INSTITUTO NACIONAL DE ESTADISTICA

Business Turnover Index (BTI)

Base 2021

Methodological Manual

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1 Introduction

The main purpose of the Business Turnover Index (BTI) is measuring the monthly evolution of the turnover for the following non-financial market sectors jointly: Extractive and Manufacturing Industries, Electrical energy and water supply, sewerage and waste management, Trade and Non-financial market services.

The BTI was dictated by the High Council on Statistics in the meeting of the Permanent Comission hold on 26th June 2013, and it follows the guidelines of the 2021-2024 National Statistical Plan for the analysis and synthesis statistics and for the statistics that use administrative records, since this new statistic introduced shows features of both kinds of previous statistics.

The INE monthly disseminates three short-term statistics that measure, separately, the evolution of the turnover indices in the quarrying and manufacturing industries (Industrial Turnover Indices: ITI), in the services sector (Service Sector Activity Indicators: SSAI) and in the Retail Trade (Retail Trade Indices: RTI). These three short-term statistics are regulated by Regulation (EU) 2019/2152 of the European Parliament and of the Council of 27 November 2019 on European business statistics and Commission Implementing Regulation (EU) 2020/1197 of 30 July 2020 laying down technical specifications and arrangements pursuant to Regulation (EU) 2019/2152 of the European Parliament and of the Council on European Business Statistics. The objective of these Regulations is the creation of a common framework for the production of European business statistics.

On the other side, the Spanish Tax Agency provides the INE with microdata. Data is obtained from monthly self-settlement of VAT carried out by Large Companies (VAT LG) (Forms 303 and 322).

In order to calculate the BTI, the information of these three surveys already mentioned is complemented with the data provided by the Spanish Tax Agency for the rest of the sectors, with the index calculated from the microdata provided by the Tax Agency

Although, according to the EBS[1] Regulation, obtaining an aggregate indicator for all economic sectors is not compulsory, the advantages of this indicator, as compared with its low-cost obtention, led us to elaborate it, since the current situation makes essential to have available data to forecast or detect, as soon as possible, any turn or change in economic trends.

Thus, users are offered an only short-term statistic. By using it, they can monthly monitor most of the market activity and carry out comparative analyses between sectors.

Activities included in BTI represent, according to the provisional forecasts of the 2021 Spanish National Accounts, 57.8% of the GDP at market prices (75% when excluding Public Administrations and net Taxes on products).

[1] EBS stands for “European Business Statistics”, term which is used by Eurostat for defining the Regulation applicable to short term statistics: “The EBS Regulation” (https://ec.europa.eu/eurostat/web/short-term-business-statistics/legislation)

2 Definitions

Turnover

Conceptually, Turnover is the invoicing of a company, in monetary terms, due to the sale of industrial goods and services provided to third parties.

Therefore, Turnover corresponds to the value of the amounts invoiced during the reference month due to the sales of goods and services provided, including both own-account and sub-contract services. It therefore includes the income from the sales of finished products, of semi-finished products, of sub-products, of waste and recovered materials, of packages and packaging and of merchandise (goods acquired for resale in the same state as that in which they were acquired), as well as the income from the provision of services related to the ordinary activity of the establishment.

From the definition of turnover, we exclude VAT and other taxes on the operation, as well as returns on sales. We should also exclude price reductions, sales and applied discounts, bearing in mind that those granted to the client after the sale, for example, at the end of the year, should not be considered. This shall also not include those subsidies received from the Public Administrations and Institutions of the European Union.

The value of turnover shall include all those amounts charged to the client (transport, packaging...), even though this kind of services are invoiced separately.

