the duplications linked to restructuring and to integrate descriptive information regarding the boundaries of the profiled companies.

Since 2019, **the legal unit level has been prioritised** wherever possible: on the one hand, this allows the information concerning the location variables to be refreshed by means of simple matching with the SIRENE directory and, on the other hand, it facilitates the work of the surveyors (searching for contacts to survey a branch of activity within a profiled unit can be very costly). The survey burden is calculated once per year ([see 4.1.2.1. Questionnaire response time](#)) and communicated to the SIRIUS directory (reference in terms of the scope of business statistics and all statistical sources in the business domain).

2.3.3.1 ***Main stage of unit selection: the “cut-off”***

“Cut-off”³⁰ methods consist of sorting the units from the largest to the smallest (in this case in terms of turnover), keeping the largest and stopping when the quality criteria are deemed sufficient. These quality criteria are defined in this case as a minimum coverage rate, a minimum number of legal units and a maximum number of legal units.

The levels are set as follows:

30 The article by Beneditti *et al.* entitled “A Framework for Cut-off Sampling in Business Survey Design”, Journal of Official Statistics, Vol. 26, No 4, 2010, pp. 651–671 sets out the general framework for cut-off sampling methods used in business surveys. The sampling performed to create the producer and import price indices is based on these methods, which are applied in a simplified manner.

Coverage	Domain	CPF level	Maximum number of legal units	Minimum coverage rate (as a %)	Minimum number of legal units
Industry	P – Price of production sold	CPF4	30	40	7
		CPF5	30	0	5
	E – Price of production exported	CPF4	30	30	7
		CPF5	30	0	5
	E1 – Price of production exported to the euro area	CPF4	30	25	5
	E9 – Price of production exported outside of the euro area	CPF4	30	25	5
	W – Price of production imported	CPF4	20	30	7
	W1 – Price of production imported from the euro area	CPF4	20	20	5
	W9 – Price of production imported from outside of the euro area	CPF4	20	20	5
Services	P – Price of production sold	CPF4	35	70	5
		CPF5	35	55	5
	C – Price of production sold in France	CPF4	5	0	0
	E – Price of production exported	CPF4	5	0	0

2.3.3.2 **Finalisation of samples**

Limit on sample sizes in the industrial sector:

In the industrial sector, once the sample has been drawn, attempts are made to limit the size of the samples to ensure that the branches of activity are resampled around once every five years (desired rate).

A list of legal units that may not be surveyed is proposed, provided:

- The minimum thresholds defined when drawing the sample at the CPF4 level are met;
- A correct coverage rate is maintained in the sense that there is little reduction when compared with the initial rate;
- The rate of entry of new units (number of unsurveyed units in the new sample in relation to the total number of units in that new sample) is close to the rate seen after the first draw.

In the services sector, for branches in which the activity is poorly concentrated:

In the services sector, the issue of sampling arises in particular in branches in which the activity is very poorly concentrated. This situation arises relatively frequently in the services and building trades sectors (building maintenance and improvement section of the OPISE survey). In such cases, probabilistic sampling is carried out to provide better coverage for the branch of activity. The use of sampling weights then improves the overall coverage rate, since the turnovers of the companies drawn, which are used as aggregation weights for the results, are adjusted to take account of the relative weight of their sampling stratum.

2.3.3.3 **Sampling in the building maintenance and improvement sector**

Companies are selected using the last digit of their SIREN number (or the code of the profiled company, where applicable), ending in N or N+5, where N is a number between 0 and 4, depending on the year.

Units are then removed from this sample:

- To reduce the risk of out-of-scope data, companies that meet the turnover requirement under the old system for branch of activity “43.99 – Other specialised construction activities n.e.c.” only and not “43.99C – Masonry works and building structural works” are removed. The same principle applies to companies only eligible for branch of activity “43.21 – Electrical installation”, which do not have APE code “43.21A – Installation works of electrical wiring and fittings in all kinds of buildings”;
- Units in the random stratum of the ESA that have already been surveyed at the time that the sample is drawn are excluded from the sampling frame in order to reduce the statistical burden on small companies.

Prioritisation is suggested for surveying the sample of companies based on the multi-branch nature of the company, whether it is included in the exhaustive or non-exhaustive stratum of the ESA survey and its turnover. The aim of this prioritisation is to limit the burden on the survey engineers while ensuring the quality of the survey.

2.3.3.4 **Sample size**

Around 8,200 companies participate in the OPISE survey, including:

- 4,800 for producer and import price indices in the industrial sector;
- 2,100 for producer price indices in the services sector;
- And around a thousand companies for residential and non-residential IPEA price indices.

2.4 Sampling of the “representative products”

2.4.1 Selection stage for branches of activity to be renewed

In the industrial sector, in order to prioritise the branches of activity that are to be resampled each year, several criteria are taken into account, such as the length of time since the last resampling, the response rates, the share of stopped elementary series and the share of incoming and outgoing companies, etc.

In the services sector, only the length of time since the last resampling of the branch of activity is of relevance for deciding which new branches of activity to renew.

Finally, with regard to building maintenance and improvement, resampling does not take place according to branches of activity, but according to the [SIREN numbers](#) of the companies: each year, one fifth of the total sample is renewed on the basis of a draw using the last figure of the SIREN number of the companies (0 and 5 one year, 1 and 6 the following year, etc.). This particular method is linked to the characteristics of the units surveyed, primarily craftspeople in the construction sector, who more often than not provide several of the categories of service monitored at the CPF4 level.

2.4.2 Establishment of a technical file (TF)

The branch resampling technical file (TF) is a document drawn up each time a branch of activity is resampled. It serves as the specifications for the renewal. It is primarily used by the survey engineers to prepare their visits to the companies being surveyed. The information included in the technical file includes:

- Information concerning previous resamplings;
- The areas to be covered ([see Coverage](#));
- The classification of activities, of products (CPF), of products at the fine Eurostat level ([rodCom](#)), of products at the fine level of the sampling frames for the industrial (EAP survey, ESANE) and services sector;
- Details of the scope of the branch of activity, any boundaries with other CPFs;
- General framework data (economic weight of the branch of activity, production in France and foreign trade, changes to prices in the branch of activity);
- Additional information obtained during the consultation of professional unions.

Thanks to the technical file and the consultation of professional unions, the survey engineer is able to gain a basic idea of the position of the company within the branch of activity under study, the products that it manufactures and the price monitoring criteria that could be envisaged.

2.4.3 Consultation of professional unions

Meeting with a professional union can provide expertise on the existence of specific taxes, the boundaries of the industry or the sampled companies. The meeting with the professional union is also of particular use if the branch of activity is large, as it allows specific observations to be made for the profession in terms of the dissemination of indices and also allows for communication campaigns among its members regarding the current OPISE survey resampling process.

The OPISE survey system and its objectives are presented during this meeting with the professional union. At this stage, the professional union can be consulted regarding the large companies present in the branch of activity and recent developments in activities within the branch in question. It also provides an opportunity to obtain more precise information on some of the points raised during the drafting of the technical file.

2.4.4 Visits to companies

These are carried out by an INSEE survey engineer specialising in interviews of this type. The interview lasts an hour and a half on average.

This visit has two main objectives:

- To get to know the company and its pricing policy;
- To establish the practical arrangements for the survey together with a high-level company executive (Managing Director, Sales or Financial Director, Management Controller, etc.).

