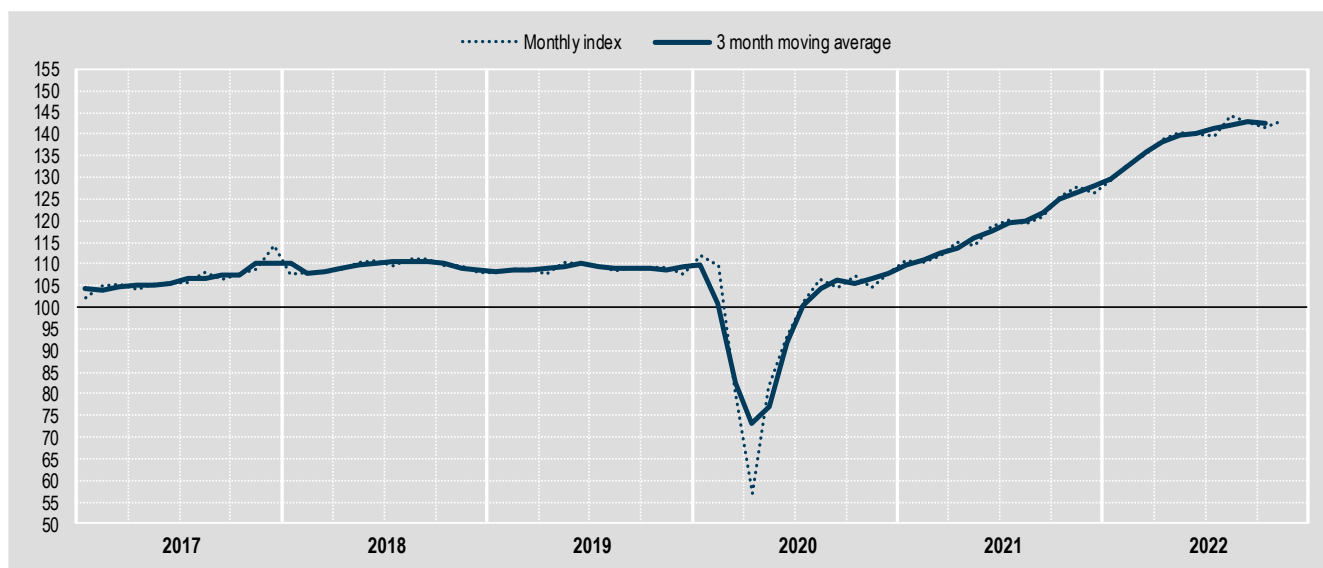November 2022

INDUSTRIAL TURNOVER

■ In November 2022 estimates for seasonally adjusted index of industrial turnover increased in the month on month by 0.9% (+0.6% in the domestic market and +1.3% in the non-domestic one).

■ In the three months to November 2022 total industrial turnover levels increased by 0.8% when compared to the previous three-month period (+0.4% in the domestic market and +1.7% in the non-domestic market).

■ Year on year, the calendar adjusted industrial turnover index grew by 11.5% comparing to November 2021 (+10.1% in the domestic market and +14.3% in the non-domestic market). Calendar working days in November 2022 were 21 as in November 2021.

