Second quarter 2020

BUILDING PERMITS INDICATORS

- In residential buildings the number of dwellings decreased in the second quarter 2020 when compared with the previous quarter (-25.6%); useful floor area decreased (-18.4%) too.

- Non-residential buildings decreased by 15.5% in the second quarter 2020 (quarter on previous quarter).

- The number of dwellings in new buildings decreased by 25.1% in the second quarter 2020 with respect to the same quarter a year earlier.

- In comparison with the same quarter a year ago, the useful floor area was down 25.3%.

- Non-residential area decreased year-on-year, falling by 41.3% in the second quarter 2020, reversing the previous trend.

CHART 1. USEFUL FLOOR AREA OF DWELLINGS AND OF NON-RESIDENTIAL BUILDINGS, NUMBER OF DWELLINGS
Q1 2008 – Q2 2020, seasonally adjusted, absolute values (a)
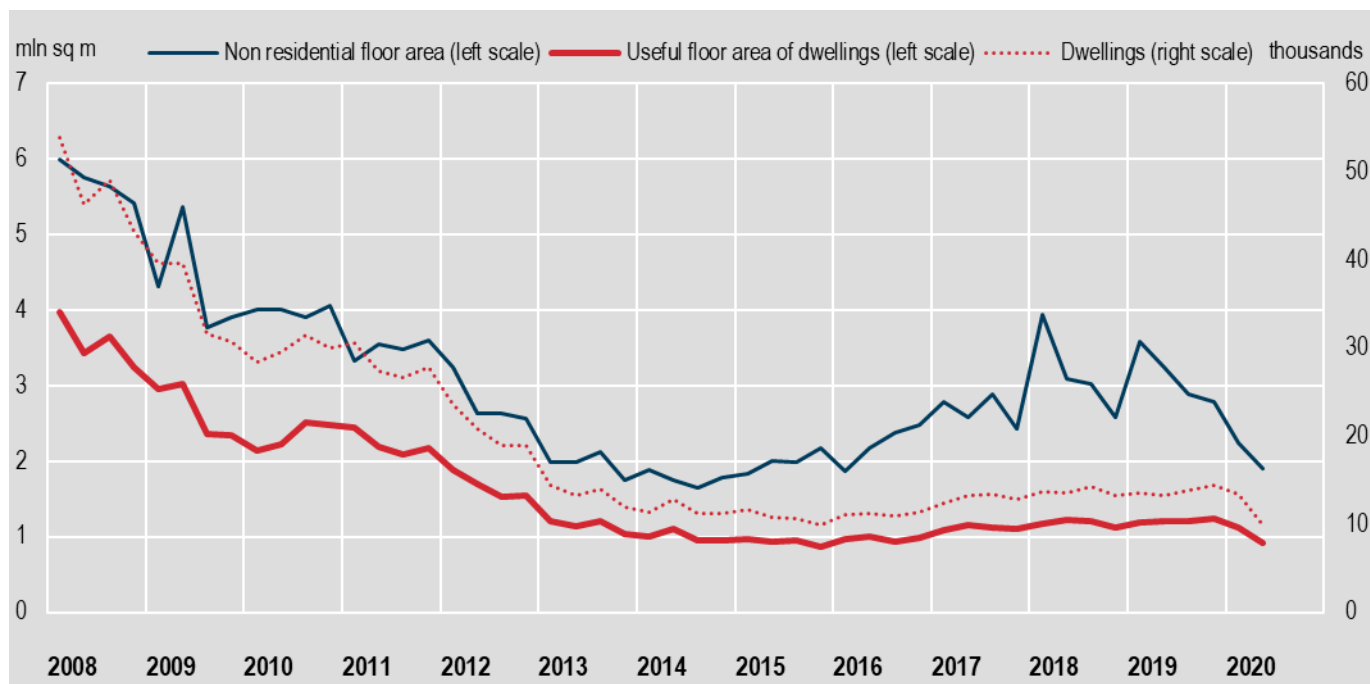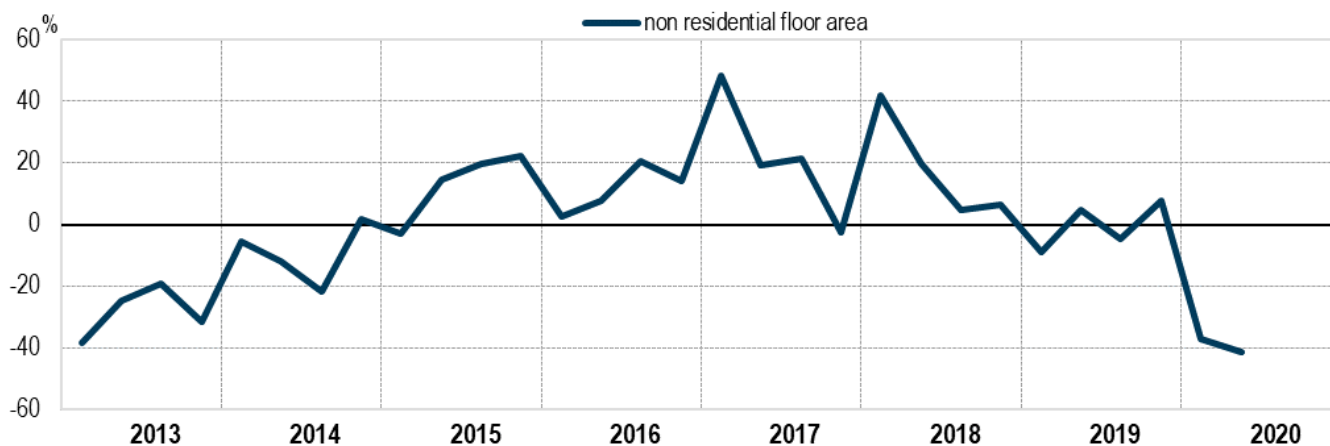

