II quarter 2020

QUARTERLY NATIONAL ACCOUNTS

■ In the second quarter of 2020 the seasonally and calendar adjusted, chained volume measure of Gross Domestic Product (GDP) decreased by 12.8 per cent to the previous quarter and by 17.7 per cent in comparison with the second quarter of 2019.

■ Compared to previous quarter, final consumption expenditure decreased by 8.7 per cent, gross fixed capital formation by 14.9 per cent, imports and exports by 20.5 per cent and 26.4 per cent respectively.

■ With respect to the second quarter of 2019, final consumption expenditure decreased by 13.7 per cent, gross fixed capital formation by 21.6 per cent, imports by 26.8 per cent, and exports by 33.1 per cent.

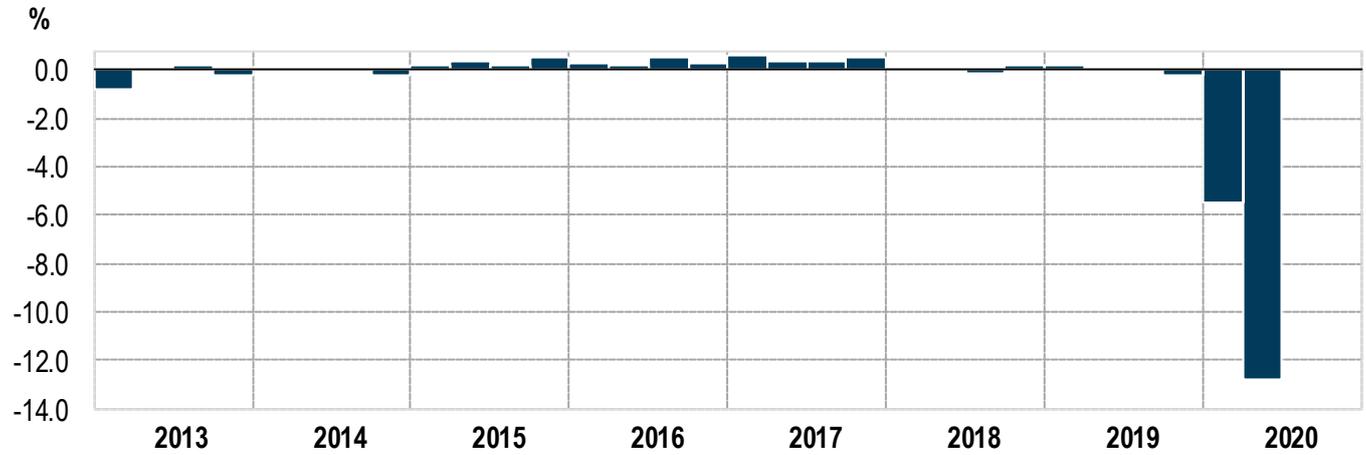■ The carry-over annual GDP growth for 2020 is equal to -14.7 per cent.