■ Looking at the volume of turnover for the manufacturing sector, the seasonally adjusted index increased by 1.2% in November 2022; in the three months to November 2022 it was up 0.2% compared with the previous three-month period. The calendar adjusted volume turnover index increased by 0.5% when compared with the same month a year earlier.
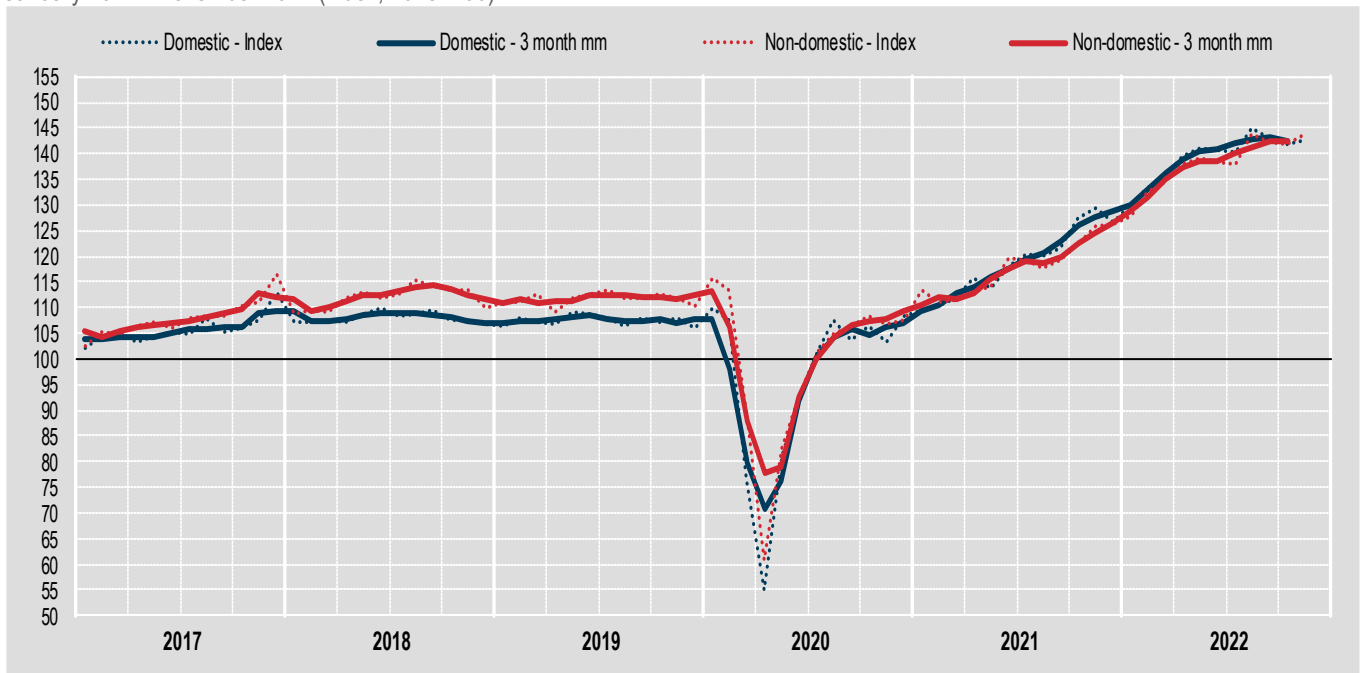
CHART 1. INDUSTRIAL TURNOVER: SEASONALLY ADJUSTED INDEX AND THREE MONTH MOVING AVERAGE
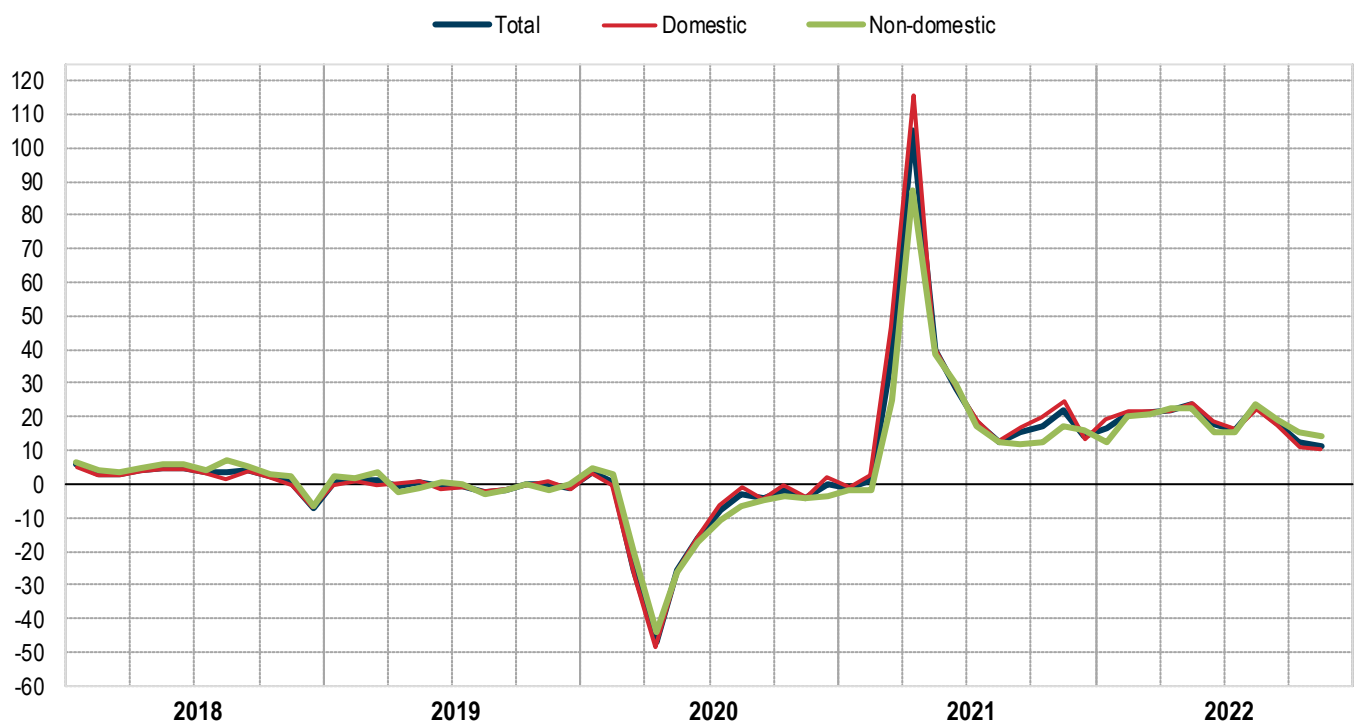January 2017 – November 2022 (index, 2015=100)

