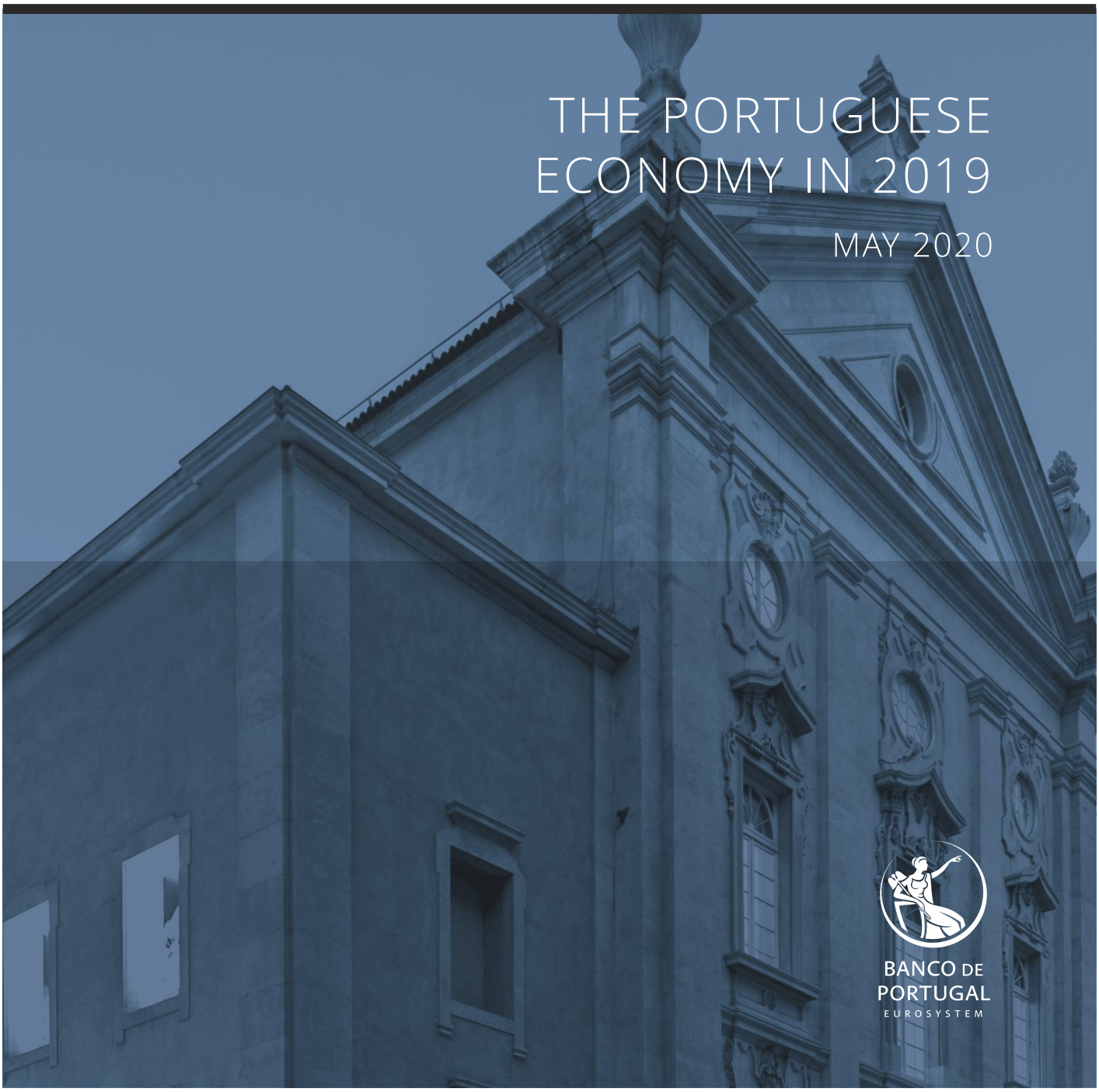
ECONOMIC BULLETIN



THE PORTUGUESE ECONOMY IN 2019

MAY 2020

BANCO DE PORTUGAL
EUROSYSTEM

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1 Overview

This issue of the *Economic Bulletin* focuses on the analysis of developments in the Portuguese economy in 2019. However, the current pandemic crisis has changed this economic reality in a sudden and dramatic manner. This crisis represents a major negative shock to global public health, with equally very adverse economic consequences for many countries, which are still difficult to fully assess. This Bulletin includes a Special issue describing the channels through which the pandemic crisis affects economic activity and the policy responses taken by the authorities to sustain the financial situation of firms and the health and income of households.

In 2019 the Portuguese economy expanded further, despite decelerating for the second year in a row. This deceleration took place against a background of generalised slowdown in global activity, associated with high levels of uncertainty. Heightened trade tensions, only eased at the end of the year with the prospect of a partial trade agreement between the United States and China, and weakening industrial production, in particular in the automobile sector, explain an even more pronounced deceleration in international trade flows. As a result, a decoupling in developments in industry and services was observed in the main advanced economies, with activity decelerating significantly more in industry, even falling in a number of countries (Box 3 "The industry-services decoupling: Portugal in the context of advanced economies" in this Bulletin). Over the year, further monetary accommodation by the main central banks and the adoption of expansionary fiscal policies in several countries likely contributed to dampen the economic slowdown.

The euro area was no exception. Exports decelerated and domestic demand continued to be the driver of economic growth, supported by continued favourable financial conditions and labour market improvements. Over the course of the year, the ECB strengthened the monetary policy accommodative stance in the euro area, against a background of low actual inflation and deteriorating inflation expectations, as well as less buoyant economic activity and persistent downside risks.

Growth in GDP and GDP *per capita* in Portugal continued to be higher than in the euro area. Indeed, the growth differential has been positive in actual terms since 2016 and in *per capita* terms since 2013. Nevertheless, and even before the onset of the current pandemic crisis, continuing the convergence process of the Portuguese economy remained a complex challenge that became more pressing in the face of the difficulties arising from an increase in potential output growth, in particular an ageing population.

In contrast to developments in the past few years, a notable feature of the Portuguese economy in 2019 was a substantial increase in labour productivity. These developments were largely due to the productivity increase within each sector – in particular, services – while the contribution related to employment flows between sectors remained slightly positive, continuing to suggest this input is gradually moving towards more productive sectors of the economy. An economy's productivity and competitiveness are also the result of the contribution of the remaining inputs, including the capital stock per worker, the quality of human capital, and the quality of business management (Box 4 "A characterisation of top managers in Portugal" in this Bulletin), as well as of technology. In the Portuguese economy, where productivity levels are lower than the euro area average, it is paramount to push for innovation (Box 5 "Innovation indicators in Portugal" in this Bulletin) and to monitor the process of becoming more digital (Box 6 "How digital is the Portuguese economy?" in this Bulletin).

The deceleration in employment was broadly based across all activity sectors and growth was sustained by resident foreign individuals to a considerably larger extent than in 2018. The unemployment rate continued to decline in 2019, albeit more modestly. In the year as a whole, the unemployment rate stood at its lowest level since 2003, but the intra-annual profile of decline was interrupted in the fourth quarter. In addition to the unemployment rate decline, available indicators point to a tightening in labour market conditions, with the employment rate at record high levels.

Favourable developments in the labour market were accompanied by a slight acceleration in compensation per employee. However, the economy's wage bill grew at a slower pace, contributing to the slowdown in households' disposable income. Given that private consumption also decelerated from the previous year, mainly due to the durable goods component associated with cars purchase, the household saving rate remained stable at historically low levels. Underlying this aggregate reaction of private consumption is a differentiated response from households, according to their characteristics and situation (Box 7 "Propensity to consume in Portugal and the euro area: an analysis with survey data" in this Bulletin). The stabilisation of the saving rate, along with continuing strong residential investment, resulted in a new decline in households' net lending capacity.

Against a background of very low interest rates, financing of households' consumption and investment decisions continued to be partly supported by credit, which increased further in 2019. However, household debt as a percentage of disposable income remained on a downward path, mirroring an increase in disposable income above the rise in the stock of debt. At the end of 2019, the share of consumption financed by credit reached a ten-year peak. The amount of new bank loans to households for house purchase continued to rise and, at the end of the year, also surpassed the levels in absolute terms reached in 2010. Interest rates on these loans have declined in Portugal and, at the end of 2019, stood below the levels seen in most euro area countries, excluding other charges (other than interest) (Box 1 "The recent decrease in interest rates on housing loans in Portugal compared to the euro area" in this Bulletin). In addition, despite the momentum in housing prices, particularly in certain segments and geographical areas, the amount of real estate market transactions stabilised somewhat throughout 2019, although at high levels.

Growth in investment rose slightly in 2019, despite the deceleration profile observed throughout the year. Amongst the main expenditure components, investment recorded the highest growth and was the only one that accelerated, albeit slightly. In particular, these developments reflected the dynamics of the construction component. This resulted from the rise in public investment and a few major ongoing construction works, which in both cases benefited from Community cofinancing. Gross fixed capital formation (GFCF) in machinery and equipment decelerated and GFCF in transport equipment declined from the previous year, although these developments reflected significant base effects in both cases.

The stock of total credit to non-financial corporations increased slightly in 2019 after reductions in previous years. The debt of non-financial corporations as a percentage of GDP thus continued its downward path observed since 2013 due to economic activity growth. Similarly to developments over the past few years, the share of non-residents in corporate financing continued to increase, while that of resident financial institutions and other resident creditors declined. However, adjusted for sales and write-offs, transaction flows continued to be positive in the exposure of Portuguese banks to firms. Firms continued to obtain funding at historically low cost and differentiated according to their risk level.

As in the euro area, the slowdown in economic activity in Portugal was largely due to developments in exports, following a deceleration in external demand for Portuguese goods and services. These

developments were compatible with a further market share gain in 2019, above that seen in the previous year. By component, the slowdown in exports reflected lower growth in sales abroad of non-energy goods and services excluding tourism, while tourism exports continued to grow robustly.

Developments in cross-border flows translated into a decline in the goods and services account surplus in 2019, largely contributing to the reduction in the Portuguese economy's net lending. These developments reflected an increase in the goods account deficit, arising from a higher deficit in the energy component, and a decline in the services account surplus, related to the behaviour of services excluding travel and tourism. The balance of transfers with the European Union (EU) increased slightly in 2019, but inflows of EU funds remained low, compared to the implementation profile in previous cycles of EU support. The international investment position (IIP) as a percentage of GDP continued to improve, but was still high, at around -100% of GDP. In terms of composition, developments in the IIP have been characterised by a decline in the share of components with higher vulnerability to adverse shocks.

As for the general government, the fiscal balance improved in 2019 and reached a surplus. This result was due to a considerable fall in the debt servicing burden and the positive contribution of economic activity, given that GDP grew above potential output. By correcting these impacts and the virtually neutral change in the effect of temporary measures, a stabilisation of the structural primary balance is achieved, pointing to an essentially neutral fiscal policy stance, similar to that observed in recent years. Underlying these developments is a stabilisation of both total structural revenue – despite a slight decline in taxes and social contributions as a whole (Box 2 "Structural developments in revenue from taxes and social contributions" in this Bulletin) – and structural primary expenditure as a ratio of potential GDP. Government debt as a percentage of GDP continued to decrease, as a result of a high primary surplus and nominal growth in economic activity above the implicit interest rate on debt. By the end of 2019, the debt ratio was high but on a downward path and the structural balance was close to the medium-term budgetary objective.

Finally, the inflation rate declined in 2019, reaching particularly low levels and increasing the negative differential *vis-à-vis* the euro area. External inflationary pressures were modest and there was a deceleration in unit labour costs and continued narrowing of corporate profit margins at domestic level (Box 8 "Recent developments in the profitability of Portuguese enterprises" in this Bulletin). In the past few years, developments in inflation in Portugal have been directly related to the situation prevailing in the euro area as a whole, where inflation, namely underlying inflation, has stood systematically below the price stability objective.

The Portuguese economy performed relatively positively in 2019, despite a deceleration in line with a maturing business cycle. Indeed, activity maintained a positive growth differential *vis-à-vis* the euro area and productivity increased, amid record low unemployment, absence of inflationary pressures and continued net lending, with additional market share gains for exports. In addition, the deleveraging process of the public and private sectors continued, although indebtedness remained at very high levels. This broadly positive outlook for the Portuguese economy deteriorated in a sudden and substantial manner with the current pandemic crisis. The economic consequences of this crisis are still difficult to assess. The policy response has been swift and decisive, striving to support the health and income of households most affected by the crisis and ensure that economic activity may resume with minimum disruption. However, very profound – and potentially long-lasting – negative effects are unavoidable, which are likely to disrupt the Portuguese economy's adjustment process.

2 International environment

The pace of global economic growth declined considerably in 2019

Global activity generally slowed down in 2019, amid high global uncertainty related to heightened trade tensions and weaker industrial activity. These factors were combined with the deceleration trend observed in advanced economies arising from the maturing business cycle and the gradual slowdown of the Chinese economy. In turn, political and social tensions hindered activity in Latin America (Table I.2.1).

Table I.2.1 • Gross domestic product | Real year-on-year rate of change, percentage

	2015	2016	2017	2018	2019
World	3.5	3.4	3.9	3.6	2.9
Advanced economies	2.3	1.7	2.5	2.2	1.7
United States	2.9	1.6	2.4	2.9	2.3
Japan	1.3	0.5	2.2	0.3	0.7
Euro area	2.0	1.9	2.7	1.9	1.2
Germany	1.5	2.1	2.8	1.5	0.6
France	1.0	1.0	2.4	1.7	1.3
Italy	0.7	1.4	1.7	0.7	0.3
Spain	3.8	3.0	2.9	2.4	2.0
United Kingdom	2.4	1.9	1.9	1.3	1.4
Emerging market and developing economies	4.3	4.6	4.8	4.5	3.7
Emerging and developing Europe	0.9	1.8	4.0	3.2	2.1
Russia	-2.0	0.3	1.8	2.5	1.3
Emerging and developing Asia	6.8	6.8	6.7	6.3	5.5
China	6.9	6.8	6.9	6.8	6.1
India	8.0	8.3	7.0	6.1	4.2
Latin America and the Caribbean	0.3	-0.6	1.3	1.1	0.1
Brazil	-3.6	-3.3	1.3	1.3	1.1
Middle East and Central Asia	2.6	5.0	2.3	1.8	1.2
Sub-Saharan Africa	3.2	1.4	3.0	3.3	3.1
Angola	0.9	-2.6	-0.2	-1.2	-1.5

Sources: Eurostat, IMF World Economic Outlook and Refinitiv.

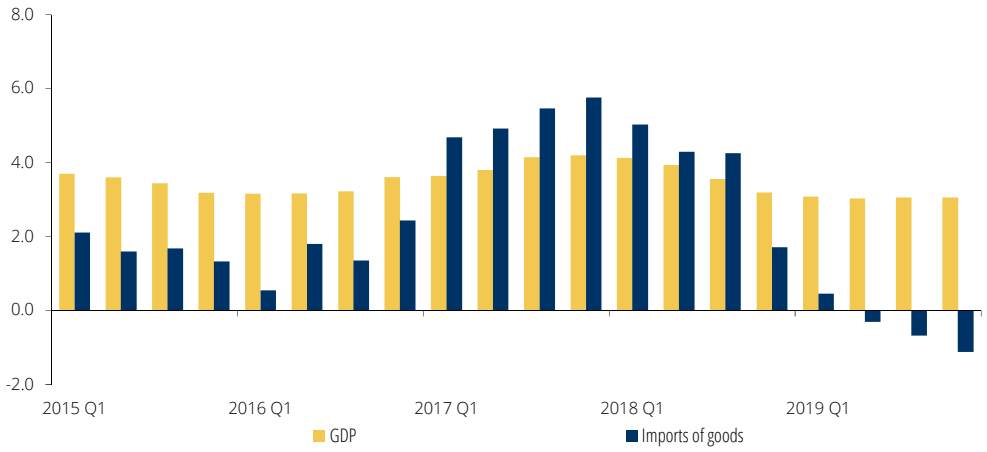
High uncertainty likely led economic agents to postpone consumption and investment decisions, contributing to the deceleration in global trade and a worsening of the economic situation in the industrial sector (particularly in the automobile sector).[1] However, further monetary accommodation by the main central banks and the adoption of expansionary fiscal policies in several countries, as well as the announcement of progress in the negotiations for a partial trade agreement between the United States and China in the last quarter, helped mitigate these developments.

1. See Box 1.1. "The Global Automobile Industry: Recent Developments and Implications for the Global Outlook", *World Economic Outlook*, IMF, October 2019.

Global trade slowed down more sharply than economic activity

2019 was marked by trade tensions between the United States and China. Following an upsurge in the conflict in the first half of 2019, tensions grew during the second half before subsiding at the end of the year.[2] Elasticity between trade and global GDP has been low in the past few years compared with the period before the financial crisis.[3] In 2019 global imports slowed down more than economic activity, even experiencing a contraction in imports of goods (Chart I.2.1). These developments reflected the negative effect of protectionist measures, namely through an increase in import costs and an adjustment of global production chains. Simultaneously, the weakening industrial sector, typically more dependent on imports, and the slowdown in investment amid heightened uncertainty also contributed to this deceleration.

Chart I.2.1 • World GDP and imports of goods | Year-on-year rate of change, percentage



Sources: CPB Netherlands Bureau for Economic Policy Analysis, Eurostat, IMF and Refinitiv (Banco de Portugal calculations).