2.4.5 Collection of “representative products”

The selection of relevant representative products or services is based on the following questions:

- What is the respective importance of the different product ranges within the company?
- Which “representative products” best represent price changes for each of these ranges?
- Which types of prices best reflect the actual changes to producer prices?
- How can comparable information be obtained over time, in spite of any potential changes to the characteristics of the “representative products”?

The weights associated with these “representative products”, which correspond to the weights of the elementary series following this representative product, are based on the following:

- The representativeness of the “representative product” within the company (turnover of the range of products represented by a “representative product” chosen together with the company for the branch of activity in question) on the one hand;
- The position of the company within the branch of activity, again in terms of turnover, on the other hand.

The survey engineer first seeks to identify the right point of contact within the company, or multiple points of contact if the company is to be surveyed with regard to multiple domains. For example, if the company is involved in sales in France, exports and imports, this could be the Sales Manager for sales in France and exports and the Purchasing Manager for imports.

The survey engineer works together with the point of contact within the company to define the most suitable “representative products” for each domain and each range of products, as well as:

- Price details (type of Incoterm³¹ or other unit price, price per litre, etc.);
- The frequency with which surveys will be carried out to identify the most appropriate frequency (monthly, quarterly or half-yearly) for the “representative product”, even though the company is asked to respond as regularly as possible to the survey depending on its periodicity so as to limit the risk of non-response on its part. Therefore, 55% of suppliers in the industrial sector are surveyed on a monthly basis (and 37% are surveyed quarterly) and 82% of suppliers in the services sector are surveyed every quarter;
- Whether to carry forward at constant price for periods where no survey takes place.

In order to select new “representative products”, it is helpful to select products with significant economic weight, i.e. those that are among the top sellers in France and for export; for imports, the products that appear to be the most frequently purchased by the company are selected.

Similarly, the survey engineer will prioritise the collection of prices for “pure products”, i.e. those that represent a transaction for a single item rather than a “mixed product”, which is a collection of items from the same range for which changes in the average price, based on variations in the quantities of the constituent products sold from one period to the next, could introduce statistical bias. For example, the measure of a price change brought about by variations in the quantities of the items in the basket rather than a measure of the change in the price of a single item.

31 Incoterms, a contraction of “International Commercial Terms”, are a codified set of standard contractual provisions relating to the carriage of goods. Defined by the International Chamber of Commerce (ICC), Incoterms are revised every 10 years in order to reflect changes in international trade practices. These rules of practice define the conditions for the delivery of goods within the scope of a sales contract. More specifically, Incoterms determine the reciprocal obligations of the seller and the buyer, the distribution of transport costs and the place of delivery, which is the point at which the risks are transferred from the seller to the buyer.

If the company is already a respondent for the branch of activity, the survey engineer can review the various existing response series with a view to updating them, provided they are still relevant for characterising the price changes within their range.

The survey engineer records the following for each of the “representative products”:

- The annual turnover of sales in France of the “representative product” (Domain C) or export sales of the “representative product” to the euro area (Domain E1) or outside of the euro area (Domain E9);
- The annual purchase amount of imports of the “representative product” from the euro area (Domain W1) and from outside of the euro area (Domain W9).

For each “representative product”, the survey engineer collects the last four average sales prices available on the date on which the “representative product” data are gathered for sales in the domain under observation.

2.4.6 Site visit report

After each visit, the survey engineer draws up a site visit report, which reports on the conditions under which the resampling of the branch of activity took place, taking account of the objectives set by the technical file:

- Collection of “representative products” that will feed into the response series;
- Coverage of all survey domains and product ranges for which a price index is disseminated;
- Reaching a sufficient number of suppliers to allow for the dissemination of indices in compliance with the rules of statistical confidentiality;
- The provisional timetable, which will make it possible to identify the particularities of the branch of activity and the difficulties encountered by the survey engineer during this renewal;
- Pricing methods;
- Difficulties in monitoring prices and ways of overcoming them.

All of this information will be useful when the branch of activity is next resampled.

2.4.7 Preparation and sending of the questionnaire

The information contained within the site visit report is integrated into the OPISE information system.

If the company and the supplier(s) have not yet been surveyed, they will be included.

Otherwise, the supplier is retained and the response series are updated: where the response series are retained, only the weights for the series will be updated.

Where new response series are created (following new “representative products”), they are integrated into the system with a weight and linked to aggregation trees ([see 2.1.4. Aggregation weights](#)). Obsolete series are removed and their aggregation trees are also updated.

The questionnaires sent to companies are updated at the same time as the “representative products” being monitored and the domains requested following that resampling.

3 Development of the collection instrument (Coltrane)

The platform for collecting data from companies via the internet (Coltrane) allows interviewees to respond online rather than by post.

- They have access to a **collection platform** that allows them to identify themselves and to respond to the majority of surveys sent to them by Official Statistics (both by INSEE and by the Ministerial Statistical Offices) using a common ergonomic framework. It is possible – at the request of the company – to pool the accounts so that they use the same user name and password combination. For survey designers, Coltrane **is a complete service offer** that allows them to collect responses via the internet, to hold and manage a repository of company contacts and to send letters, emails and paper questionnaires to companies that want them, while also having a dedicated support system.

The OPISE survey³² used the Coltrane system on 1 April 2019 for the April 2019 campaigns in the industrial sector and in the second quarter of 2019 in the services and building maintenance and improvement sectors.

3.1 Services available to respondents

Authentication portal:

The contact logs in to the service portal by entering a user name and a password. Upon first login, the contact must choose a personal password. If they lose their password, the contact can request a new one online.

The “My surveys” portal (collection website):

This is the single point of entry for responding to a large number of business surveys (from INSEE or any other MSO). Once logged in, the contact will see the surveys that they are authorised to complete for which collection is under way, as well as the desired return dates, the questionnaires that have already been completed and those that are pending.

The contact accesses the questionnaire of their choice to complete the survey or to view their responses (provided the collection is not closed).

The questionnaire:

Once the contact has selected a survey, they are able to access their personalised questionnaire. Upon completing the questionnaire, the respondent can decide whether to submit their response or to save it without submitting it. They can leave the questionnaire at any time. When they return to a questionnaire, they are offered the option of returning directly to the last page viewed or starting again from the beginning.

If the survey is submitted, a summary of the responses can be downloaded in “pdf” format (proof of submission). No further changes may be made to the questionnaire once it has been submitted.

They can also access and amend their “contact details” from the first page of the questionnaire.

The “My Account” portal – Managing contact details:

The contact can choose a personal password and view/update their personal information. This function can be accessed from the “my surveys” portal or from the questionnaire.

Pooling of accounts:

If desired, a contact may have a single login account to access and respond to questionnaires for multiple surveyed units and/or multiple surveys. Once the contact has a single account to access the questionnaires for at least two separate survey units or at least two separate surveys, that account is referred to as “pooled”. Contacts wishing to pool their accounts should call INSEE (INSEE Contact or management team) or visit the “My account” tab in the portal: the contact can choose the surveys that they wish to link to their account.

32 Examples of OPISE questionnaires in the industrial and services sectors:

https://insee.fr/fr/metadonnees/source/fichier/specimen_opiseindus.pdf

https://insee.fr/fr/metadonnees/source/fichier/specimen_opiseserv.pdf

Online assistance:

The contact can request assistance *via* a form. This assistance is contextualised, i.e. depending on where the form comes from, it can be sent to two different stakeholders.

