ufficio parlamentare di bilancio

Summary *

In the first half of the year the international economy showed signs of slowing, especially in the advanced economies. Looking forward, these signs could spread with the tightening of trade restrictions. In the euro area inflation has risen and the ECB has announced the pace of its reduction of purchases of government securities. Nevertheless, monetary conditions remain accommodative thanks to the policy of reinvesting the principal payments from maturing securities purchased, which is expected to continue for an extended period of time.

In Italy, economic indicators continued to weaken in the second quarter. Industrial production, despite the increase in May (0.7 per cent compared with the previous month), has only partially recovered the contraction in April. According to the estimates of the Parliamentary Budget Office (PBO), industrial output in the quarter was close to the levels posted in the first three months of the year. Qualitative surveys show an overall deterioration in business confidence, while household confidence is broadly unchanged. On the basis of the estimates produced with the short-term models of the PBO, in the second and third quarters economic activity is expected to grow at rates just below those registered in the first three months of the year, with a slight recovery expected in the final part of the year. As a result of these developments, GDP growth in 2018 is expected at 1.3 per cent (1.2 per cent adjusted for the number of working days). In 2019, GDP growth would be affected by the weak carry-over effect of 2018, as well as by numerous risk factors, causing the expansion to weaken, slightly above 1.0 per cent.

Labour market conditions remain favourable. In spring, the considerable increase in fixed-term employment was accompanied by a recovery in permanent hiring. Underemployment is decreasing extremely slowly, containing wage growth and inflation.

Risk factors associated with international developments are weighing on the short- and medium-term prospects for growth. The accentuation of protectionist measures, the volatility of the financial markets and geo-political tensions could also impact on consumption and investment, with adverse effects for the Italian economy.

* *Prepared by the Macroeconomic Analysis Department. Information updated to 13 July 2018.*

The international economy

International growth weakens

In recent months, the global economy has shown signs of slowing, although it is not clear whether this weakening is temporary or more long lasting. Among the major advanced countries, GDP growth eased in the United States, France, Germany and the United Kingdom in the first quarter, while output contracted in Japan. Among the emerging markets, growth in China and India has remained high, while it has slowed in Brazil. The components of demand linked to exports were the most adversely affected. International trade slowed markedly in April and May, driving down purchasing managers' confidence indices (PMI – Figure 1). In June, however, the global composite index posted a recovery in both the advanced and emerging economies, lifted at the sectoral level by services.

…and geo-political uncertainty has increased

The outlook for trade (Figure 2) has been affected by the escalation of the protectionist actions introduced or threatened by the US administration, to which that country's commercial partners have already responded. Following the introduction in February of duties on washing machines and solar panels, the United States added duties on steel and aluminium imports in June, following which Europe and China approved retaliatory measures. At the beginning of July, the US administration introduced further duties on Chinese goods, amounting to $36 billion in imports, to which China replied in kind. Announcements of possible further restrictions on Chinese investments in the United States or on imports of European automobiles are contributing to the climate of uncertainty.

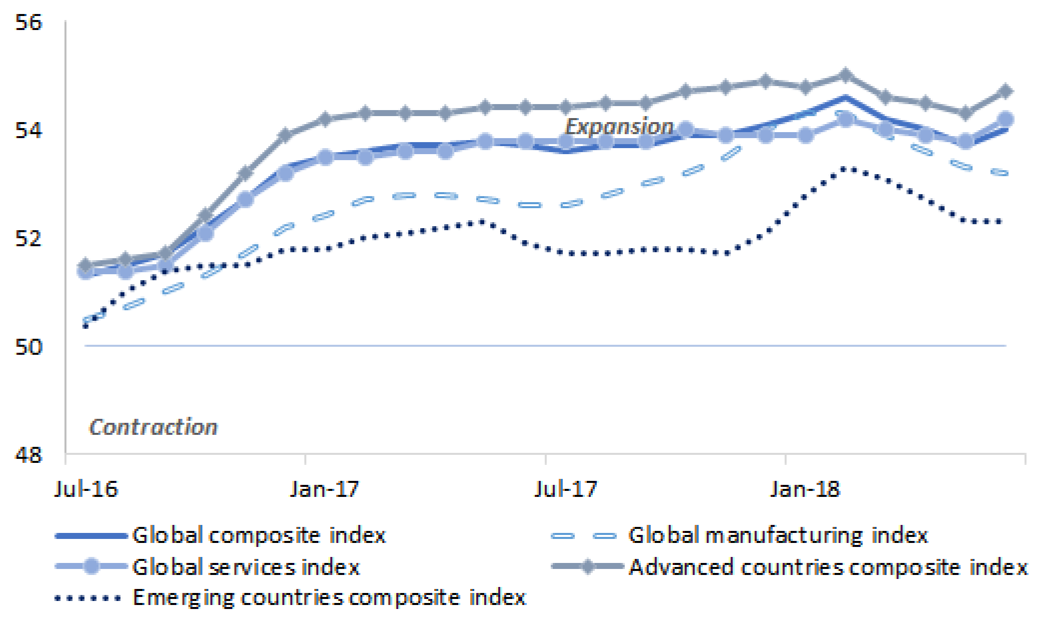
Studies conducted by international[2] and Italian[3] institutions of the effects of tariff barriers have simulated a full-blown trade war unleashed at the initiative of a single country. Under certain conditions, the imposition of a duty by a single country could benefit that country, but the most probable outcome is that, as in the prisoner's dilemma, the affected country will take retaliatory measures, so both end up worse-off than at the beginning. According to the simulations conducted by the Central Planning Bureau, the losses suffered would be a few percentage points of GDP in the case of a small number of goods and unilateral duties. In a full-scale trade war, however, involving different categories of goods and multiple countries, losses would exceed 1 percentage point of GDP for the United States and would be even greater for China.

---

[2] FMI (2016) "Tariff Scenarios", World Economic Outlook, October; OECD (2016) "The impact of changes in global trade costs", Economic Outlook, November; CPB Netherlands Bureau for Economic Policy Analysis (2018) "Trade Wars: Economic impacts of US tariff increases and retaliations", 19 June.

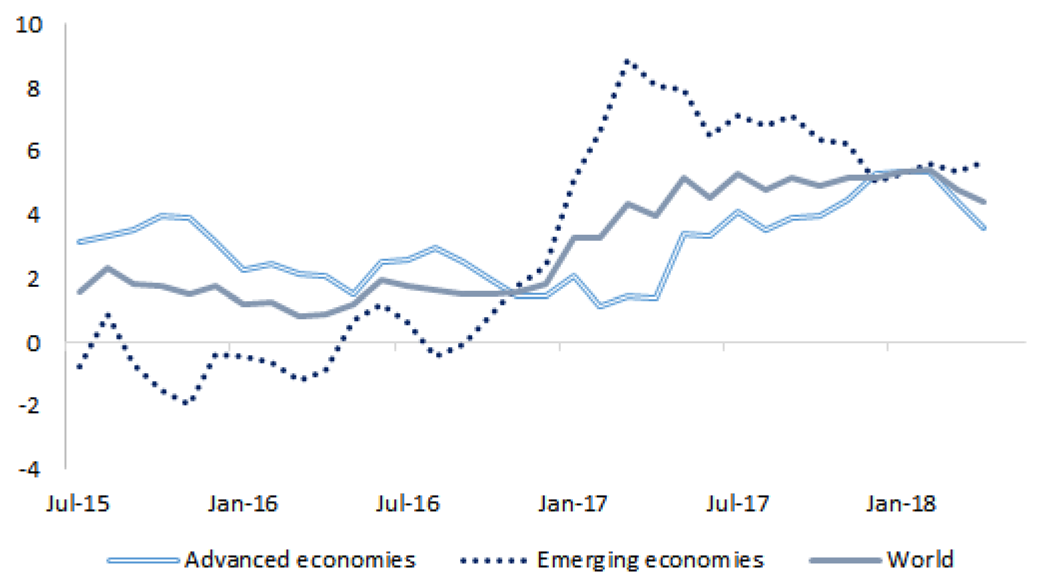
[3] Prometeia (2018) "Rapporto di previsione", 4 July.

Figure 1 – JP Morgan Global PMI (1)
(3-month moving average)



Source: Thomson Reuters.
(1) Confidence indicators based on the assessments expressed by corporate purchasing managers; a value of more (less) than 50 indicates an expansion (contraction).