From a practical perspective, the Spanish General Accounting Plan (PGC) (RD 1514/2007, 16th November) defines the Total Net Turnover by using the following accounting items:

C700+C701+C702+C703+C704+C705-C706-C708-C709 where:

C700. Sales of goods

C701. Sales of finished products

C702. Sales of semi-finished products

C703. Sales of by-products and waste

C704. Sales of containers and packaging

C705. Provisions of services

C706. Discounts on prompt payment sales

C708. Sales returns and other operations

C709. Sales rebates

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3 Survey scope

3.1 POPULATION SCOPE

The population scope of the Business Turnover Index (BTI) is made up to the kind-of-activity units whose main activity is included within the following sections of the CNAE-09: B Mining and quarrying industries (except for sections 05, 06 and 09, which are not relevant for the Spanish industry); C Manufacturing industry; D Electricity, gas, steam and air conditioning supply; E Water supply, sewerage, waste management and remediation activities; G Trade; H Transportation and storage; I Accommodation; J Information and communication; M[2]: Professional, scientific and technical activities and N[3] Administrative and support service activities.

Regarding activities in section D and E, companies included in the scope population are companies that, according to DIRCE-2021, cover 80% of the turnover of their section and that are also Large Companies. For tax purposes, the natural or legal people whose trading volume has exceeded 6.01 million euros during the previous natural year.

3.2 TIME SCOPE

3.2.1 Basis period

The basis period for the Business Turnover Index (BTI) is the year 2021.

3.2.2 Reference period

Data of the Business Turnover Index (BTI) are referred to each complete natural month.

3.3 GEOGRAPHICAL SCOPE

The geographical scope of the Retail Trade Index (RTI) includes all the nationalterritory.

The geographical scope of the Industry Turnover Index (ITI) and the Services Sector Activity Indicator (SSAI) includes all the national territory except for Ceuta and Melilla.

The geographical scope for those activities in section D and E (which will be exclusively surveilled by using administrative registers) is the national territory, except in the case of the territories excluded of the application of the VAT (Canarias, Ceuta and Melilla) and those companies which operate only within the territories subjected to the Basque Country and Navarra Public Finance Systems.

[2] Without including the following activities: 70.1 Activities of head offices, 72 Scientific researchand development and 75 Veterinary activities.

[3] Without including the following activities: 77 Rental and leasing activities, 81.1 Combinedfacilities support activities and 81.3 Landscape service activities.

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4 Features of the statistical process

4.1 METHODOLOGY OF THE COLLECTION OF DATA

The initial data required by this statistical operation comes from the indices which result of the INE surveys (ITI, SSAI and RTI) for Mining and quarrying industries, Trade and Non-financial Market Services.

Regarding Electrical energy and water supply, sewerage and waste management (D and E Sections of the NACE 2009), the initial data will come from the monthly VAT declarations of Large Companies.

4.2 FEATURES OF THE ADMINISTRATIVE SOURCE. MONTHLY VAT DECLARATIONS OF THE LARGE COMPANIES

The **observation units** to which primary data are referred are the Large Companies, that is, for tax purposes, the natural or legal persons whose trading volume has exceeded 6.01 million euros during the previous natural year. In order to determinate the trading volume, the Article 121 of the Spanish VAT Law 37/1992 is applied. Companies meeting this requirement can be found in the Census for Large Enterprises, which variates every year.

Large Enterprises file the VAT declarations by using models 303 and 322. **Legislation** about these models is found in the Order EHA/1033/2011, dated on 18th April, which amends Order EHA/3786/2008, dated on 29th December, which enacts the model 303 for the self-settlement and the model 308 for the refund of the VAT: Sales equalization tax, section 30 bis of the VAT Regulations and occasional taxpayers. Also it amends Annexes I and II of the Order issued by the Ministry of Economy and Finance/3434/2007, dated 23 November, which approves Form 322 (Monthly Self-settlement: Individual Form) and Form 353 (Monthly Self-settlement: Aggregate Form), as well as other tax regulations (BOE, 27 April 2011).

It is compulsory for Large Companies to file these self-settlement models **monthly**, on the 20th of the following month after the reference month (except for the months of August, when self-settlement is not filed, and January, when the deadline is delayed until the 30th since it is filed the annual summary). Filing must be **online**.

Files related to sales, whose data will be used as input for calculating an Index of Value for the activities where this source of information is used, correspond to fields 1, 4, 7, 42 and 43 in model 303 and to fields 1, 4, 7, 51, 54, 35, 36 and 37 in model 322.