(a) Provisional data

CHART 2. USEFUL FLOOR AREA OF DWELLINGS AND NUMBER OF DWELLINGS OF NEW RESIDENTIAL BUILDINGS

Q1 2013 – Q2 2020, quarter on same quarter a year ago percentage changes – non-adjusted data (a)
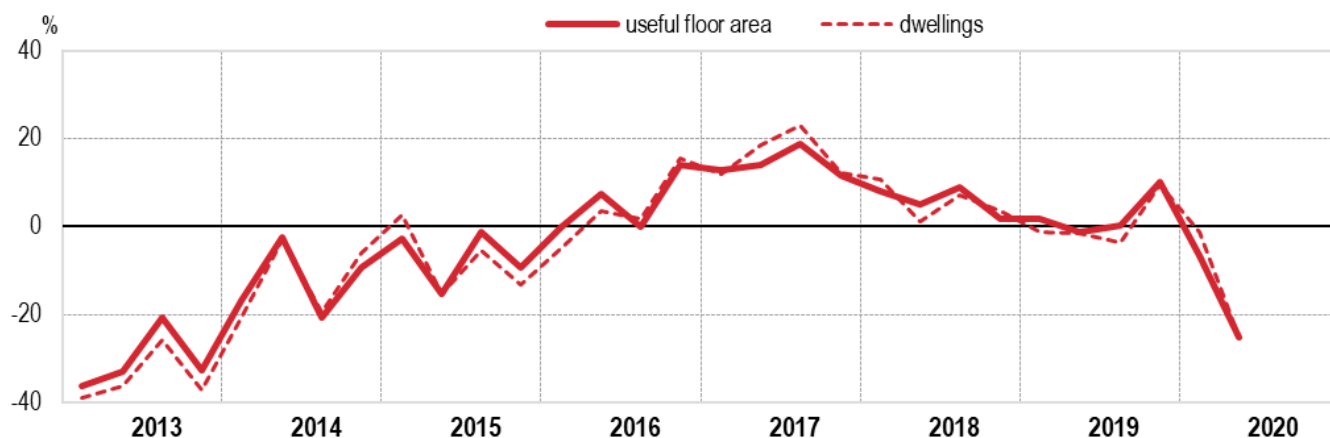
(a)   Provisional data starting from I quarter 2020