Figure 2 – Growth rate of world imports
(annual percentage change in 3-month moving average)



Source: based on Thomson Reuters data.

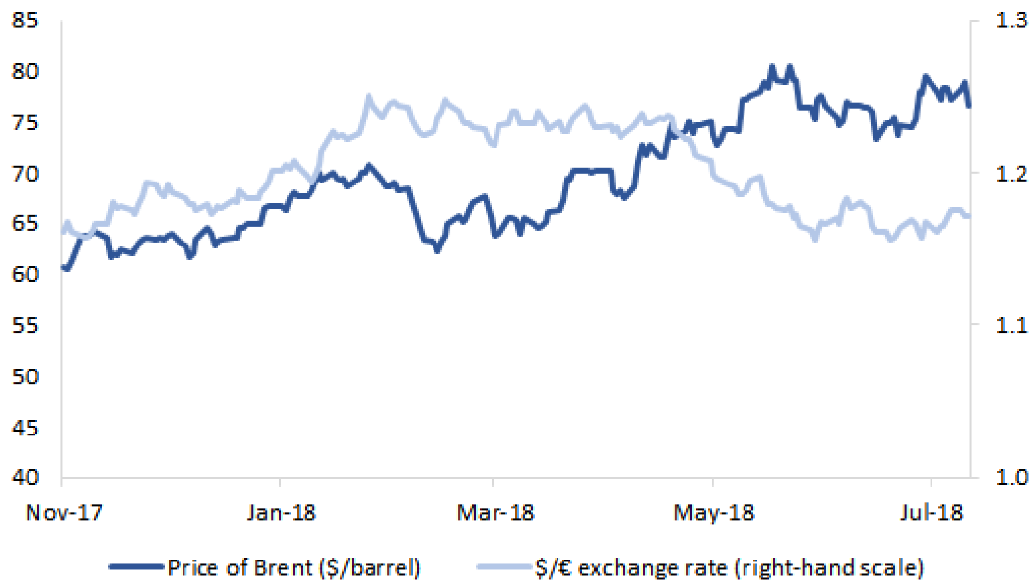
In addition to the protectionist pressures, the international environment suffer from other global risk factors, of which the volatility of oil prices and uncertainty about the negotiations over the exit of the United Kingdom from the European Union stand out.

Oil prices have risen and the euro has depreciated …

Oil prices rose between February and May, driven both by the increasing demand and the contraction of supply. The loss of Venezuelan output was accompanied by an even steeper cut in production than that decided in November 2016 by the OPEC and non-OPEC[4] countries. The last two months saw a partial downward correction, first as a consequence of the economic slowdown and then because of the decision taken on June 22 by the oil producing countries to achieve the production targets set two years ago and confirmed last year (Figure 3).

On the foreign exchange market, the euro has been depreciating against the dollar since April, reflecting the better growth prospects in the United States compared with Europe and expectations of a further increase in official interest rates by the Federal Reserve, which then took place in mid-June. US-China trade tensions weakened the renminbi, which depreciated by almost 6 per cent against the dollar between early April and mid-July, partly offsetting the effects of the increase in the prices of Chinese exports to the United States, caused by the duties.

Figure 3 – Oil prices and dollar/euro exchange rate



Source: based on Thomson Reuters data.

[4] The non-OPEC countries are those that signed on to the declaration of cooperation with the OPEC countries to stabilise oil prices (https://bit.ly/2maRGiA).

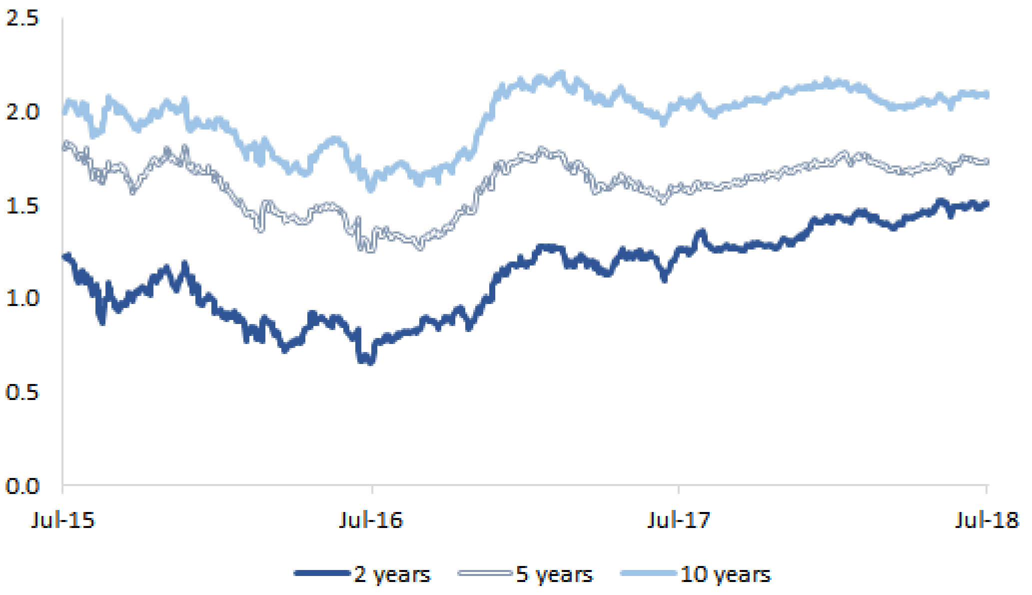
In the euro area, inflation has risen and the end of QE is drawing near

As expected by market analysts, in June the harmonised inflation rate in the euro area reached 2.0 per cent, boosted by the most volatile components. Core inflation remained low (1.0 per cent), reflecting the underutilisation of the factors of production, while market expectations rose only marginally (Figure 4). On 14 June the Governing Council of the ECB decided that, subject to incoming data confirming its medium-term inflation outlook, the monthly pace of the net asset purchases under the asset purchase programme (APP) would be halved to €15 billion as from 1 October, with net purchases ending from the beginning of next year. The policy of reinvesting the principal repayments from maturing securities purchased under the APP will instead continue for an extended period of time after the end of net asset purchases and in any case for as long as necessary to maintain favourable liquidity conditions and an ample degree of monetary accommodation. This decision was supported by three guiding criteria: the convergence of inflation towards the monetary policy target, confidence in the future outlook and resilience of the path of adjustment towards inflation of 2 per cent, which is robust to a partial withdrawal of the asset purchase programme.[5]

The labour market has also shown progress towards normalisation. Unemployment in the euro area fell to 8.5 per cent in April, the lowest rate since the end of 2008. There has also been a decline in the broader category of underemployment, i.e. the unemployed, involuntary part-time workers, persons looking for work but not immediately available and those who would be immediately available but are not actively seeking a job. Between the peak of the first quarter of 2014 and the first half of 2018, underemployment fell by just less than four percentage points (Figure 5).

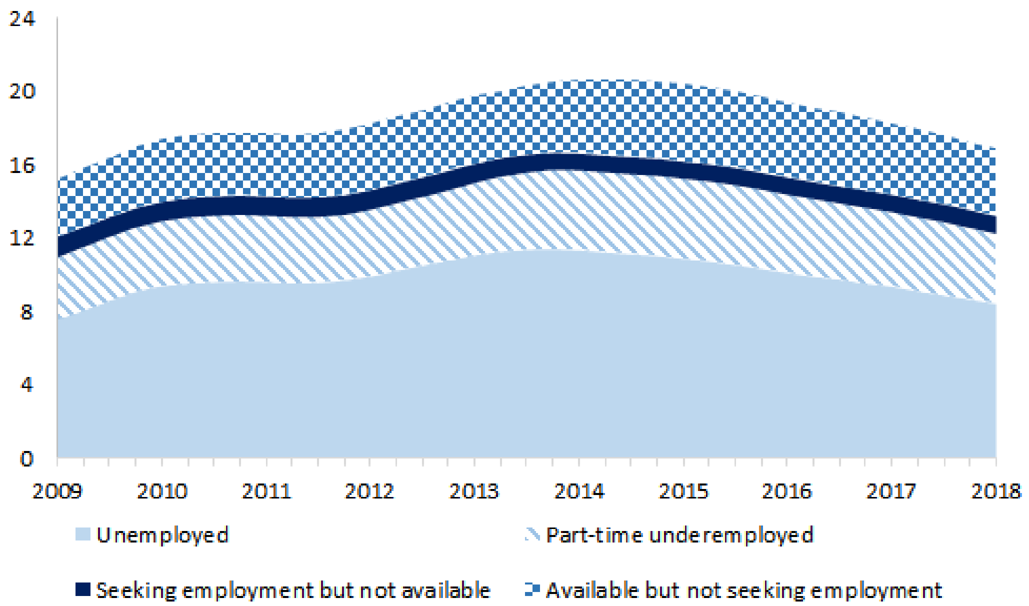
[5] Welcoming remarks by Luis de Guindos, Vice President of the ECB, at the meeting of the ECB's Bond Market Contact Group, held in Frankfurt am Main on 26 June 2018.