- **INSEE Contact:**

This service is responsible for responding to “technical” questions (how to access the collection platform, the reality of the survey, the objectives of the survey, forgotten access code, etc.) relating to online collection and receives requests sent by means of the assistance form provided on the login page or within the portal.

- **Survey management teams:**

These teams are responsible for answering “business” questions directly related to the survey and they receive requests from the assistance form included in the questionnaire.

3.2 Service offer for survey designers

“Paper” letter and questionnaire generation:

The Coltrane platform also allows standard letters and paper questionnaires to be generated. Companies that so wish can request that a paper copy be sent, which they can then return by post.

Sending emails:

When opening surveys for collection or issuing reminders, messages inviting contacts to complete the survey are sent out to those with an email address.

4 Collection of the OPISE survey

4.1 Implementation of collection

4.1.1 Collection dates

In the industrial sector, collection takes place every month of the year. The questionnaires are sent out at the very beginning of month M+1 and relate to the prices during months M, M-1, M-2 and M-3. The companies then have around three weeks to submit their responses. The results of campaign M+1 are disseminated by no later than the final working day of month M+1 (deadline set by the EBS Regulation).

In the services and building maintenance and improvement sectors, collection begins at the very beginning of the first month of quarter T+1 (T being the reference quarter). The companies surveyed have just over a month and a half to submit their responses for the indices for quarter T. These are published by no later than the final working day of the second month of T+1, i.e. at T+60 days.

4.1.2 Provision of online or paper questionnaires

More than 9 in 10 questionnaires are filled in online in both the industrial sector (95%) and the services sector (90%).

4.1.2.1 Response time to questionnaires

Given the form that the survey takes, the response time to an OPISE system questionnaire varies significantly depending on the number of “representative products” to be reported on by the company and the complexity of the company’s information system. When determining “representative products”, the company may indicate to the survey engineer that its prices or tariffs are being revalued at a slower rate than that of the OPISE survey. Companies then might be granted a derogation to respond at a lesser frequency (quarterly or half-yearly in the industrial sector, half-yearly in the services sector).

In order to measure the time spent by companies on responding to the OPISE survey, they are asked once per year to indicate the amount of time they dedicated to responding to the previous year’s questionnaires. In 2020, the median monthly time spent on each questionnaire was 10 minutes and the average was 15 minutes, taking account of both the industrial and the services sector.

4.1.2.2 Consistency checks during online collection

For each index campaign (monthly for the industrial sector and quarterly for the services sector), the companies surveyed have the option of declaring the current reference period (P) and correcting the prices that they declared for the three previous periods (P-1, P-2 and P-3).

If one of the prices entered for one of these periods changes by more than 10% in terms of absolute value when compared with another consecutive revisable period (i.e. between P and P-1, P-1 and P-2 or P-2 and P-3) and if the response series is directly linked to the elementary series, the company is asked additional questions. If the company has already responded to these questions during a previous campaign, and if there has been no change to the declarations, these questions are not asked again.

The company can explain this change from a list of six options:

1. linked to a change in the cost of raw materials and/or inputs;
2. linked to a change in the cost of labour;
3. linked to competitive factors (supply and demand relationship): arrival of a new company on the market, alignment of prices to those of competitors, etc.;
4. linked to a change to the characteristics of the product: addition of an option, change of model, the quality of the product or the service;

5. linked to a change to the commercial terms of the transaction, such as payment terms, delivery type, customer type;

6. linked to other factors: blank field to be completed.

In all cases, this questionnaire sends an alert to the INSEE clerk for analysis and processing (see the section on processing ([see 5. Processing the data](#))).

4.1.3 Reminder operations

Each campaign starts on the first working day of the month following the end of the period for which the information is being collected (month M+1). The questionnaires to be completed by the surveyed companies are loaded in the online collection system. All companies receive an email informing them that collection is open and reminding them what they need to log in. They are then asked to submit their responses around the 6th of that same month M+1 for the industrial sector and on the 18th or 19th of the month for the services industry.

If the responses are not received by the required dates, a first reminder email or letter is sent to the companies on the evening of the deadline set when the survey was opened. A new date is proposed in the reminder letters (before the 14th of month M+1 for the industrial sector and around the 2nd of month M+2 for the services sector) and in the emails, a standard message is sent “Thank you in advance for responding online and submitting your questionnaire as soon as possible”.

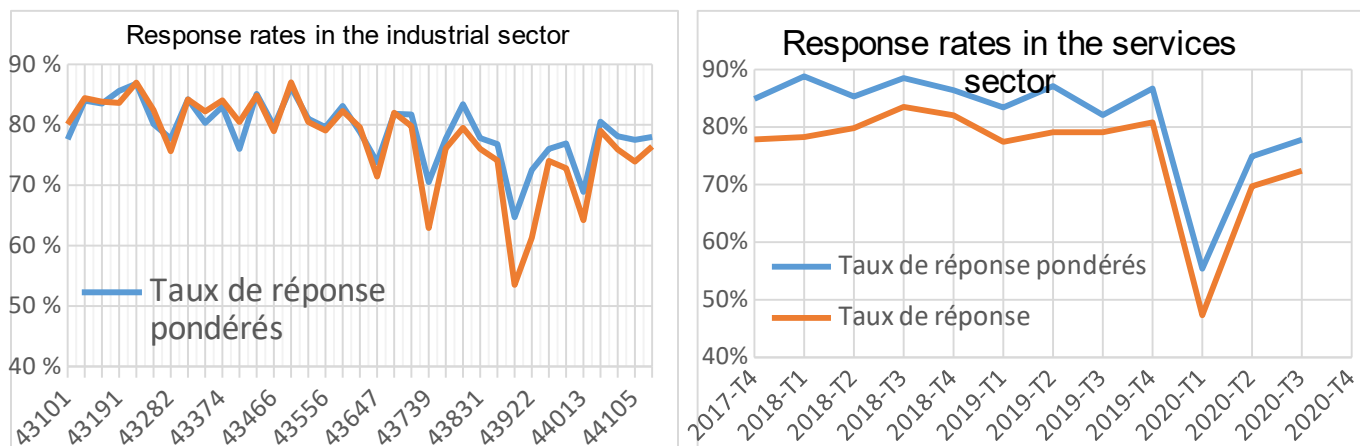
If no response is received by the evening of the date specified in the first reminder letter, a second and final reminder is sent to these companies, this time by email only, once again asking them to respond as soon as possible, for both the industrial and services sectors.

Companies responding to a paper questionnaire also receive a reminder by post at around the same time as the first reminders are sent to companies responding online.

These reminders are sent out by email or post for every survey.

4.1.4 Response rates

Graph showing response rates and weighted response rates in relation to the weights of elementary series in the OPISE survey in the industrial and services sectors:



Response rates in the industrial sector are around 80% with some lower response rates linked to shorter collection times. Response rates in the services sector are stable at around 80% and 85% for weighted response rates. In early 2020, a drop in response rates was observed in connection with the health crisis (see [BOX: Impact of the health crisis on the measurement of indicators](#)), followed by a recovery.

4.1.5 Number of suppliers surveyed, number of response series and elementary series supplied

In the industrial sector, in 2021, almost 5,000 suppliers were surveyed in connection with 28,000 representative products (response series excluding calculated response series). This information is used to feed 31,500 elementary series.

In the services sector, 3,100 suppliers were surveyed in connection with 13,000 representative services (response series excluding calculated response), allowing 22,000 elementary series to be fed.