CHART 1. GROSS DOMESTIC PRODUCT
Q1 2008 – Q2 2020, seasonally and calendar adjusted chain-linked values (reference year 2015), billions of euros
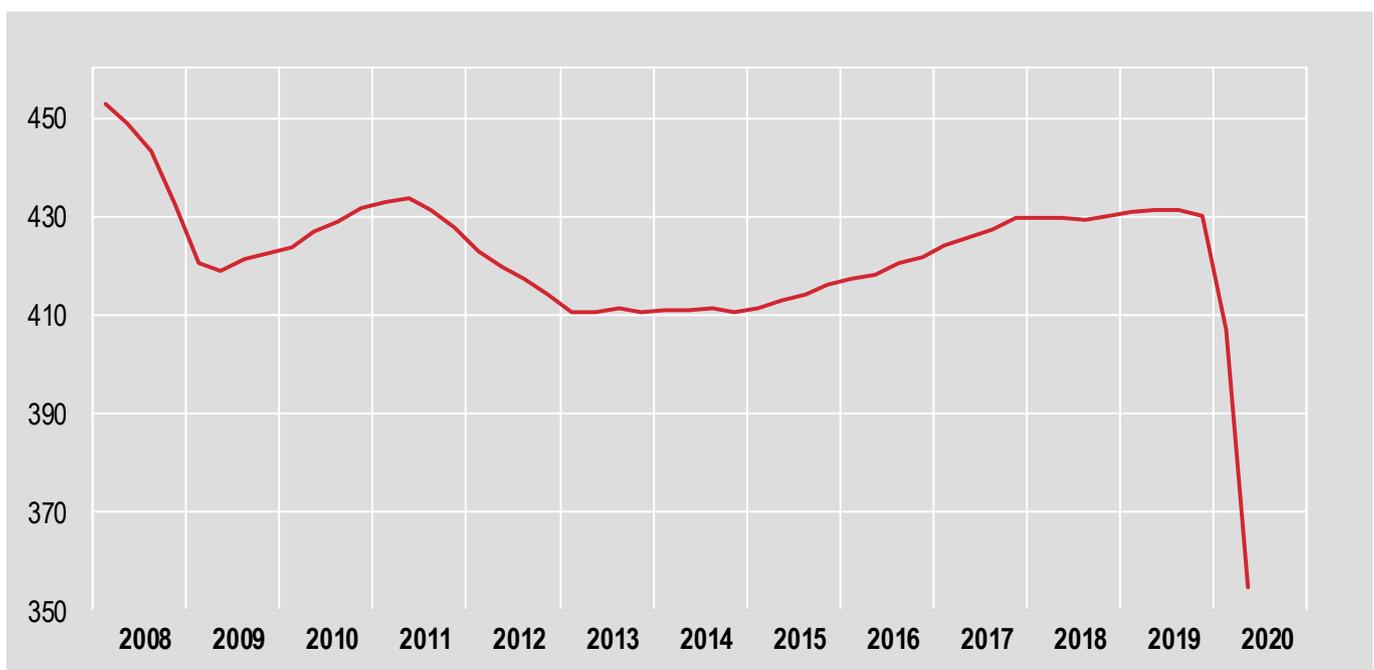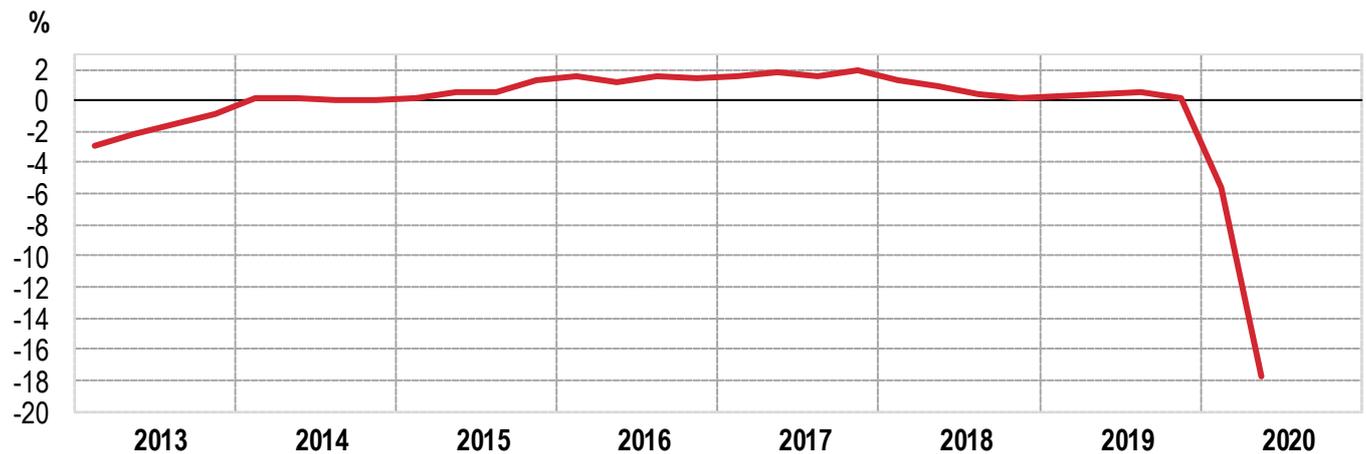
CHART 2. GROSS DOMESTIC PRODUCT, QUARTER ON PREVIOUS QUARTER PERCENT CHANGES
Q1 2013 – Q2 2020, chain-linked and seasonally adjusted data (reference year 2015)