Figure 4 – Inflation expectations in the euro area
(inflation linked swaps)



Source: based on Thomson Reuters data.

Figure 5 – Unemployment, the potential additional labour force and underemployment in the euro area



Source: based on Eurostat data.

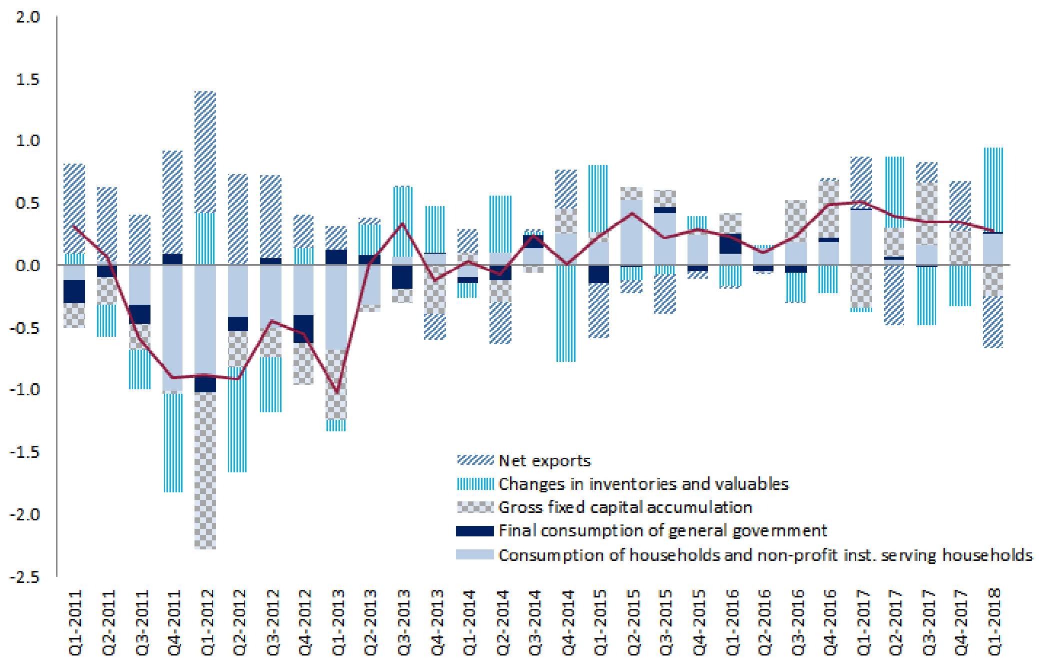
The Italian economy

The recovery continues

According to the latest national accounts figures released by Istat at the beginning of June, GDP continued to grow in the first quarter of 2018, by 0.3 per cent compared with October-December (1.4 per cent on a year-on-year basis), slightly down on the previous quarter (0.4 per cent). The increase in GDP at the beginning of the year, the thirteenth in a row, brings the growth achieved for 2018 if there were no further expansion in the rest of the year, calculated using data adjusted for calendar effects, to 0.8 per cent.

On the supply side, the growth in output in the first quarter reflected the modest increase in the value added of services (0.3 per cent) and the marked increase in that of agriculture (4.6 per cent), while construction was stagnant and industry excluding construction contracted slightly (-0.1 per cent). As regards the components of demand (Figure 6), the positive contribution of household consumption (0.3 percentage points) was almost entirely offset by the negative contribution of investment. The contribution of inventories was positive at 0.7 percentage points, while that of net foreign demand was negative (0.4 percentage points), as a result of a more severe decline in exports (-2.1 per cent) than in imports (-0.9 per cent).

Figure 6 – Change in GDP on previous quarter and contributions of the components of demand
(percentage changes and contributions in percentage points)



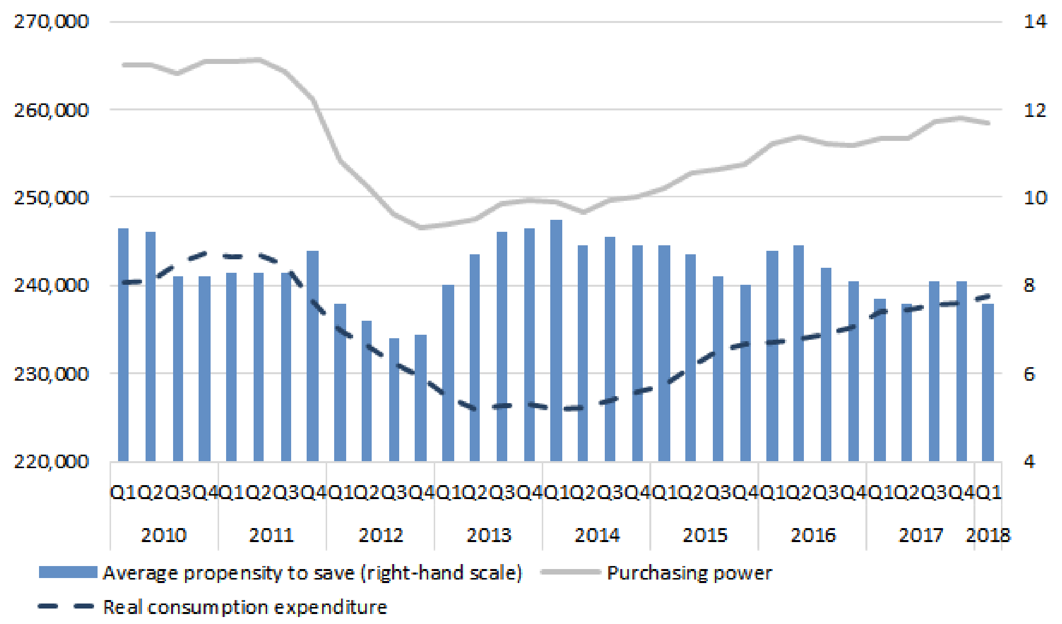
Source: based on Istat data.

Consumption expands ...

After the pause at the end of 2017, consumption strengthened in the first quarter of this year (with an increase of 0.4 per cent on the previous quarter), mainly thanks to the buoyant dynamics of purchases of durables and, above all, semi-durables. The increase in consumer spending occurred despite the decline in household purchasing power (-0.2 per cent), so the propensity to save fell by about half a percentage point (to 7.6 per cent of disposable income - Figure 7).

Consumption benefitted from the improvement in household confidence, which mainly reflected more positive assessments of the personal component. The most recent data, referring to the second quarter, however, point to a slight downward revision of both the overall climate of confidence and the personal and general sub-components. The broad resilience of the climate of confidence, accompanied by the continuation of positive developments in the labour market, could continue to sustain household spending plans in the coming months.

Figure 7 – Household purchasing power, consumption and saving
(millions of euros and percentages)



Source: based on Istat data.