In annual average terms, oil prices were lower in 2019 than in 2018

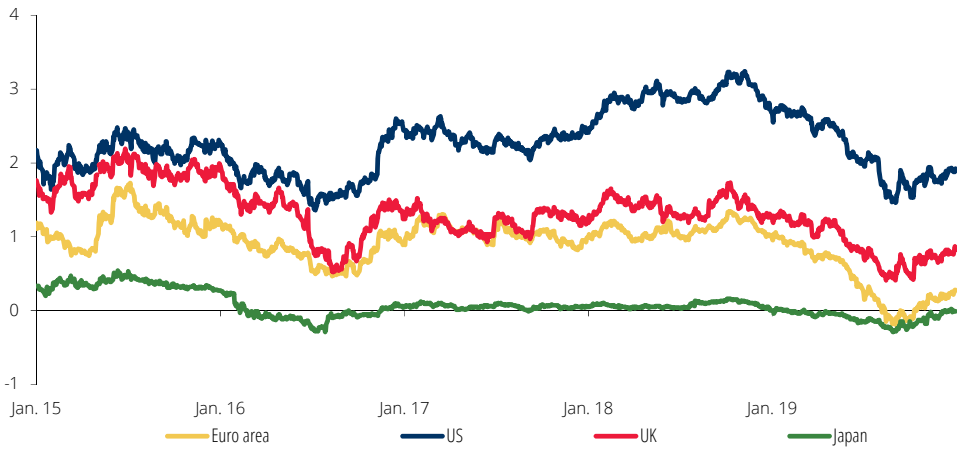
From the end of 2018 to May 2019, oil prices showed an upward trajectory, exceeding USD 70 per barrel, followed by a decline up to October (when prices dropped to below USD 60), motivated by expectations of a slowdown in the global economy. In the last quarter of 2019, a number of supply-side shocks – namely the attack on oil installations in Saudi Arabia and the extension of production restrictions in OPEC+ countries in December – as well as progress in the negotiations for a trade agreement between the United States and China led to a slight recovery at the end of the year (to around USD 65). During the year as a whole, oil prices were on average 10% lower than in 2018.

2. For further details on the impact of trade tensions on global trade, see Box 1 "Global trade: recent developments and outlook" in the December 2019 issue of the *Economic Bulletin*.
3. Elasticity between global imports and GDP is measured as the ratio of growth in global imports of goods and services and growth in global GDP, both in real terms.

Financial markets developments reflected high global uncertainty levels and monetary policy easing by major central banks

Over the course of 2019, financial market sentiment deteriorated as a result of heightened trade tensions and an accumulation of downside risks to activity and inflation in advanced economies. These developments prompted risk-averse movements in financial markets over the course of the year, which were mitigated by the generalised adoption of a more accommodative monetary policy stance. 10-year government bond interest rates declined, in particular in the first three quarters of 2019 and in the United States (Chart I.2.2). For longer maturities, interest rates declined to negative levels during the summer in a number of euro area countries perceived as having a higher credit quality. At the same time, some safe-haven currencies appreciated (specifically, the Swiss franc and the Japanese yen) and the price of gold increased. The euro depreciated over the course of the year, reflecting prospects of a deceleration in economic activity, political instability in Spain and Italy and uncertainty surrounding the United Kingdom's exit from the European Union (Brexit).

Chart I.2.2 • 10-year sovereign bond interest rates | Percentage

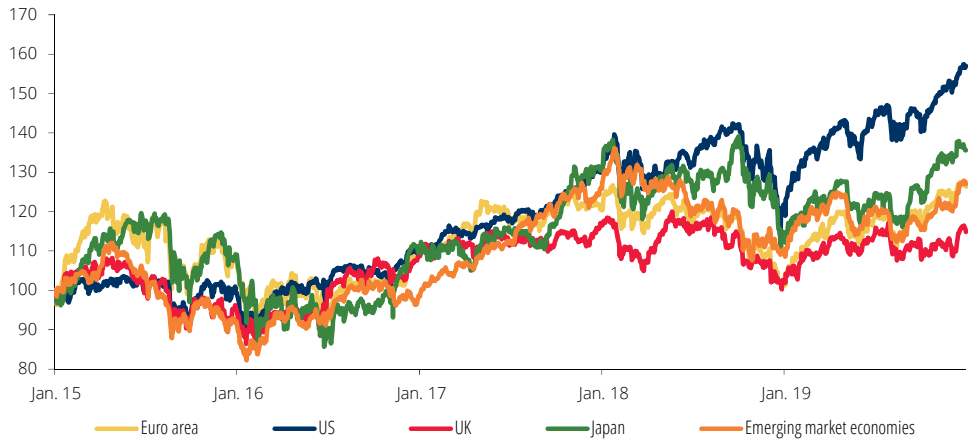


Sources: ECB and Bloomberg. | Note: The Euro area aggregate corresponds to a weighted average of euro area countries' sovereign bond interest rates.

The value of the main stock market indexes increased in 2019, reaching record highs in a number of countries, namely the United States (Chart I.2.3). Given the slowdown in global activity and high uncertainty, these developments signalled some optimism in terms of the outlook for economic activity.[4] In particular, at the end of the year, the increase observed in stock market indexes reflected some signs of improvement in the international environment, with expectations of a trade agreement between the United States and China and the implementation of Brexit at the start of 2020.

4. For an analysis of developments in risk premia in the United States stock market, see the article entitled "Monitoring the equity risk premium in the S&P500" in *Banco de Portugal Economic Studies*, vol. IV, No 4, 2019.

Chart I.2.3 • Stock markets | Index (01-01-2015 = 100)



Sources: Refinitiv and Bloomberg (Banco de Portugal calculations). | Note: The stock market indexes represented in the chart are Dow Jones Eurostoxx (Euro area), Standard and Poors (USA), Footsie (UK), Nikkei (Japan) and MSCI for emerging market economies.

The deceleration in economic activity was broadly based across most advanced and emerging market economies

In the United States, GDP growth declined to 2.3% in 2019, remaining robust against a background of a deteriorating international environment and the trade conflict with China. In the second half of the year, growth in activity moderated slightly compared with the first half, as a result of a slowdown in private investment amidst a deterioration in economic sentiment and heightened uncertainty related to the trade tensions. Inflation measured by the private consumption deflator remained fairly stable at around 1.4% throughout the year, below the Federal Reserve's objective. Low inflationary pressures and downside risks to the global growth outlook led to the interruption of the monetary policy normalisation in the United States, with a 25 basis point cut in key interest rates in July, followed by another two cuts of the same amount in September and October.

Economic growth in the United Kingdom stabilised in 2019, but remained subdued (1.4%), continuing to be penalised by the uncertainty surrounding the country's economic relationship with the European Union.[5] Compared to other advanced economies, the United Kingdom has shown a more moderate growth profile since the 2016 referendum, in particular as a result of weaker investment. Inflation, measured by the year-on-year rate of change in the Consumer Price Index (CPI), decreased throughout the year, standing below the Bank of England's objective during the second half. This is partly explained by the drop in energy prices, in line with developments in oil prices.

Activity in emerging market economies slowed down in 2019. China's GDP decelerated, reflecting the slowdown in domestic demand and the negative impact of United States tariffs on Chinese exports.

5. For an analysis of this impact, see Box 1 "Developments in the United Kingdom's departure from the European Union (Brexit) and its impact on the British economy so far", in the May 2019 issue of the *Economic Bulletin*.

In turn, the increase in political and social tensions, namely in South America, also contributed to a slowdown in a number of emerging market economies. Economic growth in Brazil moderated in 2019 owing to the difficulties faced by the mining industry in the first quarter of the year.

Euro area GDP decelerated in 2019, amid weakening external demand

In 2019 activity in the euro area grew by 1.2%, 0.7 percentage points (p.p.) less than in the preceding year. Domestic demand continued to be the driver of economic growth, supported by continued favourable financial conditions and labour market improvements. In turn, exports slowed down in 2019 in the context of a moderation in global activity and a subsequent deceleration in external demand for euro area goods and services. A dichotomy between developments in industry and services, together with a decline in global trade and weaknesses in a number of important industrial sectors (namely, the automobile sector and the technology sector), was observed at international and euro area level (see Box 3 "The industry-services decoupling: Portugal in the context of advanced economies" in this issue of the *Economic Bulletin*). The gross value added of services continued to grow at a sustained pace in 2019 (1.7%), only slightly below growth in 2018, while industrial activity excluding construction contracted during the year, partly reflecting the difficulties faced by the German automobile industry.

As regards the largest economies in the euro area, the slowdown was broadly based in 2019. In Germany and France, the acceleration in consumption was dampened by negative contributions from changes in inventories and net exports, as a result of the sharp slowdown in exports. Domestic demand in Spain and Italy slowed down, continuing nevertheless to support economic growth. Gross fixed capital formation in Spain slowed down significantly, particularly in the construction sector. Among euro area economies, Italy and Germany were the most affected by the weakness observed in the industrial sector, recording a contraction in industrial production and declines in gross fixed capital formation growth in machinery and equipment, particularly in the second half of 2019.

External demand for Portuguese goods and services continued to slow down significantly in 2019

External demand for Portuguese goods and services continued to decelerate in 2019, reflecting lower growth in the main trading partners and a slowdown in global trade. In the group of extra-euro area trading partners, imports from China, Brazil and the United States decelerated significantly, against the background of increased protectionism associated with the trade conflict between the United States and China. Imports from the United Kingdom accelerated in 2019, although some volatility can be observed in the intra-annual profile associated with the accumulation of inventories before the date of withdrawal of the United Kingdom from the European Union (which was first postponed in March and then in October and only took place at the end of January 2020). In the group of euro area countries, imports from Italy, Spain and Germany decelerated more significantly, reflecting the weaknesses observed in their industrial sectors (typically more dependent of import) and a moderation in investment (Table I.2.2).

Table I.2.2 • External demand for Portuguese goods and services | Year-on-year rate of change, percentage

	Weights [b]	2015	2016	2017	2018	2019
External demand (ECB) [a]	100	3.9	2.9	5.0	3.4	2.0
Intra euro area external demand	63.3	6.0	3.2	5.7	2.8	1.9
Imports:						
Spain	25.9	5.1	2.6	6.6	3.3	1.2
France	12.7	5.7	3.0	4.1	1.2	2.2
Germany	11.9	5.4	4.2	5.7	3.7	1.9
Italy	3.5	6.3	4.1	6.5	2.8	-0.2
Extra euro area external demand	36.7	0.8	2.4	3.8	4.3	2.2
Imports:						
United Kingdom	7.0	5.4	4.4	3.5	2.0	4.6
United States	5.2	5.3	2.0	4.7	4.4	1.0
China	1.6	-0.7	3.9	7.0	5.9	-0.9
Brazil	1.3	-14.0	-10.4	7.2	7.5	2.7
World trade of goods and services (IMF)		2.8	2.3	5.7	3.8	0.9
World imports of goods (CPB)		1.7	1.5	5.2	3.8	-0.4

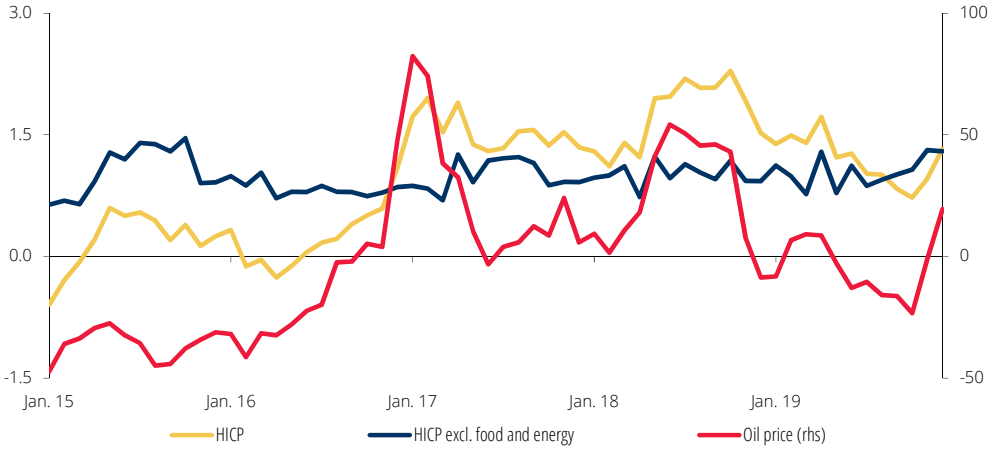
Sources: ECB, CPB Netherlands Bureau for Economic Policy Analysis, IMF and Refinitiv (Banco de Portugal calculations). | Notes: Each country year-on-year rates of change refers to imports of goods and services. (a) Computed by the ECB as the weighted average of imports volumes of the main trading partners of Portugal. Each country/region is weighted by its share in Portuguese exports. (b) Average weights over the period 2015-17.

Euro area inflation declined in 2019, mostly reflecting the contribution of more volatile components

The euro area inflation profile was highly influenced by energy prices, decreasing from May following the drop in oil prices (Chart I.2.4). In the year as a whole, the inflation rate declined from 1.8% to 1.2%. Inflation excluding food and energy remained relatively stable at around 1.0% during 2019, despite increasing slightly in the last quarter of the year. Pressures on non-energy industrial goods prices remained weak and, despite an acceleration in compensation of employees, developments in services prices were also contained. Nevertheless, there seems to be a differentiation between the levels of inflation excluding food and energy among countries. Since the sovereign debt crisis, southern European countries, namely Italy, Spain, Portugal, Greece and Cyprus, have recorded lower underlying inflation rates than the countries perceived as having a higher credit quality (Germany, France, Netherlands, Belgium, Austria and Finland) (Chapter 7).

Euro area survey-based inflation expectations for a horizon of four to five years declined in 2019, reaching record lows in the second half of the year (1.7%) (Chart I.2.5). Likewise, market-based expectations for a horizon of five to ten years followed a downward trend, stabilising at lower levels at the end of the year (at around 1.3%).

Chart I.2.4 • Euro area HICP inflation and oil price | Year-on-year growth rates, percentage



Sources: Bloomberg and Eurostat (Banco de Portugal calculations). | Note: Oil price in euros.

Chart I.2.5 • Euro area inflation expectations | Percentage

Sources: ECB (Survey of Professional Forecasters) and Refinitiv (Banco de Portugal calculations). | Note: Average inflation rates implied in swaps (5-year period, 5 years ahead) and survey-based instruments in the horizon of 4/5 years.

3 Monetary and financial conditions

3.1 Euro area

In the course of 2019, the ECB strengthened its accommodative monetary policy stance

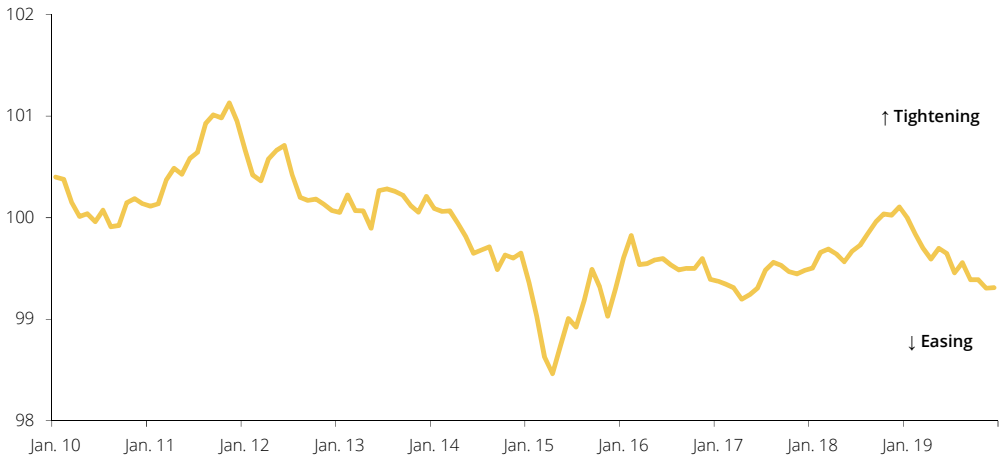
Against a background of slowdown in economic activity, increased uncertainty worldwide, downside risks to activity and inflation levels (actual and projected) below the price stability objective, the ECB strengthened the monetary policy accommodative stance in the euro area in the course of 2019. In March, the Governing Council of the ECB announced the introduction of a new series of targeted longer-term refinancing operations (TLTRO-III), which was recalibrated in September with a lower interest rate and a longer maturity. Forward guidance on key interest rates was changed. Initially, the minimum period during which key interest rates were expected to remain at their current (in June) or lower levels (in July) was extended. Subsequently (in September), the Governing Council cut the deposit facility rate from -0.4% to -0.5%. At the same time, it announced that key interest rates were expected to remain at their present or lower levels until the inflation outlook is seen to robustly converge to a level sufficiently close to, but below, 2% within its projection horizon, and such convergence had been consistently reflected in underlying inflation dynamics. The cut in the deposit facility rate was accompanied by the introduction of a two-tier system for reserve remuneration, in which part of banks' holdings of excess liquidity will be exempt from the negative deposit facility rate. Also in September, the Governing Council decided to restart net purchases under the asset purchase programme (APP), with a monthly pace of asset purchases of €20 billion, to end shortly before the ECB starts raising its key interest rates.[6] These measures aimed at supporting the sustained return of inflation rates to the ECB's medium-term objective, by securing favourable bank financing conditions and ensuring the adequate transmission of monetary policy.[7]

Amid greater monetary accommodation, monetary and financial conditions eased

Financing conditions eased in 2019, given that some of the monetary policy measures introduced in the course of the year, namely TLTRO-III and the two-tier excess reserve remuneration system, were aimed at preserving favourable bank lending conditions and ensuring the smooth transmission of monetary policy (Chart I.3.1). As such, interest rates on loans decreased in 2019, reaching record lows, in line with developments in money market rates.