CHART 3. GROSS DOMESTIC PRODUCT, , QUARTER ON SAME QUARTER A YEAR AGO PERCENT CHANGES
Q1 2013 – Q2 2020, chain-linked and seasonally adjusted data (reference year 2015)

TABLE 1. GDP AND EXPENDITURE COMPONENTS
Q2 2020, chain-linked and seasonally adjusted data (reference year 2015) and percent changes.

AGGREGATE	CHAIN-LINKED VALUES IN MILLION OF EURO	PERCENT CHANGES	
		Quarter on previous quarter	Quarter on same quarter a year ago
		II quarter 2020 I quarter 2020	II quarter 2020 II quarter 2019
Gross Domestic Product	354,679	-12.8	-17.7
Imports	92,887	-20.5	-26.8
Final Consumption Expenditure	294,857	-8.7	-13.7
- Households final consumption expenditure and NPISH	216,838	-11.3	-17.3
- Government final consumption expenditure	77,751	-0.9	-2.2
Gross Fixed Capital Formation	61,746	-14.9	-21.6
- Dwellings	14,066	-17.5	-22.6
- Other buildings and structures	12,441	-20.7	-25.3
- Machinery and equipment and weapon systems	21,546	-17.0	-28.6
- Transport equipment	3,776	-20.3	-40.4
- Cultivated biological resources	146	0.0	0.0
- Intellectual property products	13,597	-0.9	-0.2
Changes in inventories, including valuables	-	-	-
Exports	92,425	-26.4	-33.1

CHART 4. QUARTER ON PREVIOUS QUARTER PERCENT CHANGES OF GDP AND CONTRIBUTES OF EXPENDITURE COMPONENTS
Q1 2013 – Q2 2020, percent changes
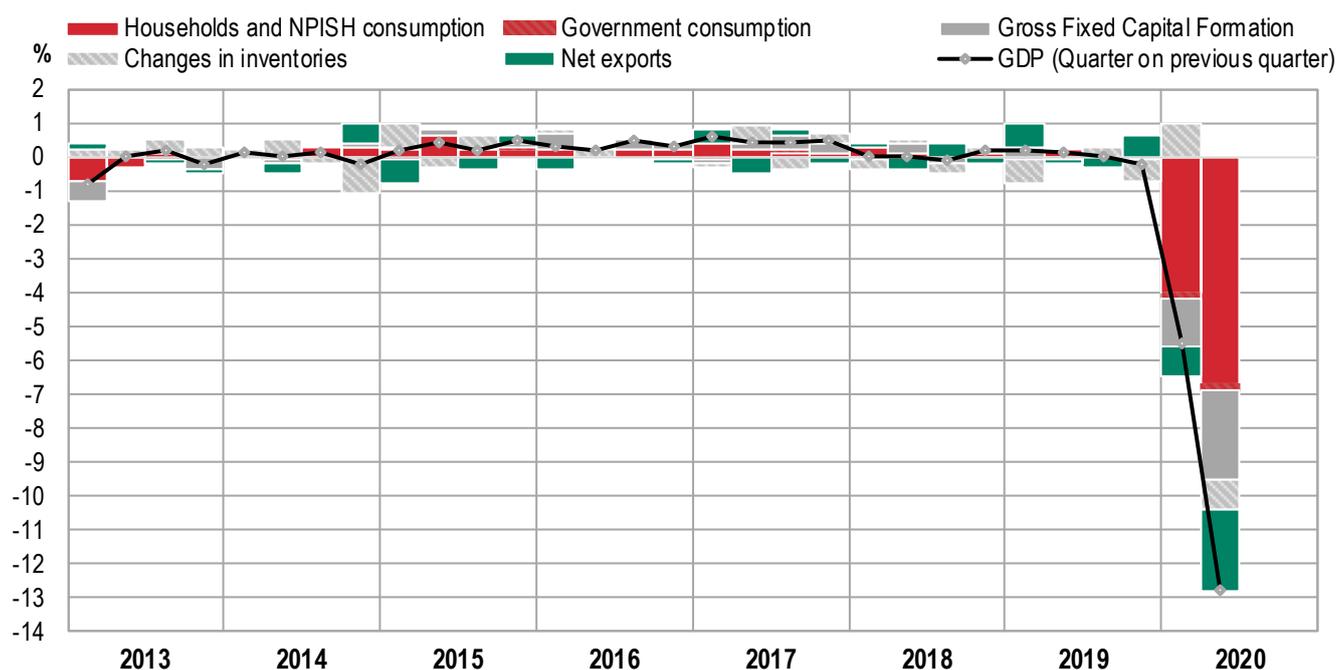
Gross domestic product at market prices (Gdp): final outcome of the production activity of resident units. Sum of the values added by all activities producing goods and services, plus taxes less subsidies on products.