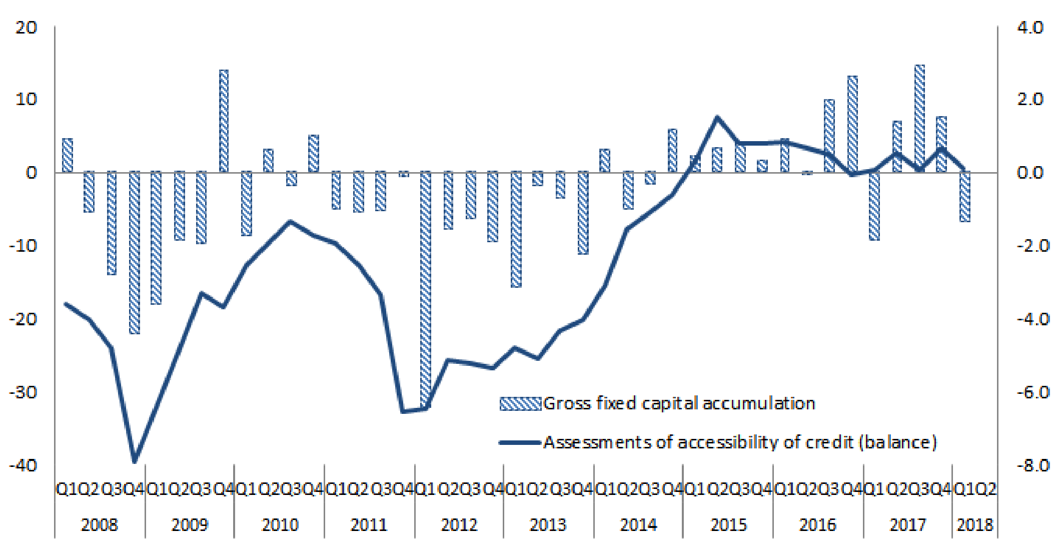
... and investment contracts

In the first three months of the year, capital accumulation declined by 1.4 per cent with respect to the previous quarter, reversing part of the gains achieved in the second half of 2017. It is likely that investment decisions reflected the uncertainty, last autumn, on the extension to 2018 of tax relief measures for the purchase of machinery (the so-called "super-depreciation and hyper-depreciation). In particular, the decrease reflected the downturn in the machinery and equipment and weapon systems component (-2.9 per cent, from +3.0 per cent on average in October-December), while investment in transport equipment increased again, albeit at a slower pace (3.7 per cent, after the 8.6 per cent posted at the end of 2017).

The investment in construction was essentially stagnant for both the housing sector and non-residential buildings. The Bank of Italy's May/June survey on inflation and growth expectations points to a strengthening of investment plans for 2018, albeit at a lower level than that indicated in the previous survey.

In the first quarter the investment rate (i.e. the ratio between gross fixed capital formation and value added at basic prices) fell by seven-tenths of a percentage point, to 21.3 per cent. Assessments of credit conditions, as measured by Istat in its manufacturing survey, appear to have deteriorated slightly (Figure 8), especially for small and medium-sized enterprises and those operating in construction. However, more positive signs emerge in the most recent statistics on banking aggregates produced by the Bank of Italy. In April, the pace of growth in lending to enterprises, net of securitisations, rose to +3.0 per cent (from 2.4 per cent in March) on an annualised basis.

Figure 8 – Gross fixed capital accumulation and assessments of credit conditions
(percentage change and percentage balance)



Source: based on Istat data.

Foreign trade slows

In the first quarter, the volume of total exports as registered in the national accounts decreased by 2.1 per cent compared with the October-December average. This mainly reflected by the decline in sales of goods abroad (-2.4 per cent), while sales of services posted a smaller contraction (-0.7 per cent).

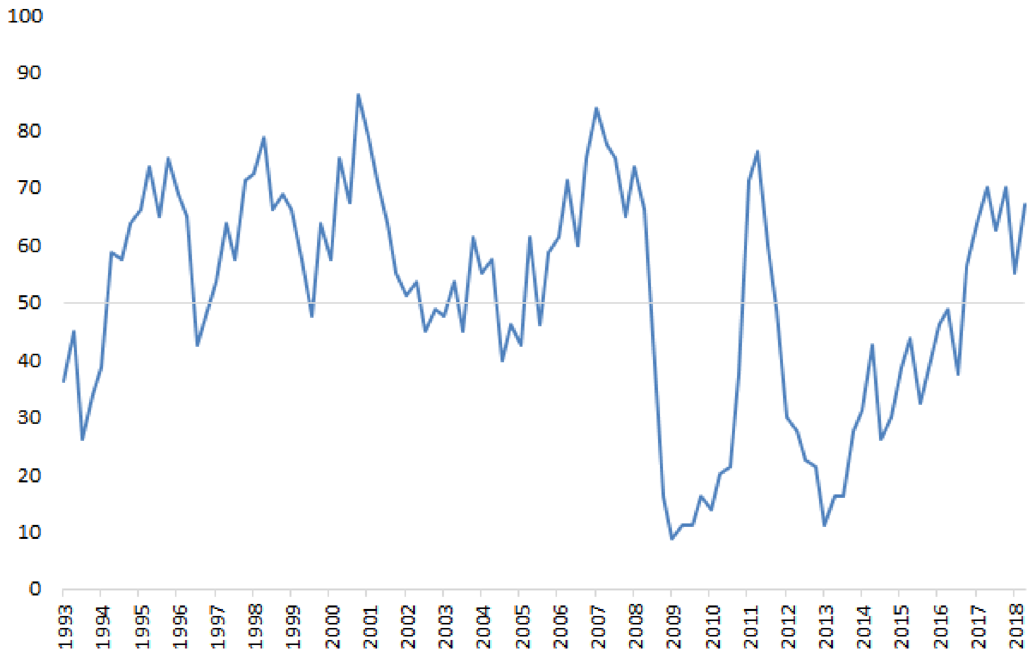
With regard to the performance of exports of goods, in April there were opposite tendencies in trade in value terms with EU markets (up) compared with those outside the EU (down). The data for May, which are available only for trade flows with non-EU countries, confirms a further weakening of the value of foreign sales (-3.0 per cent compared to April). The survey of manufacturing firms, conducted by Istat in June, still shows a large share of worsening assessments of orders from abroad and expectations for turnover in international markets, suggesting the possible continuation of the slowdown in exports in the short term as well. The contraction of exports in the early months of the year was accompanied by a decline, albeit a smaller one, in total imports (-0.9 per cent on the previous period), caused by the weakness of the components that exert the greatest stimulus on imports, namely investment and exports.

Industrial activity weakens ...

The most recent economic indicators point to a slowdown in output. The slight decline in industrial production in the first quarter was followed by a further decline in April-May due to a decrease in the output of intermediate goods, energy and consumer products, offset by an expansion of the volume of capital goods. Qualitative indicators confirm the cyclical slowdown: in the second quarter, the PMI for manufacturing decreased by about four points compared with the January-March average, while the level of confidence of industrial firms measured by Istat fell further in June, continuing the decline that began in the closing months of last year.

Based on PBO estimates, industrial activity is expected to have remained virtually unchanged in the second quarter (after the decline of 0.2 per cent in the first). In the same period the diffusion index remained well above the 50 per cent threshold, signalling broadly positive cyclical conditions for the majority of manufacturing sectors (Figure 9).

Figure 9 – Diffusion index
(percentage shares)



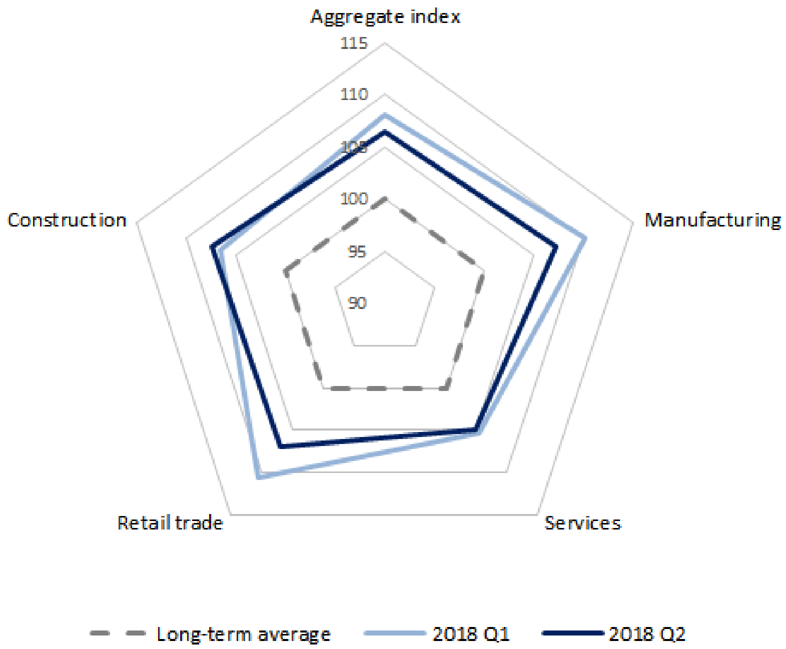
Source: based on Istat data.