6. For more details on the monetary policy measures put in place in 2019, see the box entitled "Monetary policy in 2019", *Annual Report – Activities and Financial Statements 2019*, Banco de Portugal.
7. For an explanation of the transmission channels for these measures, see the Special issue "ECB's unconventional monetary policy: what has been done and did it work?", *Economic Bulletin*, Banco de Portugal, June 2015.

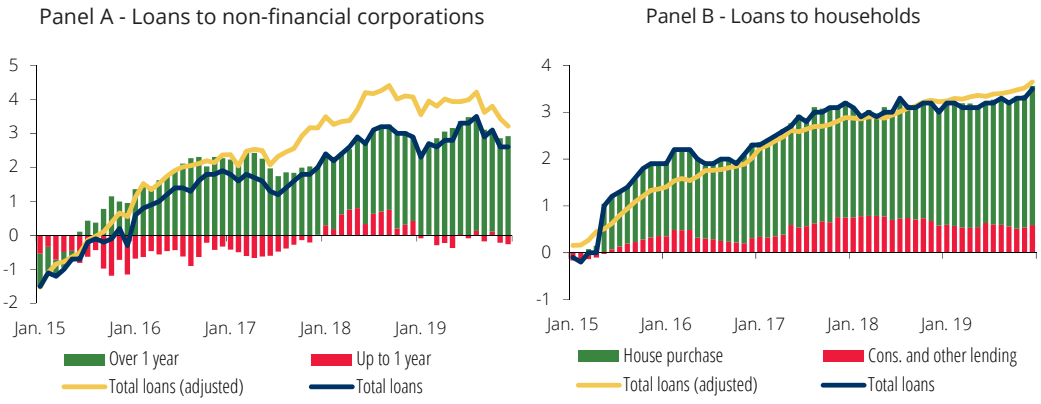
Chart I.3.1 • Euro area financial conditions index | Index (Jan-2019 = 100)



Source: Bloomberg (Banco de Portugal calculations). | Note: The financial conditions index includes money market indicators, bond market indicators, and equity market indicators.

Loans to non-financial corporations grew at a relatively stable rate in the first half of 2019, but decelerated in the second half of the year, namely those with a shorter residual maturity (Chart I.3.2, Panel A). According to the *Bank Lending Survey*, demand for corporate loans decreased, especially in Spain, amid a slowdown in economic activity, lower loan demand to finance investment and lower working capital requirements. In turn, loans to households accelerated further throughout 2019, gaining more momentum in the second half of the year, particularly housing loans (Chart I.3.2, Panel B). BLS results pointed to the strengthening of demand for housing loans, due to the low interest rate levels and a favourable outlook for the real estate market.

Chart I.3.2 • Euro area bank loans | Annual rate of change as a percentage and contributions in percentage points



Source: ECB (Banco de Portugal calculations). | Note: Loans adjusted for sales, securitisation and notional cash pooling.

The cost of financing for euro area banks decreased in 2019 chiefly due to the substantial reduction in the cost of financing through bonds, while deposit rates remained virtually unchanged at

historically low levels. In the course of the year, bond issuance by banks increased, accompanied by a more marked reduction in equity issuance, with a virtually nil growth rate in 2019. For non-financial corporations, the cost of financing through bonds also decreased in 2019, while the cost of financing through equity went up. As such, firms increased their issuance of debt securities in 2019.

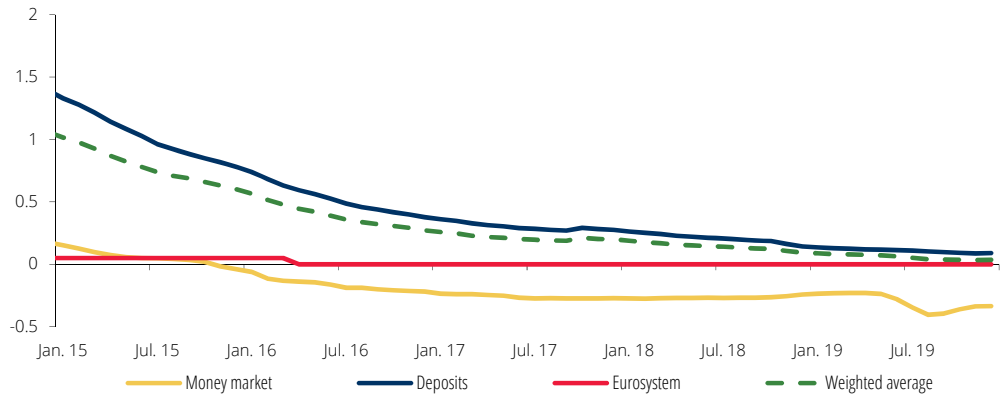
3.2 Portugal

Portuguese banks' funding conditions remained favourable in 2019

As in the past few years, Portuguese banks continued to benefit from favourable financing conditions, in a context where interest rates stand at historically low levels (Chart I.3.3). The ECB's non-standard monetary policy measures continued to play a key role in these developments. In particular, the introduction of the third series of TLTROs in September and December 2019 made it possible for banks to borrow long term at very low rates.

The cost of financing for banks through deposits decreased further, standing below the euro area levels. Likewise, money market funding rates also declined, interrupting a period of stabilisation that had started in 2017. According to the *Bank Lending Survey* in Portugal, financing conditions were relatively stable compared to the previous year.

Chart I.3.3 • Cost of funding of Portuguese banks | Percentage



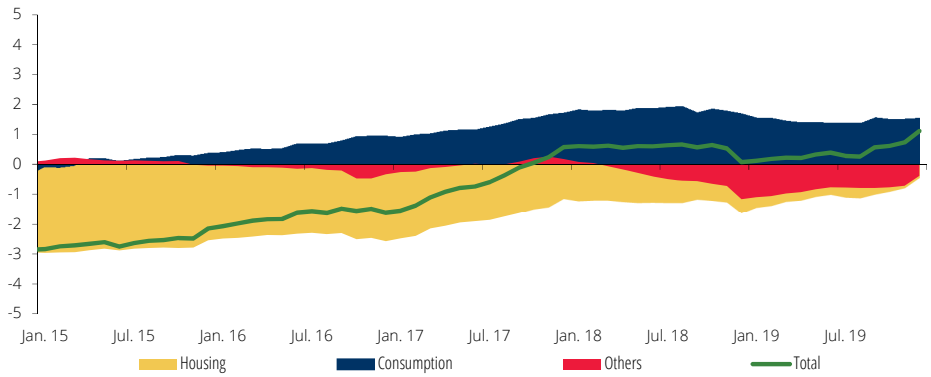
Sources: Banco de Portugal and Refinitiv. | Notes: The cost of deposit financing corresponds to the interest rate on outstanding balances of firms' and households' deposits, the cost of financing with the Eurosystem corresponds to the rate of main refinancing operations and the cost of money market financing corresponds to 6-month Euribor. The weighted average is calculated according to the relative weight of these three banks' funding sources. As of December 2019, these sources of financing accounted for 96% of total liabilities (consolidated data).

Credit to households increased in 2019, but debt as a percentage of disposable income remained on a downward path

Household debt as a percentage of disposable income has decreased since the second quarter of 2012. At the end of 2019, it stood at 97%, 1.6 p.p. less than at the end of the previous year, thus converging towards the euro area median (95%). These developments stemmed from the increase in disposable income, given that the stock of debt rose slightly.

The annual rate of change in total credit to households stood at 1.1% in 2019 (Chart I.3.4). The main contribution to this change was made by consumer loans, which decelerated in the first half of the year, only to accelerate again in the second. In turn, loans for house purchase and other purposes continued to make a negative contribution in the course of 2019. In the case of housing, the magnitude of this contribution decreased throughout 2019, and was virtually nil at the end of the year. This resulted from the increase in new loans and an interruption in the growth in repayments, which, however, remained at high levels.

Chart I.3.4 • Contributions to the annual rate of change of credit to households by purpose | Percentage and percentage points

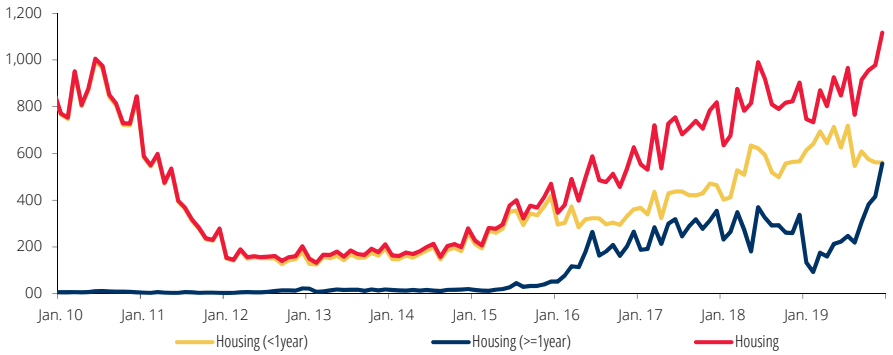


Source: Banco de Portugal.

The amount of new bank loans to households for house purchase surpassed the levels reached in 2010

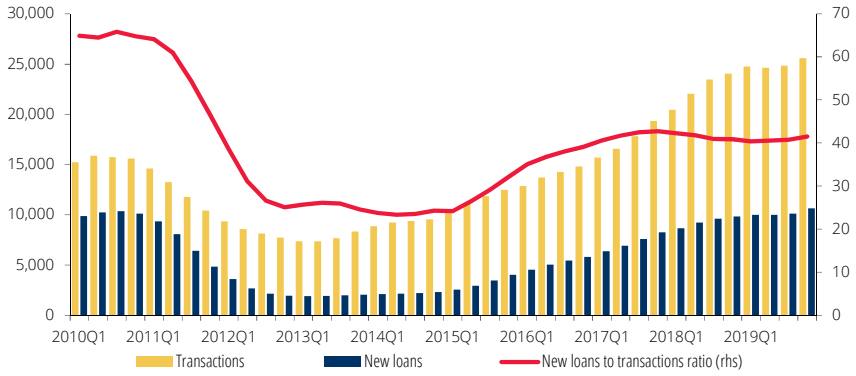
The amount of new bank loans to households for house purchase remained on an upward path in 2019 and, at the end of the year, surpassed the levels reached in 2010 (Chart I.3.5). Underlying year-end growth was a rise in fixed-rate loans. The *Bank Lending Survey* indicates that credit demand by households increased slightly from the second quarter of the year onwards, due to the low interest rate levels. In the course of 2019, despite the momentum in housing prices, the amount of real estate market transactions stabilised somewhat, although at high levels. The ratio of new housing loans to the total amount of transactions of housing units stood at around 40% (Chart I.3.6).

Chart I.3.5 • New housing loans granted by resident banks to households | Millions of euros



Source: Banco de Portugal. | Note: Amount of new loans granted by resident financial institutions. The breakdown by maturity refers to the initial interest rate fixation period.

Chart I.3.6 • Households' housing transactions and new housing loans | Millions of euros and percentage



Source: Statistics Portugal (Banco de Portugal calculations). | Note: 12-month cumulative values.

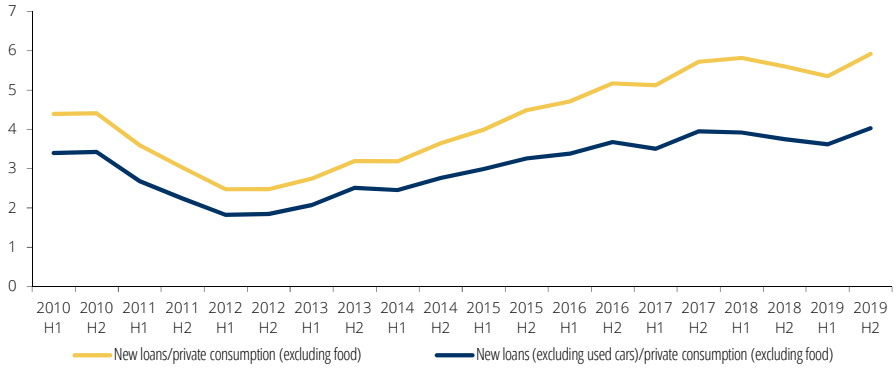
At the end of 2019, the share of consumption funded by credit reached a ten-year peak

The amount of new consumer credit grew throughout the year, and accelerated in the second half of the year. The share of consumption funded by credit declined in the first half of the year, but reversed that trend in the second half (Chart I.3.7).

Interest rates on new loans to households for house purchase decreased, but stabilised in the case of consumer credit

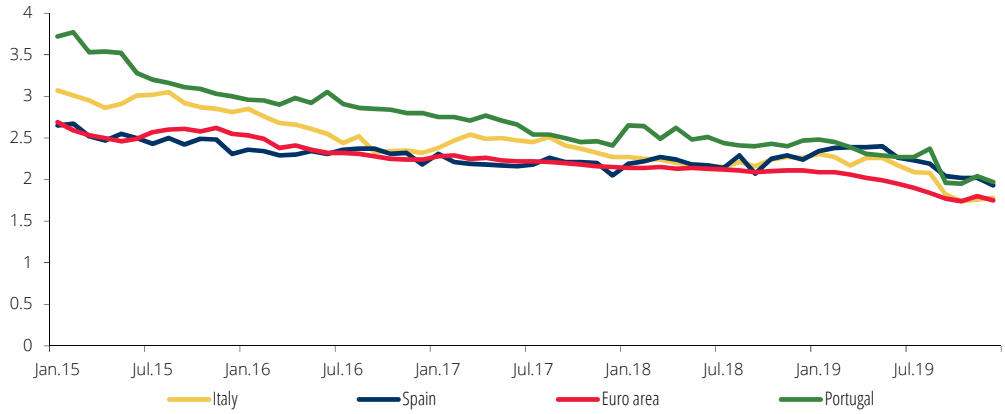
In 2019 the annual percentage rate of charge (APRC) on new bank loans for house purchase continued on the downward path followed in previous years, which translated into a 50 basis points (b.p.) fall (Chart I.3.8). This rate was close to the one recorded in Spain and continued to stand above the euro area rate as a whole. This situation reflects the fact that other charges other than interest are higher in Portugal than in most euro area countries. In fact, excluding these charges (which have been stable in the past few years), the interest rate on new housing loans in Portugal is below the euro area average and in Spain (Box 1 "The recent decrease in interest rates on housing loans in Portugal compared to the euro area" in this Bulletin).

Chart I.3.7 • New loans for consumption granted by resident financial institutions | As percentage of private consumption excluding food expenditures



Sources: Statistics Portugal and Banco de Portugal. | Notes: Consumption credit does not include revolving credit (credit cards, credit lines, current bank accounts and overdraft facilities), as the amounts for this type of credit correspond to ceilings rather than effecive credit. The indicator that excludes credit for the acquisition of used cars is also presented, given that a part of these acquisitions is not accounted for in private consumption.

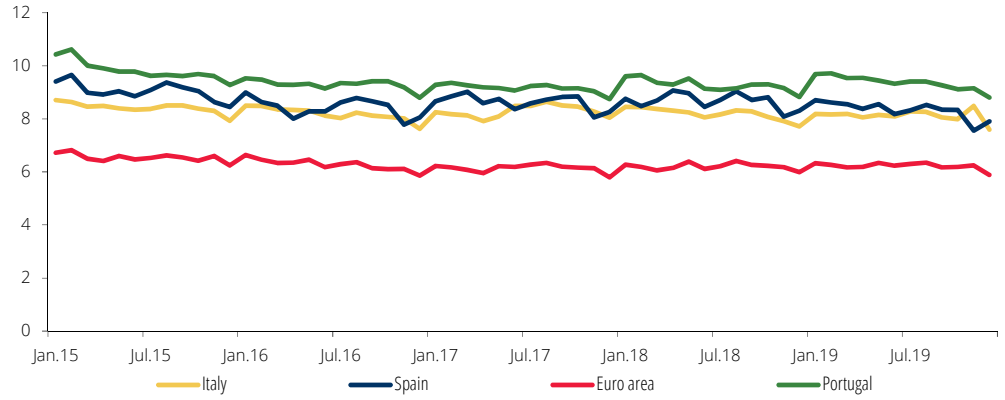
Chart I.3.8 • APRC on new housing loans granted by resident banks to households | Percentage



Source: ECB. | Notes: The APRC (Annual Percentage Rate of Charge) is the total cost of the loan, i.e. the overall costs, including interests and other costs paid to acquire the loan.

In consumer credit, interest rates on new bank loans at the end of the year stood close to the levels seen at the end of 2018 (Chart I.3.9). The level of these interest rates is above the euro area average, as well as the rates charged in Spain and Italy.

Chart I.3.9 • APRC on new consumption loans granted by resident banks to households | Percentage



Source: ECB. | Notes: The APRC (Annual Percentage Rate of Charge) is the total cost of the loan, i.e. the overall costs, including interests and other costs paid to acquire the loan.

