

April 2020

INDUSTRIAL TURNOVER AND NEW ORDERS

- In April 2020 the seasonally adjusted turnover index dropped by 29.4% compared to the previous month (-27.9% the domestic market and -32.0% in non-domestic market); the average of the last three months decreased by 23.9% compared to the previous three months (-25.3% in domestic market and -21.4% in non-domestic market).
- The seasonally adjusted industrial new orders index fell by 32.2% compared to March (-33.9% in domestic market and -30.0% in non-domestic market); the average of the last three months decreased by 27.7% compared to the previous three months (-31.5% in domestic market and -22.1% in non-domestic market).
- With respect to the same month of the previous year the calendar adjusted industrial turnover index plummeted by 46.9% (-48.1% in domestic market and -44.6% in non-domestic market). Calendar working days in April 2020 were 21, one more than April 2019.
- The unadjusted industrial new orders index fell by 49.0% with respect to the same month of the previous year (-53.0% in domestic market and -43.6% in non-domestic market).
- The seasonally adjusted volume turnover index (only for the manufacturing sector) diminished by 28.9% compared to the previous month; the average of the last three months fell by 23.4% compared to the previous three months. The calendar adjusted volume turnover index dropped by 45.9% with respect to the same month of the previous year.
- The pandemic emergency impacted on the data collection of the survey and a moderate loss in the responses rate was registered. Strategies implemented to deal with the missing responses allowed to calculate and release accurate indices for April 2020 (for further details see Methodological note, page 8).

CHART 1. INDUSTRIAL TURNOVER AND NEW ORDERS: SEASONALLY ADJUSTED INDICES AND THREE MONTH MOVING AVERAGES

January 2015 – April 2020 (index, 2015=100)