Value added at basic prices: .difference between output at basic prices and intermediate consumption at market prices. The basic price is the amount received by the producer from the sale of goods and services, net from taxes on products but including subsidies on products.

Carry-over annual growth rate: annual growth rate under the assumption that the quarters of the year which have not been released yet perform a null growth (or in other words that the quarterly levels of GDP in that year remain at the same level as those in the last observed quarter).

Calendar adjusted data: time series where the calendar effects due to number of working days, Easter holidays (that can fall in different quarters) and the leap year effects are removed in case they are significant.

Seasonal adjusted data: time series where the effects due to seasonal fluctuations are removed. If not alternatively specified, seasonal adjusted data also include the removal of calendar effects. However, in quarterly national accounts we further specify "calendar adjusted data" when the effect is significant.

Chain linked volume: measure of national accounts aggregates referred to data net of price movements. For each aggregate and each quarter from the second year on, a volume index is calculated as the ratio between its value at previous year prices and that at current prices referred to the average of previous year quarters. These volume indices are linked by multiplying (and dividing by 100) the consecutive indices starting from a value of 100 relative to the average of first year quarters (quarterly data of first year at current price standardized to an average of 100 and deflated by quarterly price indexes with base same year) and then shifting the base to the year taken as reference (currently 2015). The result is a chain-linked index that multiplied for the average of quarterly values at current prices of the reference year (and divided by 100) produces the chain-linked volume measure of the aggregate.

Price deflators: ratio of the nominal (or current-price) measure of an economic aggregate to the corresponding real (or chain linked value) measure. It points out the relative part of the nominal growth due to price changes.

Quarter on quarter percent changes: changes registered with respect to previous quarter.

Quarter on same quarter a year ago percent changes: changes registered with respect to same quarter of previous year.

Contributions to GDP growth: brake-down of GDP growth in a given quarter by demand (or supply) components for which the the sum of contributions of each sub-component is equal to GDP growth.

Methodological note

Covid-19 sanitary emergency and estimation of quarterly national accounts

The measures of Covid-19 sanitary emergency undertaken by the Government caused some criticalities in the surveys of short term statistics carried out by Istat since March (partially in February) over the production of goods and services, trade, households, prices and over the normal availability of administrative data. Furthermore, these measures will probably involve criticalities in data availability also in coming months. At the moment, all the analysis carried out by Istat over response rates and the information provided by economic agents, indicate that the quality of short term statistics used in the estimates do not register relevant repercussion.

For a review of most relevant measures adopted by the government see http://www.governo.it/it/coronavirus-normativa.