Table showing the number of suppliers surveyed and the elementary series fed by domain:

- Industry

Domain	Number of suppliers	Number of Elementary Series
C (French market, base price)	3,300	13,400
CM (French market, market price)*	200	800
E1 (euro area export)	1,700	4,400
E9 (non-euro area export)	1,500	3,600
W1 (euro area import)	1,400	4,700
W9 (non-euro area import)	1,200	4,700

*for CM, in the majority of branches of activity, no specific sample is managed, but the CM series are chained to the C series.

- Services

Domain	Number of suppliers	Number of Elementary Series
C (French business market, base price)	2,700	13,200
CM (French business market, market price)*	400	1,800
H (French household market, base price)	500	1,900
E1 (euro area export)	400	1,700
E9 (non-euro area export)	900	2,700

*for CM, in the majority of branches of activity, no specific sample is managed, but the CM series are chained to the C series.

4.2 Finalisation of the collection

4.2.1 Entry of data from paper questionnaires

The clerks enter the data from the paper questionnaires received and destroy them after a statutory retention period of three years.

4.2.2 Litigation

Generally speaking, INSEE encourages voluntary participation by companies in the OPISE survey system. Should one of the companies surveyed refuse to participate, a litigation procedure may be initiated against it.

Such procedures are framed in time by the meetings of the Litigation Committee for Mandatory Statistical Surveys (one session every six months, generally held in June and December).

Two types of litigation procedure can be initiated:

- One relates to the refusal of a new company to integrate the OPISE survey samples during the resampling of a branch of activity. The aim of the pre-litigation activities in this case is to establish contact with the company;
- The other procedure is associated with the sending of reminders to companies that are no longer submitting their responses to the OPISE questionnaires without good reason.

In each of these two cases, a formal notice is sent, followed by a statement of non-response (registered letter with acknowledgement of receipt). If no response is received to these various letters, the matter is referred to the Litigation Committee for the possible application of an administrative fine. This litigation procedure stops if the company resumes its participation in the OPISE survey under satisfactory conditions.

5 Data processing

5.1 Review and validation

5.1.1 Systematic review of questionnaires

5.1.1.1 Supplier declaration

The questionnaires (containing one or more response series) must be checked by a clerk immediately if the supplier has declared at least one of the following in the questionnaire:

- A change to the product description, the details or the unit of a response series;
- The addition of a response series;
- The deletion of a response series;
- A request for contact;
- A comment or explanation on the questionnaire;
- A zero value.

The manager contacts the company if necessary.

5.1.1.2 Replacement of a “representative product”³³

A “representative product” must be replaced if the company reports that it is no longer available. Every effort is made to identify a new “representative product” from within the same product or service range offered by the company.

If this cannot be achieved, the variations in price of the different products will be partly due to their different nature or composition. To ensure “pure” price monitoring, it is essential that the “quality effect” is separated out from the price variation (examples: sale price with or without delivery, television standards and resolution, television publicity based on the time of broadcast). The quality effect only takes account of variations in price caused by differences in the characteristics of the product being monitored. It differs from the price effect, which represents the price changes that the product would have experienced had it not been changed.

A candidate product to act as a replacement is one with the same “nature” as the old one. This notion is subjective: it assumes that the usefulness of the “new” product for the buyer is similar to that of the old product and, particularly in the context of producer price indices, that the new product belongs to the same product range at the company as the product it is replacing. A quality adjustment is performed to establish a link between the old product and the new one.

Where the product to be replaced and the new product coexist at the time of the replacement, the “**overlap**” method is used. The aim is to establish the price of the product had it not been replaced. And the quality effect is measured by the difference in price observed on the market. More specifically, the price of the replacement product during the previous period is sought in order to establish the link. By way of a reminder, the change in the elementary series is calculated on the basis of the response series with a quality coefficient ([see 2.1.2.1. Suppliers’ responses to the “elementary series”](#)),

in other words:
$$\frac{SE_t}{SE_{t-1}} = \frac{SR_t * CQ_t}{SR_{t-1} * CQ_{t-1}}$$

The hope is that the change in the elementary series will mirror the change in the new product.

If:

- SR_t : the price of the replacement product at t (= $PRODNOUV_t$);
- $PRODNOUV_{t-1}$: the price of the replacement product at $t-1$;
- SR_{t-1} : the price of the replaced product at $t-1$,

³³ Details on the methods for replacing a product are set out in Part 7 of the IMF manual:

<https://www.imf.org/en/Publications/Manuals-Guides/Issues/2016/12/30/Producer-Price-Index-Manual-Theory-and-Practice-16966>

$$\text{The desired outcome is: } \frac{SE_t}{SE_{t-1}} = \frac{SR_t * CQ_t}{SR_{t-1} * CQ_{t-1}} = \frac{PRODNOUV_t}{PRODNOUV_{t-1}}$$

$$\text{So, } CQ_t = \frac{SR_{t-1} * CQ_{t-1}}{PRODNOUV_{t-1}}$$

Where there is no overlap, the changes in the price of the discontinued product can be estimated:

- Via direct information that allows a distinction to be made between quality and price (example of a simple change in quality for the same product);
- By imputation: information regarding other, similar products produced by the company or products produced by other companies within the sample can be used;
- If the prices are close enough, and where there is no information to suggest that the products are different, the replacement will take place without correcting for a quality effect.

5.1.2 In-depth examination of the questionnaires by “selective editing”

The questionnaires collected during the course of a campaign are not all subject to an in-depth examination by the managers: only those questionnaires for which examination is deemed the most useful are appraised, which is referred to as “selective editing”.

5.1.2.1 Prioritisation of questionnaires to be appraised

An “appraisal score” is calculated for the questionnaires that were responded to during the campaign, which allows the analysis to be prioritised.

The appraisal score of a questionnaire is the sum of the contributions of the elementary series to the absolute value (see below) for the current period and for the revisable periods (t-1, t-2 and t-3). This sum is weighted by the relative weight of the CPF4 * domain of the elementary series and the relative weights of the different periods, which are as follows:

Periods	Industrial sector weight	Services sector weight
t	0.3	0.4
t-1	0.2	0.4
t-2	0.2	0.1
t-3	0.3	0.1

If:

- Contribution_{SE_{i,t-x}}: contribution of the elementary series SE_i, for the period t-x, x = 0 to 3;
- p_{SE_{i,t-x}}: the share of the weight of elementary series SE_i within the CPF4 * domain during the reference period t-x ([see 2.1.4. Aggregation weights](#));
- Pond_{t-x}: relative weights for the different periods (p, p-1, p-2 and p-3);
- (SE_i) ⊂ CPF 4: all of the elementary series SE_i included in the CPF4 * domain,

$$\text{Then: } ScoreExpertise = \sum_{x=0}^3 Pond_{(t-x)} \sum_{(SE_i) \subset SS_{CPF4}} p_{SE_{i,t-x}} Contribution_SE_{i,t-x}$$

The questionnaires in the portfolios of each of the OPISE survey clerks are sorted in descending order in terms of their score, so they must be appraised in accordance with their “relative priority”.

The managers can then choose whether or not to validate the responses following this appraisal and possible contact with the companies. The aim of this appraisal is to validate and approve changes in prices, having neutralised changes linked to the quality effect ([see 2.1.2.1 Suppliers' responses to the elementary series](#)).

5.1.2.2 ***Influential contributions***

- **Contribution of an elementary series**

The questionnaire is integrated at a time when the elementary series SE has not yet been calculated, so the contribution is estimated based on the change in the response series rather than that of the elementary series. The quality coefficients are therefore not included in the formula ([see 2.1.2.1 Suppliers' responses to the elementary series](#)). This means that when the questionnaire is integrated, the change in the elementary series precisely follows that of the response series.