CHART 3. FLOOR AREA OF NEW NON-RESIDENTIAL BUILDINGS

Q1 2013 – Q2 2020, quarter on same quarter a year ago percentage changes – non-adjusted data (a)

(a)   Provisional data starting from I quarter 2020

TABLE 1. BUILDING PERMITS INDICATORS. SEASONALLY ADJUSTED DATA

Q1 2019 – Q2 2020, absolute values, quarter on previous quarter percentage changes (a)

PERIOD	New residential buildings				New non-residential buildings	
	Number of dwellings	Quarter on previous quarter percentage changes	Useful floor area of dwellings (sqm)	Quarter on previous quarter percentage changes	Area (sqm)	Quarter on previous quarter percentage changes
2019 (b)						
Quarter 1	13,560	+2.4	1,196,117	+6.2	3,588,614	+39.0
Quarter 2	13,300	-1.9	1,213,960	+1.5	3,236,131	-9.8
Quarter 3	13,767	+3.5	1,212,337	-0.1	2,879,805	-11.0
Quarter 4	14,479	+5.2	1,235,673	+1.9	2,786,208	-3.3
2020 (b)						
Quarter 1	13,400	-7.5	1,117,882	-9.5	2,248,852	-19.3
Quater 2	9,968	-25.6	911,964	-18.4	1,900,336	-15.5

(a) All series of Building permits indicators are available in the database I.stat: http://dati.istat.it/?lang=en
(b) Data are provisional and subject to revisions

TABLE 2. BUILDING PERMITS INDICATORS. NON-ADJUSTED DATA

Q1 2019 – Q2 2020, absolute values and quarter on same quarter a year ago percentage changes (a)

PERIOD	New residential buildings				New non-residential buildings	
	Number of dwellings	Quarter on same quarter a year ago percentage changes	Useful floor area of dwellings (sqm)	Quarter on same quarter a year ago percentage changes	Area (sqm)	Quarter on same quarter a year ago percentage changes
2019						
Quarter 1	12,942	-1.1	1,147,187	+1.8	3,342,220	-8.9
Quarter 2	14,067	-1.4	1,245,266	-1.1	3,398,390	+4.7
Quarter 3	13,253	-3.6	1,181,397	+0.4	2,836,844	-4.8
Quarter 4	14,842	+9.5	1,285,857	+10.1	2,878,481	+7.9
2019	**55,104**	**+0.8**	**4,859,707**	**+2.7**	**12,455,935**	**-0.8**
2020 (b)						
Quarter 1	12,788	-1.2	1,072,941	-6.5	2,094,378	-37.3
Quater 2	10,537	-25.1	930,307	-25.3	1,995,002	-41.3

(a) All series of Building permits indicators are available in the database I.stat: http://dati.istat.it/?lang=en
(b) Data are provisional and subject to revisions

The table below shows routine revisions, calculated as differences (in percentage points) between first publication and the latest estimates concerning the same reference period. Revisions to year-on-year growth rate of quarters of year 2019 are due to the reconciliation of the quarterly data to the final release of annual data for the same year (see Methodological note).

TABLE 3. REVISIONS OF GROWTH RATES
I quarter 2019 - IV quarter 2019, differences in percentage points

QUARTER	Number of dwellings	Useful floor area of dwellings (sqm)	Floor area of non residential buildings (sqm)
I quarter 2019	-0.2	+0.2	-1.0
II quarter 2019	+0.5	+1.0	-1.7
III quarter 2019	+1.0	+1.4	-1.2
IV quarter 2019	+1.4	+1.8	-1.6

Building: a building is an enclosed structure, isolated by either streets or empty spaces or where load-bearing walls provide separation from other constructions from foundations till the roof. It has its own street entrance and possibly an entrance via an independent staircase.

Building permit: a building permit is an authorisation to start work on a building or remodeling project and it is issued by the local governmental office.