Output in construction increased slightly in April compared with the average of the first quarter (0.3 per cent), but remained at the historically low levels that characterised the 2015-2017 period. Despite a deterioration in June, confidence among industrial firms continued the improvement that began in the first few months of 2016. Favourable signs also came from the survey conducted by the Osservatorio del Mercato Immobiliare, which showed an increase in the number of sales in the first quarter (four-period moving average), continuing the recovery that began in 2014. The weakness in house prices continued in the first quarter (-0.1 per cent on the previous period; -0.4 compared with the average for the first three months of 2017), mainly as a result of a decline in the prices of existing homes, which more than offset the rise in the prices of new housing. The housing market survey conducted in April by the Revenue Agency, the Bank of Italy and Tecnoborsa paints a moderately more positive picture, showing an attenuation of downward pressures on sales prices and the stabilisation of discounts on asking prices.

In the first quarter, the services sector consolidated the expansion that began in the spring of 2014. The seasonally adjusted index of turnover rose by 0.3 per cent on the previous period (2.4 per cent year-on-year). Growth was registered by travel agencies and business services, information and communication services and transportation and storage services. Conversely, the turnover of accommodation and catering services, professional, scientific and technical activities and wholesale trade stagnated or contracted moderately. Istat qualitative indicators point to a weakening of confidence in the market services sector in April-June compared with the previous quarter. The deterioration was more marked for the index for retail trade which, despite gains posted in May-June, was on the second quarter still more than ten points lower than at the end of 2017.

The composite index of business confidence for April-June, obtained as the weighted average of sectoral indices, remained higher than the long-term average, although it was lower than in the first quarter. More specifically, there was a deterioration in confidence in the retail and manufacturing sectors (Figure 10). At the same time, the index of economic uncertainty, drawn from surveys of businesses and households, remains moderate overall. Signs of weakness, however, can be found in the composite economic indices published by various institutions. Both the Bank of Italy's coincident ITA-coin indicator, which fell markedly for the fourth consecutive month, and the Istat leading indicator, which declined further in June, point to a slowdown of the economic activity in the central months of this year.

Figure 10 – Confidence in productive sectors (1)
(index; average January 1998 – June 2018=100)



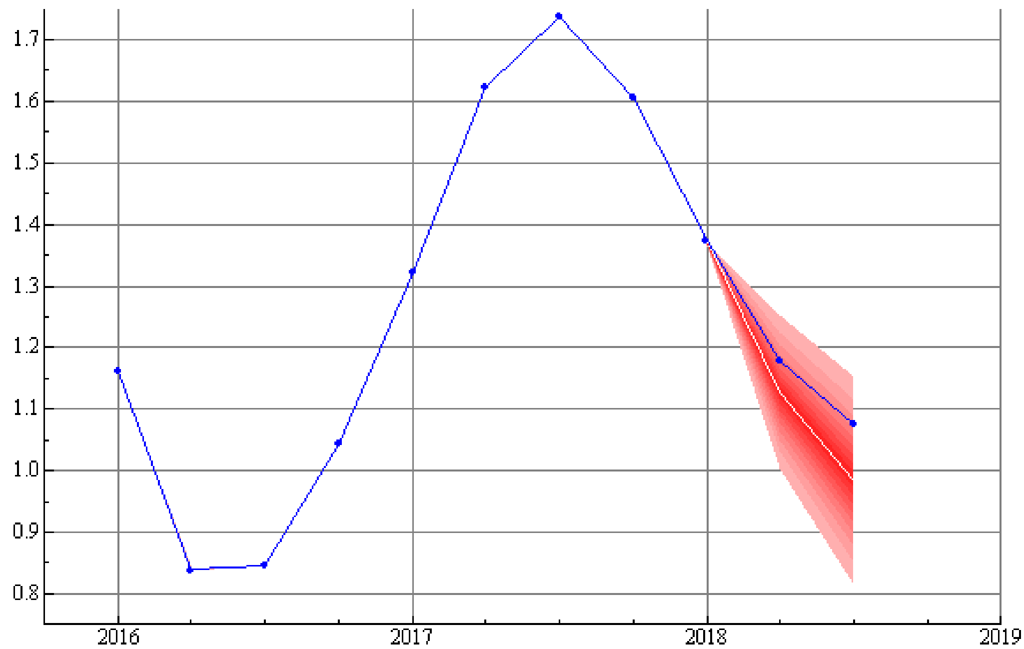
Source: based on European Commission and Istat data.
(1) The aggregate confidence indicator is constructed by applying the weights used by Istat to produce the Istat Economic Sentiment Indicator (IESI) to the time series (standardised) of sectoral confidence indicators of the European Commission.

Short-term forecasts

The economic scenario described above is consistent with a slowdown in economic activity in the first half of the year, followed by a gradual recovery. On the basis of the estimates produced using the PBO's short-term models, GDP is estimated to have increased by 0.2 per cent in the second quarter compared with the previous period (the value falls within an error band of between 0.0 and 0.3 per cent), driven by the developments in services and construction, while the industrial segment stagnated. Economic activity is expected to continue along a similar growth path in the third quarter, and then to strengthen in the last quarter of the year (0.3 per cent). The uncertainty surrounding the forecasts is mainly on the downside, given the numerous risk factors, which are mainly global in nature (Figure 11).

To sum up these short-term developments, GDP growth in the 2018 is expected to amount to 1.2 per cent based on the quarterly accounts, which could translate into a 1.3 per cent increase in the annual accounts (which are not adjusted for the number of working days). This would represent a downward revision of one-tenth of a percentage point compared with the values projected by the PBO in May 2018 (at the hearing of the PBO on the Economic and Financial Document on 9 May 2018). The decline in the carry-over on 2019 would result in a correction of the GDP growth forecast for next year as well, to just over 1.0 per cent.

Figure 11 – Forecasts for year-on-year GDP growth and standard error (1)



(1) The error bands regard a confidence interval of 90 per cent.

Employment was stable in the first quarter and then strengthened in the spring

Labour market conditions are generally favourable, despite the stagnation of employment in the first quarter, which nevertheless expanded in the services sector and among workers on fixed-term contracts. According to the most recent data, the demand for labour revived in the spring.

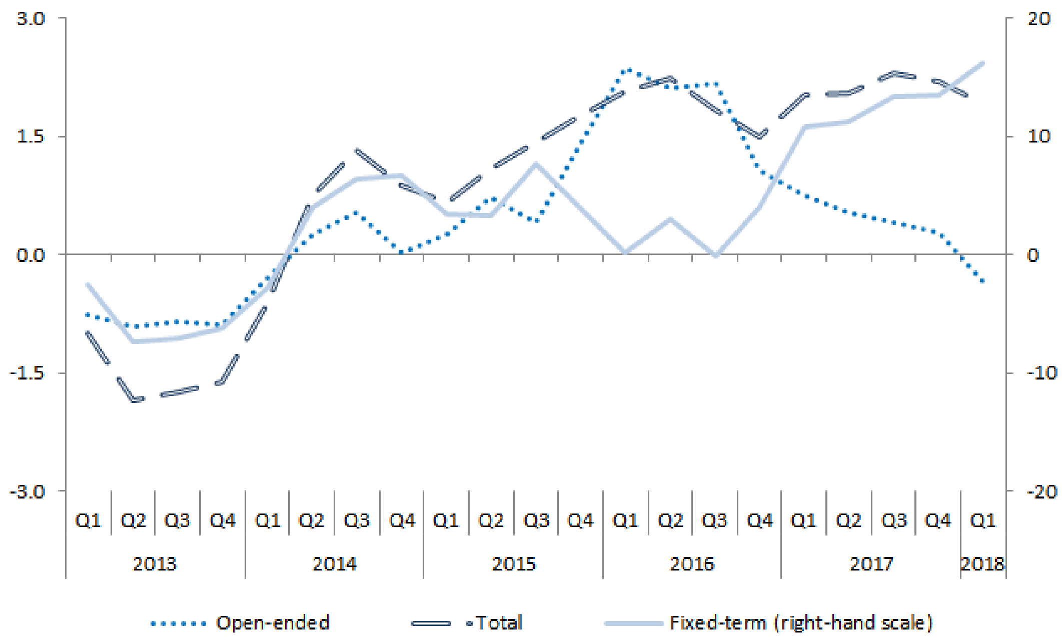
In the first quarter, labour input, measured by hours worked in the national accounts, declined marginally (-0.2 per cent), as the result of a reduction in manufacturing and in construction and a rise in services. Conversely, the number of persons in employment slightly edged upwards (0.1 per cent), benefitting from an increase in employment both in manufacturing and services (0.3 per cent, respectively). Therefore, on a per capita basis, the number of hours worked fell (-0.3 per cent), especially in the industrial sector. The stagnation in the labour market probably reflected the slight weakening of economic activity, in addition to the termination of the tax relief originally approved with the 2015 Stability Law.