The debt of non-financial corporations as a percentage of GDP continued its downward path but mostly due to economic activity growth

The debt (loans, debt securities and trade credit) of non-financial corporations as a percentage of GDP continued on the downward path seen since the beginning of 2013, chiefly as a result of an increase in nominal GDP. In 2019 it went down by 2.5 p.p., reaching 130% of GDP at the end of the year. This ratio is at levels that are very close to the euro area median (128%). The ratio of

debt to assets (leverage ratio) of Portuguese firms declined by 1.2 p.p., reaching 57%. Nonetheless, Portuguese firms continued to be substantially more leveraged than the euro area median (49%).

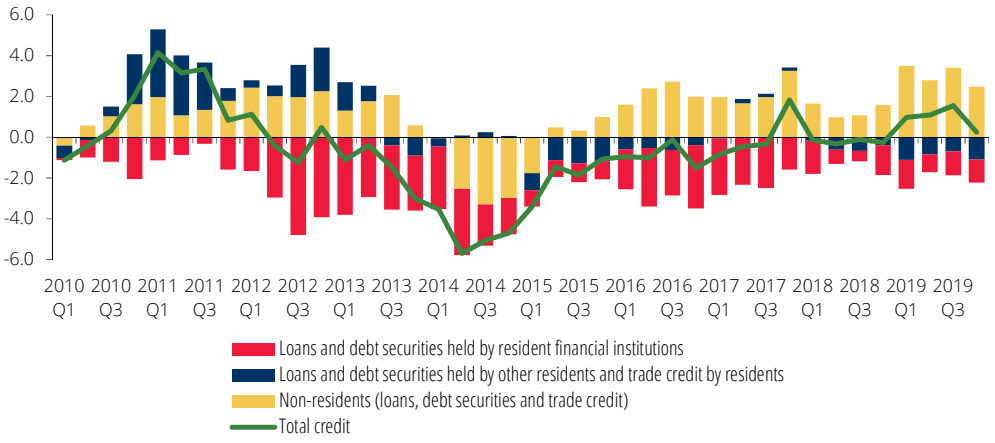
The stock of total credit to non-financial corporations, which covers bank credit, financing by other resident financial institutions and loans from other creditors (residents and non-residents), increased slightly after reductions in previous years (Chart I.3.10). Similarly to developments over the past few years, the share of non-residents in corporate financing continued to increase, while that of resident financial institutions and other resident creditors declined (Chapter 8). The increase in the stock of credit by non-residents was broadly based across all debt instruments (loans, debt securities and trade credit).

By sector of activity, construction and real estate activities made the largest contribution to the year-on-year rate of change in total credit to firms, in contrast to that seen since early 2010 (Chart I.3.11). The increase in credit to construction was accompanied by an acceleration in GFCF in this sector (Chapter 6).

In 2019 loans to firms decelerated

Although resident banks continued to reduce their exposure to firms throughout 2019, adjusted for sales and write-offs, transaction flows continued to be positive (Chart I.3.12).[8] In 2019 the annual rate of change in loans granted by resident banks to firms remained on a downward trend, to stand close to zero in December.

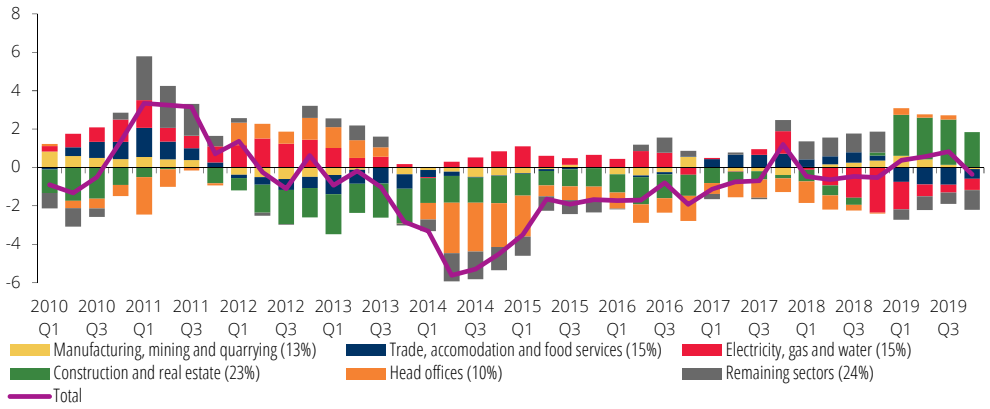
Chart I.3.10 • Contributions to the year-on-year rate of change of total credit to non-financial corporations by funding sector | Percentage and percentage points



Source: Banco de Portugal. | Notes: Total credit includes loans, debt securities and trade credit (trade credit between resident firms are excluded). Year-on-year rates of change are computed based on the relation between end-of-month outstanding amounts and no adjustments are done regarding sales, reclassifications, write-offs and exchange rate and price revaluations.

8. The decrease in the stock of credit in the portfolio of resident financial institutions illustrated in Chart I.3.10 is compatible with the existence of positive-valued annual rates of change in bank credit. Indeed, the aim of the annual rate of change is to measure the change in stocks, adjusted for a set of effects, such as the sale of credit portfolios and write-offs, while the year-on-year rate of change is determined by the change in stocks of credit. These effects explain the difference between both measures. Therefore, although resident banks have continued to reduce their exposure to firms, as has been the case since 2010, transaction flows were positive throughout 2019, adjusted for sales and write-offs.

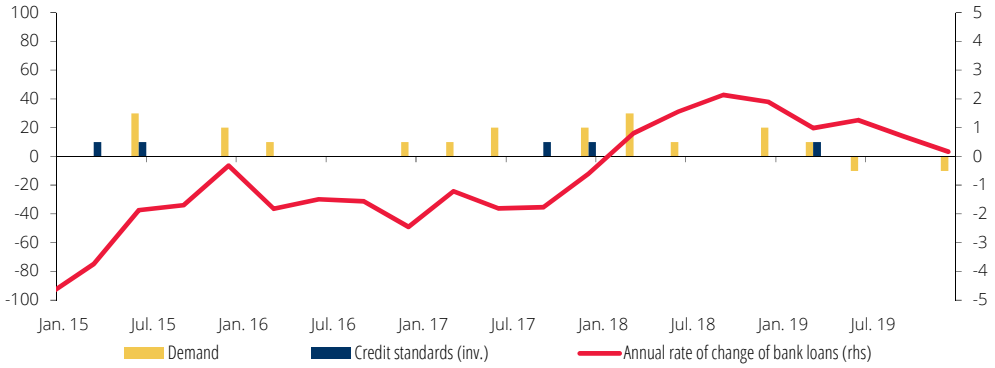
Chart I.3.11 • Contributions to the year-on-year rate of change of total credit to non-financial corporations by sector of activity | Percentage and percentage points



Source: Banco de Portugal. | Notes: Total credit includes loans and debt securities (trade credit is excluded so it differs from the chart I.3.10). Year-on-year rates of change are computed based on the relation between end-of-month outstanding amounts and no adjustments are done regarding sales, reclassifications, write-offs and exchange rate and price revaluations. In the caption, the values in parentheses correspond to each sector weight on total credit granted to non-financial corporation as of December 2019.

According to the *Bank Lending Survey*, credit demand by firms remained, overall, virtually unchanged from the previous year, after some signs of an increase in 2018 (Chart I.3.12).

Chart I.3.12 • Demand and supply of loans granted by resident banks to non-financial corporations | Diffusion index and annual rate of change in percentage



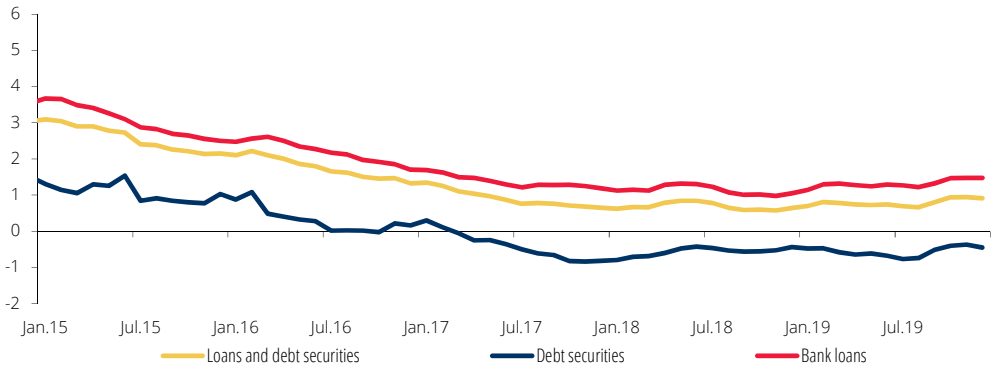
Source: Banco de Portugal. | Notes: The diffusion index is computed based on the Bank Lending Survey and it is the difference between the weighted sum of the percentage of responses of "eased" and the weighted sum of the percentage of responses of "tightened". The weights are defined according to the intensity of the change in each of the directions: if "considerably" it is 1 and if "somewhat" it is 0.5. The diffusion index varies from -100 to 100. Values higher (lower) than zero imply an improvement (deterioration) of financing conditions in the previous three months. The value zero corresponds to the "unchanged" situation.

Firms continued to obtain funding at historically low cost

The cost of financing of non-financial corporations, in both nominal and real terms, remained at historically low levels (Chart I.3.13). The cost of financing through loans, in real terms, increased

slightly given the reduction in inflation expectations in the course of 2019. The cost of financing through debt securities remained at historically low levels.

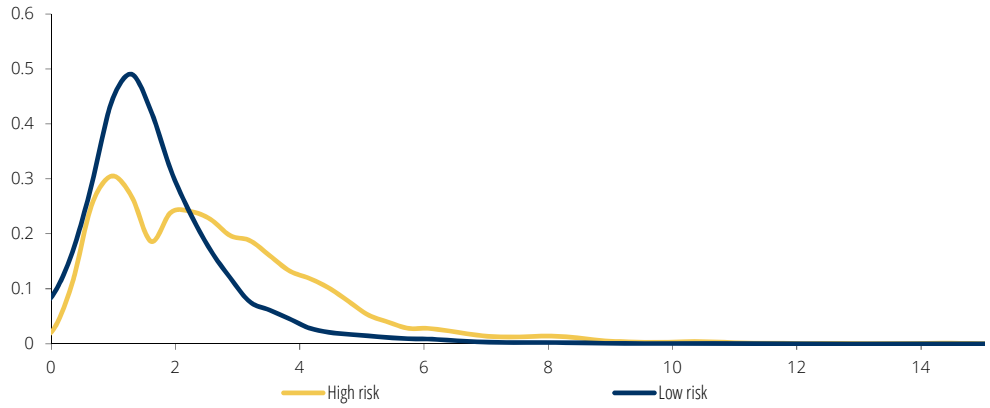
Chart I.3.13 • Cost of funding of non-financial corporations (loans and debt securities), in real terms | Percentage



Sources: Barclays, Consensus Economics, Refinitiv and Banco de Portugal. | Notes: The cost of funding with bank loans, short-term debt securities and long-term debt securities is measured, respectively, by the interest rates on new loans granted by resident banks, interest rates on commercial paper and the yield implicit in the Barclays index for bonds issued by Portuguese non-financial corporations. In order to deflate the nominal values, Consensus Economics' inflation expectations for horizons comparable with the maturities of the different instruments were used.

Nominal interest rates on new bank loans to non-financial corporations dropped by 30 b.p. in 2019. Average interest rates on new loans granted to high-risk firms continued to be higher than those observed in loans to low-risk firms and to be more widely dispersed (Chart I.3.14).

Chart I.3.14 • Distribution of interest rates on new loans granted by resident financial institutions to private non-financial corporations by credit risk profile in the 4th quarter of 2019 | Density

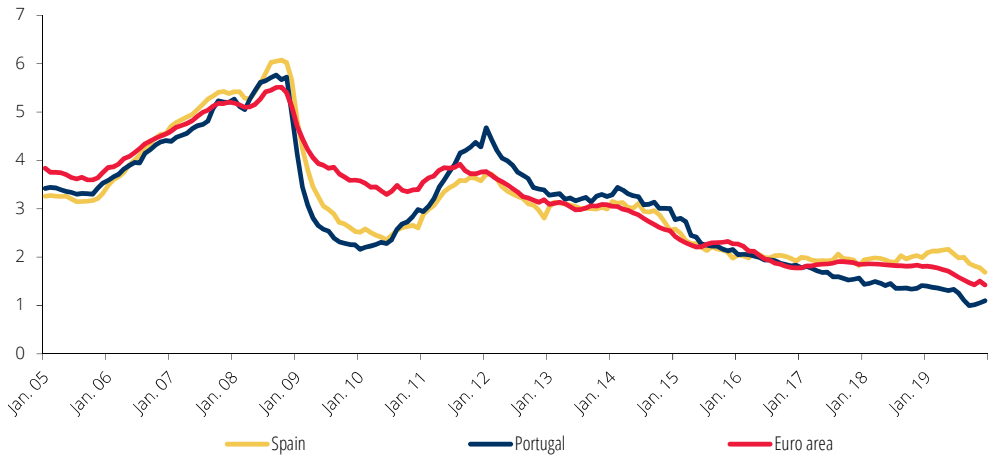


Source: Banco de Portugal. | Notes: Interest rates are weighted by loan amounts. The sample includes for-profit private non-financial corporations. Low (high) risk corporations lie in the first (last) quartile of the credit risk distribution. Credit risk is measured by the Z-score estimated according to Antunes, Gonçalves and Prego, "Firm default probabilities revisited", *Banco de Portugal Economic Studies*, Vol. 2, No 2, April 2016.

Box 1 • The recent decrease in interest rates on housing loans in Portugal compared to the euro area

At the end of 2019, the annual percentage rate of charge (APRC) on new bank loans for house purchase in Portugal continued to stand above that observed for the euro area as a whole and close to that of Spain, despite the downward trend observed over the past few years. One of the factors behind this difference is the fact that other charges (other than interest) are higher in Portugal; however, they have remained relatively stable. Indeed, excluding this factor, the interest rate on new housing loans has also been declining and, at the end of 2019, it stood below the levels seen in most euro area countries, including Spain (Chart C1.1). This box seeks to explore whether the different interest rate fixation periods are a further reason underlying the rate differential among countries.

Chart C1.1 • Interest rates on new loans for house purchase | Percentage



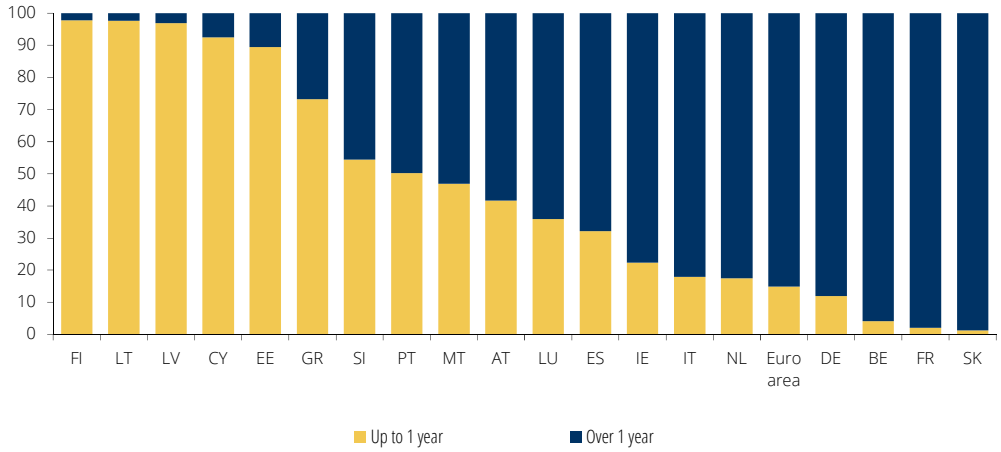
Source: Statistical Data Warehouse - ECB.

In Portugal, the share of loans with an interest rate fixation period of less than one year stands well above the euro area average.[9] At the end of 2019, this share was of 50% for Portugal, compared to less than 20%, on average, in the euro area (Chart C1.2). Given the exceptionally low level of reference rates for floating interest rates, interest rates on housing loans in Portugal are expected to be lower than in the euro area as a whole. Indeed, excluding periods in which a substantial cut in monetary policy interest rates is expected, interest rates with a longer fixation period stand, in general, at higher levels than rates with shorter fixation periods, given that they incorporate a risk premium to compensate for the uncertainty assumed by banks.

In comparison with Spain, the share of loans with shorter interest rate fixation periods is also greater in Portugal, which may be one of the reasons why rates are currently lower in Portugal. However, the currently negative differential between Portuguese and Spanish rates has seen a gradual increase in the recent past, suggesting that Portuguese interest rates are currently at a lower level, even for equivalent rate fixation periods.

9. Typically, loans with an interest rate fixation period of less than one year are considered to be floating rate loans.