Building permits indicators: indicators measuring the quantity of constructions for which building permits are issued, expressed in terms of number of dwellings and in terms of square metres of floor areas. Residential indicators refer to new buildings while non-residential indicators refer to both new buildings and enlargement of existing buildings, as recorded through the issue of building permits.

Dwelling: a dwelling is a room or suite of rooms, intended for habitation, with a separate access to a street or to a common space within the building such as a landing, a backyard, a terrace, a passage and so on.

Enlargement of an existing building: a building is enlarged when the total volume of the building is increased, either with a lateral or vertical extensions.

New building: new building refers to a construction built from scratch from foundations till the roof. New building also refers to buildings enterily demolished and re-built.

Non-residential building: a non-residential building is a building or a part of it used mainly or exclusively for other than dwelling purposes.

Quarter on previous quarter percentage changes: percentage change compared to the previous quarter.

Quarter on same quarter a year ago percentage changes: percentage change compared to the same quarter of the previous year.

Residential building: a residential building is a building or a part of it used mainly or exclusively for dwelling purposes.

SCIA (Start-of-work certified reports): building permit as provided for in the Decree of the President of the Republic

Useful floor area: the useful floor area is the floor space of dwellings measured inside the outer walls, excluding pillars, partition walls, splays, windows and doors areas, stairwells, loggias and balconies.

Information objectives and reference regulatory framework

The survey on building permits (hereinafter "structural survey") is a census, so data are collected for all units of the target population on a monthly basis regarding new construction projects (even if demolished and completely rebuilt) or enlarging of pre-existing structures, residential and non-residential, authorised by certified building permits (Building permits, SCIA – Start-of-work certified report, or Public construction work). Dividing up, changes of use and renovation of pre-existing buildings, which do not cause an increase in volume of said buildings, are not included in the survey observation field.

A survey was commissioned in December 2003 on a sample of Municipalities (hereinafter "rapid survey") to fulfill the requirements set by Regulation no. 1165/98 of the European Council on short term statistics and its subsequent amendments. It was designed to provide estimates of the main indicators of building permits, considered as a close approximation of future works of the construction industry, able to anticipate the trend. Quarterly estimates of construction permits are transmitted confidentially to Eurostat 90 days past the end of the reference quarter and revised 180 days past the reference period. The estimated variables are a very limited sub-group of those measured by the structural survey, exclusively monitoring two aspects of residential building activity (the number of dwellings and the useful floor area) and one feature of non-residential building activity (the area).

Consequently, with reference to the building permit indicators, preliminary estimate, based on the rapid survey are released on a quarterly basis and after the completion of the structural survey, final annual estimates are also released.

This leads to the release of two time series regarding:

▪ provisional quarterly data available 180 days past the reference period and then revised;
▪ final annual estimates available within the year following the reference year

The survey is administered as part of the National Statistical Programme (current edition: NSP 2017-2019 Updating 2018-2019 approved with Decree of the President of the Republic of 20 May 2019, published in the Official Journal - general series - no. 165 of 16 July 2019).

Reference population, survey and analysis units

The reference population is based on new constructions and enlarging of pre-existing residential and non-residential buildings authorised by a certified permit.

Municipalities are the survey units.

The unit of analysis targets the single building work, represented either by an entire new building, even if demolished and entirely rebuilt, or by the enlargement of a pre-existing building. Two or more building works, relating to the same construction permit, set two or more units of analysis for which similar forms are compiled.

Sampling design

The sample design was conceived in order to produce estimates of the total of the two main variables relating to residential and non-residential building activity at a quarterly level, with a pre-set level of accuracy; in particular, the following parameters of interest were considered:

▪ the total number of dwellings in the new residential buildings;
▪ the total area for non-residential purpose, obtained by summing the area of new non-residential buildings and the area of non-residential building gained after enlargements.

The universe of municipalities has been divided into two sub-groups, the first includes provincial capitals and municipalities of at least 50,000 inhabitants (self-representing units or SR) with probability equal to one; the second includes the remaining municipalities (non-self-representing municipalities or NSR). The SR municipalities are 176, while all the other Italian municipalities are considered as NSR.