The quality coefficients associated with the response series are first rolled over from one month to the next before being revised – if necessary – in the event that a quality effect is observed.

To calculate the contribution of an elementary series to the change in the index for an overlap between CPF4 and a domain, if:

- $Evol(SR_{i,t}, SR_{i,t-1})$: the change in the response series linked to elementary series SE between reference periods t-1 and t;
- $SE_{i,t-1}$: index of the elementary series SE_i for the previous period t-1;
- $SS_{CPF4,t}$: the price index for the synthetic series at the level of the CPF4 * domain, including SE_i , for reference period t;
- $SS_{CPF4,t-1}$: the price index for the synthetic series at the level of the CPF4 * domain, including SE_i , for the previous period t-1;
- $(SE_j) \subset SS_{CPF4}$: all of the elementary series SE_j included in the synthetic series at the level of the CPF4 * domain;
- $p_{SE_i,t}$: the share of the weight of elementary series SE_i within the CPF4 * domain for the reference period t ([see 2.1.4. Aggregation weights](#)).

$$Contribution_SE_i = \frac{p_{SE_i} * SE_{i,t-1}}{\sum_{(SE_j) \subset SS_{CPF4}} p_{SE_j} SE_{j,t-1}} * Evol(SR_{i,t}, SR_{i,t-1})$$

- **Influential contribution (where the supplier has responded)**

A supplier's response is considered to be influential if the contribution of the elementary series to which it is linked falls outside a likelihood interval. This interval is estimated as follows:

- For each overlap between the CPF4 and a domain, account is taken of the distribution of the contributions for all SE that have been neither imputed nor adjusted during the previous 12 months for the industrial sector and the previous 4 quarters for the services sector ([see 5.2. Adjustment and imputation](#));
- The thresholds used correspond to 5% and 95% of the distribution. These thresholds are re-estimated for each campaign;
- The thresholds can also be set by being integrated directly into the application, still at the level of the CPF4 * domain.

Where there are no historical data (e.g. upon the commencement of the monitoring of a branch of activity), the contribution thresholds are set by default at -0.2 points and +0.2 points.

- **Influential contribution (in the event of partial non-response)**

Where the questionnaire has been integrated, but without information for a response series, a “predicted” response is estimated for that response series. This “predicted” response is estimated using the average changes from the first synthetic series to which it is linked (INFRA level, CPF6, CPF5 or CPF4 * domain) over five periods (industry and services sectors).

As is the case for supplier responses, supplier non-responses are considered to be influential if the contribution of the elementary series to which they are linked falls outside a likelihood interval (see above).

5.1.2.3 **Outliers**

During the integration of the questionnaire, micro checks are also carried out to determine whether the value is “atypical”, i.e. whether it is positioned outside of the interval of plus or minus 10% of the monthly change for the industrial sector and the quarterly change for the services sector.

Since a response series may be linked to multiple elementary series (such as a response series used for both the French market and exports to the euro area), the check is carried out on the overlap between the CPF4 and the domain (exports to the euro area, imports from outside of the euro area, etc.) corresponding to the elementary series with the highest weight.

These checks are carried out on all new responses for the current period and on all values added or corrected by the supplier for the previous three periods. The change calculation is based solely on the data provided (gross values) and therefore does not include information regarding changes associated with a change to the quality of the product and that have already been integrated ([see 2.1.2.1 Suppliers’ responses to the elementary series](#)).

5.1.3 **Prioritisation of questionnaires in case of total non-response for targeted reminders**

The total non-response score of a questionnaire is the sum of the contributions to the change for all of the response series linked to the questionnaire. As is the case for partial non-response, a “predicted” response is estimated using the average changes from the first synthetic series to which it is linked (INFRA level, CPF6, CPF5 or CPF4 * domain) this time over 12 periods (industry and services sectors).

These contributions are weighted by the relative weight at the overlap between CPF4 and the domain of the elementary series linked to the response series and by the difference in terms of absolute value between the weighted response rate and a threshold response rate:

- The weighted response rate is estimated at the level of the overlap between CPF4 and the domain as being the share of the weights of the elementary series for which there are responses within the total weight for that branch of activity;
- The threshold response rates are 30% for domains E1, E9, W1 and W9 and 50% for the remaining domains.

They are then sorted in descending order of prioritisation for reminders.

If:

- Contribution_SE_i: contribution of elementary series SE_i;
- TxRep_CPF4_i: the weighted response rate at the level of the CPF4 * domain overlap to which elementary series SE_i belongs;
- TxRep_seuil_i: response rate thresholds of the domain to which elementary series i belongs;
- $(SE_j) \subset \text{Questionnaire}$: all elementary series SE_j in the questionnaire

Then:

$$\text{Score_NR_Tot_Questionnaire} = \sum_{(SE_j) \subset \text{Questionnaire}} \text{Contribution_SE}_i * \text{TxREP_CPF4}_i * \text{TxREP_seuil}_i$$

5.1.4 Automatic processing

In addition to the systematic and in-depth examinations, automatic processing is provided for the response series ([see 5.2.2. Imputation and adjustment methods](#)) and applied by default; within the scope of the appraised series, the manager may withdraw the automatic processing in favour of manual processing.

Automatic processing is carried out on the basis of the following tests (taking into account the declared value or adjustment thereof):

- **First test:** we consider whether the change between the value declared in P and the value retained (declared, adjusted or imputed) for the previous period P-1 is atypical ([see 5.1.2.3. Outliers](#));
- **Second test:** we check whether the supplier's response has an influential contribution ([see 5.1.2.2. Influential contributions](#));
- **Third test:** the results of the test carried out at the time of entry of the questionnaire data are retrieved and a check is carried out of the entry of the declared values ([see 4.1.2.2. Consistency checks during online collection](#)) that have given rise to an additional response from the company with regard to the reason for the significant change in the price of the product, according to the following six options:
 1. Linked to a change in the cost of raw materials and/or inputs;
 2. Linked to a change in the cost of labour;
 3. Linked to competitive factors;
 4. Linked to a change to the characteristics of the product (addition of an option, change of model, the quality of the product or the service);
 5. Linked to a change to the commercial terms of the transaction;
 6. Linked to other factors (blank field to be completed).

Test performed	Test 1 upon the integration of the questionnaire Atypical change	Test 2 upon the integration of the questionnaire Influential contribution	Test 3 upon the entry of the data from the questionnaire Reason for significant change	Automatic processing
Case 1 the value is not atypical	NO	NO	no option*	Account taken of the declared value
Case 2 The value is only atypical	YES	NO	no option*	Automatic adjustment
Case 2a Significant change with price effect	YES	NO	Options 1, 2 and 3	Account taken of the declared value
Case 2b Significant change with quality effect	YES	NO	Options 4, 5 and 6	Automatic adjustment
Case 3 The value is only influential	NO	YES	–**	Account taken of the declared value
Case 4 The value is atypical and influential	YES	YES	–**	Automatic adjustment

* no option: upon entering the data from the questionnaire, either there has been no significant change (plus or minus 10%) detected between the periods declared or the supplier did not give a reason.

** the result of the tests performed upon the entry of the data from the questionnaire is not taken into account.

5.2 Adjustment and imputation

The changes in the elementary series therefore follow those seen in the response series, except for the quality effect. However, in the case of non-response or responses that are considered to be abnormal according to defined criteria ([see 5.1. Review and validation](#)), imputations or adjustments will need to be carried out for the elementary series.