Mitigation actions undertaken for quarterly national accounts estimates are in line with Eurostat suggestions on how to conduct the estimate in this particular circumstance characterized by a relative scarcity of statistical information, also in order to guarantee international comparability (see the dedicated section of the Eurostat website Covid-19 and European Statistics). In particular, concerning seasonal and calendar adjustment, it emerged the need to operate an extraordinary revision in the current models. Two ways have been followed: the former modelling the last period as an outlier through the inclusion of a dummy variable in the existing models; the latter extrapolating to last observations the seasonal and calendar factors relative to data until 2019q4 and, in a second step, applying these factors to raw data relative to last observations. A more careful treatment will be operated in coming releases when the evolution of the crisis will be clearer.

As usual, GDP data of the second quarter 2020 will be object of further revisions in the next releases, as new data will become available. These revisions are expected to be larger than usual.

Introduction and regulatory framework

Quarterly national accounts recall principles, definitions and structure of annual accounts, differing in some respects for reasons due to the analysis of data at a higher frequency of observation. Since the October 2014 edition, methods and sources used in the estimate of quarterly accounts follow criteria defined by the manual of European System of national and regional accounts (ESA 2010), which is the application, at European level, of the System of National Accounts (SNA 2008) by the United Nations. The methodological provisions established therein represent strict rules for member states of the European Union, in order to ensure comparability of the estimates. The ESA 2010 was adopted with the EU Regulation of the EU Parliament and the Council No. 549/2013 on the European System of national and regional accounts of the European Union, which establishes a mandatory data transmission programme. Concerning quarterly national accounts, the Regulation provides processing and transmission within 60 days from the end of the reference quarter.

Estimation of quarterly national accounts is the result of a process that takes into accounts the main aggregates of the accounting system, both at current prices and in volume. From the supply side, the components are imports and gross domestic product (GDP), while the demand side distinguishes final consumption expenditure of households and NPISH (non-profit institutions serving households) and that by the general government, gross fixed capital formation, net acquisition of valuables and exports. Estimation of GDP is obtained by a balance between estimates from the demand side - sum of domestic and net exports - and those by the supply side - sum of value added components and taxes net of contributions. However, it should be highlighted that in occasion of the estimates relative to extrapolated quarters, i.e. before data relative to current year are available, supply side aggregates are considered more robust, and therefore, GDP is calculated as the sum of value added and net taxes. The independent estimates computed from the demand side take the important function of double-checking for the overall coherence of the macroeconomic framework, but the sum of consumption, gross fixed capital formation and net exports when subtracted from GDP determines the aggregate "change of inventories and statistical discrepancies" in which the second component (i.e. discrepancies) prevails.

The elaboration is inserted in the National Statistical Programme (current edition: NSP 2014-2016 - 2016 update) approved with Decree of the President of the Republic of 30 August 2016, published by the Official Journal of the Italian Republic - general series - No. 242 of 15 October 2016.

Data processing: framework, tools and techniques

National accounts, processed for Italy by Istat, provide a quantitative description of the macroeconomic system of the Country.

In Italy, similarly to several other countries worldwide, quarterly national accounts adopt an indirect method of compilation based on economic short-term indicators, that allow overcoming the limits imposed by reduced availability of direct measures. These methods consist of distributing annual data over quarters on the basis of the pattern of quarterly reference indicators. In particular, the technique adopted by Istat produces quarterly estimates on the basis of the relation - identified through an econometric method - between the specific annual accounts aggregate, and the value assumed in the same period by one or more suitable reference indicators. The method is used for estimation of quarterly data, both for periods referred to the past, i.e. when the annual value is already known and for extrapolation, i.e. when the annual information is not yet available. This procedure is carried out separately for each of the significant aggregates required for the compilation of the accounts.

In general, the series of quarterly national accounts are processed and issued both in unadjusted and adjusted form, where the adjustments concern both calendar and seasonal effects. Moreover the measures are at current prices (millions of euros), at prices of previous year and in chain linked values with reference year 2015. The implicit price deflators used for the estimates are on a mobile basis of Paasche type.