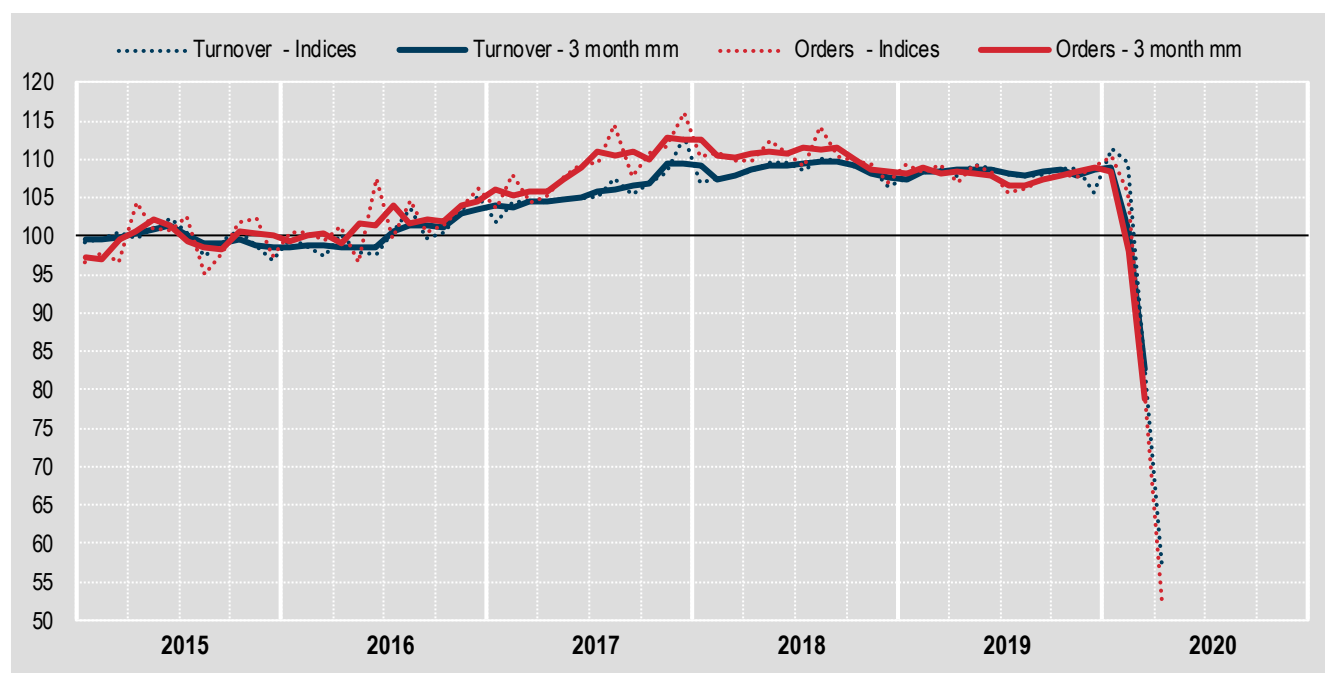


CHART 2. INDUSTRIAL TURNOVER, MONTH ON SAME MONTH A YEAR AGO PERCENTAGE CHANGES

January 2016 – April 2020, calendar adjusted data (index, 2015=100)

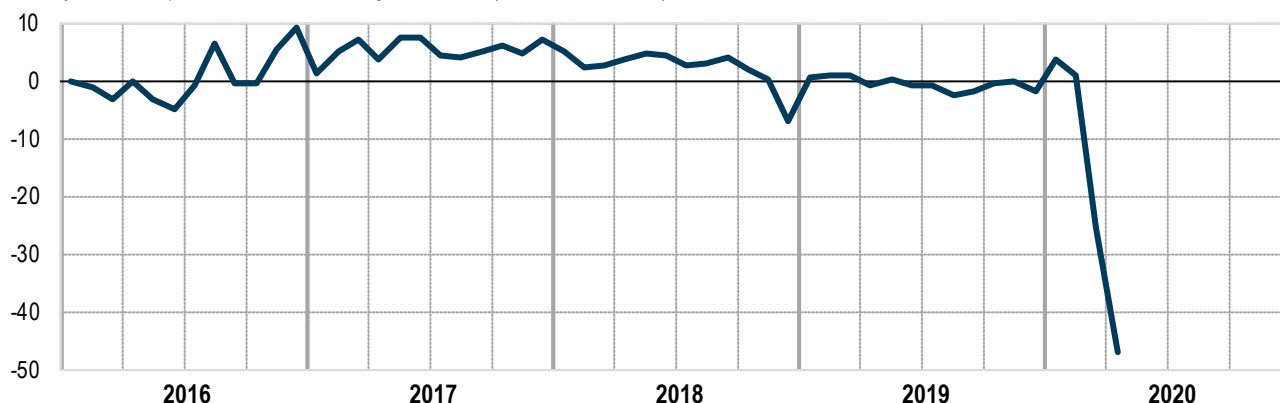


CHART 3. INDUSTRIAL NEW ORDERS, MONTH ON SAME MONTH A YEAR AGO PERCENTAGE CHANGES

January 2015 – April 2020, unadjusted data (index, 2015=100)