A stratified sample design was conceived for the group of NSR municipalities.

Stratification method and sample size were selected taking into account the information derived from the structural survey on building activity, referring to the years 2007-2009. Quarterly data were analysed to keep trace of the variability of the estimates on residential and non-residential building in the different quarters.

Since 1 January 2013, 858 NSR sample municipalities were identified and added to the 176 SR municipalities to define a total sample of 1,034 municipalities. In 2019 and 2020 the merger of the two sample municipalities in the new municipality reduced the sample size to, respectively, 1,033 and 1,032 municipalities. Then the demographic

changes of the last years have led to a different stratification of the 856 common NAR champions

The 856 municipalities, randomly chosen according to a probabilistic design, are layered in 20 groups and the layers are defined by:

▪ four geographic divisions (North-West, North-East, Centre, South);
▪ population grouped in five classes (up to 3,000 inhabitants, from 3,001 to 7,000, from 7,001 to 13,000, from 13,001 to 25,000 and more than 25,000).

Table 1 shows the distribution of the municipality universe and of the municipalities currently used in the last samples by layer.

TABLE 1. DISTRIBUTION OF MUNICIPALITIES IN THE UNIVERSE AND IN THE SAMPLE BY LAYER

LAYER		Municipalities Universe 2011	Sample 2013	Sample 2019	Sample 2020
Self-representing municipalities:		176	176	176	176
Non-self-representing municipalities:		7916	858	857	856
North West	up to 3,000 inhabitants	2013	92	92	92
	3,001 - 7,000 inhabitants	585	96	96	96
	7,001 - 13,000 inhabitants	257	62	62	62
	13,001 - 25,000 inhabitants	123	65	65	64
	more than 25,000 inhabitants	46	19	19	20
North East	up to 3,000 inhabitants	679	42	42	39
	3,001 - 7,000 inhabitants	403	54	54	55
	7,001 - 13,000 inhabitants	226	61	61	62
	13,001 - 25,000 inhabitants	111	26	26	26
	more than 25,000 inhabitants	34	10	10	10
Centre	up to 3,000 inhabitants	466	19	19	19
	3,001 - 7,000 inhabitants	223	20	20	20
	7,001 - 13,000 inhabitants	132	28	28	28
	13,001 - 25,000 inhabitants	97	19	19	19
	more than 25,000 inhabitants	43	21	21	21
South	up to 3,000 inhabitants	1372	53	53	54
	3,001 - 7,000 inhabitants	557	53	53	52
	7,001 - 13,000 inhabitants	282	50	50	51
	13,001 - 25,000 inhabitants	170	48	48	47
	more than 25,000 inhabitants	97	19	19	19
TOTAL MUNICIPALITIES		**8,092**	**1,034**	**1,033**	**1,032**

Data collection

Since 2010, Istat implemented the online survey system through the website https://indata.istat.it/pdc. In addition, the data collection process on building permits was completely renewed in January 2010, introducing three new forms: ISTAT/PDC/NEG that the municipality must use to send a report of null construction activity, ISTAT/PDC/RE for data collection on new residential buildings and ISTAT/PDC/NRE for non-residential buildings; the latter two forms substituted the form in use from 2000 to 2009.

Two new questionnaires ISTAT/PDC/RE and ISTAT/PDC/NRE have to be filled in by the building permits applicant or by other qualifying title to build or, failing that, by the municipality.

Every month municipal offices must check the accuracy of the information reported in the questionnaires, therefore they fill in the space of the form reserved for office use and transmit data to Istat on a monthly basis. When no permits or other qualifying title to build are issued in the reference month, the municipality shall send a notice of **no building activity** (ISTAT/PDC/NEG form).

If either data or notice on building activity are not reported, the municipality is considered as a nonrespondent.

Data processing: process, methods and techniques

Nonresponse

Regarding the sub-group of self-representing municipalities, in case of partial lack of response (PLR), estimates are imputed based on the average value of the variables (dwellings and area) over the course of the previous 12 months in that municipality (if the municipality has responded at least once). In case of total lack of response (TLR), which occurs when the municipality does not respond for 12 consecutive months, missing data are imputed using the method of minimum distance.