5.2.1 Definitions

- **Non-response:** the supplier has been prompted to respond, but has failed to provide the expected response for the period;
- **Not surveyed:** during the visit by the survey engineer, an agreement was reached by the supplier to not provide information during each price collection campaign (monthly for the industrial sector, quarterly for the services sector), but only in a single period during which all of their sales prices are revalued. For certain periods, the supplier is therefore not questioned and the price of the response series is estimated according to two possible methods: either by carrying over the value from the previous period or by imputation in relation to the change in the parent series ([see 5.2.2. Imputation and adjustment methods](#));
- **“No transaction” response:** the supplier is surveyed, but they are not able to provide a price level due to a lack of transactions during the period. This is specified in the questionnaire. The price of the response series will be estimated based on the changes to the parent series.

In all such cases, the price of the response series is missing for the period and the elementary series must be **imputed**. It is assigned an automatic value.

- **Outlier:** the supplier is surveyed, but according to quality criteria, their response is atypical. The criteria for judging whether a response needs to be adjusted are explained above ([see 5.1.4. Automatic processing](#));
- **Response retained:** a response has been given by the supplier and has been retained for the calculation either automatically or after validation by the clerk.

Atypical responses will not be used to calculate the elementary series associated with this product, the index for which will be **adjusted** automatically.

5.2.2 Imputation and adjustment methods.

- **Imputation:** in the event that a supplier fails to respond, a value is assigned that has been calculated automatically.
- **Adjustment:** the supplier responded, but their response has not been retained (either it has automatically been deemed to be atypical, or the manager has decided to not retain it as it is considered to be unusable); it is substituted for a value that has been calculated automatically.

Three estimation methods can be used (for both imputation and adjustment):

- **“Change in the parent series”:** estimate of the change in the elementary series based on the change in the synthetic series at the level directly above, to which the series is linked (INFRA³⁴, CPF6, CPF5 or CPF4 * domain);
- **“Carry-over from the previous period”:** the index of the elementary series from the previous period is carried over to the reference period;
- **“Change in a different synthetic series”:** estimate of the change in the elementary series based on the change seen in a different synthetic series * domain, regardless of the level in the CPF classification.

These three estimation methods can be selected for the imputation or adjustment of an elementary series.

5.2.2.1 Method 1: “Change in the parent series”

The change in the level directly above, to which the elementary series is linked, is used, but estimated using just one of the “respondent” elementary series. Therefore, the change in this aggregate will be estimated on the basis of elementary series for which the suppliers have provided responses over two consecutive months (quarters): t and t-1 and for which the response in t-1 has not previously been adjusted.

This level of aggregation directly above can be the INFRA, CPF6, CPF5 or CPF4 * domain. This level is chosen based on the number of elementary series and companies making up that level (*the criterion is at least five elementary series and three companies per level*). In this way, we avoid calculating a CPF6 * domain if it contains too few product series. This ensures a certain robustness for the calculation.

Correspondence table between the status of the response series and the elementary series

Response series in t: responding supplier	Elementary series in t
Yes: the supplier has declared a gross value, which has been retained	According to the change in the response series
Yes: the supplier has declared “no transaction”, which has been retained	Estimated on the basis of the change in the parent series
Yes: the supplier has declared a gross value or “no transaction”, but that declaration has not been retained	Adjusted according to the chosen imputation method
No: the supplier has not made any declarations	Imputed according to the chosen imputation method

³⁴ It should be noted that INFRA represents a level of aggregation of elementary series that is finer than CPF6.

The indices in month t of the non-responding elementary series or those that present outliers are therefore calculated based on the change in the aggregates formed by those elementary series that responded and do not present outliers over two consecutive months (quarters).

If:

- SS = the synthetic series of the level directly above, to which the elementary series belongs;
- $p_{SE,t}$: the calibrated weight of the elementary series SE for the reference period t;
- $(SE)_{(R,t-1)(R,t)}$: all of the elementary series SE for which a response has been retained for period t AND for period t-1;
- $SE_{(NR,t)}$: the price index to be calculated on the basis of elementary series SE in reference period t. This is a non-response or an outlier.

$$\text{Then: } \frac{SE_{(NR,t)}}{SE_{t-1}} = \frac{\sum_{(SE)_{(R,t-1)(R,t)} \subset SS} p_{SE,t} * SE_t}{\sum_{(SE)_{(R,t-1)(R,t)} \subset SS} p_{SE,t} * SE_{t-1}}$$

At this stage, there is an index in t for all elementary series, regardless of whether their value has been calculated based on supplier responses or adjusted or imputed.

The response series are then themselves estimated based on the elementary series to which they are linked³⁵.

5.2.2.2 Method 2: "Carry-over from the previous period"

The index of the elementary series is estimated based on that of the previous period.

If:

- SE_t : the price index of the elementary series SE for the reference period t;
- SE_{t-1} : the price index of the elementary series SE for the previous period t-1.

Then: $SE_t = SE_{t-1}$

5.2.2.3 Method 3: "Change in a different synthetic series"

The change in the elementary series is estimated based on the change seen in a different synthetic series, regardless of the level in the CPF classification. This method is used less frequently than the previous ones. A different series is selected according to a number of criteria: similar series profiles, branches of activity influenced by the same price drivers, same domains, etc.

If:

- SS_t : the price index of the synthetic series chosen for the reference period t;
- SS_{t-1} : the price index of the synthetic series chosen for the previous period t-1.

$$\text{Then: } \frac{SE_t}{SE_{t-1}} = \frac{SS_t}{SS_{t-1}}$$

³⁵ Not all response series are linked to elementary series. In this case, the non-responses are not imputed.

6 Analysis

6.1 Analysis of changes

There are two possible approaches:

- **The bottom-up approach:** all of the elementary series prioritised during the analysis are verified ([see 5.1. Examination and validation](#)) and the CPF4 and CPF2 levels are systematically assessed. This approach allows the quality of all of the CPFs to be improved;
- **The top-down approach:** the series are analysed at level A10 of the classification and the changes are explained by commenting on the changes to the series making the greatest contribution, up to the CPF4 level. This is the preferred approach to commenting on the changes described in the “Informations Rapides” ([see 7.3. Dissemination media](#)), published each month.

6.1.1 The bottom-up approach

Based on the analyses performed at the elementary series level ([see 5.1. Review and validation](#)), the series at the CPF4 and CPF2 * domain level are systematically analysed and their changes explained, regardless of whether or not they contribute to the overall change in the indices.