4.3 INFORMATION UNITS

This three short-term surveys carried out by the INE are designed in a way that they use, in each case, the appropriate methodology to measure those variables required by the Regulation (EU) 2019/2152 of the European Parliament and of the Council of 27 November 2019 on European business statistics. In all the cases the observation unit is the: Economic Activity Unit (EAU).

The Industrial Turnover Indices are monthly short-term statistics regarding **establishments** whose main activity is included in sections B (mining and quarrying industries) (except for sections 05, 06 and 09, which are not relevant for the Spanish industry) and C (manufacturing industry) of the CNAE-2009.

The Service Sector Activity Indicators are monthly short-term statistics regarding **companies** whose main activity is included in sections 45 (Maintenance and repair of motor vehicles), 46 (Wholesale trade) and sections H (Transportation), I (Accommodation and food service activities), J (Information and communication), M (Professional, scientific and technical activities) (without including the following activities: 70.1 Activities of head offices, 72 Scientific research and development and 75. Veterinary activities) and N (Administrative and Support Service activities) (without including the following activities: 77 Rental and leasing activities, 81.1 Combined facilities support activities and 81.3 Landscape service activities).

Retail Trade Indices are monthly short-term statistics regarding **companies** whose main activity is included in section 47 (Retail trade).

On the other side, the observation units for activities in Sections D (Electricity, gas, steam and air conditioning supply) and E (Water supply; sewerage, waste management and remediation activities) are those **Large Companies** which file the monthly VAT declaration.

4.4 SAMPLE DESING

Every operation carried out by the INE: Industrial Turnover Indices (ITI), Service Sector Activity Indicators (SSAI) and Retail Trade Indices (RTI) has its own sample design, which can be accessed in the concerning methodology published in the INE Website (links to this documents have been included in Annex I).

Regarding the Industrial Turnover Indices, the sample is not probabilistic, since it is determined by the "cut-off" method. This sample covers the turnover produced by the establishments of the enterprises with more than 50 employees. In some sectors, the establishments of the enterprises with more than 20 employees are also included.

In turn, the samples of the Service Sector Activity Indicators and the Retail Trade Indices are probabilistic: a stratified sampling is carried out, by using as stratification variables the branch of activity of the company; its size, in terms of number of workers, and the Autonomous Community. The exhaustive stratum of the Service Sector Activity Indicators is composed by the companies larger than 200 workers, and the companies between 50 and 199 workers just in case they are multi-located in several Autonomous Communities. Regarding the RTI, the exhaustive stratum is composed by the companies larger than 50 workers. In both cases, in the rest of the stratums a sample is selected, and 25% of this sample rotates every year in order to avoid the informant units to get tired.

Regarding the activities which mine information out of the tax register, this information will be compiled by cut-off sampling, covering 80% of the turnover of each section.

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5 Formulation of the Indices

The Business Turnover Index (BTI) is a value index, that is, it measures the joint performance of the quantities, qualities and prices.

The calculation formula for the BTI, basis 2021, is the Laspeyres index, fixed base.

5.1 BASIC INDICES

An "elementary aggregate" is the component with the lowest level of aggregation, to which indices are obtained. The indices of these aggregates are known as basic indices.

For calculating this BTI, we considerate as "basic indices" those aggregate indices compiled directly out of the BTI, SSAI and RTI surveys.

In turn, for calculating the indices related to Power and water supply, sewerage and waste management, fiscal information must be used.

The following chart shows the "basic indices", including those activities registered in CNAE-2009, and the survey (BTI, RTI, SSAI) or administrative file (LC VAT) out of which the information is going to be obtained.