On the supply side, data from the Labour Force Survey show that favourable employment conditions continued in the first quarter (0.3 per cent compared with the previous quarter), sustained by the increase in fixed-term employment (2.4 per cent). By contrast, permanent employment (-0.2 per cent) and self-employment contracted.

A comparison on a year-on-year basis also shows the driving role of fixed-term employment in the first quarter (16.2 per cent; Figure 12). According to labour market flow data, the probability of remaining in a fixed-term position continues to rise, while the probability of transition to an open-ended position or to non-employment status has declined.

Employment returned to growth in the spring (114,000 more people in May compared with the previous month). In the April-May period the increase in the number of persons in employment (0.9 per cent compared with the first quarter) was driven by the further expansion of fixed-term employment (3.4 per cent), as well as by an increase in permanent employment (0.2 per cent) and in self-employment (1.7 per cent, after five quarters of decline).

Figure 12 – Change in payroll employment
(percentage year-on-year change)



Source: based on Istat data.

Evidence of a recent recovery in open-ended employment is also found in information from the Osservatorio sul precariato of the National Social Security Institute (INPS), which usually leads the employment trends in the short term. In the period from January to April, permanent positions rose due to the increase in transformations of fixed-term employment relationships to open-ended positions (an increase of 64,000 jobs). Employment relationships that benefited from the contribution relief measures approved with the 2018 Budgetary Law (38,000 jobs) represented 6.3 per cent of the total number of open-ended contracts activated.

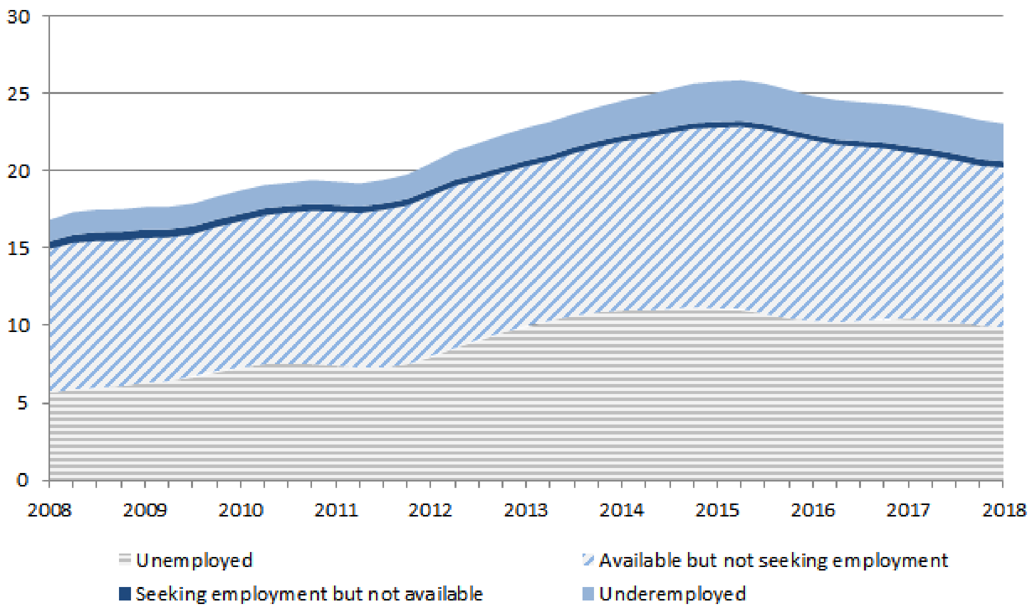
The unemployment rate in the first quarter was broadly unchanged (11.1 per cent), reflecting the small increase in both the employment rate (which rose by one-tenth of a point to 58.2 per cent) and the participation rate (65.6 per cent). The number of inactive persons fell, to a large extent thanks to the decline in the number of people seeking work but not immediately available to take a job. The segment of the inactive population that is furthest removed from the labour market, i.e. those who are available to work but not seeking a job, also decreased. The long-term unemployment rate declined slightly (-0.1 percentage points compared with the first quarter of 2017), but remains about three percentage points higher than the pre-crisis average in the 2000s.

In April-May, the unemployment rate fell to 10.8 per cent, benefitting in particular from the decline in youth unemployment (to 32.3 per cent).

The underutilisation of the labour force in the Italian economy remains extensive. A measure of underemployment, which in addition to the unemployed and the potential additional labour force includes those employed on part-time contracts who are willing to work more hours, decreased slightly in the first quarter but remains high (23.1 per cent, based on raw data corrected with a four-period moving average; Figure 13). The divergence from pre-crisis values is largely attributable to the slow decline in unemployment. The margins of underutilisation of the labour force, which includes involuntary part-time workers rather than underemployed persons, is unchanged at around 30 per cent.

The considerable underutilisation of the labour force despite the recovery in the demand for labour will act as a brake on wage growth. This phenomenon could reflect the introduction, in the contract renewals signed in 2015-2016, of indexing mechanisms based on past inflation. In the first quarter, wage growth, measured on the basis of actual earnings, was stagnant. Signs of recovery were seen in hourly contractual earnings, which rose by 0.8 per cent year-on-year, with a slightly larger increase in the private sector (1.0 per cent) and less pronounced growth in the public sector (0.6 per cent); in April-May, the latter accelerated further as a result of the renewal of bargaining agreements.

Figure 13 – Unemployment, potential additional labour force and underemployment
(percentage of extended labour force; 4-period moving average)



Source: based on Istat data.

Hourly productivity accelerated (to 0.5 per cent on a quarterly basis in the first quarter, up from 0.2 per cent in the previous quarter). The strong recovery in the industrial and construction sectors was associated with a decline in hours worked. Conversely, in the services sector productivity stagnated. After a slight increase in the second half of 2017, unit labour costs fell (-0.5 per cent on the previous period) thanks to the recovery in productivity and wage moderation. The decline in unit labour costs involved the industrial sector (-0.8 per cent) and, to a lesser extent, services (-0.3 per cent, despite a slight contraction in income per hour worked).

Inflation is still weak, although driven by its more volatile components

Despite recent increases, consumer price inflation in Italy remained low and below that for the euro area as a whole, due to the weakness of its core components (excluding energy and food products) and of the pressures from the labour market.

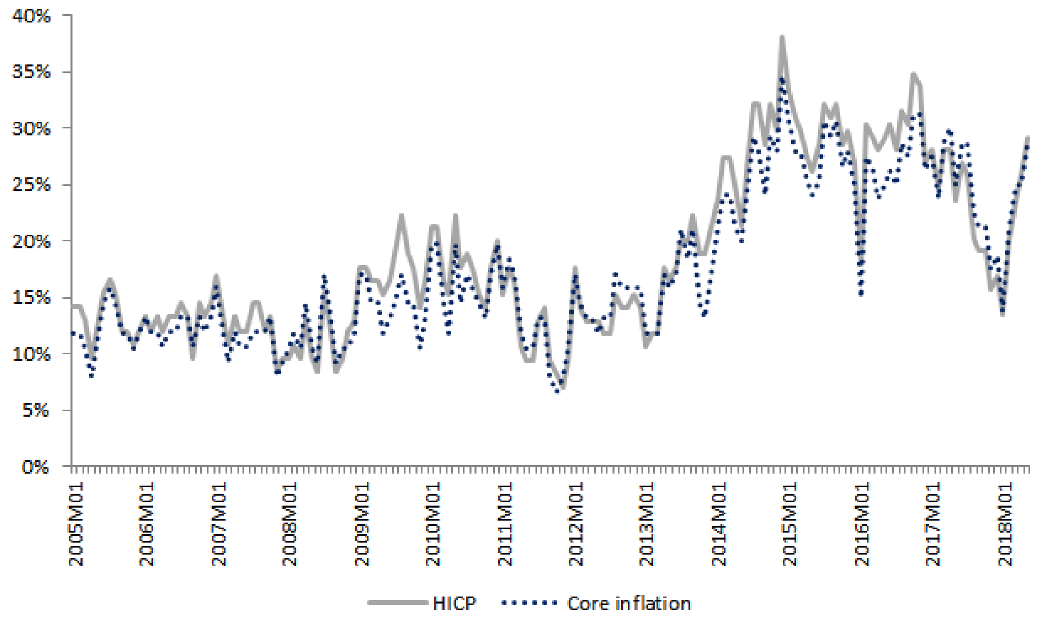
According to preliminary Istat figures, consumer price inflation rose in June (measured with the national index for the entire population) to 1.4 per cent year-on-year (from 1.0 per cent in May), while kept increasing by 0.3 per cent on the previous month. The year-on-year rise reflects price increases for products purchased frequently, especially unregulated energy products, food products and transportation services. Core inflation (excluding energy and unprocessed food) rose only marginally year-on-year, to 0.9 per cent. The carry-over effect on inflation for 2018 is 1.1 per cent for the general index and 0.8 per cent for the core component.