keyfigures

CHART 2. INDUSTRIAL TURNOVER BY MARKET: SEASONALLY ADJUSTED INDICES AND THREE MONTH MOVING AVERAGES

January 2017 - November 2022 (index, 2015=100)

CHART 3. INDUSTRIAL TURNOVER, MONTH ON SAME MONTH A YEAR AGO PERCENTAGE CHANGES

January 2018 - November 2022, calendar adjusted data (index, 2015=100)

TABLE 1. INDUSTRIAL TURNOVER, INDICES, MONTHS ON PREVIOUS MONTHS AND ON SAME MONTHS A YEAR AGO PERCENTAGE CHANGES
November 2022 (index, 2015=100)

	SEASONALLY ADJUSTED			CALENDAR ADJUSTED			UNADJUSTED		
	Indices	**Months on previous months**		**Indices**	**Months on same months a year ago**		**Indices**	**Months on same months a year ago**	
	Nov 22	Nov 22 Oct 22	Sep-Nov 22 Jun-Aug 22	Nov 22	Nov 22 Nov 21	Jan-Nov 22 Jan-Nov 21	Nov 22	Nov 22 Nov 21	Jan-Nov 22 Jan-Nov 21
Turnover index	**143.0**	**+0.9**	**+0.8**	**150.2**	**+11.5**	**+18.2**	**150.9**	**+11.4**	**+17.8**
Domestic market	142.6	+0.6	+0.4	150.7	+10.1	+18.2	151.4	+10.1	+17.8
Non-domestic market	143.7	+1.3	+1.7	149.1	+14.3	+18.3	149.8	+14.2	+17.8

TABLE 2. INDUSTRIAL TURNOVER BY MAIN INDUSTRIAL GROUPINGS (MIGS), MONTHS ON PREVIOUS MONTHS AND ON SAME MONTHS A YEAR AGO PERCENTAGE CHANGES
November 2022 (index, 2015=100)