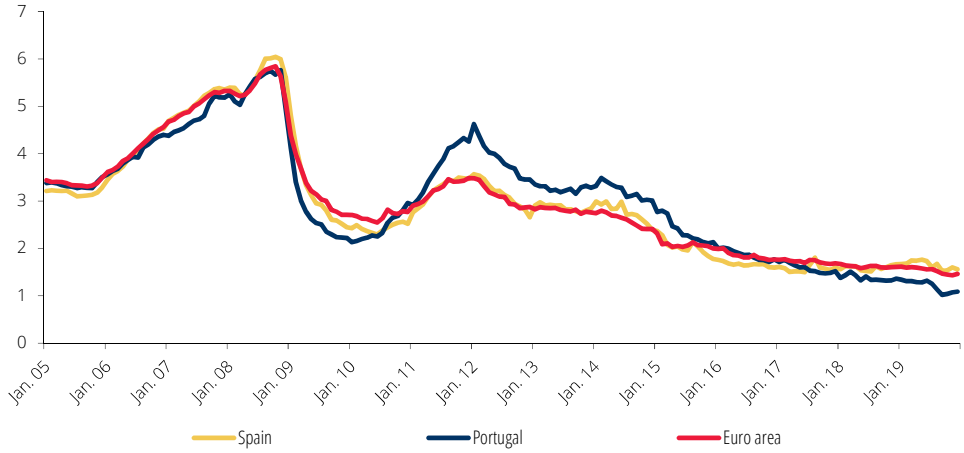
Chart C1.2 • Breakdown of new loans for house purchase by initial rate fixation period, Dec 2019 | Percentage



Source: Statistical Data Warehouse - ECB. | Note: The country-acronym correspondence is as follows: Austria (AT), Belgium (BE), Cyprus (CY), Estonia (EE), Finland (FI), France (FR), Germany (DE), Greece (GR), Ireland (IE), Italy (IT), Latvia (LV), Lithuania (LT), Luxembourg (LU), Malta (MT), Netherlands (NL), Portugal (PT), Slovakia (SK), Slovenia (SI) and Spain (ES).

Chart C1.3 allows to validate this hypothesis, by comparing interest rates on new housing loans with a rate fixation period of up to one year, in Portugal and Spain. It may be noted that these rates were relatively close between mid-2015 and end-2017 and that they have gradually diverged over the past few years.

Chart C1.3 • Interest rates on new loans for house purchase on loans with an initial rate fixation period of up to 1 year | Percentage



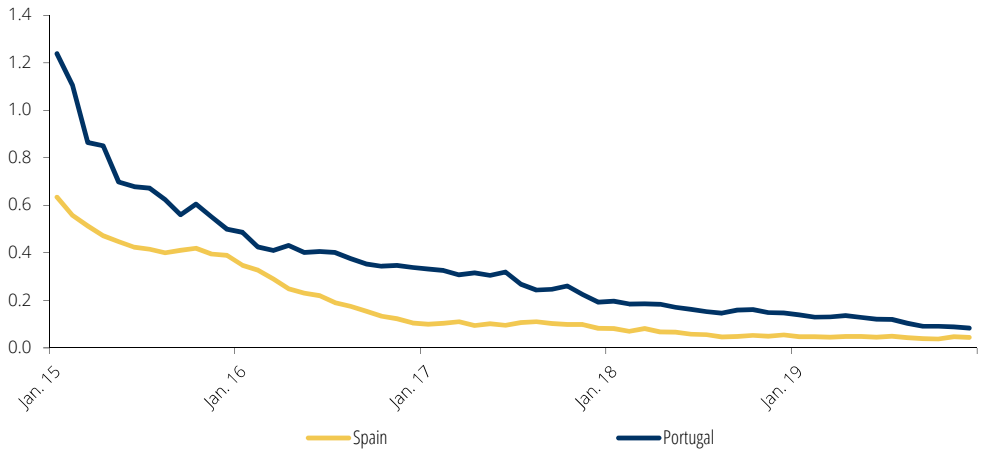
Source: Statistical Data Warehouse - ECB.

A possible explanation for this behaviour may be related to the thesis advanced in Bonfim et al. (2020).[10] These authors show the importance of the deposits channel in the transmission of monetary policy

10. Christian Bittner, Diana Bonfim, Florian Heider, Farzad Saidi, Glenn Schepens and Carla Soares (2020), "Why so negative? The effect of monetary policy on bank credit supply across the euro area", *mimeo*.

in different euro area countries. When monetary policy interest rates are negative, the existence of a zero lower bound in deposit rates may impair monetary policy transmission. Banks funded by deposits closer to this limit are less able to lower deposit rates in response to policy decisions, which may hamper decisions to lower interest rates on loans in order not to jeopardise commercial margins. Chart C1.4 compares interest rates on household deposits, in Portugal and Spain. The chart shows that in Spain interest rates on deposits became close to zero in 2017, the period in which interest rates on housing loans in Portugal and Spain began to diverge (Chart C1.3). At that time, interest rates on deposits in Portugal were still above zero, which might have made it possible for banks to continue lowering the interest rate on housing loans against a background of monetary policy accommodation in the euro area.

Chart C1.4 • Interest rates on new deposits from households with an agreed maturity
| Percentage



Source: Statistical Data Warehouse – ECB.

To sum up, Portuguese rates on new loans for house purchase have decreased over the past few years to levels below those observed in most euro area countries, when excluding other charges (other than interest). This may be partly explained by the greater share of loans with interest rates with short fixation periods in Portugal. However, even for the most common fixation period in Portugal (of less than one year), interest rates are at lower levels in Portugal than in other countries with a high weight of loans with this fixation period, which is also the case when compared to Spain. Another possible explanation might be that in Portugal there was a greater transmission of monetary policy to interest rates on loans, due to interest rates on deposits standing further away from the zero lower bound. Furthermore, other factors which have not been discussed in this box may play an important role in the reduction of Portuguese rates, such as competition and the role of bank fees in the market for loans to house purchase.

4 Public finances

In 2019 the general government balance reached a surplus, with a neutral fiscal stance

In 2019 the general government sector recorded a budget balance of 0.2% of GDP, corresponding to the first surplus in recent decades (Table I.4.1). This result reflects a more favourable outturn than the official estimate published by the Ministry of Finance (0.1% in the State Budget for 2020)[11] and compares with a deficit of 0.6% of GDP in the euro area as a whole, although the budgetary positions in the different countries vary considerably.

According to the Banco de Portugal's estimates, this corresponds to a structural balance,[12] cyclically adjusted and corrected for the total impact of temporary measures,[13] relatively close to the medium-term objective, which corresponds to a structural surplus of 0.25% of GDP in 2019 and a balanced structural balance in 2020. However, for assessing compliance with the European commitments, the methodology for calculating the relevant structural balance is that used by the European Commission.

Compared with the previous year, the budget balance registered an improvement of 0.6 p.p. of GDP. This result was partly due to a fall in the debt servicing burden (0.4 p.p. of GDP), with the primary surplus posting a 0.3 p.p. increase. Economic activity continued to contribute to the improvement of budgetary developments, given GDP growth above potential output (Chapter 5), resulting in a 0.3 p.p. increase in the cyclical component of the balance. By correcting this impact and the virtually neutral change in the effect of temporary measures,[14] a stabilisation of the structural primary balance is achieved, pointing to an essentially neutral fiscal policy stance, similar to that observed in recent years. Underlying these developments is a stabilisation of both total structural revenue and structural primary expenditure as a ratio of potential GDP. In the euro area as a whole, fiscal policy took on a slightly expansionary stance in 2019 (0.3 p.p. of potential GDP, according to the European Commission's Autumn Forecast).

11. The State Budget for 2019 included an initial estimate of 0.2% of GDP, and the European Commission's forecasts, published last autumn, pointed to a deficit of 0.1% of GDP.
12. The structural figures in this chapter are calculated using the new methodology for the cyclical adjustment of budget balances adopted in 2019 in the context of the ESCB. For more information on this methodology and its application to the Portuguese case, see Braz et al. (2019), "The new ESCB methodology for the calculation of cyclically adjusted budget balances: an application to the Portuguese case", *Banco de Portugal Economic Studies*, Volume V, No 2, 2019.
13. The classification of temporary measures follows ESCB rules. In 2019 the following operations were included: the capital injection from the Resolution Fund into Novo Banco, a compensatory payment as a result of a judicial decision on a concession contract and an amount relating to a land sale by local government, with an impact on capital expenditure (0.52 p.p. of GDP) and, affecting capital revenue, the partial recovery of the guarantee granted to BPP (0.02 p.p.). As a whole, the temporary measures had a negative impact on the budget balance, amounting to 0.5% of GDP.
14. In 2018, as in 2019, the magnitude of the temporary measures amounted to 0.5% of GDP. For a detailed description of the operations included, see Chapter 4 of the May 2019 issue of the *Economic Bulletin*.

Table I.4.1 • Main fiscal indicators

	2015	2016	2017	2018	2019	2019-18 change (in p.p.)
Overall balance	**-4.4**	**-1.9**	**-3.0**	**-0.4**	**0.2**	**0.6**
Interest expenditure	4.6	4.1	3.8	3.4	3.0	-0.4
Primary balance	0.1	2.2	0.8	2.9	3.2	0.3
Structural indicators (in percentage of potential GDP) [a]						
Structural balance	-1.4	-1.1	-0.8	-0.4	-0.1	0.4
Structural primary balance	3.0	2.9	2.9	3.0	3.0	0.0
Structural revenue	43.8	42.5	42.4	42.9	42.9	0.0
Structural primary expenditure	40.7	39.5	39.5	39.9	39.9	0.0
Public debt	**131.2**	**131.5**	**126.1**	**122.0**	**117.7**	**-4.3**
Change in public debt (in p.p.)	-1.8	0.3	-5.4	-4.1	-4.3	
(-) Primary balance	-0.1	-2.2	-0.8	-2.9	-3.2	
Differential between the effects of interest and of GDP growth	-0.3	-0.6	-2.6	-1.8	-1.6	
Deficit-debt adjustments	-1.3	3.2	-2.0	0.6	0.5	
Memo:						
Temporary measures [a]	-1.4	0.4	-2.0	-0.5	-0.5	0.0

Source: Statistics Portugal (computations by Banco de Portugal). | Note: (a) Structural figures are adjusted for the cycle and the effects of temporary measures. The cyclical components and temporary measures are gauged by Banco de Portugal in line with the methodology and definitions adopted in the ESCB. For further details, see Braz et al. (2019).

The ratio of structural revenue to potential GDP remained constant, despite the sharp growth in social contributions

In actual terms, total general government revenue grew by 3.8% in 2019, keeping the share of structural revenue in potential GDP unchanged (Chart I.4.1). This reflected the performance of the collection of social contributions and, to a lesser extent, the increase in other revenue, which offset the fall in the share of tax revenue in potential GDP. The decrease in structural tax revenue as a ratio of potential GDP was seen across the main taxes, except for VAT. Box 2 of this *Economic Bulletin* entitled "Structural developments in revenue from taxes and social contributions" describes in greater detail the structural evolution of revenue from taxes and social contributions in 2019.

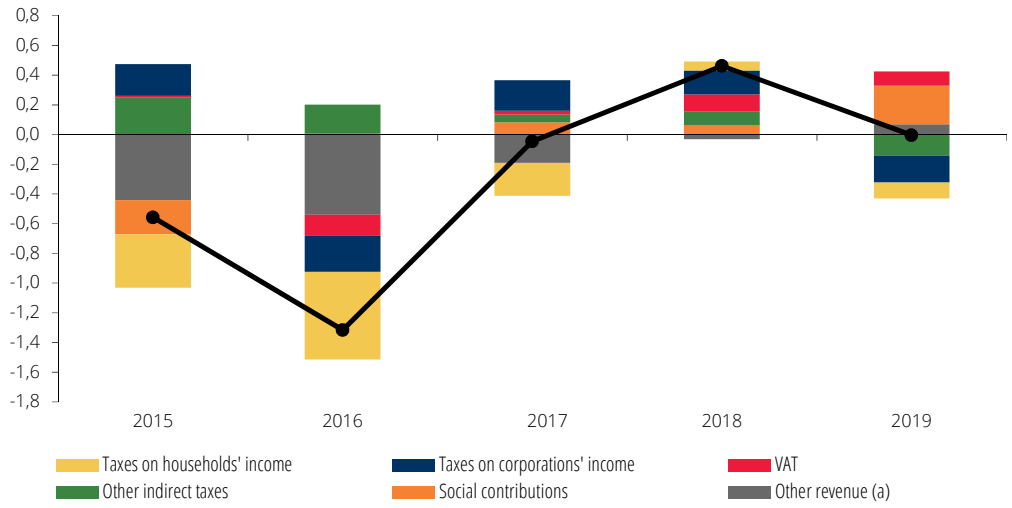
With regard to other revenue (non-tax and non-contributory revenue) adjusted for temporary measures, there was a 0.1 p.p. increase as a ratio of potential GDP, which reflects the increase in other current revenue, largely explained by growth in dividends distributed both by the Banco de Portugal and the Caixa Geral de Depósitos. As for capital revenue excluding temporary measures, its share in potential GDP stabilised as growth in capital transfers from the European Union to the general government reflected in expenditure in the year was offset by a fall in other unspecified revenue.

Structural primary expenditure also stabilised as a ratio of potential GDP

In 2019 primary expenditure increased by 3.1%, which corresponds to a stabilisation of this item's share in potential GDP (Chart I.4.2), excluding the impact of temporary measures and the effects of the economic cycle.[15] This was largely due to the reduction in intermediate consumption, which offset the contained increases in several other components.

15. On the expenditure side, it is considered that the only item affected by the economic cycle is spending on unemployment benefits.

Chart I.4.1 • Breakdown of the change in structural revenue | Contributions in percentage points of potential GDP



Source: Statistics Portugal (computations by Banco de Portugal). | Note: (a) Other revenue encompasses "other current revenue", including sales of goods and services, and "capital revenue".

As regards intermediate consumption, there was a 0.7% reduction in 2019, which excluding expenditure relating to the 2017 wildfires (classified as temporary measure in 2018) corresponds to the quasi-stabilisation of this item in terms of level and a reduction of the ratio in potential GDP by 0.2 p.p.. This evolution still remains, excluding the effect of the decrease in expenditure on public-private partnerships in the road sector and the costs associated with financial intermediation services indirectly measured (FISIM).

Compensation of employees showed a 4.4% change, resulting in a 0.1 p.p. increase of this item's ratio in potential GDP. In particular, wages and salaries grew by 5.1%, reflecting the unfreezing of career progressions and promotions in general government and an increase in the number of civil servants. The less significant increase in compensation of employees in relation to wages and salaries was partly due to the decrease in the number of subscribers to the CGA, the Civil Service pension scheme, following the closure of this subsystem to new subscribers in January 2006.

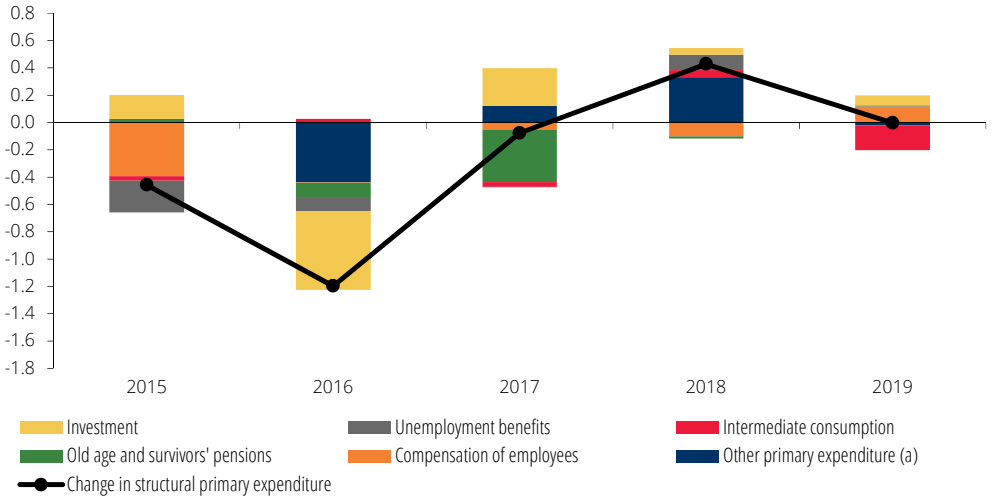
Outlays referring to old age and survivors' pensions grew by 3.3% in 2019, as a result of the rise in the average pension, greatly influenced by the update based on the pension indexation formula and the extraordinary increases in the lowest pensions. In turn, the total number of pensioners nearly stabilised, both in the general social security system and the CGA. This development was reflected in a stabilisation of this item's share in potential GDP. On the other hand, expenditure on unemployment benefits fell by 3.7% in 2019, as a result of the drop in the number of unemployed. By adjusting for cyclical developments, the share of this aggregate in potential GDP stabilised.

In 2019 public investment rose by 4.9% in nominal terms, with the share of this item in GDP remaining constant, and below that observed in 2015. By correcting the effect of temporary measures, there was a greater increase (7.5%), although less expressive than in the last two years, corresponding to a 0.1 p.p. increase in potential GDP.

The remaining components of primary expenditure maintained their overall share in potential GDP, as a result of the reduction in other capital expenditure that offset the increase in other

items (subsidies, other social benefits in cash and in kind and other current expenditure). In fact, other capital expenditure decreased by 37%, excluding the impact of the previously specified temporary measures (14.9% in actual terms), corresponding to 0.3 p.p. of potential GDP. Part of this decrease reflects the impact of a number of operations that, despite not complying with the requirements to be classified as temporary measures, had a significant one-off effect on the general government balance, with a more important impact in 2018.[16] In turn, there was a significant increase in social benefits in kind (9%) which, in addition to the increase in healthcare expenditure, is greatly influenced by the programme supporting the reduction in the prices of public transportation and by the measure widening the free distribution of school manuals.

Chart I.4.2 • Breakdown of the change in structural primary expenditure | Contributions in percentage points of potencial GDP



Source: Statistics Portugal (computations by Banco de Portugal). | Note: (a) Other primary expenditure includes social payments excluding old-age and survivors' pensions and unemployment benefits, subsidies, and other current and capital expenditure.