The persistence of weak inflationary trends in the Italian economy is also signalled by the increase in May of the share of goods and services in the harmonised price index whose prices are decreasing, which reached 29 per cent (from 13 per cent at the beginning of this year, Figure 14). Similarly, the share of items characterised by low inflation, i.e. with year-on-year variations of less than 0.5 and 1.0 per cent, returned to the levels observed in the summer of 2017 (48 and 66 per cent respectively).

In the upstream phase of the inflationary process, the rise in producer prices of industrial goods that began in 2017 continued (2.4 per cent year-on-year in May for all goods, compared with 1.4 per cent in April), primarily driven by to the prices of goods sold on the domestic market, which are considerably affected by developments in the intermediate goods. Oil price increases also impacted on the import price dynamics, which rose to 1.5 per cent on an annualised basis in April, recouping the decline observed at the beginning of the year, but were still modest compared with 2017.

Inflation expectations remain moderate. According to the Istat survey of price expectations, 56.6 per cent of Italian households in the second quarter expected stable prices and only 38 per cent expected rising prices (compared with 45.5 per cent in the first three months of the year). The balance for household inflation expectations gradually deteriorated, reaching -18.4 in June. The share of undecided respondents increased slightly (to 4.3 per cent in June), which could signal the uncertainty of households. A similar trend was observed among industrial firms, which are increasingly expecting price stability, with a decline in the expectations of increases observed at the beginning of the year (the balance dropped to 5 in June from a peak of 11.7 in January).

Figure 14 – Proportion of goods and services in consumer price index (HICP) experiencing deflation
(percentages)



Source: based on Eurostat data.

Box – Measuring the trend in total factor productivity in Italy

After the good performance until the 1990s, Italy's total factor productivity (TFP) began to decelerate, before actually contracting following the recent economic crisis (Figure B1).

The changes in the economic environment in the last twenty years, reflecting the increase in globalisation, the technological revolution and the introduction of the euro, have been a difficult challenge for Italian firms. The literature has identified many causes to explain the weakening of TFP in Italy in structural terms. The most relevant factors include: the specialisation of Italian firms in sectors with low technological content; the low share of investment in the ICT sector; the firm size; the quality of management practices; the experience of workers and managers; the inefficient allocation of productive factors among firms; and the concentration of investment in low productivity sectors.[6] Alongside these structural factors, productivity has also been adversely affected by the economic cycle, which for Italy was sharply negative during the double recessions of 2008-2009 and 2012-2013.

The structural weakness of TFP affects the potential growth, making the process of fiscal consolidation difficult. For this reason, a key element in assessing the long-term sustainability of the public finances is the identification of the underlying trend in productivity, which excludes cyclical factors. The estimate for TFP growth obtained using the potential output calculation model developed by the European Commission[7] (EC) shows negative growth rates for trend TFP some years before the outbreak of the global financial crisis. About 15 years of uninterrupted decline in productivity seems difficult to explain even in the context of weak Italian output growth, as it involves an extremely long period not merely of stagnation but rather of technological regression and gradually less efficient production.

The method agreed at the European level uses only capital capacity utilisation as a cyclical indicator of the TFP, but omits metrics of the intensity of labour force utilisation, which could instead produce a higher estimate for growth in potential output.[8]

TFP represents the component of the production function that cannot be directly attributed to labour and capital inputs, and is therefore obtained as a residual. In a Cobb-Douglas production function, TFP can be estimated with the Solow residual, defined by $ptf = y_t - 0.65lnL_t - 0.35lnk_t$ in which Y_t is output, L_t and K_t are respectively inputs of labour and capital "weighted" by coefficients representing their respective shares in value added.[9]

The procedure agreed at the European level uses a Bayesian unobserved components model to separate the trend (μ_t) and cyclical (c_t) components, such that:

$$ptf = \mu_t + c_t \qquad (1)$$

and estimates the cyclical component using the time series for capacity utilisation (cu_t), which in addition to the cycle shows a specific trend ($\mu_{cu,t}$) :

$$cu_t = \mu_{cu,t} + \theta_1 c_t + a_{cu,t} \qquad (2)$$

A white noise error component ($a_{cu,t}$) completes the equation.

This box proposes to modify the indicators used in the model to measure the intensity of use of the factors of production. First, the capacity utilisation series (CU) is used as production capacity indicator only in the manufacturing sector, rather than the CUBS composite indicator developed

[6] For a survey of the literature, see M. Bugamelli et al. (2018), "La crescita della produttività in Italia: la storia di un cambiamento al rallentatore", *Questioni di economia e finanza* No. 422, Banca d'Italia.

[7] K. Havik et al. (2014), "The Production Function Methodology for Calculating Potential Growth Rates & Output Gaps", *European Economy , Economic Papers,* no. 535.

[8] See the box: "Stima del prodotto potenziale e dell'output gap: una metodologia alternativa a quella concordata a livello europeo" in *Documento Economico e Finanziario 2018*, p. 51.

[9] The shares attributed to labour and capital in the European Commission procedure for calculating potential output are the standard values adopted in the literature.

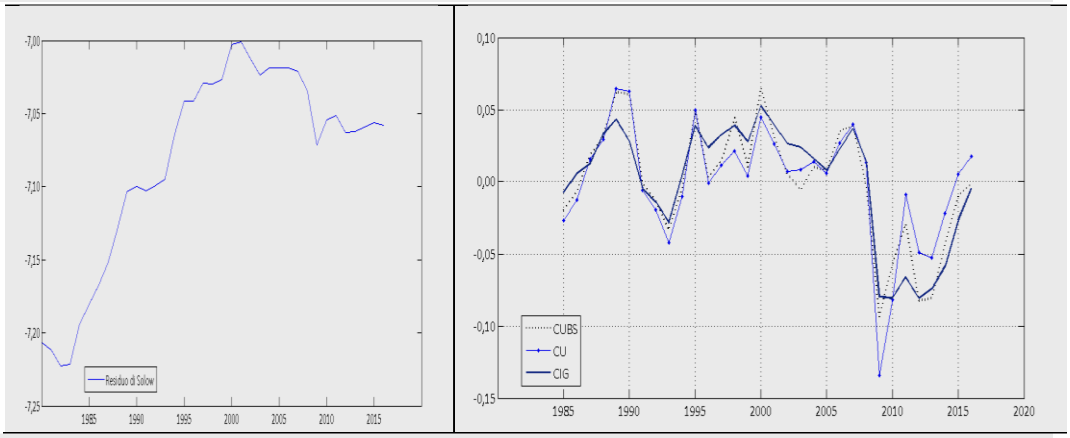
by the European Commission,[10] since the procedure for constructing that latter appears to have limitations especially for the services. In addition, the model is extended, including a variable that takes account of the intensity of utilisation of labour, with a measure of labour hoarding based on information on wage supplementation (CIG) hours requested by firms.[11] Leaving the other components of the EC method unchanged, we therefore consider an additional equation for the CIG:

$$cig_t = \mu_{cig} + \theta_2 c_t + a_{cig,t} \qquad (3)$$

The cycle c_t, common to the two indicators, follows a second-order regression model, while the two trends $\mu_{cu,t}$ and $\mu_{cig,t}$ follow a random walk with drift. The error ($a_{cig,t}$) is white noise uncorrelated with that in equation (2).