	SEASONALLY ADJUSTED			CALENDAR ADJUSTED		
MAIN INDUSTRIAL GROUPINGS	**Indices**	**Months on previous months**		**Indices**	**Months on same months a year ago**	
	Nov 22	Nov 22 Oct 22	Sep-Nov 22 Jun-Aug 22	Nov 22	Nov 22 Nov 21	Jan-Nov 22 Jan-Nov 21
Consumer goods	137.7	+1.5	+2.6	146.2	+13.3	+15.9
durable goods	151.0	+1.7	+0.4	163.2	+7.4	+12.2
non durable goods	135.4	+1.6	+3.0	143.2	+14.6	+16.7
Capital goods	140.1	+2.7	+5.5	152.7	+17.6	+9.9
Intermediate goods	151.5	-0.5	-1.3	155.4	+4.5	+21.2
Energy	134.5	-1.8	-10.7	131.4	+19.5	+49.4
General index excluding Energy	143.7	+1.1	+1.8	151.6	+11.0	+16.3
General Index	**143.0**	**+0.9**	**+0.8**	**150.2**	**+11.5**	**+18.2**

TABLE 3. INDUSTRIAL TURNOVER BY SECTORS OF ECONOMIC ACTIVITY, UNADJUSTED DATA, MONTHS ON SAME MONTHS A YEAR AGO PERCENTAGE CHANGES
November 2022 (index, 2015=100)

		CALENDAR ADJUSTED		
SECTORS OF ECONOMIC ACTIVITY		**Indices**	**Months on same months a year ago**	
		Nov 22	Nov 22 Nov 21	Jan-Nov 22 Jan-Nov 21
B	**Mining and quarrying**	**168.7**	**+18.1**	**+36.3**
C	**Manufacturing**	**150.0**	**+11.4**	**+18.0**
CA	Manufacture of food products, beverages and tobacco products	148.9	+14.7	+17.3
CB	Manufacture of textiles, apparel, leather and related products	136.2	+17.7	+22.1
CC	Manufacture of wood and paper products, and printing	143.3	+5.1	+25.1
CD	Manufacture of coke and refined petroleum products	135.7	+20.8	+50.6
CE	Manufacture of chemicals and chemical products	145.2	+1.9	+23.9
CF	Manufacture of basic pharmaceutical products and pharmaceutical preparations	148.9	+12.0	+14.3
CG	Manufacture of rubber and plastic products and other non-metallic mineral products	147.9	+9.2	+18.2
CH	Manufacture of basic metals and fabricated metal products, except machinery and	168.3	+1.6	+19.2
CI	Manufacture of computer, electronic and optical products	145.7	+8.7	+13.0
CJ	Manufacture of electrical equipment and of non-electric domestic appliances	148.7	+7.8	+11.7
CK	Manufacture of machinery and equipment n.e.c.	154.4	+16.3	+13.8
CL	Manufacture of transport equipment	143.6	+22.5	+1.4
CM	Other manufacturing, and repair and installation of machinery and equipment	162.7	+10.5	+12.2
General Index		**150.2**	**+11.5**	**+18.2**

TABLE 4. VOLUME TURNOVER INDEX – MANUFACTORING SECTOR
November 2022 (index, 2015=100)

	Indices	Months on previous months		Months on same months a year ago	
		Nov 22 Oct 22	Sep-Nov 22 Jun-Aug 22	Nov 22 Nov 21	Jan-Nov 22 Jan-Nov 21
Seasonally adjusted data	114.0	+1.2	+0.2	-	-
Calendar adjusted data	120.1	-	-	+0.5	+3.8
Unadjusted data	120.6	-	-	+0.5	+3.5

revisions

The table below shows routine revisions for October 2022, calculated in percentage points comparing the current percent changes to those released last month. With regard to the month on previous month percent changes calculated on seasonally adjusted indices, an additional source of revision is the updating of the seasonal factors applied to the unadjusted time series.

Updated time series are available at I.Stat data warehouse.

TABLE 5. REVISIONS TO PERCENTAGE CHANGES
October 2022, differences in percentage points (index, 2015=100)

	Month on previous month (a)	Month on same month a year ago (b)
	Oct 2022	Oct 2022
Turnover		
Total	**0.0**	**0.0**
Domestic market	+0.1	0.0
Non-domestic market	+0.1	-0.1

(a) Figures are calculated on seasonally adjusted data.
(b) Figures are calculated on calendar-adjusted data.

Consumer durables: examples of consumer durables production include household appliances, furniture, motorcycles and audio and video equipment.