Elementary Index	**Sections CNAE 2009**	**Source of the information**
- Mining, Quarrying and Manufacturing	B and C	BTI
- Electrical energy and water supply	D and E	LC VAT
- Trade	G	RTI, SSAI
- Non financial services	H, I, J, M[4] and N[5]	SSAI

Regarding Electrical energy and water supply, sewerage and waste management, elementary indices are calculated by using information from the file of the Monthly VAT declarations of the Large Companies, according to the following formulation:

The index for an "elementary aggregate" in January 2021 is:

$$_{2021}I_i^{enero2021} = \frac{\sum_j f_{j,i}^{enero2021}}{\sum_{m=1}^{12}\sum_j f_{j,i}^{m2021}\Big/_{12}}$$

Where:

[4] Without including the following activities: 70.1 Activities of head offices, 72 Scientific research and development and 75 Veterinary activities

[5] Without including the following activities: 77 Rental and leasing activities, 81.1 Combined facilities support activities and 81.3 Landscape service activities.

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$_{2021}I_i^{enero2021}$ is the year 2021 index of the elementary aggregate "i", in January 2021

$f_{j,i}^{enero2021}$ is the value of sales recorded, in January 2021, in the 303 or 322 Models of the "j" company, which is part of the elementary aggregate "i": Electrical energy and water

$\sum_{m=1}^{12} \quad \sum_j f_{j,i}^{m,2021} \Big/ 12$ is the value, recorded in 2021, of the average sales of the whole of the Large Companies "j" which are part of the elementary aggregate "i": Electrical energy and water

Since the Large Companies Census changes year on year, as it is composed by the natural or legal persons whose trading volume has exceeded 6.01 million euros during the previous natural year, since February 2021, the elementary index is obtained as follows:

$$_{2021}I_i^{mt} = I_i^{m-1t} x \frac{\sum_j f_{j,i}^{mt}}{\sum_j f_{j,i}^{m-1t}}$$

Where:

$_{2021}I_i^{mt}$ is the year 2021 index of the elementary aggregate *"i"*, in any month *m* of year *t*

$_{2021}I_i^{m-1t}$ is the year 2021 index of the elementary aggregate *"i"*, in anymonth *m-1* of year *t*.

$f_{j,i}^{mt}$ is the value of sales recorded during the month *m* of year *t* by the company *j* which is part of the elementary aggregate *"i"*

$f_{j,i}^{m\text{-}1t}$ is the value of sales recorded during the month *m-1* of year *t*, by thecompany *"j"* which is part of the elementary aggregate *"i"*

5.2 WEIGHTINGS

For calculating the weightings that take part in the buildings of the aggregated indices, we have started by using data obtained from the existing structural surveys: Annual Industrial Companies Survey, Annual Trade Survey and Annual Services Survey. The main objective of these structural and annual surveys is to provide accurate, reliable and convenient information about the different activities that make up these sectors.

The said statistics, since they are conceived as separate operations, may have some different methodological aspects.

Thus, the homogeneity in the common variables (including turnover) shown in this surveys makes possible the integration of data by sectors, which let us obtain the weightings required for calculating this index.

The weightings of each elementary aggregate represent the relationship between the invoicing value or turnover of the activities which composes this elementary aggregate and the total invoicing of the activities that make up the population scope of this index: Mining and quarrying industries and Manufacturing industries, Electrical energy and water supply, Sewerage and waste management, Trade and Non-financial market services.

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The formulation used for calculating the weightings of each elementary aggregate is the following:

$$W_{io} = \frac{\overline{VN}_{i,o}}{\sum_{i=1}^{N} \overline{VN}_{i,0}}$$

Weightings of the BTI, base 2021

Elementary aggregate	Weightings
Mining and quarrying industries	29.95
Electrical energy and water supply, sewerage and waste management	7.17
Trade	42.52
Non financial services	20.36
General	100.00

5.3 GENERAL INDEX

Business Turnover Index is a value index, that is, it measures the joint performance of the quantities, qualities and prices.

The calculation formula for the BTI, base 2021, is the Laspeyres index, fixed base.

$$_{2021}I_t^G = \sum_{i=1}^{N} W_{io}\ {}_{2021}I_t^i$$

Where:

$_{2021}I_t^G$	is the Business Turnover Index, base 2021, in every month *t*.
$i = 1 \ldots\ldots N$	is every activity, within the population scope, covered by this index: Extractive and Manufacturing Industries, Electrical energy and water supply, sewerage and waste management, Trade and Non-financial market services
$W_{i,o}{}_{2021}I_t^i$	is the elementary index, base 2021, in every month t.
$W_{i,o}$	is the weighting of the elementary aggregate in the base year 2021, as the ratio between the turnover of the activities covered by the elementary aggregate in that year and the overall invoice of the activities covered by the population scope of this index.