Government debt ratio kept a downward path, as a result of a high primary surplus and of nominal growth in economic activity above the implicit interest rate

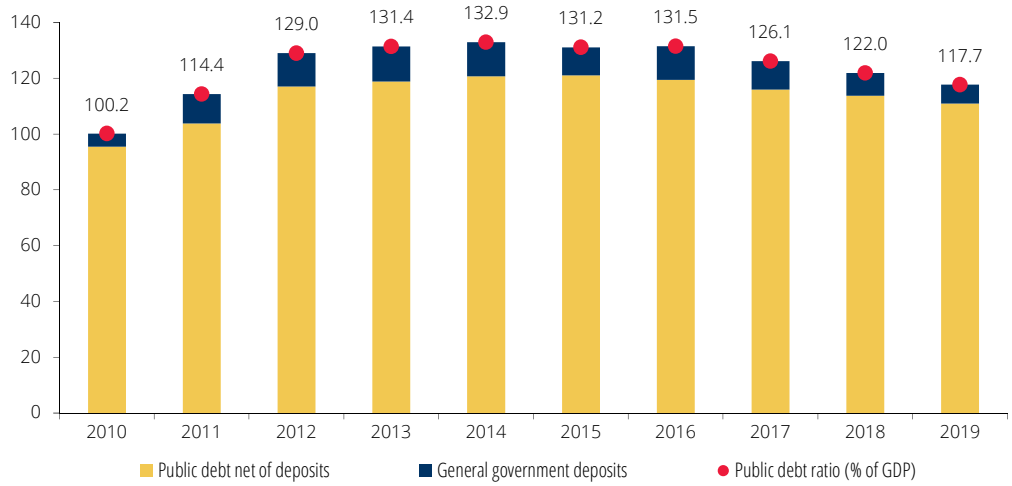
In 2019 Portugal continued to benefit from favourable financing conditions in the sovereign debt markets, in a context of a general fall in interest rates and a narrowing of the spread against German debt (Chapter 2). The average rate in 10-year Treasury bonds auctions maintained the downward trend of recent years, standing at 0.8%, 1.1 p.p. less than in 2018. As regards short-term issues, the average interest rate on Treasury bill auctions remained negative, decreasing from 0.3% in 2018 to 0.4% in 2019.

16. Noteworthy, due to their magnitude, are the amounts related to the compensation paid to former clients of Grupo Espírito Santo and the transfer to the energy sector of part of the revenue from the extraordinary contribution levied on that sector in order to reduce the tariff deficit.

These developments led to a significant reduction in the public debt interest burden in 2019 (-7.5%), which has resulted in a further reduction of this item's share in GDP. Cumulatively, this decrease amounted to 1.9 p.p. of GDP in the last five years. In particular, the implicit interest rate on debt[17] fell for the eighth consecutive year, reaching 2.7% in 2019. This development has benefited from the early repayments of loans granted under the Economic and Financial Assistance Program, including a payment to the European Financial Stability Facility (EFSF) in 2019.

At the end of 2019, general government debt stood at 117.7% of GDP, 4.3 p.p. less than at the end of the previous year (Chart I.4.3). This compares with 84.1% of GDP in the euro area as a whole, with the magnitude of the decrease relative to the previous year being significantly lower from that observed in Portugal. Excluding general government deposits, the Portuguese debt ratio posted a less marked reduction (2.9 p.p. of GDP), reaching 110.9% of GDP. Despite the deposit decumulation observed in recent years, their share in the stock of debt remains higher than that in the period prior to the sovereign debt crisis.

Chart I.4.3 • Public debt ratio | As a percentage of GDP



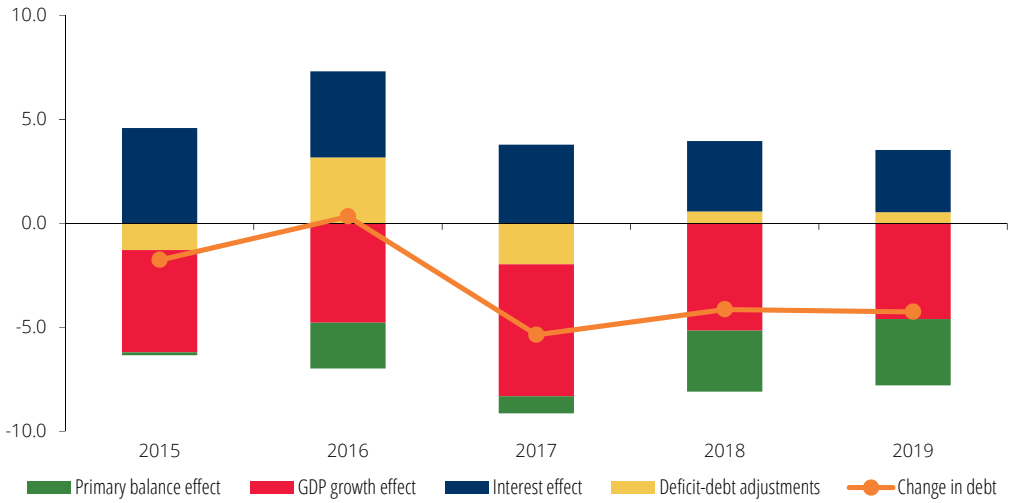
Sources: Banco de Portugal and Statistics Portugal.

As regards the decrease in the debt ratio, the main contribution stemmed from the general government primary balance, which reached 3.2% in 2019 (Chart I.4.4). Furthermore, the implicit interest rate on debt remained lower than the nominal GDP growth rate, contributing to a reduction of the debt to GDP ratio. By contrast, deficit-debt adjustments had a moderate increasing impact on this ratio (by 0.5 p.p. of GDP). These adjustments are explained by an accumulation of financial assets, since there were significant increases in debt securities and shares and other equity held by general government, which more than offset the reduction in the stock of deposits. Similarly, with an increasing impact on debt, the adjustments related to time-lag between cash and national accounting recording are also noteworthy, including the difference between paid and accrued interest and

17. The implicit interest rate is computed as the ratio of interest expenditure to the simple average of the stock of debt at the end of the same year and at the end of the preceding year.

pension expenditure associated with past transfers of pension funds. Finally and conversely, the effect of capital gains associated with the issuance of debt above nominal value stands out.

Chart I.4.4 • Breakdown of the change in the debt ratio | Contributions in percentage points of GDP



Sources: Banco de Portugal and Statistics Portugal.

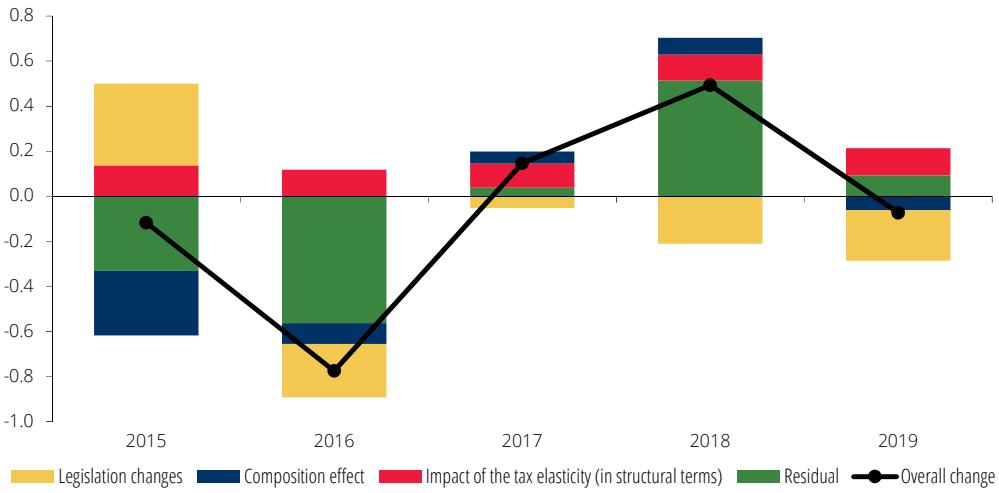
Box 2 • Structural developments in revenue from taxes and social contributions

The purpose of this box is to present a detailed analysis of the revenue developments in the main taxes and social contributions in structural terms, i.e. by eliminating the effect of transitory factors associated with business cycle fluctuations and temporary measures. The theoretical framework used in this analysis is the methodology adopted within the context of the ESCB, both as regards the criteria for identifying temporary measures and the method for quantifying the cyclical impact.

This methodology, as presented in Braz et al. (2019),[18] is based on an aggregate approach in which the cyclical component is obtained by multiplying the output gap by a budgetary semi-elasticity. Notwithstanding this aggregate nature of the methodology of cyclical adjustment, it is possible to break down the contribution of different factors to structural changes in revenue from taxes and social contributions into the: (i) effect of permanent tax policy measures; (ii) fiscal drag (essentially associated with personal income tax progressivity); (iii) composition effect resulting from the difference between developments recorded by the macroeconomic bases and what would have been expected given the respective elasticities with respect to the output gap; and (iv) residual component referring to the share of the structural variation that is not explained by the remaining components.

In 2019 the collection of taxes and social contributions grew by 3.8%. In structural terms, it is estimated that this aggregate stood at 36.8% of potential GDP, declining by 0.1 p.p. compared with the previous year (Chart C2.1). This is mainly explained by the impact of permanent fiscal policy measures, amounting to 0.2 p.p. of potential GDP. In turn, the fiscal drag and factors that are not singled out in the ESCB methodology, which, as such, are included in the residual component, were positive but modest. As regards the residual component, the modest figure results from the near offset of effects with opposite signs.

Chart C2.1 • Breakdown of the structural change in total taxes and social contributions
| Contributions in percentage points of potential GDP

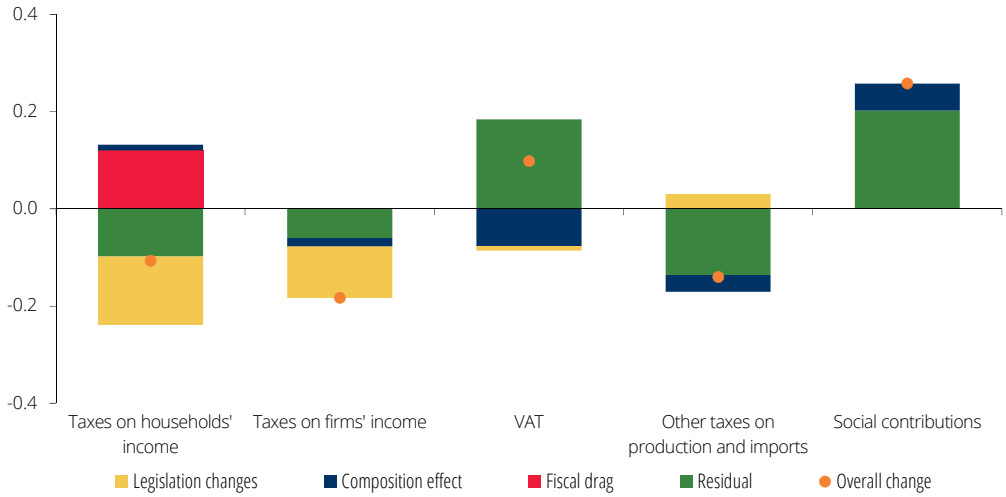


Source: Statistics Portugal (computations by Banco de Portugal).

18. Braz et al. (2019), "The new ESCB methodology for the calculation of cyclically adjusted budget balances: an application to the Portuguese case", Banco de Portugal *Review of Economic Studies*, Volume V, No 2.

In terms of items, the increase in social contributions, which amounted to 0.3 p.p. as a ratio of potential GDP (Chart C2.2), was noteworthy. This is mainly explained by the residual component that captures the factors that are not singled out in the ESCB methodology, such as, possible efficiency gains in the collection of contributions, which are difficult to quantify, as well as the impact of the integration programme for general government employees with precarious contracts and of the changes in the rules applicable to self-employed workers.[19] Finally, although not very significant, the composition effect associated with employment growth in the economy as a whole was also positive.

Chart C2.2 • Breakdown of the structural change in revenue from taxes and social contributions in 2019 | Contributions in percentage points of potential GDP



Source: Statistics Portugal (computations by Banco de Portugal). | Note: Part of the residual of social contributions reflects the actual and imputed social contributions referring to the civil servents' regime, both of which are also recorded on the expenditure side.

Structural revenue from taxes on production and imports remained unchanged as a ratio to potential GDP, as a result of the positive contribution of VAT collection, which offset the decrease in the share of other indirect taxes. Indeed, structural revenue from VAT increased by 0.1 p.p. of potential GDP. This outcome stemmed from a positive residual component which is likely to reflect the base-effect associated with the 2018 change in the taxation of extra-EU imports and a buoyant tourism sector which is not taken into account in the macroeconomic bases considered in the methodology. By contrast, in 2019 private consumption grew less than what would have resulted from its average sensitivities to changes in the output gap, as captured by the slightly negative composition effect. In terms of the remaining taxes on production and imports, structural revenue decreased by 0.1 p.p. of potential GDP. This results from developments in several taxes, particularly the decrease of the share of the Municipal Tax on Real Estate (IMI) revenue in potential GDP, as a result of the drop in the rate applied in a considerable number of municipalities, as well as of the revenue from the Tax on Motor Vehicle Sales (ISV). With regard to ISV, this decrease is consistent with the fall observed in light passenger vehicle purchases (Chapter 6).

19. Note that the decrease in the number of CGA subscribers, due to the closure of this subsystem to new subscribers, is likely to have a low impact on total revenue from social contributions, involving mainly a recomposition between actual and imputed contributions.

The structural revenue from taxes on income and wealth decreased by 0.3 p.p. as a ratio of potential GDP, reflecting the reduction in the collection of taxes paid by corporations and, to a lesser extent, households. In the case of taxes on corporate income, structural revenue decreased by 0.2 p.p. of potential GDP. This was the result of a number of legislative changes and a negative residual component. Among these, the base-effect associated with the change in the asset valuation regime, applicable in the period 2016-2018, and the elimination of the special prepayment are particularly noteworthy. The residual component may partly reflect the increase in the ratio of corporate income tax (IRC) refunds to potential GDP (net of the conversion of deferred tax assets in 2018 and 2019[20]).

Revenue from taxes on households' income also decreased by 0.1 p.p. in structural terms, in line with the implementation of measures to reduce the personal income tax (IRS) (namely the remaining effect of the elimination of the IRS surcharge implemented in 2013 and the changes to tax brackets introduced in the State Budget for 2018). In the same vein, an increase in refunds net of additional payments related to income earned in 2018 may also be noted, as captured by the negative residual component. This loss of revenue is mitigated by the fiscal drag which assumes in its calculation that the tax brackets are not updated.

20. In national accounts these operations are reflected in capital expenditure, while in public accounts, the conversion of deferred tax assets is recorded in IRC refunds, thus negatively affecting the net revenue of this tax.

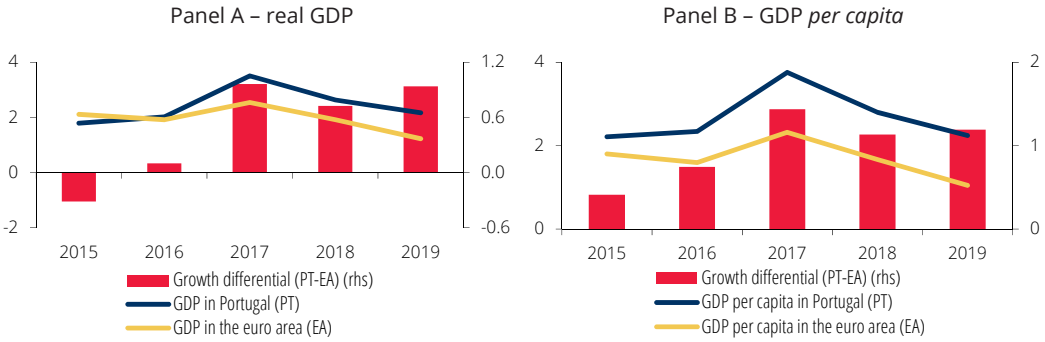
5 Supply

Economic activity in Portugal decelerated in 2019 but GDP and GDP *per capita* growth continued to be higher than in the euro area

In 2019 GDP grew by 2.2%, representing a deceleration of 0.4 p.p. from 2018 (Chart I.5.1, panel A). This slowdown was less marked than that observed in euro area countries as a whole, where GDP slowed from 1.9% to 1.2%. Thus, the positive growth differential in Portugal *vis-à-vis* the euro area increased to 1.0 p.p.

The same occurred in GDP *per capita* (Chart I.5.1, panel B). The fact that the GDP *per capita* growth differential has been positive since 2013 led to an upward trend in the ratio between the Portuguese GDP *per capita* and that of the euro area, standing at 58.4% in 2019. Nevertheless, in 2019 this ratio was at the same level as in 1996. The maintenance of the convergence process of the Portuguese economy remains a complex challenge that becomes more pressing in the face of the today's demographic challenges.[21]

Chart I.5.1 • GDP in Portugal and in the euro area | Annual rate of change in percentage and differential in percentage points



Source: Eurostat (Banco de Portugal calculations).