Consumer non-durables: examples of consumer non-durables include food and beverages processing and preservation, several kinds of textile manufacturing and pharmaceutical manufacturing.

Intermediate goods: examples of intermediate goods include chemical industry, metal fabrication, metal products and electrical appliances manufacturing, wood industry and textiles processing.

Capital goods: examples include production of machinery and manufacturing equipment, measuring and test equipment and vehicles.

Survey sample: subset of statistical units selected from a larger population in order to conduct a survey. In short-term statistics, a theoretical sample is defined when rebasing the indices every five year to obtain longitudinal or panel data, considering the actual corporate changes over time.

Energy: examples of energy industries include extraction of raw materials (petroleum, natural gas, coal) and refining processes.

Industrial turnover index: the industrial turnover index measures the monthly changes of industrial sales at current prices.

Industrial turnover volume index: the volume of industrial turnover index measures the industrial sales over time in volume terms. In order to determine the volume of industrial turnover index, the value of industrial turnover index is divided by the industrial producer price index to allow removing price effects on turnover.

Calendar adjusted data: calendar adjusted data are data adjusted for calendar effects such as the number of working days, the occurrence of public holidays (including Easter moving holiday) and of leap years. Calendar adjusted data permit to better compare year-on-year percent changes and average annual percent changes.

Seasonally adjusted data: seasonally adjusted data are data adjusted for seasonal variations (such as weather conditions, administrative measures, etc.) including calendar effects when relevant. Seasonal adjustment permits the comparison of consecutive months.

Non-domestic market: non-domestic market refers to customers operating in foreign countries.

Domestic market: domestic market refers to customers operating in Italy.

Period on previous period percent change: period on previous period percent change compares a period (typically a month or quarter) with the previous period.

Period on same period a year ago percent change: period on the same period a year ago percent change compares a period (typically a month or quarter) with the same period from the previous year.

Main industrial groupings: consumer durables, consumer non-durable, intermediate goods and energy. The main industrial groupings (MIGS), laid down in Commision Regulation (EC) No 656/2007, are based on the statistical classification of economic activities in the European Community (NACE rev. 2), whose Italian version is ATECO 2007. Istat also releases the Consumer Goods Index, calculated as the weighted average of the durable and non-durable components.

Introduction and regulatory framework

The turnover index measures the change over time of the amount of sales of industrial enterprises belonging to mining and quarrying and manufacturing industries. The legal basis for the STS indicators are the Regulation (EU) 2019/2152 of the European Parliament and of the Council on European business statistics, repealing 10 legal acts in the field of business statistics (EBS-Regulation) and the Commission Implementing Regulation 2020/1197 laying down technical specifications, definitions and arrangements pursuant to Regulation (EU) 2019/2152 (General Implementing Act). In particular it requires indices for both domestic and non-domestic market and with regard to the latter domain, a specific indicator for the Euro zone is also demanded.

Since January 2021, the collection and dissemination of industrial new orders data have been discontinued as a consequence of a rationalisation of the statistical production and for reducing the burden on businesses. When disseminating indicators on manufacturing business confidence, Istat also makes available early information on new order and demand levels. Since July 2012, the Commission Regulation (EU) No 461/2012 established the production of industrial new orders index is no longer mandatory.

The reference list to identify the sample of enterprises is made up of the Italian Business Register, named Statistical Archive of Active Enterprises (Asia).

Reference population and sampling

The panel of enterprises selected for the survey is a purposive sample. It is drawn from the universe of active enterprises of the Italian Business Register involving - for nearly all of the sectors - enterprises with 20 employees and over. For sectors characterised by the presence of small sized companies, the target universe is, however, represented by all the companies without any restriction on the number of employees. The identification of the enterprises belonging to the sample is performed at 3-digit level of the Ateco 2007 classification (the Italian version of NACE rev. 2), using a cut-off criterion and selecting enterprises in descending order representing at least 70% of the total turnover of the sector.

The statistical unit is generally the enterprise; however, when the turnover of the enterprise refers to different economic activities, detailed data for each kind of activity unit are required.

