

## Services production index

### Objectives

Due to the increasing weight of services in France but also in all European countries, INSEE has been developing an index of production in services since 2017. The services production indices are used to measure the monthly change in the services production of the companies in the sectors concerned. As such, they are a primary information to monitor the business cycle in France. Production indices in services fall under the European regulation on short-terms statistics – the Council Regulation “STS” No 1165/98 of 19 May 1998, modified by subsequent amendments.

### Scope

The production indices in the services are calculated according to the nomenclature NAF rev. 2, which came into force on 1 January 2008. They cover the following sectors:

- Transport and storage (Section H);
- Accommodation and Catering (Section I);
- Information and communication (Section J);
- Real estate activities (Section L);
- Specialized scientific and technical activities (Section M);
- Administrative and support services (Section N);
- Arts, Entertainment and Recreation (Section R);
- Other service activities (Section S, Divisions 95 and 96 only).

Services Production index are constructed from a tax source, the "CA3" form, which must be completed by enterprises for the payment of value added tax (VAT) every month. These indexes cover “whole France” including overseas departments (excepted French Guyana and Mayotte, which are not liable for VAT). Price indices calculated by INSEE, mainly for “whole France” (including Overseas Departments) are used as deflators for indices in value.

### Dissemination

Services production indices are monthly disseminated at the latest 60 days after the month under review. They are available for sectors and more detailed levels – divisions, groups and classes in the NAF rev. 2 – on the INSEE database. Special indices are calculated for M+N and R+S. The indices are transmitted to Eurostat and available on its website along with those of all European countries. Eurostat calculated a global index grouping the sectors H, I, J, L, M, N.

### Sources

Two main sources are used to calculate production indices in services:

- a tax source, the "CA3" form, which companies fill in for the value-added tax (VAT) every month (cf Methodology for Turnover indices). The tax authority (DGFiP) provides INSEE with VAT returns every month ;
- price indices calculated by INSEE, as production price indices for services and consumer price indices.

## Methodology

### Calculation of indices in volume:

The production indices at a fine level are defined as the ratio of the turnover index in value to the associated price deflator. This is done for the 141 classes in the service sector. Once the indices at the finest level of nomenclature are calculated, the indices for higher levels are obtained by aggregating (cf infra). They are disseminated on the INSEE website from the class level. They are calculated since 2005, according to the availability of the prices.

**For most of sectors, the deflators used are production price indices in services (PPS).** Production price indices in services are produced only quarterly (available at T + 60 days) and should be monthly. The date of availability of these indices is 60 days after the end of the quarter when the index of production is to be published 60 days after the end of the month. At this date, for some months, the quarterly price indices are not yet available. Prices must therefore be predicted.

Some sectors do not have a production price index for services. An imputation must then be used. Other sectors have been covered more recently, so a retropolation is necessary. The production prices of certain sectors are not collected; In these cases, a very close price index, the consumer price index (CPI), or a price index of production in another service appearing as a good proxy, are used.

For the R and S sectors, which are mainly services sectors for households, there is none production price index for services. The Consumer Price Index (CPI), which measures changes in the prices of goods and services consumed by households, is then used as a deflator. It is measured all taxes included, so it is necessary to correct the VAT rates to make it duty-free.

### Aggregation method, rebasing and reference chance to 2015:

Services production indices are rebased every 5 years. From now on, they have reference year 2015, which means that they have for average 100 in 2015. Previously, indices had reference year 2010.

The 2015 rebasing implements an innovation, with the introduction of a two-weighting system (instead of a constant-weight system) in order to better take into account the structural evolutions. Until now, aggregation of elementary indices was done on the basis of constant weights representing the reference year – i.e. 2010 previously. From now on, 2010 weights are used for the aggregation of elementary indices between 1999 and 2012, whereas 2015 weights are used for the period after. The calculation on the whole period is then achieved by chaining both series (computation of a link coefficient on the year 2013). This change responds to a recommandation of Eurostat in order to increase the robustness of indices over a long period.

The estimation of annual weights is based primarily on the value added at basic prices per branch calculated by the annual national accounts. By definition, added value at basic prices excludes taxes on products but includes subsidies on products. It does not include transport services. At the lower levels of the classification, weights are also based on INSEE's Esane device (structural business statistics).

## Seasonal variations and working days adjustments

Series are seasonally adjusted – SA – and working-days adjusted – WDA. The computation is performed with the X13-Arima program available in JDemetra+ - supplied by Eurostat – at the NAF rev. 2 class level for the volume ratio (i.e. the turnover index in value/ price index). Upper SWDA levels are obtained by class level series aggregation (indirect SWDA correction).

The annual mean of SWDA indices may slightly differ from that of the unadjusted indices, mainly because it takes into account the variations from one year to the next of the annual composition in working days – presence of leap year, position in the week of the various bank holidays, etc.

## Revisions

VAT declarations of some companies may not be available when the indices are first published. This leads to revise raw indices or prices and SWDA indices when these declarations or prices are finally available. Otherwise, production price indices in services are produced only quarterly. They have to be carried out on a monthly basis and predicted for the current quarter. This may also lead to revisions when price indices are eventually available 60 days after the end of the quarter.

Finally, models used to correct seasonal and calendar effects are updated annually. Between two model updates, SWDA coefficients are updated monthly in order to take into account the most recent data – this includes raw data rectifications related to the previous months. At each publication, all SWDA indices disseminated on the INSEE website are updated from 2005.