The adjustment procedure of the aggregates for the calendar effects is based on the regression method, and takes into account the different number of working days, Easter holidays and the leap year effects. Both the calendar and seasonal effects correction operates on the reference indicators, and is performed applying the Reg-Arima approach within the TRAMO-SEATS procedure (September 2017 version for Linux).

For further details see the information note I Conti economici trimestrali. Principali elementi informativi of September 2015 (in Italian), that presents the indirect method of quarterly disaggregation, a selected list of main indicators used in the estimates, a summary description of the main variables object of estimation and the link between accounting schemes and short-term indicators. Moreover, the document outlines estimation methods for value added and double deflation, for final uses, labour inputs, income, costs and margins indicators, as well as the revision policy currently adopted.

Major innovations introduced by the adoption of ESA 2010 are discussed in I conti trimestrali: innovazioni metodologiche e risultati (in Italian) relative to the presentation provided within the Istat seminar "Adoption of ESA 2010 and the general revision of national accounts" of December 2014.

Main indicators used in the estimate (sources)

Within the adopted system, each annual aggregate to be disaggregated into quarters is associated to one or more quarterly or monthly indicators able to describe the short-term pattern of the same variable. The following section presents a list of the indicators used by main variable categories.

Production and value added. For industrial activities, the most important source is provided by the monthly index of industrial production, split at level of 16 branches of economic activity for mining, manufacturing and supply of electricity, gas, steam and air. For water and waste industries, a composite indicator is used, built by aggregating the 16 production indices by means of a set of weights computed over intermediate consumptions of the corresponding branches. For construction, the relative monthly production index is used. For market services, the quarterly indices of turnover is used. In particular this indicator is used for trade of transport vehicles, for wholesale, transport, postal services, hotel and restaurant services, information and communication, legal services, management consultancy of engineering and architecture, advertising and market research and personnel recruitment activities, travel agencies, security agencies and other services to businesses. For agriculture, both production, harvest and input indicators are used and they are computed on data provided by ISMEA - the Italian institute for services for farming and food market - and Istat); these elaborations assume for each elementary production a fixed quarterly calendar of activities over the year. For fishing, data on specific quantities in transit through national ports are used (provided by IREPA - the institute for economic research in fishery and aquaculture).

System of price indicators to derive QNA estimates in volume. The main sources are the following Istat surveys on prices: production price indices for industrial products on domestic and foreign markets, import price indices of industrial products, import-export unit value indices (as integration of the corresponding price indices), harmonised consumer price indices, price indices of agricultural products, construction costs indices of residential building and road stretches, production price indices for telecommunication, postal services and courier services (from 2006), water and air transport, warehousing and storage services (from 2010) business to business price indices. The

quarterly indices of business to business service prices, being issued at approximately 85 days from the end of the reference quarter are incorporated into the estimate with a delay of one quarter.

In general, price indices are acquired at elementary detail and aggregated in a second step using a system of weights consistent with annual accounts. At the end of the process a complete set of price indicators is derived for volume estimation of all QNA aggregates. In particular, the sub-systems are processed as detailed below.

a) *Input and output price indicators by branch of economic activity.* Constructed for estimating the volumes of both production and intermediate consumption (and therefore of the value added through double deflation). Output prices are an average, at branch level, of production prices of the products sold within the economic territory and production prices of exported products. Input prices are derived at branch level as average of producer prices for products used as intermediate goods and acquired on the domestic market and import prices relative to imported products. The weighting system derives from annual supply and use tables according to a Paasche-type aggregation scheme.

b) *Price indicators of final household consumption by purpose of consumption*, through harmonised consumer prices indices.

c) *Import and export price indicators for goods and services by product*, through producer prices of exported products and prices of imports integrated, where necessary, by import-export unit values.

Foreign trade and balance of payments. Istat data of foreign trade, available on a monthly basis, constitute the main system of indicators for indirect estimation of the quarterly flows of imports and exports of QNA goods at current prices; for services, data on balance of payments are used.