Data processing, indicators

Data provided by the enterprises belonging to the mining and quarrying and manufacturing sectors allow to compile elementary indices referring to the economic activity group. Elementary indices are calculated separately by domestic and non-domestic market and, within the latter, by Euro zone and non-Euro zone; they are then aggregated according to the Laspeyres formula, i.e. using the weighting structure that reflects the sectoral distribution of turnover in the base year. For each classification level, the total indices are calculated as weighted averages of domestic and non-domestic indices and the non-Euro zone indices are calculated as weighted averages of non-domestic and Euro zone indices.

Starting from the press release referring to January 2018, the indices are calculated with 2015 as base year, according to the 2007 Ateco classification of economic activities, the Italian version of Nace Rev. 2.

Weighting structure

The weighting structure of the turnover indices is based on two sources. Starting from the third digit level of the Ateco 2007 classification up to the total of the industry, the weights are derived from the value of the total turnover[1] of the Italian industrial sectors in 2015, measured by the Structural business statistics that give rise to the data on "The economic performances of Italian enterprises".

In addition to the total turnover for each economic activity, shares referred to the breakdown between domestic and non-domestic turnover have been calculated, as well as shares for Euro and non-Euro zone within the non-domestic turnover. For these breakdowns, information coming from the monthly survey on foreign trade referring to 2015 is also used.

The following tables show the weighting structures of the main industrial groupings and economic activity sectors used in compilation of aggregated turnover indices.

TABLE 1. WEIGHTING STRUCTURE FOR THE TURNOVER INDICES BY MAIN INDUSTRIAL GROUPING
Base year 2015

MAIN INDUSTRIAL GROUPINGS	Weights
Consumer goods	29.6669
- durable goods	*4.4036*
- non durable goods	*25.2633*
Capital goods	28.2860
Intermediate goods	34.8244
Energy	7.2227
General Index	**100.0000**

TABLE 2. WEIGHTING STRUCURE FOR THE TURNOVER INDICES BY ECONOMIC ACTIVITY SECTOR (SECTIONS AND ANA/ISIC A38 SUBSECTIONS)
Base year 2015

	ECONOMIC ACTIVITY SECTORS	Weights
B	Mining and quarrying	1.0029
C	Manufacturing	98.9971
CA	Manufacture of food products, beverages and tobacco products	14.3406
CB	Manufacture of textiles, apparel, leather and related products	8.4548
CC	Manufacture of wood and paper products, and printing	4.9406
CD	Manufacture of coke and refined petroleum products	6.7633
CE	Manufacture of chemicals and chemical products	5.4602
CF	Manufacture of basic pharmaceutical products and pharmaceutical preparations	2.7599
CG	Manufacture of rubber and plastic products and other non-metallic mineral products	7.7932
CH	Manufacture of basic metals and fabricated metal products, except machinery and equipment	14.0125
CI	Manufacture of computer, electronic and optical products	2.1303
CJ	Manufacture of electrical equipment and of non-electric domestic appliances	4.1659
CK	Manufacture of machinery and equipment n.e.c.	12.1305
CL	Manufacture of transport equipment	9.9394
CM	Other manufacturing, and repair and installation of machinery and equipment	6.1059
	General index	**100.0000**

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[1] Specifically, it deals with earnings from sales of products manufactured by the enterprise.

methodological**note**

Seasonal adjustment

In addition to the unadjusted indices, calendar adjusted time series are also released for total, domestic and non-domestic turnover from 2 digit NACE division indices up to overall indices. In accordance with the guidelines on seasonal adjustment for the European Statistical System, time series are corrected using a regression model (through the TRAMO procedure - LINUX version), which identifies the effect of the working days (calendar days of the month excluding Saturdays, Sundays and secular and religious holidays not coinciding with Saturdays and Sundays), the leap years and Easter through the introduction of a set of regressors in the univariate model that describes the trend of the series. Since the effect due to the working days is not a zero mean value on an annual basis, the calendar adjusted series calculated through this method would not present an average of 100 per base year. To release a set of indices with a common base and therefore allowing Eurostat to estimate the European aggregates, the adjusted time series are rescaled to report the annual average of the base year 2015=100 (the dynamic profile is unchanged). Moreover, regressors method may generate revisions of the data, since regression parameters are monthly estimated. Given an equal number of working days, the procedures here described may cause discrepancies between year on year percent changes calculated on the unadjusted time series and year on year percent changes calculated on adjusted data. Although negligible differences may be caused by the rounding policy, more relevant differences are due to the the leap year and Easter[2] effects and to the type of model used for the correction of the calendar effects. In the case of the additive model, in fact, the differences are inversely proportional to the level of the indices and directly proportional to the absolute value of the trend variations calculated on the unadjusted series.