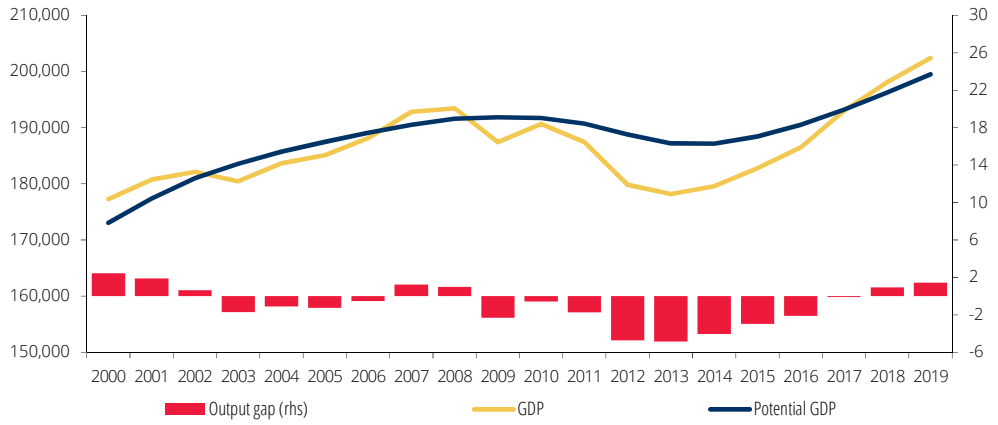
GDP growth continued to exceed that of potential output

The cyclical position of the Portuguese economy remained favourable in 2019, as GDP growth exceeded that of potential output.[22] Thus, the difference between the real level of GDP observed and the potential output (output gap) widened, and has been positive since 2018 (Chart I.5.2).

21. The Special issue of the October 2019 *Economic Bulletin* analyses the real convergence in the European Union and the relative performance of the Portuguese economy between 1960 and 2018. The analysis shows that there was no convergence of GDP *per capita* in Portugal towards the EU average in the past 25 years, which contrasts with the considerable progress in the Portuguese economy's real convergence observed in the 1960-1995 period.

22. Banco de Portugal's estimates are obtained according to the Cobb-Douglas production function. It should be noted that the calculation of potential GDP generally involves a high degree of uncertainty, which, in the current context, is magnified by the complexity of the pandemic crisis. For more information on this methodology and the usual uncertainty inherent to estimates, see Braz, Campos and Sazedj (2019), "The new ESCB methodology for the calculation of cyclically adjusted budget balances: an application to the Portuguese case", *Banco de Portugal Economic Studies*, Volume V – No 2 and the Special issue "Potential output: challenges and uncertainties" in the December 2017 issue of the *Economic Bulletin*.

Chart I.5.2 • GDP, potential GDP and output gap | Millions of euros at 2016 constant prices and as a percentage of potential GDP



Sources: Statistics Portugal and Banco de Portugal (Banco de Portugal calculations).

Real GVA deceleration mainly in industry

In 2019 gross value added (GVA) grew by 2.0%, which accounts for a 0.3 p.p. deceleration from 2018 (Table I.5.1). As recorded since 2014, year-on-year GVA growth was below that of GDP (2.2%).[23] In the euro area, GVA grew by 1.2% in 2019, 0.7 p.p. less than in 2018.

Table I.5.1 • GVA by activity sector | Year-on-year growth, percentage

	% of GVA in 2019	2017	2018	2019	2018		2019	
					H1	H2	H1	H2
GVA	100.0	3.3	2.3	2.0	2.9	1.7	1.9	2.0
Agriculture, forestry and fishing	2.4	2.0	-0.7	3.7	-0.9	-0.5	3.2	4.3
Manufacturing	13.8	5.9	1.6	-0.8	3.4	-0.1	-0.8	-0.7
Electricity, gas and water supply	3.5	-3.6	6.2	-0.6	6.3	6.1	-1.0	-0.2
Construction	4.5	5.3	4.2	7.1	3.7	4.8	8.7	5.6
Services	75.8	3.1	2.2	2.3	2.7	1.8	2.2	2.4
Trade, repair, restaurants and hotels	19.9	2.7	4.0	3.0	4.0	4.1	3.2	2.8
Transport, storage, information and communication activities	8.5	5.6	2.0	4.1	2.7	1.3	3.8	4.4
Financial and real estate activities	17.6	1.7	0.5	2.0	0.7	0.4	1.9	2.1
Other services (including public administration, education and health)	29.8	3.4	2.1	1.5	2.9	1.3	1.2	1.7
Memo:								
Euro area	–	2.7	1.9	1.2	2.5	1.4	1.3	1.1

Sources: Eurostat and Statistics Portugal – National Accounts (Banco de Portugal calculations).

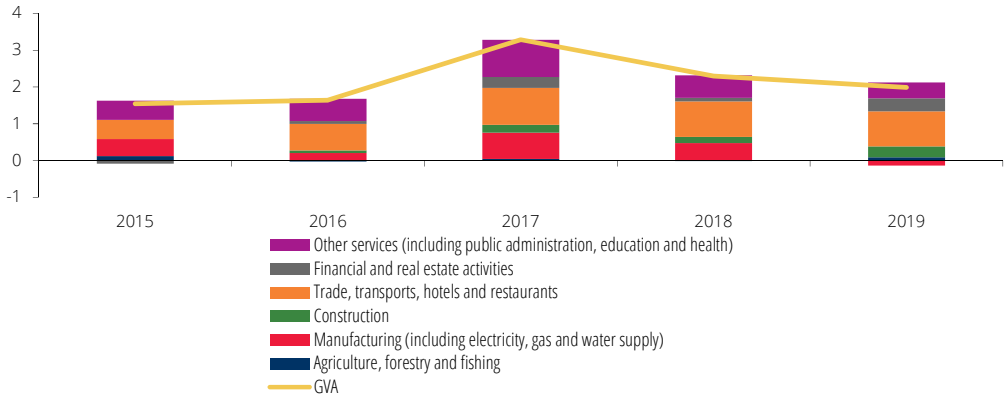
GVA growth in 2019 mainly reflects the contribution of the services sector (1.7 p.p.) and, to a lesser extent, construction (0.3 p.p.). Regarding services, the continued high growth of trade, transport,

23. The difference between GVA and GDP growth reflects statistical discrepancies as well as developments in taxes net of subsidies on products, which rose by 3.3% year on year, in 2019.

accommodation and food services was in line with the growth in tourism in Portugal (Chart I.5.3). In contrast, the slowdown in GVA since 2017 reflects less buoyant industrial activity. In 2019 industry GVA contributed most to the deceleration of total GVA, from an annual rate of change of 1.6% in 2018 to -0.8% in 2019 (Table I.5.1 and Chart I.5.3).

This decoupling of industry and services is also evident in the deterioration of confidence in industry, in a context where the services confidence indicator remains at high levels, despite showing some signs of slowdown. This differentiated behaviour between the two sectors is not specific to the Portuguese economy and is particularly evident in the euro area (Box 3 "The industry-services decoupling: Portugal in the context of advanced economies" of this Bulletin).

Chart I.5.3 • Sectoral contributions to the GVA annual rate of change | Percentage and percentage points



Source: Statistics Portugal – National Accounts (Banco de Portugal calculations).

Labour productivity increased significantly

According to Statistics Portugal's Labour Force Survey, in 2019 employment continued to show the deceleration that began in 2018, growing by 1.0% year on year (1.3 p.p. down from 2018). Therefore, labour productivity – measured as GVA per worker – grew by 1.2% (Chart I.5.4). Excluding general government and real estate activities, the growth of GVA per worker was 1.8% (Table I.5.2).[24]

While the slowdown in real GVA was mainly driven by the manufacturing sector in 2019, the slowdown in employment was relatively widespread across sectors. Given the sectoral data for GVA per worker, unlike the past few years, the aggregate productivity gains arise essentially from the within-sector component. This is due to the productivity increase in services, particularly trade, transport, accommodation and food activities, where GVA growth was higher than that of employment in 2019. The inter-sectoral contribution to productivity growth was positive and close to that seen in the last few years, continuing to reflect employment flows to more productive sectors of the economy.

24. The sectors "Real estate activities and rentals" and "General government, education and health" were excluded from the GVA per worker analysis, as the way GVA is calculated in these sectors implies that their productivity does not have economic meaning (in the first case, GVA is distorted by imputed rents; in the second, the GVA calculation for non-market services is based on wages).

Table I.5.2 • Sectoral contributions to the GVA per worker annual rate of change
| Percentage and percentage points

	2015	2016	2017	2018	2019	2014-2019	*Memo:* 2009-2013
Whole economy (exc. public administration and real estate activities, growth rate, percentage)	-0.1	0.3	0.2	0.6	1.8	1.8	9.3
Contributions (in p.p.):							
Agriculture, forestry and fishing	0.4	0.1	0.1	0.0	0.3	1.1	0.6
Manufacturing	-0.1	0.1	0.5	-0.3	-0.3	-0.1	2.5
Electricity, gas and water supply	0.0	-0.2	-0.4	0.2	-0.2	-0.4	-0.2
Trade, transports, hotels and restaurants	-0.3	-0.2	-0.2	0.3	0.8	-0.3	4.5
Construction	-0.1	0.0	0.0	0.1	0.3	0.2	0.5
Other services	-0.9	-0.1	-0.2	0.1	0.3	-2.2	-1.1
Within-sector	-1.0	-0.3	-0.2	0.3	1.3	-1.7	6.9
Inter-sectoral	0.8	0.6	0.4	0.4	0.5	3.5	2.4

Sources: Eurostat and Statistics Portugal – National Accounts (Banco de Portugal calculations). | Notes: The calculation of the within-sector component assumes that employment remains constant between periods, such that only the change in productivity of each sector is assessed. In turn, the calculation of the inter-sectoral component assumes that productivity does not change, isolating changes in employment. For a more detailed description of the methodology used to compute sectoral contributions, see the box 6 in the Economic Bulletin October 2017.

An economy's productivity and competitiveness can also be interpreted as the result of the contribution of the various productive inputs, including the capital stock per worker, the quality of human capital, and the quality of business management (Box 4 "A characterisation of top managers in Portugal" in this Bulletin), as well as of technology. In the Portuguese economy, where productivity levels are lower than the euro area average, it is paramount to push for innovation and to monitor the process of becoming more digital (Box 5 "Innovation indicators in Portugal" and Box 6 "How digital is the Portuguese economy?" in this Bulletin).

There was an acceleration in wages in 2019, offset by productivity gains

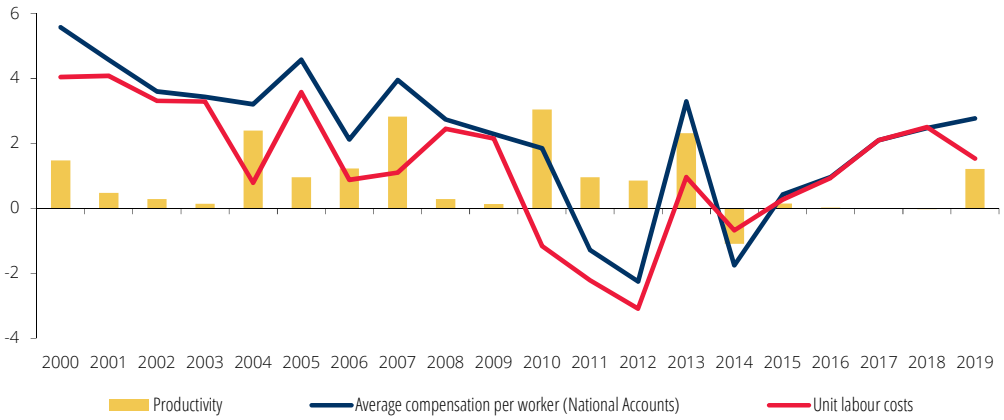
According to data released by the Ministry of Labour, Solidarity and Social Security, base wages per worker declared to Social Security in 2019 grew by 3.1%, which represents an acceleration from 2.4% in 2018 as a whole. The national accounts disclosed by Statistics Portugal point towards a 2.8% increase in average compensation per worker in 2019 (2.5% in 2018). Unit labour costs (ULCs), however, slowed down in 2019 (from 2.5% in 2018 to 1.5% in 2019), reflecting productivity growth (Chart I.5.4).[25]

Wage developments also reflect the greater momentum in collective bargaining in Portugal, which has translated into a greater number of collective agreements. In 2019, 352 new collective agreements were published, covering approximately 883.7 thousand workers, which led to 4.0% growth in bargained wages. Given its importance in wage distribution in Portugal, wage developments in 2019 also reflect the increase in the national minimum wage.[26]

25. Unit labour costs are calculated as the ratio of average compensation per worker to labour productivity – measured by the ratio of real GVA to total employment.

26. According to the Labour Gains and Duration Survey, released by the Office of Strategy and Planning of the Ministry of Labour, Solidarity and Social Security, the share of full-time employees earning the guaranteed monthly minimum wage was 25.6% in April 2019, the same as in the same period of 2018. The national minimum wage rose from €580 to €600 in the beginning of 2019 and to €635 on 1 January 2020.

Chart I.5.4 • Annual rate of change of average compensation per worker, unit labour costs and productivity | Percentage



Sources: Eurostat and Statistics Portugal – National Accounts (Banco de Portugal calculations).

The labour market situation continued to improve, with emphasis on the role of residents of foreign nationality

In 2019 the labour force maintained the subdued growth profile of the last few years with a 0.4% year-on-year increase. As observed since mid-2017, and despite its relatively small weight, the foreign labour force contributed 0.8 p.p. to this development.[27]

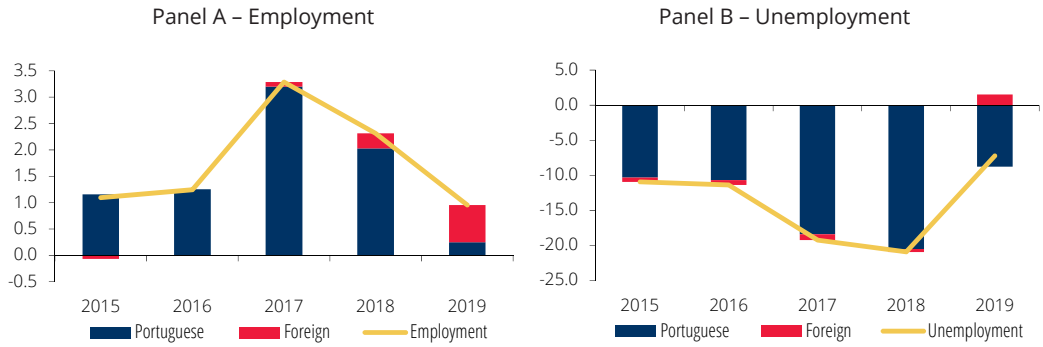
The labour force increase in 2019 occurs in a scenario of relative stabilisation of the total population – after the continuous decline in the resident population since 2010. The labour force growth over the most recent period benefited from the rise in the participation rate among older groups, boosted by a gradual increase in the retirement age. Younger generations in turn have posted a gradual decrease in the participation rate associated with longer schooling.[28] In addition, the maintenance of the long-term trend of a rising female participation rate, which is expected to converge with the male participation rate over the next few decades, is a factor that may mitigate the effects of the adverse demographic dynamics on the labour force.[29]

Resident foreign individuals drove employment growth in 2019, particularly in the second half of the year, and also contributed to the increase in unemployment throughout the year (Chart I.5.5). As regards employment, these individuals are relatively young (mainly under 35, but also between 35 and 54), have secondary and tertiary education, and have resided in Portugal for one or two years. In turn their impact on unemployment was virtually cross-cutting.

27. In 2019 the foreign labour force represented 3.4% of the total labour force (2.6% in 2018). For an analysis of the contribution of the foreign labour force residing in Portugal to developments in the total labour force, see, for example, Box 3 "The contribution of foreign population to labour force developments in Portugal" in the October 2019 issue of the *Economic Bulletin*.
28. For a more detailed analysis on the main demographic changes and the labour supply in Portugal, see the Special issue in the June 2019 issue of the *Economic Bulletin*.
29. In 2019 the female participation rate – ratio of labour force to total population – stood at 47.9%, 7.0 p.p. lower than the male participation rate. Compared to 2010 for instance, the female participation rate rose by 3.1 p.p. in 2019 and the differential between the female and male participation rates decreased by around 5.9 p.p.

The unemployment rate remained on a downward trend in 2019, albeit a more moderate one. Unemployment stood at 6.5%, the lowest since 2003 (6.3%).[30] However, the intra-annual profile of decline in the unemployment rate was interrupted in the fourth quarter of 2019 with an unemployment rate of 6.7% (6.1% in the third quarter).[31]

Chart I.5.5 • Nationality contributions to the employment and unemployment annual rate of change | Percentage and percentage points



Source: Statistics Portugal – Labour Force Survey (Banco de Portugal calculations).

The slowdown in employment resulted from employees, fixed-term contracts and contracts with service providers

The lower momentum in employment in 2019 reflects the deceleration of employment in a scenario where self-employment has returned to robust growth (Table I.5.3). Regarding types of contracts, both fixed-term contracts and contracts with service providers recorded a decrease. Fixed-term contracts as a share of total employees stood at 17.6% in 2019, 0.8 p.p. down from 2018.

In addition, employment slowed down in all age groups in 2019. Employment growth in 2019 (1.0%) mostly reflected the evolution in employment among older age groups, especially among individuals aged over 54 (0.7 p.p. contribution), and among individuals aged 45 to 54 (0.4 p.p.), but also in the 15 to 24 age bracket (0.2 p.p.).

In terms of educational attainment levels, the share in employment of individuals who did not complete secondary education continued to decrease (-5.4% year-on-year rate of change in 2019). The share of individuals with tertiary education in employment increased by 4.2%, while employment of individuals with secondary education posted a 4.7% rise. These developments resulted in individuals with tertiary and secondary education contributing 1.4 p.p. and 1.6 p.p. respectively to employment growth in 2019 (Chart I.5.6).