With regard to the missing responses of the remaining 856 sample municipalities, data are imputed based on a re-weighting procedure of information received from the responding municipalities. In addition, when making the monthly estimates, as the coverage of the sample may not be complete, it is necessary to use the auxiliary information from the remaining non-sample municipalities that have already responded to the structural survey.

The imputation method currently used, beginning from the aggregated data by municipality, suitably layered by division and population class, estimates the total number of dwellings in new residential buildings and the total non-residential for these municipalities every month, attributing a weight to each variable of the responding municipalities in the reference period.

The estimator used is as follows [1]:

$$\tilde{Y}_t = \sum_{k \in r_t} y_{t,k}\, a_{t,k}$$

where $y_{t,k}$ is the variable of interest over time t in the kth unit and $a_{t,k}$ is the weight attributed to the same unit, determined on the basis of the parameters estimated through a logistical regression model, and it is equal to:

$$a_{t,k} = 1/(\pi_{at,k}(\pi_{t,k|at}\varphi_{k|st,\mathbf{ms}})) + ((1 - \pi_{t,k|at})\, (\varphi_{k|\bar{s}_t}\, \mathbf{m}_{\bar{s}}))$$

of which:

$\pi_{at,k} = 1$;

s_t = set of sample units (sample of 856 units)

$\bar{s}_t$ = set of no sample units

$\pi_{t,k|at}$ = inclusion probability in s_t;

$\varphi_{k|st,ms}$ = response probability of units of sample s_t;

$\mathbf{m}_s$ = response rate within the weighting cells of the sample s_t;

$(1 - \pi_{t,k|at})$ = inclusion probability in $\bar{s}_t$, non-inclusion probability in s_t;

$\varphi_{k|\bar{s}_t}\, \mathbf{m}_{\bar{s}}$ = response probability of units of sample $\bar{s}_t$;

$\mathbf{m}_{\bar{s}}$ = = response rate within the weighting cells of the sample $\bar{s}_t$;

Total number of dwellings and useful floor area in new residential buildings and total non-residential area for the universe of Italian municipalities are obtained adding the estimated values for the 176 self-representing municipalities to those of the remaining sample and non-sample municipalities,[1] .

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[1]For further information see: Bacchini F., Iannaccone R., Otranto E. "Attribution of non-responses in the presence of longitudinal data: an application to Italian building permits". Istat Contributions, no. 4/2005.

Falorsi P.D., Alleva G., Bacchini F., Iannaccone R. "Estimated based on preliminary data from a specific subsample and from respondents not included in the subsample". Statistical Methods and Applications, vol. 14, n.1, 83-99, 2005.

Reconciliation

The estimates of the quarterly values of building permits obtained through the previously mentioned procedure, may not be entirely consistent, in terms of annual average, with the annual results obtained from the complete information processed in the structural survey. The difference arises, in the first place, from different imputation methodologies for missing items in the two contexts. Census relies on a much richer and comprehensive wealth of municipal microdata, but its procedures do not allow quarterly estimates, as the information collected cannot be to split up into monthly observations. However in the quarterly estimate, as previously noted, nonresponse is treated at an aggregated level, where imputation is based on a re-weighting technique of the actual responses. Moreover, annual statistics are not subject to revisions and intend to investigate on a much wider group of variables rather than those measured for the quarterly indicators.

Seasonal adjustment

To allow the analysis of the rapid survey results in a short-term view, from January 2018, the quarterly data are also released in a seasonally adjusted form.

The seasonally adjusted indices are obtained through the TRAMO-SEATS procedure (4 Version Linux Revision 942). TRAMO-SEATS, just like other seasonal adjustment procedures, is founded on the assumption that a monthly or quarterly time series may be represented as a combination (sum or product) of different, not directly observable components: a long term component, called 'trend-cycle', a seasonal component that captures periodic movements of the observed phenomenon, and an irregular component due to erratic factors. TRAMO-SEATS, in particular, uses a *model-based* approach consisting in identifying a suitable statistical model for the time series to be seasonally adjusted.