6.1.2 The top-down approach

6.1.2.1 Calculation of contributions

The contributions to the changes at the CPF2 level are used for the top-down approach. The contribution of a synthetic series at the infra-CPF2 level to the change in a synthetic series at the CPF2 level is broken down into three parts:

If:

- $SS_{CPF_i,t}$: the price index for the series at the CPF i * domain level for the reference period t , where $3 \leq i \leq 6$;
- $SS_{CPF_i,t-1}$: the price index for the series at the CPF i * domain level for the previous period $t-1$, where $3 \leq i \leq 6$;
- $SS_{CPF2,t-1}$: the price index for the series at the CPF2 * domain level for the previous period $t-1$;
- $(SS_{CPF_i}) \subset CPF\ 2$: all of the synthetic series SS at the CPF i * domain level included in CPF2;
- $p_{SS_{CPF_i,t}}$: the weight of the synthetic series SS at the CPF i * domain level for the reference period t ;
- $p_{SS_{CPF2,t}}$: the weight of the synthetic series SS at the CPF2 * domain level for the reference period t .

$$\text{Contrib}_{SS_{CPF_i}} = \frac{\frac{p_{SS_{CPF_i,t}}}{p_{SS_{CPF2,t}}} * SS_{CPF_i,t-1}}{SS_{CPF2,t-1}} * \text{Evol}(SS_{CPF_i,t}, SS_{CPF_i,t-1})$$

- **1st part:** the share of the turnover of the synthetic series at the CPF i level in that of the aggregate at the level of CPF2;
- **2nd part:** the level of the index of the synthetic series at the CPF i level over the level of the index at the CPF2 level for the previous period;
- **3rd part:** the change in the index of the synthetic series at the CPF i level between the current period and the previous period.

The largest contributions in terms of absolute value are analysed and commented on.

6.1.2.2 A noticeable feature of the contributions

- **Additivity of contributions in case of constant weights**

Where the weights are constant, the contributions are additive and their sum is equal to the change in the aggregate being analysed.

$$(1) \text{Evol}(SS_{CPF2,t-1}, SS_{CPF2,t}) = \sum_{(SS_{CPFi}) \subset SS_{CPF2}} \frac{\frac{p_{SS_{CPFi,t}}}{p_{SS_{CPF2,t}}} * SS_{CPFi,t} - \frac{p_{SS_{CPFi,t-1}}}{p_{SS_{CPF2,t-1}}} * SS_{CPFi,t-1}}{SS_{CPF2,t-1}}$$

As the weights are constant, $p_{SS_{CPFi,t}} = p_{SS_{CPFi,t-1}}$ and $p_{SS_{CPF2,t}} = p_{SS_{CPF2,t-1}}$

$$(2) \text{Evol}(SS_{CPF2,t-1}, SS_{CPF2,t}) = \sum_{(SS_{CPFi}) \subset SS_{CPF2}} \frac{\frac{p_{SS_{CPFi,t}}}{p_{SS_{CPF2,t}}} * SS_{CPFi,t} - \frac{p_{SS_{CPFi,t-1}}}{p_{SS_{CPF2,t-1}}} * SS_{CPFi,t-1}}{SS_{CPF2,t-1}}$$

$$(3) \text{Evol}(SS_{CPF2,t-1}, SS_{CPF2,t}) = \sum_{(SS_{CPFi}) \subset SS_{CPF2}} \frac{\frac{p_{SS_{CPFi,t}}}{p_{SS_{CPF2,t}}} * SS_{CPFi,t} - \frac{p_{SS_{CPFi,t-1}}}{p_{SS_{CPF2,t-1}}} * SS_{CPFi,t-1}}{SS_{CPF2,t-1}}$$

$$(4) \text{Evol}(SS_{CPF2,t-1}, SS_{CPF2,t}) = \sum_{(SS_{CPFi}) \subset SS_{CPF2}} \text{Contrib}(SS_{CPFi})$$

The change in the synthetic series at the CPF2 level between t and t-1 is therefore equal to the sum of the contributions defined in part [6.1.2.1. Calculation of contributions](#).

- **Loss of additivity of contributions when the weights are changed**

When there is a change in weights, which is the case between December N-1 and January N for the industrial sector and the last quarter of year N-1 and the first quarter of year N for the services sector, the contributions lose their additivity property.

Indeed, in this case:

$$(1) \text{Evol}(SS_{CPF2,t-1}, SS_{CPF2,t}) = \sum_{(SS_{CPFi}) \subset SS_{CPF2}} \frac{\frac{p_{SS_{CPFi,t}}}{p_{SS_{CPF2,t}}} * SS_{CPFi,t} - \frac{p_{SS_{CPFi,t-1}}}{p_{SS_{CPF2,t-1}}} * SS_{CPFi,t-1}}{SS_{CPF2,t-1}}$$

$$(2) \text{Evol} = \sum_{(SS_{CPFi}) \subset SS_{CPF2}} \frac{\frac{p_{SS_{CPFi,t}}}{p_{SS_{CPF2,t}}} * SS_{CPFi,t} - \frac{p_{SS_{CPFi,t-1}}}{p_{SS_{CPF2,t-1}}} * SS_{CPFi,t-1}}{SS_{CPF2,t-1}}$$

$$(3) \text{Evol} = \sum_{(SS_{CPFi}) \subset SS_{CPF2}} \frac{\frac{p_{SS_{CPFi,t}}}{p_{SS_{CPF2,t}}} * SS_{CPFi,t} - \frac{p_{SS_{CPFi,t-1}}}{p_{SS_{CPF2,t-1}}} * SS_{CPFi,t-1}}{SS_{CPF2,t-1}} + \frac{SS_{CPFi,t-1} * \left(\frac{p_{SS_{CPFi,t}}}{p_{SS_{CPF2,t}}} - \frac{p_{SS_{CPFi,t-1}}}{p_{SS_{CPF2,t-1}}} \right)}{SS_{CPF2,t-1}}$$

The first part corresponds to the contributions in the case of constant weights, and the second part is a second-order corrective term, which takes account of the chain-linking of the indices in the event that the weights are changed.

For the price indices, in both the industrial and services sectors, only the first part is taken into account when prioritising the analysis of changes.

6.2 Analysis of revisions

The revisions are analysed over all of the revisable periods: P-1, P-2, P-3, and for all synthetic series at the CPF4 level and below with at least 3 revision points in terms of absolute value, as well as at the CPF2 level with at least 0.2 revision points. The analysis concentrates on the series disseminated on the Insee.fr website (search for indices and time-series) - [see 7.3. Dissemination media](#)), as well as on the series that are disseminated to Eurostat only, for which the threshold is set at 10 points. Revisions to these series must then be explained with a return to the elementary series level (top-down approach) by checking whether they are linked to responses received late from suppliers or changes to imputed or adjusted values or to calculation methods (chain-linking to another series, selection of a new method for imputations).

6.3 Documentation

All comments concerning changes and revisions are recorded and can be consulted during subsequent campaigns. A documentary base is therefore established with regard to the variations and revisions of the indices.

All of the following elements are retained:

- At the level of the elementary series:
 - Management comments specifying the information directly related to collection management ([see 5. Data processing](#)): reasons for price validation, adjustment, clarification regarding a data entry error, etc.;
 - Economic comments specifying the economic reasons for variations in price: these comments are used during the appraisal of the synthetic series ([see 6. Analysis](#)).
- At the level of the synthetic series, economic comments on each series at the CPF4 * domain and CPF2 * domain levels observed for each period, together with the date, the change, the response rate and the factors explaining the changes. The comments on the most significant revisions of the disseminated series are also kept in files external to the survey management software, together with their justifications (late response, change of processing, etc.).

7 Dissemination

7.1 Dissemination dates for the indices for the period and possible revisions

7.1.1 Dissemination and revisions of producer and import price indices in the industrial sector (IPPI)

Producer and import price indices for the industrial sector are disseminated by no later than the last working day of the month following the month under review (M+30 days). The publication schedule is announced four months in advance and, for organisational reasons, is drawn up a year in advance.

The results include revisions to previous periods. These revisions are primarily the result of the processing of late responses from companies, error corrections and, once per year, the updating of the weights used for the aggregations of the indices for the higher levels.