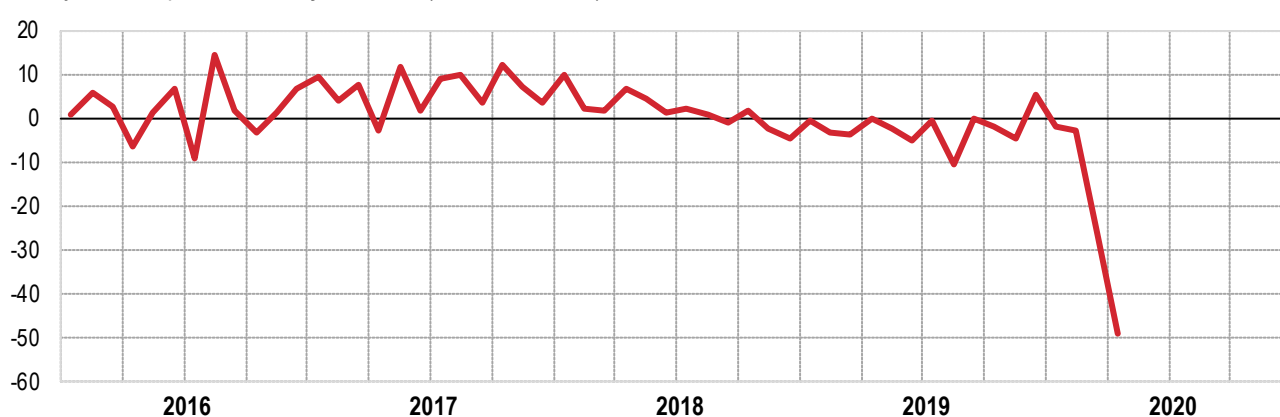


TABLE 1. INDUSTRIAL TURNOVER AND NEW ORDERS, INDICES, MONTHS ON PREVIOUS MONTHS AND ON SAME MONTHS A YEAR AGO PERCENTAGE CHANGES

April 2020 (index, 2015=100)

	SEASONALLY ADJUSTED			CALENDAR ADJUSTED (a)			UNADJUSTED		
	Indices	Months on previous months		Indices	Months on same months a year ago		Indices	Months on same months a year ago	
		Apr 20	Apr 20 Mar 20		Feb-Apr 20 Nov 19-Jan 20	Apr 20		Apr 20 Apr 19	Jan-Apr 20 Jan-Apr 19
Turnover index	57.3	-29.4	-23.9	55.4	-46.9	-17.6	57.1	-45.1	-17.1
<i>Domestic market</i>	55.6	-27.9	-25.3	53.7	-48.1	-19.0	55.3	-46.5	-18.5
<i>Non-domestic market</i>	60.7	-32.0	-21.4	58.7	-44.6	-15.0	60.7	-42.6	-14.4
New orders index	52.8	-32.2	-27.7	-	-	-	52.2	-49.0	-19.7
<i>Domestic market</i>	48.5	-33.9	-31.5	-	-	-	47.6	-53.0	-21.6
<i>Non-domestic market</i>	59.1	-30.0	-22.1	-	-	-	58.7	-43.6	-17.1

(a) New orders indices are not calendar adjusted because calendar effects are not statistically relevant.

Table 2 below provides routine revisions for March 2020, 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 2. REVISIONS TO PERCENTAGE CHANGES

March 2020, differences in percentage points (index, 2015=100)

	Month on previous month (a)	Month on same month a year ago (b)
	March 2020	March 2020
Turnover		
Total	0.0	-0.1
Domestic market	0.0	-0.1
Non-domestic market	-0.1	0.0
New orders		
Total	+0.1	0.0
Domestic market	-0.1	-0.1
Non-domestic market	+0.3	+0.3

(a) Figures are calculated on seasonally adjusted data.

(b) Turnover figures are calculated on calendar-adjusted data, new orders figures are calculated on unadjusted 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 years 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.

New orders index: new orders index measures the value of incoming industrial new orders in each reference month at current prices.

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

Industrial turnover volume index: industrial turnover volume index measures the monthly changes of industrial sales at constant prices. It is obtained by dividing the industrial turnover index by the industrial producer price index to remove price effects on turnover. In order to better allow for a comparison, the two indices are based on the same reference population.

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 Commission 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 new orders index estimates the rate of change in the value of new orders that enterprises receive from clients in the reference month. The latter indicator is based on the information provided by the subset of enterprises belonging to the industrial sectors that usually work on order.

[Council Regulation \(EC\) No. 1165/98](#), subsequently amended by [Regulation \(EC\) no 1158/2005 of the European Parliament and of the Council](#), defines the levels of detail, the methodology and the frequency with which the monthly industrial turnover indicators must be produced. 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. Turnover definition is based on [Commission Regulation \(EC\) No 1503/2006](#).