Since the addition of new quarterly information allows a better evaluation of the different components of the series, each quarter the previously published data concerning the most recent years is subject to revision.

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

Output: main measures of analysis

The survey forms adopted since 2010 (ISTAT/PDC/RE and ISTAT/PDC/NRE) have the same first two boxes where information on the certified permit, the permit number, the census section, the permit validity date, the cadastral references (cadastral sheet, parcel and subordinate) and the estimated duration of the works are reported. The following boxes of the two forms, residential and non-residential, are different.

The ISTAT/PDC/RE form for residential building includes a box (box 2) gathering information on new buildings, a second box (box 3) for enlargements of pre-existing buildings and a third box (box 4) for the "communities". Further three boxes (5, 6 and 7) regard the holder of the building permit, energy efficiency of the new building and any connection between the new work and the "Piano Casa" Regulations. In the box regarding new buildings information about number of floors, volume, area and number of dwellings is requested along with classification of dwellings by number of rooms and useful floor area. The enlargement box asks for information about volume, floor area and when extensions regards new dwellings, data on useful floor area, number of rooms and ancillary spaces are also requested. Box 4 is for buildings where social services are planned and collects information on number of floors, volume and area.

The ISTAT/PDC/NRE survey form for non-residential building has two boxes: box 2 for new constructions and box 3 for enlargement of pre-existing buildings. There are five more in-depth information boxes below that investigate on the economic purpose of the building (agriculture, industry, etc.), on the definition of its use classification (offices, factories, shopping centers, etc...), on the holder of the building permit, on the energy efficiency and on possible connection to the "Piano Casa". The box relating to the new constructions asks for the number of floors, volume, area and if intended for dwelling purpose, main features of dwellings must be reported too. The box for enlargements includes questions about volume, area and, where new dwellings are planned, includes questions about their useful floor space, number of rooms and ancillary spaces.

Garozzo S. Rallo G., Building permits survey: control and correction of data. Istat Contributions, no. 13/2008.

Revisions

Quarterly preliminary estimates are issued at approximately 180 days past the reference period and revised estimates become definitive when the structural survey data are disseminated.

Quarterly seasonally adjusted series are estimated each quarter to include latest responses and update seasonal factors. Thus, with the release of new data, the seasonally adjusted values for the previous quarters are also revised. Models for seasonal adjustment are periodically revised.

Information on data privacy

The data collected for the building permits survey is protected by statistical confidentiality and subject to the Regulation on the protection of personal data. It may be used, even in successive processing, exclusively for statistical research by subjects of the National Statistical System and may be communicated for scientific research purposes in the conditions and methods provided by art. 7 of the Ethics Code on processing of personal data performed within the National Statistical System and by Community Regulation no. 831/2002. The estimates, issued in aggregate form, will not reveal any personal information or allow identifying subjects individually.

Coverage and territorial detail

The estimates of the press release "Building permits indicators" are available at national level only.

Timeliness

Provisional quarterly estimates are issued at approximately 90 days past the end of the reference quarter; these estimates are revised at 180 days.

Issue

Quarterly non-seasonally adjusted and seasonally adjusted data are available on the Istat data warehouse I.Stat within the section "Industry and construction/building permits". Quarterly series including number of dwellings and useful floor space in new residential buildings and area in non-residential buildings are available on the press release "Building permits indicators" webpage. Main results of the survey on building permits are available on the Istat website at the following address http://www.istat.it/en/archive/building+permits.

The management of the health emergency effects on the surveys

Covid-19 health emergency did not impact on the data collection phase carried out for the reference quarter.
Overall, the survey met with the effective collaboration both of the technicians and the municipalities involved in the survey.
With reference to the seasonally adjustment procedure used to treat the indicators disseminated, the seasonal adjustment models were reviewed to manage the exceptional decreases recorded 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 the first quarter 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 aims at minimizing the revisions of past values of the seasonally adjusted series. 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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