Finally, the seasonally adjusted time series are released for turnover (general indices and main industrial groupings by domestic, non-domestic and total market). The seasonal adjustment is carried out through the software TRAMO-SEATS (LINUX version released in September 2017). Like other seasonal adjustment procedures, TRAMO-SEATS assumes that every intra-year time series can be decomposed into three different components, not directly observable: the trend-cycle, that represents the underlying medium and long-term movement; the combined seasonal and calendar effects, which are intra-year fluctuations; the irregular component, due to erratic factors. TRAMO-SEATS uses a model-based approach consisting in identifying a suitable reg-ARIMA model for the time series to be seasonally adjusted.

In order to remove the seasonal component, it is necessary to choose a decomposition model for the unadjusted series: turnover indices are seasonally adjusted using either an additive decomposition (the observed data are equal to the sum of the non-observable components), or a multiplicative decomposition (the observed data are equal to the product of the non-observable components). Domestic and non-domestic turnover indices at the main industrial groupings level are directly seasonally adjusted, while the total turnover indices are obtained by aggregation of the latter.

The statistical models used for seasonal and calendar adjustment are periodically reviewed to ensure a good fitting to time series. Moreover, TRAMO-SEATS specifications are available upon request to allow users to replicate the official seasonally adjusted time series.

Volume of manufacturing turnover

This index is obtained by removing the price component from the industry turnover index, the former is derived from the Producer Price Index.

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[2] Since the regressor takes into consideration the week prior to Easter Sunday, the differences may be more or less consistent according to whether the whole week falls completely within one month or not.

Revision policy

The industrial turnover indices concerning the most recent month are provisional and are subject to a first revision after one month to take into account additional information received from enterprises (revised indices are released through the press release referred to the subsequent month).

A second annual revision is released in November, when the indices referred to September are disseminated; the revision horizon spans all the months from January of the base year. The annual revisions aim at:

- taking into account information received from late respondents after the first revision and any improvements in estimation methodology;

- correcting previously provided data and any possible errors (corrections are often due to events concerning transformation of enterprises, which may have significant effects in the short-term evolution of indices).

Further information on the revision policy is available at https://www.istat.it/en/economic-trends/revisions.

Territorial breakdown

Indices are calculated and disseminated at national level.

Timeliness and dissemination

Industrial turnover indices are disseminated in a provisional version with a monthly press release approximately 60 days past the end of the reference month. The related time series are available in the excel file "Time series" available in the press release web page. Time series are also available at I.Stat, the Istat data warehouse, in the section "Industry and Construction", from January 2000. With regard to the turnover volume index of the manufacturing sector, data are available starting from January 2002.

Measures adopted to handle the impact of pandemic emergency on the survey

The COVID-19 pandemic emergency did not affect the data collection for businesses involved in this survey. Overall, the majority of them provided the information required. With reference to the seasonally adjustment procedure used to treat the indicators disseminated, the seasonal adjustment models were reviewed to manage the exceptional changes recorded since March 2020 taking into consideration the Eurostat guidelines, available at the URL:
https://ec.europa.eu/eurostat/documents/10186/10693286/Time_series_treatment_guidance.pdf
Therefore, since March 2020, the unusual size of the changes of the unadjusted time series were taken into account. For this purpose, additional regressors (the so-called additive outliers) were introduced in models for seasonal adjustment when statistically significant. This procedure, which aims at minimizing the revisions of past values of the seasonally adjusted series, was carried out until the reference month of January 2021. As soon as the available information will allow an overall evaluation of the great volatility phase, models will be revised/modified if necessary. In that case, revisions of seasonally adjusted data may be larger than usual.

For technical and methodological information

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