The approach adopted in this box is similar to that proposed in Cacciotti et al. (2017).[12] However, the model presented here differs from that in Cacciotti et al. in three main ways. First, the intensity of capital use is measured with the CU index rather than the CUBS. Furthermore, a tri-variate model is proposed, i.e. the production capacity series and the CIG series are kept separate (and not merged as a sum in a single indicator) and a specific coefficient is estimated for each. Finally, only the “ordinaria” and "in deroga" CIG series is used as a labour hoarding metric, excluding the extraordinary CIG series, which could be linked to cyclical conditions with a lag.

Figure B1 – Solow residual and cyclical indicators of the factors of production (1)



Source: based on Istat and INPS data.
(1) CUBS is the composite indicator of capacity utilisation adopted by the European Commission, which is given here for comparative purposes. CU is the Istat indicator of capacity utilisation in manufacturing Istat, while CIG is the series of “ordinaria” and "in deroga" wage supplementation hours requested by firms.

The results show a decelerating TFP trend after 2000, although it is still higher than that estimated by the EC (Figure B2). If we observe the slope of the TFP trend (Figure B3), we find that while the indicator based on the EC method is negative from the early 2000s to today, the CIG model shows a stagnation in the first five years and negative values only after the global crisis.

A less negative TFP trend in the final part of the sample translates into an estimate for potential output (obtained using the procedure agreed at European level) that is more favourable than the official estimate (Figure B4) and produces a larger output gap after the recent economic crisis.

---

[10] The CUBS indicator is constructed using three Istat survey series: the degree of utilisation of manufacturing plants (CU) and the climate of confidence for construction and for services. The series are combined using as weights the cyclical component of sectoral value added extracted using a Hodrick-Prescott filter. The limitations of using series of different nature and length (climate of confidence and plant utilisation) and statistical filters prompted us to use the simple series (CU), which although is essentially the only information pertaining to the economic concept addressed here.
[11] The series of wage supplementation hours requested, produced by INPS, were provided by the Ministry for the Economy and Finance – Department of the Treasury.
[12] M. Cacciotti et al. (2017) “The Estimation of Potential Output for Italy: an Enhanced Methodology”, *Rivista Internazionale di Scienze Sociali*, no. 4.

Figure B2 – Gap and trend in TFP

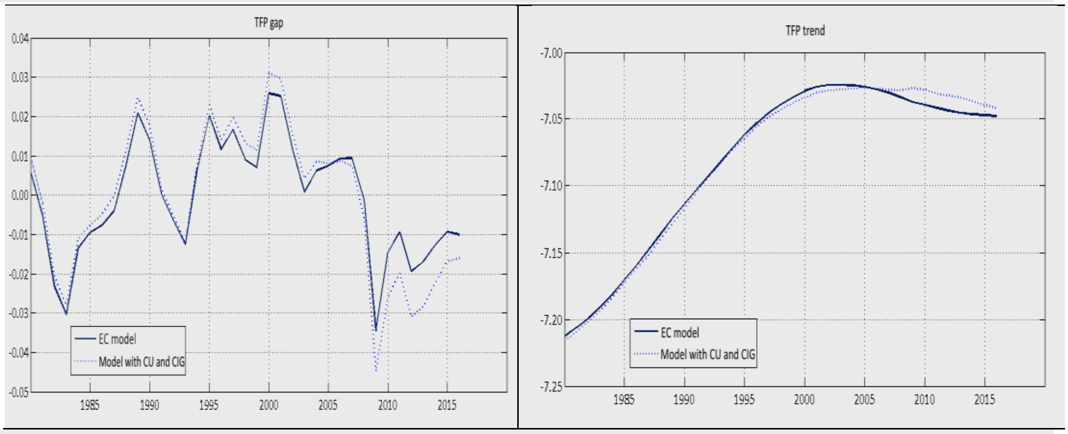


Figure B3 – TFP growth and slope of trend in two estimation models

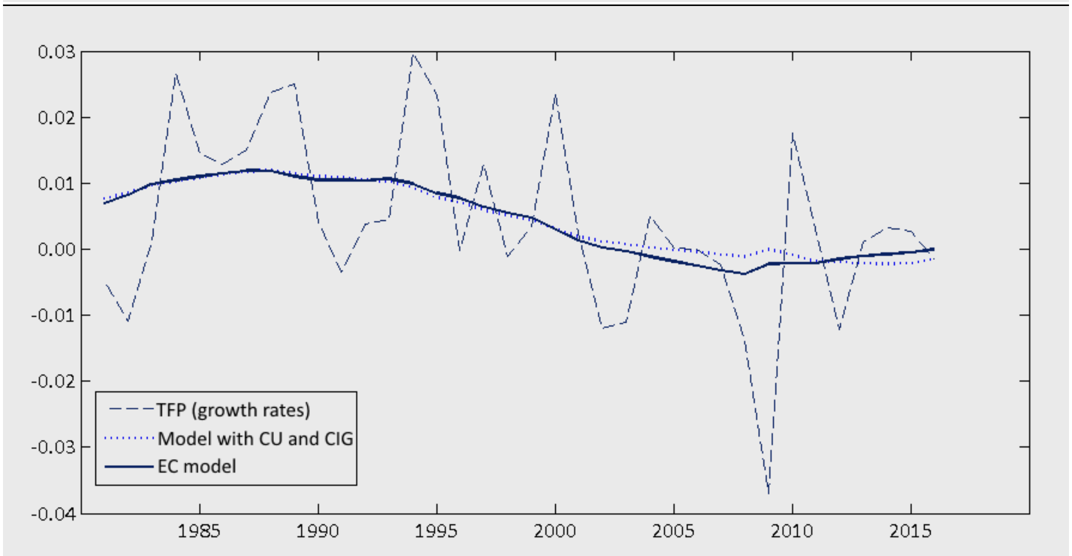
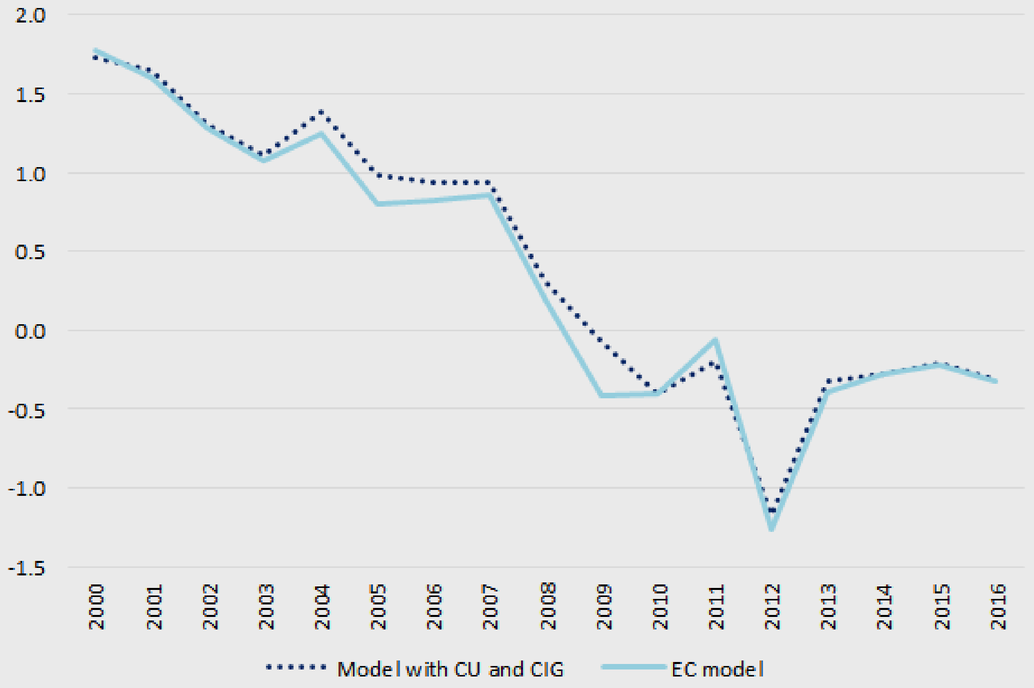


Figure B4 – Potential output in the two specifications of the model



In conclusion, the box shows that by modifying the metrics used to consider the intensity of use of the factors of production, labour in particular, we obtain faster growth in Italian productivity than that calculated using the EC model. This has a non-negligible impact on the estimate for potential output and the output gap, which are used in calculating the structural balances usedin the European fiscal rules.