Household consumptions. Household consumptions are estimated on the basis of quarterly data coming from the household budget survey (HBS). This survey is conducted on monthly basis, it is subject to quarterly statistical validation and it is published at annual time span. For consumption of goods, indicators which are derived from the commodity flow approach are also used. The method consists in estimating, for a specific grouping of goods, the amount of goods available for consumption (as well as for investments) as sum between domestic production and imports net from exports. Further indicators come also from Istat (service turnover indices, index of sales, occupancy in collective tourist accommodations), as well as by external sources, such as UNRAE (association of foreign car makers) for vehicle registrations, Farmindustria (the Italian pharmaceutical association), Unione Petrolifera (petrol producers association), Assaeroporti (Italian association of airport managers), Ferrovie dello Stato (Italian National Railway System).

Gross fixed capital formation. The main indicators are obtained through the commodity flow approach. Other relevant sources come from UNRAE for data on transport vehicle components, and the Ministry of Defense for weapon system expenditures.

Other economic indicators. The estimate of the aggregates related to hotels and restaurants uses the monthly statistics on occupancy in collective tourist accommodations, both for aggregates from the demand side (household consumption) and for those from the supply (production and value added); the actual production of credit uses the quarterly data of the accounting matrix from bank of Italy; the estimate of financial intermediation services indirectly measured (FISIM) uses data of the stock of deposits and loans, and the relative interest rates to which they are applied. These data are split by counterpart sector of the financial and monetary institutions and other financial intermediaries of the bank of Italy; the estimate of insurance production uses the quarterly indicator of premiums from IVASS (institute for the supervision of insurance). The estimate of components of household consumption and gross fixed capital formation uses monthly data on vehicle registrations from UNRAE; the estimate of household food expenditure uses the monthly index of retail sales (from Istatù) in combination with data from HBS. As regard the variables related to non-market activities, we consider data on general government expenditures from MEF (the ministry of the economy), data of the public health budget from Ministry of Health, monthly and quarterly data of taxes and subsidies on products from MEF and other administrative data.

Labour input. Indicators are derived from the following Istat sources: the labour force survey (LFS), the quarterly employment, earnings and social security contributions indicators (OROS) which are based on administrative information collected by INPS (the Italian national institute for social insurance), hours worked per employee from VELA statistics (quarterly survey on job vacancies and hours worked).

The LFS provides indicators related to the number of employed persons, job positions and per capita hours worked. Since the LFS results from interviews to households, their data capture the non-regular employment component.

The quarterly OROS indicators used are as follows: data related to job positions of employees in the industrial sector and in main market services; earnings and social security indices for employees available for industry and market services and relative to regular employment.

VELA statistics concern the regular per employee hours worked of industrial and market services enterprises with

more than 10 employees.

Other indicators are those of contractual earnings for employees in agriculture, and the indicators from MEF regarding the annual projections of public administration employees on the basis of the current regulations.

Output: main measures of analysis

Quarterly national accounts provide a framework of main macroeconomic variables from both the supply and demand sides, for which GDP is the representative measure.

Demand variables are the expenditures for households final consumption, NPISH and the general government, gross fixed capital formation, net acquisition of valuables, exports and change of inventories.

The supply variables are value added, net taxes and imports.

Evaluation of GDP according to the income approach considers an independent estimate of gross wages and salary from employed work, while the gross operating surplus is obtained as balance.

Measures of labour inputs concern number of employed persons, of job positions, hours worked and the number of full time equivalent.

Finally, 5 cost and margin indices are released: the implicit output deflator at factor costs, the implicit input deflator at purchaser prices, unit labour costs, variable unit costs and a mark-up indicator.

Data revision policy

Istat adopts a specific revision policy for quarterly national accounts, that is completely in line with the European recommendations regarding the cycle of ordinary revisions, that is, those deriving from the normal update of most recent data related to the indicators in use. It should be noted that extraordinary revisions are those which take place following relevant modifications, and concern the entire time series of estimates, as in case of the general revisions of national accounts carried out to incorporate improvements of sources and methods.