Monthly industrial new orders index is no longer required by European Regulations (see Commission Regulation (EU) No 461/2012) and is only provided for domestic and non-domestic market.

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/orders of the enterprise refer 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. For each variable, turnover and new orders, elementary indices are calculated separately by domestic and non-domestic market and, within the latter, by Euro zone and non-Euro zone. The elementary indices 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.

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 and new orders 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 turnover¹ 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 and new orders 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 STRUCTURE FOR THE TURNOVER AND NEW ORDERS INDICES BY ECONOMIC ACTIVITY SECTOR (SECTIONS AND ANA/ISIC A38 SUBSECTIONS)

Base year 2015

ECONOMIC ACTIVITY SECTORS	Weights of turnover	Weights of new orders
B Mining and quarrying	1.0029	-
C Manufacturing	98.9971	100.0000
CA Manufacture of food products, beverages and tobacco products	14.3406	-
CB Manufacture of textiles, apparel, leather and related products	8.4548	12.9813
CC Manufacture of wood and paper products, and printing	4.9406	5.9026
CD Manufacture of coke and refined petroleum products	6.7633	-
CE Manufacture of chemicals and chemical products	5.4602	8.3833
CF Manufacture of basic pharmaceutical products and pharmaceutical preparations	2.7599	4.2374
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	21.5146
CI Manufacture of computer, electronic and optical products	2.1303	3.2708
CJ Manufacture of electrical equipment and of non-electric domestic appliances	4.1659	6.3960
CK Manufacture of machinery and equipment n.e.c.	12.1305	18.6252
CL Manufacture of transport equipment	9.9394	15.2604
CM Other manufacturing, and repair and installation of machinery and equipment	6.1059	3.4284
General index	100.0000	100.0000

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

Seasonal adjustment

In addition to the unadjusted indices, calendar adjusted time series are also released for the total turnover at the ANA/ISIC A38 level and for total, domestic and non-domestic turnover for main industrial groupings. New orders indices are not calendar adjusted as calendar effects are not significant. 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 Easter² 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 both for turnover (general indices and main industrial groupings by domestic, non-domestic and total market) and for new orders (only general indices 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 and new orders 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 and domestic and non-domestic overall new orders indices are directly seasonally adjusted, while the total turnover and new orders 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. Since this indicator is processed exclusively for the purpose of comparison with the industrial production index, the same domain is considered and the same seasonal adjustment approach is used.

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 and new orders 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 <http://www4.istat.it/en/economic-trends/revisions>.

Territorial breakdown

Indices are calculated and disseminated at national level.

Timeliness and dissemination

Industrial turnover and new orders indices are disseminated in a provisional version with a monthly press release approximately 45 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 partially affected the data collection causing minor issues throughout the month of May. Overall, even if working under critical conditions, the majority of the businesses involved in the survey provided the information required. The responses rate of businesses (in terms of weight on the total turnover) decreased by about 5 percentage points compared with the usual rate of the advance estimate. As the responses loss occurred was very limited, the ordinary approach for missing-data imputation process was used. Although quality of monthly data provided for April is to be considered about the same as usual, a larger revision might occur when the final estimate will be released.

Series were seasonally adjusted following official Eurostat guidelines, available at:

https://ec.europa.eu/eurostat/documents/10186/10693286/Time_series_treatment_guidance.pdf

Taking into account the extraordinary sharp fall in turnover recorded in March and April, models for time series treatment included additional regressors (additive outliers) when necessary. This procedure may continue in the next months until the information collected will offer a clear insight and therefore statistical models for seasonal adjustment might be revised. Therefore, in the next months revisions of the seasonally-adjusted data may be larger than usual.

For technical and methodological information

Anna Ciammola

tel. +39 06 4673.6659

ciammola@istat.it