7.1.2 Dissemination and revision of producer price indices in the services (IPSE) and the building maintenance and improvement sectors (IPEA)

The producer price indices for services are disseminated by no later than the last working day of the second month following the quarter under review (T+60 days). The publication schedule is announced three months in advance.

For the same reasons as in the industrial sector, the results include revisions to previous periods. These revisions are primarily the result of the processing of late responses from companies, error corrections and, once per year, the updating of the weights used for the aggregations of the indices for the higher levels (CPF class indices and higher levels).

7.1.3 Provisional and final indices

For each index campaign (monthly for the industrial sector and quarterly for the services sector), the companies surveyed have the option of declaring the current reference period (P) and correcting the prices that they submitted for the three previous periods (P-1, P-2 and P-3). Producer and import price indices in the industrial sector are therefore revisable and provisional for three months following their initial publication and become final after their 4th publication.

Table of average revisions in the industrial sector from 1 January 2018 to 31 December 2020 (in change points, estimated to one decimal place):

		Average revisions	Average revisions in terms of absolute value
Industry	Producer price on the French market	0.01	0.05
	Producer price for export	- 0.02	0.06
	Producer price for all markets	- 0.01	0.06
	Import price	- 0.01	0.03
Services	Sale price on the French business market	0.04	0.11
	Sale price on the French household market	0.04	0.09
	Export sale price	- 0.21	0.48
	Sale price for all markets	0.07	0.12

Unless specifically mentioned, the “base price” indices are provisional for three months in the industrial sector and three quarters in the services sector. The “market price” indices are also provisional for three months in the industrial sector, but they are only revised once in the services sector so as to enable contractors to have definitive data as soon as possible for their contract indexations at M+120 days in the industrial sector and T+150 days in the services sector.

7.2 Management of statistical confidentiality and reliability of the series

INSEE takes care to ensure that the rules of statistical confidentiality are respected when disseminating producer price indices based on the OPISE system. Save for some exceptions, the indices published must include responses from at

least three companies (from different groups) and none of these should account for 85% or more of the turnover in the area of activity (production, export or import) of the branch in question. The composition of the samples of companies responding to the OPISE survey also constitutes confidential information: INSEE undertakes to keep the fact that a company has participated in an OPISE survey confidential.

Furthermore, in order to ensure the reliability of the published indices, for each of the synthetic series at the CPF4 level and below, as well as for all of the domains observed (C, CM, E1, E9, W1, W9 and H), where the indices are still provisional (i.e. could still be revised), they are only disseminated if the weighted response rate is greater than 50%. The weights used for the calculation are the turnover weights linked to each of the series ([see 2.1.4. Aggregation weights](#)). Conversely, when they become final, they are disseminated, regardless of the OPISE survey response rate.

Clerks from the organisations managing the collection and performance of a delegated survey, (CEEB and A3M, [see 2.2.2.1. Delegated surveys](#)) sign confidentiality agreements regarding the use they may make of the personal data submitted by the companies. In particular, they shall ensure that the rules of statistical confidentiality are applied and complied with for the collection of data and the dissemination of the results of the indices under their responsibility, in accordance with the same provisions as INSEE's clerks responsible for managing the OPISE survey system are expected to follow.

7.3 Dissemination media

- Publication of “Informations Rapides” concerning producer and import price indices in the industrial sector, producer price indices in the services sector and building maintenance and improvement price indices.
- Price index series on the Insee.fr website (search for indices and time-series³⁶):
 - [600 series disseminated for the services sector each quarter](#);
 - [2,100 series disseminated for the industrial sector each month](#).
- Price indices disseminated to Eurostat:
 - [70 services sector series submitted each quarter](#);
 - [1,850 industrial sector series submitted each month](#), a little under half of which are not available on the Insee.fr website.
- Transmission to internal and external users,
 - INSEE: National accounts; producers of industrial production indices (IPI); turnover indices (ICA); agricultural means of production purchasing price indices (IPAMPA); building, civil engineering and various indices for construction; producer cost indices for construction; consumer price indices (CPI);
 - Others: Observatory of prices and margins of food products, Data and Statistical Studies Department (Ministry of Sustainable Development).

7.4 Provision to the CASD

The CASD is a public interest grouping (GIP) made up of INSEE, the Groupe des Écoles Nationales d'Économie et Statistique (GENES), the National Centre for Scientific Research (CNRS), the École Polytechnique and HEC Paris, created by [the interministerial order of 20 December 2018](#). The main purpose of this GIP is to organise and implement secure access services for confidential data for non-profit research, study, evaluation or innovation purposes, activities classed as “research services”, predominantly public in nature.

The results of the OPISE survey (elementary series) are made available on the Secure Data Access Centre in around July each year. The years 2013 to 2019 were made available in early 2021.

³⁶ The disseminated “market price” indices (excluding VAT, including taxes and excluding product subsidies) are used for contract indexation. The indices are final from their second publication in the services sector and their fourth publication in the industrial sector. An obligation exists to continue the series at market prices if this is stopped. A new series is then proposed, with an associated connection coefficient that allows the changes in the series being replaced to be extended by the changes in the replacement series.

BOX: Impact of the health crisis on the measurement of indicators

Less impact on prices than on output:

Each month, INSEE calculates and publishes indicators to monitor the output of industry, construction, trade and market services (excluding financial services). It also publishes producer price indices on a monthly basis for the industrial sector and on a quarterly basis for the services sector. All of these indices also constitute a key source for the establishment of the quarterly national accounts.

The Institute uses business surveys to compile the producer price indices, the industrial production index (IPI) and the index of production in construction. Although surveys are mandatory, there are always between 10% and 15% of companies that do not respond on time, or at all. International manuals set out the action to be taken under normal circumstances to overcome such difficulties. Typically, processing involves the imputation of the change in prices or the activity observed for a comparable company (same activity or same product) to the non-responding company or, failing that, the change observed for the same company one year earlier.

The first lockdown came into force on 17 March 2020. It brought about a sudden drop in production – or even a complete stop – in a number of sectors. In parallel, survey response rates also fell: on 23 April 2020, the response rate to the survey of industrial production in March was around 20 percentage points lower than what is normally observed on the 23rd of a typical month. In such circumstances, it is not possible to replace the missing values by means of the imputation of the previous year's activity.

Similarly, it is risky to impute them on the basis of the changes observed in comparable companies that have responded: there is likely to be a higher proportion of companies that have ceased all activity among the non-responding companies than among those that did respond. The same problem arises in price surveys.

To estimate the responses of non-responding companies for industrial production indices and indices in the construction sector, the Institute drew upon partial unemployment data from the nominative social declaration (*déclaration sociale nominative* – DSN) and electricity consumption data from companies with heavy consumption.

Special treatments were also considered for price indices, but they proved unnecessary as response rates – while lower than in a “normal” period – were ultimately sufficient to allow for the dissemination of good quality indices.

Table: Response rate (as a %) for the survey on producer prices in the industrial sector during the first few months of the pandemic.

Reference month:*	Publication date						
	31 March 2020	30 April 2020	31 May 2020	30 June 2020	31 July 2020	31 August 2020	30 September 2020
February 2020	64.4	73.8	77.8	78.5			
March 2020		67.2	76.2	80.5	81.2		
April 2020			70.1	78.9	82.1	82.5	
May 2020				73.6	80.8	83.5	83.9
June 2020					64.6	81.1	83.2

*Producer price indices in the industrial sector for reference month M are published on the last working day of month M+1. Each of the monthly surveys collects the prices from the previous four months.