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6 Business Turnover Index adjusted for seasonal and calendareffects

The BTI is published only after adjusting for seasonal and calendar effects, base 2021.

The seasonal adjustment of these indicators is carried out in accordance with the *INE Standard for adjusting seasonal and calendar effects in short-term series*[6] that is available in INEbase. This standard follows the European Union recommendations contained in the ESS *guidelines on seasonal adjustment*.

The series adjusted for calendar effects and the series adjusted for seasonal and calendar effects are obtained with the JDemetra+ software (version 2.2.2)[7] , from the publication of data in base 2015. JDemetra+ has been officially recommended by Eurostat since February 2015 for performing seasonal and calendar adjustments in the official statistics of the European Union.

The time series analysis methodology recommends a periodic review of models to incorporate the most current information. This means that the series adjusted for calendar effects and for seasonal and calendar effects are always provisional.

6.1 INDEX ADJUSTED FOR CALENDAR EFFECTS

The calendar effect is defined as the impact produced in the time series of a variable, due to the different structure that the months (or quarters) present in the different years (in both length and composition), even if the remaining factors influencing said variable remain constant.

The length of the month is not completely absorbed by the seasonal component, since the number of days in February is not the same each year. This non-seasonal part of the component of the length of the month must be eliminated in the series adjusted for the calendar effect.

On the other hand, the composition of the month refers to the variations in Industrial Turnover caused by the different number of public holidays in the same month in different years.

The method used to adjust calendar effects is based on regARIMA models (regression models with stationary ARIMA errors), following the INE Standards and Eurostat recommendations. Particularly, regARIMA models with centered regressors have been used for the calendar effect covering the three following effects:

a) Trading day effect.

   The adjustment for the effect of trading days has been carried out with *Trading Days* regressors calculated by default by JDemetra+ taking into account the national holidays. These regressors take into account the different composition of working days in the month, as the performance can vary from one day to another.

[6] http://www.ine.es/clasifi/estandar_efectos_estacionales.pdf
[7] https://github.com/jdemetra/jdemetra-app/releases/tag/v2.2.2

b) Easter effect.

Regarding the moving holidays, the most important in Europe is Easter. The Easter regressor used is JDemetra+ by default. This regressor considers Easter Monday as bank holiday.

c) Leap-year effect.

The intervention variable that models the effect of the leap year distinguish the months of February accounting 29 days from the rest of months of February.

6.2 INDICES ADJUSTED FOR SEASONAL AND CALENDAR EFFECTS

Once the calendar effects are adjusted, a further step is taken and the indices of seasonal effects are adjusted. Seasonal fluctuations are movements that occur with a similar intensity each month, each quarter or each season of the year, and which are expected to continue occurring.

Seasonally adjusted series, that is, those that are adjusted for seasonal and calendar effects, provide an estimate of what is "new" in a series (change in the trend, the cycle and the irregular component).

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Annex I. Links to the different operations of which BTI is made up

1. Methodology of the Industrial Turnover Indices (ITI)::

   https://www.ine.es/metodologia/t05/t0530053_2021_en.pdf

2. Methodology of the Service Sector Activity Indicators (SSAI):

   https://www.ine.es/metodologia/t37/notaiass21_en.pdf

3. Methodology of the Retail Trade Indices (RTI):

   https://ine.es/daco/daco43/notaccm21_en.pdf

4. Report on Sales, Employment and Salaries in Large Companies (in Spanish)
   http://www.agenciatributaria.es/static_files/AEAT/Estudios/Estadisticas/Informes_Estadisticos/Informe_de_Ventas__Empleo_y_Salarios_en_las_Grandes_Empresas/2013/VESGE.pdf