The Scheda informativa e calendario delle revisioni of quarterly national accounts available on the Istat website describes timeline of ordinary revisions both with respect to reference period and type of estimate. The following table summarises the adopted revision policy.

QUARTERS REVISED BY REFERENCE PERIOD AND TYPE OF ESTIMATE

Last quarter of estimate	Preliminary estimate of GDP with release at t+30 days	Complete estimate with release at t+60 days	Complete estimate with release at t+90 days
I	16	16	-
II	17	17	complete time series
III	18	18	-
IV	15	15	-

For further information related to the revisions of short-term indicators, see the dedicated section, where a set of revision triangles are provided.

Coverage and territorial breakdown

The main geographic reference of quarterly national accounts is the economic territory. For expenditures of resident households and in some other cases, the reference also extends to the national territory.

Main aggregation and classification schemes in use refer to: the ATECO 2007 classification of economic activities, Italian application of NACE Rev. 1, CPA 2008 classification of products associated to the activities, COICOP 1999 classification of individual consumption by purpose and the ANF classification of non-financial activities according to ESA 2010.

Households expenditures in the economic territory is divided among durable, non-durable, semi-durable goods and services. For the releases related to the fourth quarter a further split among 12 expenditure items is provided. National expenditure of resident households is obtained by adding the estimate of final consumption expenditure of

resident households in the rest of the world net of that of non-resident households on the economic territory to domestic consumptions.

Gross fixed capital formation are split into 6 items: i) dwellings, ii) other buildings and structures, iii) transport equipments, iv) ICT equipment, weapons systems, other machinery and equipment, v) cultivated biological resources and vi) intellectual property products. Exports are split in goods and services.

Value added, salaries, income and labour input measures are currently made available in 10 groupings of economic activities: agriculture, industry, construction and 7 groups of services. A further detail concerns total manufacturing and total of non-market activities. In occasion of the releases related to the fourth quarter a further disaggregation of manufacturing into 8 groupings is made available. Like exports, also imports concern total and the split in goods and services.

Unit cost and margin indices are computed at 10 economic activity groupings: i) total economy, ii) agriculture, forestry and fishing, iii) industry and construction, iv) industry, v) manufacturing, vi) construction, vii) total services, viii) trade, transportation and storage, accommodation and food service activities, information and communication, ix) financial, insurance, real estate, professional, administrative and support services, x) public administration and defense, compulsory social security, education, human health and social work activities, arts, entertainments, recreation, repair of household goods and other services.

Timeliness

The full set of quarterly national accounts is released at 60 days by the end of the reference quarter. A preliminary estimate of GDP at chain-linked values is published at 30 days. Data related to the second quarter are issued a third time at 90 days to make quarterly data coherent to the updates of annual accounts issued a second time in September.

Dissemination

The series of quarterly national accounts are processed and issued by the Institute several forms: unadjusted, adjusted for both calendar and seasonal effects in millions of euros, at previous annual prices and chain linked values with reference year 2015.Time series of quarterly national accounts are available from the first quarter of 1995 for current price values and from the first quarter of 1996 for previous year price measures and chain linked values.

In occasion of the releases related to the fourth quarter, a larger detail of publication is issued for several aggregates: see value added, compensation of employees, wages and salaries, employers' social contributions and labour input measures which split manufacturing into 8 groupings, as well as domestic households expenditures detailed into 12 expenditure items.

Main data series in excel format are also released together with the two press quarterly releases "Preliminary estimate of GDP" and "Quarterly national accounts".

The complete set of series is issued through the Istat data warehouse I.Stat in the section "National Accounts/Quarterly National Accounts" together with press releases.

Time series according to ESA 2010 from 1995 are available on the Istat data warehouse I.Stat. Moreover, the ESA 1995 time series are also available on I.Stat, covering the period from first quarter 1981 to second quarter 2014.

For technical and methodological information

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