30. This corresponds to the lowest decrease since 2014, when the unemployed population began to decline.

31. The increase in individuals unemployed for 12 months or less (short-term unemployment) contributed to the increase in the unemployment rate in the fourth quarter of 2019. This was reflected in the lower share of long-term unemployment (12 months or more) which stood at 48.4% in the fourth quarter of 2019 (52.7% in the third quarter). In annual terms, the trend is to reduce the weight of long-term and very long-term unemployment (24 or more months) (Table I.5.4).

Table I.5.3 • Indicators of recent employment developments in Portugal | Year-on-year growth, percentage

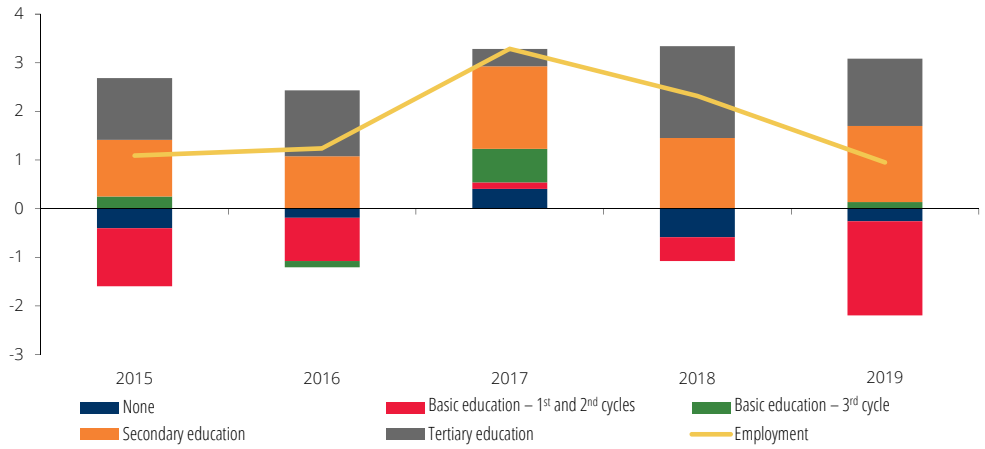
	Thousand individuals in 2019	2017	2018	2019	2018		2019	
					H1	H2	H1	H2
Total employment	4913.1	3.3	2.3	1.0	2.8	1.9	1.2	0.7
Employees	4084.8	4.3	2.7	0.7	3.7	1.7	0.6	0.8
Self-employed	810.5	-0.4	0.5	2.6	-1.5	2.5	4.2	1.1
Homeworkers	17.8	-23.9	-7.1	-12.9	-12.2	-1.6	-3.1	-22.3
By type of contract								
Open-ended contracts	3235.8	4.7	2.8	2.2	3.5	2.1	1.6	2.9
Fixed-term contracts	718.8	3.3	2.2	-3.5	5.4	-0.7	-2.0	-5.1
Service providers	130.2	0.8	4.8	-11.1	2.0	7.5	-7.2	-14.7
By duration								
Full-time	4404.9	4.1	3.2	1.1	4.1	2.3	1.1	1.1
Part-time	508.2	-2.4	-4.7	-0.6	-7.4	-1.8	1.8	-3.0
By age group								
From 15 to 24 years old	305.3	7.7	4.9	3.0	3.8	5.9	4.8	1.4
From 25 to 34 years old	935.6	1.1	0.7	-0.5	1.5	0.0	0.0	-0.9
From 35 to 44 years old	1292.5	-0.1	-0.3	-0.8	0.2	-0.7	-0.4	-1.3
From 45 to 54 years old	1269.5	4.3	2.7	1.4	3.8	1.6	0.5	2.3
More than 54 years old	1110.3	7.7	6.0	3.3	6.0	6.0	4.0	2.5

Source: Statistics Portugal – Labour Force Survey (Banco de Portugal calculations).

In addition to the unemployment rate decline, other available indicators point to a tightening labour market

In 2019 the number of unemployed in Portugal fell by 7.2% from 2018 (Table I.5.4).[32] Since 2013, when the unemployment rate reached a historical peak of 16.2%, the number of unemployed fell by 60.3% (515.8 thousand fewer unemployed).

Chart I.5.6 • Schooling level contributions to the employment annual rate of change | Percentage and percentage points



Source: Statistics Portugal – Labour Force Survey (Banco de Portugal calculations).

32. Taking into account flows, with a constant sample, i.e. considering individuals that remain in the sample of Statistics Portugal's Labour Force Survey for two consecutive quarters, it is clear that this reduction in the number of unemployed is essentially based on a significant flow of transitions to employment. In addition, the net flow from employment to inactivity was positive in the first half, but negative in the second half, and the net flow from inactivity to unemployment was positive throughout the year.

Table I.5.4 • Indicators of recent unemployment developments in Portugal | As a percentage of labour force, unless otherwise stated

	Thousand individuals in 2019	2017	2018	2019	2018		2019	
					H1	H2	H1	H2
Unemployment (year-on-year rate of change, in %)	339.5	-19.2	-20.9	-7.2	-22.7	-19.0	-10.5	-3.7
Unemployment rate	–	8.9	7.0	6.5	7.3	6.7	6.5	6.4
By age group								
From 15 to 24 years old	68.2	23.9	20.3	18.3	20.7	20.0	17.8	18.7
From 25 to 34 years old	70.6	9.7	7.5	7.0	8.0	7.1	6.7	7.4
From 35 to 44 years old	67.3	7.2	5.9	4.9	6.2	5.5	5.3	4.6
From 45 to 54 years old	71.7	7.2	5.3	5.3	5.5	5.2	5.7	5.0
More than 54 years old	61.5	7.2	5.5	5.3	5.8	5.1	5.2	5.3
Labour underutilisation (year-on-year rate of change, in %)	690.0	-14.8	-17.4	-7.2	-18.2	-16.5	-8.4	-6.0
Labour underutilisation rate [a]	-	16.5	13.7	12.7	14.3	13.1	13.0	12.4
Discouraged	167.5	4.1	3.5	3.2	3.5	3.5	3.3	3.1
Long-term unemployment (in % of total unemployment) [b]	170.9	58.1	51.4	50.3	53.2	49.4	50.2	50.5
Very long-term unemployment (in % of total unemployment) [c]	118.5	41.9	36.1	34.9	36.8	35.3	34.3	35.6

Source: Statistics Portugal – Labour Force Survey (Banco de Portugal calculations). | Notes: (a) The labour underutilisation rate aggregates unemployed population, involuntary part-time workers, individuals seeking work but not immediately available and individuals available to work but not seeking. To compute labour underutilisation rate, the labour force also includes these inactive individuals. (b) The long-term unemployment includes those unemployed for 12 or more months. (c) The very long-term unemployment includes those unemployed for 24 or more months.

By age group, the decrease in the unemployment rate also reflected the downward trend found in the youth unemployment rate (aged 15 to 24), amid a new increase in the labour force for this age group. In 2019 the youth unemployment rate stood at 18.3%, 2.0 p.p. down from 2018.

Available information continues to point to a tightening labour market. The employment rate in Portugal as a percentage of the working-age population (which is an indicator of the extent to which the potential labour supply is being used) stood at 70.5% in 2019, the highest since official employment statistics have been available. Compared to the euro area, this figure is higher by 3.2 p.p.[33] In addition, the labour underutilisation rate presented a steeper downward path than the unemployment rate, standing at 12.7% in 2019, 1.0 p.p. down from 2018.[34] The number of discouraged workers, who in 2019 represented 3.2% of the labour force, recorded a significant decrease of 9.3%. These indicators suggest that the room for labour supply growth by inclusion of inactive individuals still attached to the labour market has narrowed. Involuntary part-time workers, who represented 3.5% of the labour force in 2019, also declined 1.4% year on year.

33. The figures for the employment rate in Portugal and the euro area are published in the OECD database (Employment Rate Indicator).

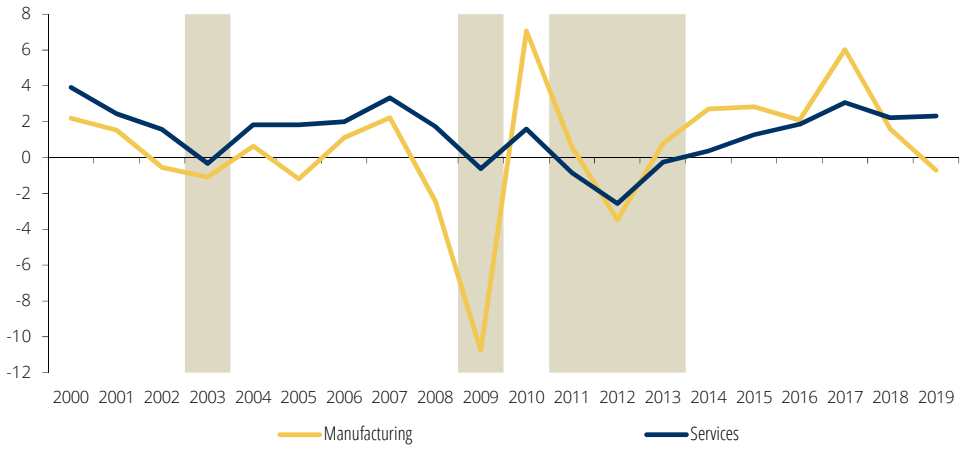
34. The labour underutilisation rate calculated by Statistics Portugal aggregates, in addition to those officially unemployed, involuntary part-time workers, inactive individuals seeking work but not immediately available and inactive individuals available to work but not actively seeking it.

Box 3 • The industry-services decoupling: Portugal in the context of advanced economies

In 2019, the slowdown in economic activity in Portugal was particularly concentrated in the manufacturing sector. This sector's activity – measured by gross value added (GVA) – has decelerated since 2017, falling by 0.7% in 2019. By contrast, activity in the services sector has remained relatively resilient, with a growth of around 2% in the last two years (Chart C3.1).

This decoupling is also corroborated by developments in several quantitative and qualitative indicators. On the one hand, industrial production has slowed down since the end of 2017, with a negative change in 2019, in line with deteriorating confidence in the sector. On the other hand, the turnover in services remained resilient in 2019, in a context where confidence in this sector was high, despite some signs of moderation. This Box seeks to understand the main factors underlying this different behaviour and to assess the extent to which the decline observed in manufacturing may have negative repercussions on the services sector.[35]

Chart C3.1 • GVA in volume of the manufacturing and services sectors in Portugal | Annual rate of change in percentage

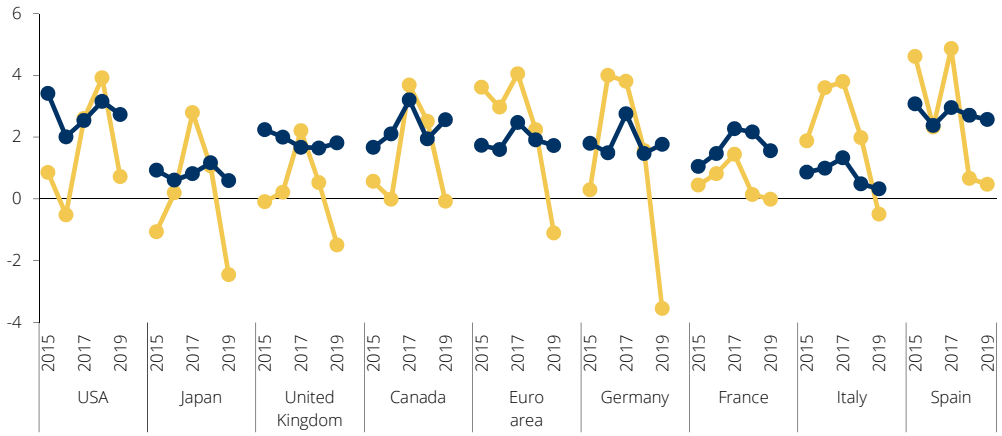


Source: Eurostat. | Note: The shaded area denotes periods of contraction of the Portuguese economy.

The weakness observed in the manufacturing sector is not specific to Portugal and has also been seen in several advanced economies (Chart C3.2). The manufacturing-services decoupling has become particularly noticeable in Germany, where manufacturing accounts for a relatively higher share of the economy. This behaviour has been greatly influenced by the sharp drop in the car production sector since the second half of 2018.[36] Also noteworthy is the negative behaviour of manufacturing in Japan, due to constraints in the production chain arising from natural disasters, as well as in the United Kingdom, where Brexit-related uncertainty is likely to have continued to influence investment decisions, especially affecting the production of capital goods.[37]

35. The heterogeneity of the Portuguese industrial fabric is not analysed in this Box.
36. A negative global performance in the car production sector has been observed over the last two years, with considerable impact on countries relatively more specialised in this sector, such as Germany. The main reasons given for this development are related to a significant reduction in China's demand directed to this sector and the introduction of regulatory changes in the European Union. See "Box 1.1. The Global Automobile Industry: Recent Developments and Implications for the Global Outlook", *World Economic Outlook* by the IMF, October 2019, and Box 6 entitled "Car production in Portugal: overview, recent developments and challenges", *Economic Bulletin*, October 2019.
37. See Box 1 entitled "Developments in the United Kingdom's departure from the European Union (Brexit) and its impact on the British economy so far", *Economic Bulletin*, May 2019.

Chart C3.2 • GVA in volume of the manufacturing and services sectors in the main advanced economies | Annual rate of change in percentage



Sources: Refinitiv and Eurostat (Banco de Portugal calculations). | Notes: In the case of Japan, the industrial production index of the manufacturing industry and the activity index of the tertiary sector are presented.

The different behaviour of activity in manufacturing and services may be related to the fact that the economic slowdown is associated with global factors resulting from the escalation of trade tensions between the United States and China, which have affected world trade and, more directly, the manufacturing sector.

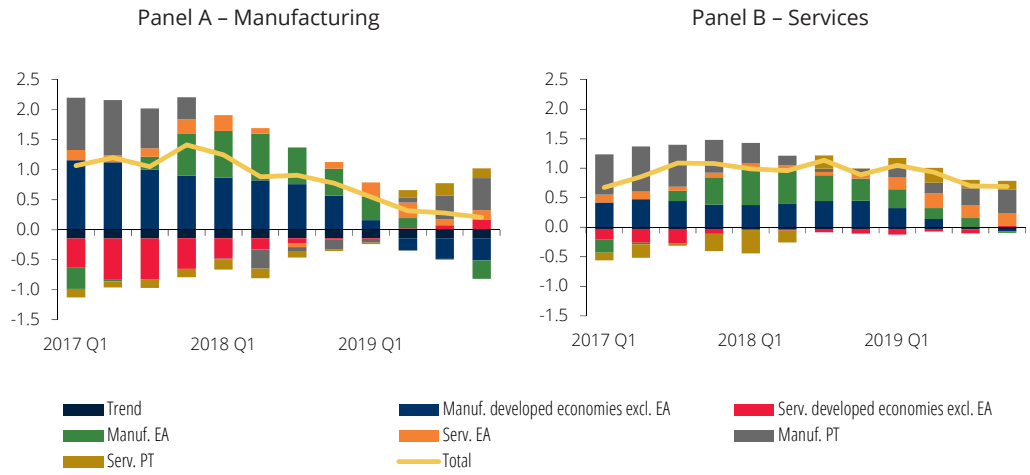
To evaluate this hypothesis, a model[38] was estimated with qualitative indicators for advanced economies (excluding the euro area), the euro area and Portugal, which usually capture well the evolution of manufacturing and services activity, with a view to analysing the explanatory factors of the recent behaviour of each sector in Portugal. This model allows for a breakdown of the changes in the manufacturing and services confidence indicators for the contributions resulting from these sectors' developments in Portugal, the euro area and other advanced economies.

Evidence suggests that the slowdown in activity in Portugal has been largely influenced by a global weakening of the manufacturing sector – directly influencing both the euro area and other advanced economies – which has had a particularly negative effect on Portuguese manufacturing (Chart C3.3, Panel A), but also impacting services (Chart C3.3, Panel B), albeit to a lesser extent.

Despite the resilience observed by the services sector as a whole, a more disaggregated analysis makes it possible to identify some subsectors where the activity has slowed down, possibly related to developments in the manufacturing sector. The behaviour among the various subsectors is identical both in the euro area and Portugal, although in the euro area the correlation between manufacturing and the services subsectors that are more synchronised with the economic cycle is higher (Chart C3.4, Panel A).

38. The model used corresponds to an SVAR (Structural Vector Autoregressive model).

Chart C3.3 • Historical decomposition of the industry and services confidence indicators in Portugal | Deviations from the 10-year historical average (standardised) and contributions



Sources: IHS Markit and European Commission (Banco de Portugal calculations). | Notes: (i) The series used correspond to the respective PMI, with the exception of Portugal (PT), where the qualitative indicators released by the European Commission were used; (ii) The PMI for developed economies excluding the euro area includes: United States, Japan, United Kingdom, Canada, Australia, Switzerland, Denmark and New Zealand; the euro area PMI (EA) includes: Germany, France, Italy, Spain, the Netherlands, Austria, Ireland and Greece; (iii) The model was estimated using quarterly data from 1998 to 2019, including 4 lags; (iv) The decomposition presented resorts to a Cholesky's identification following the order of the variables shown in the chart. The main results are qualitatively robust to other identification strategies, namely for changes in the order between industry and services in Portugal; v) The term "trend" captures the dynamics that the indicator would have in the absence of shocks.

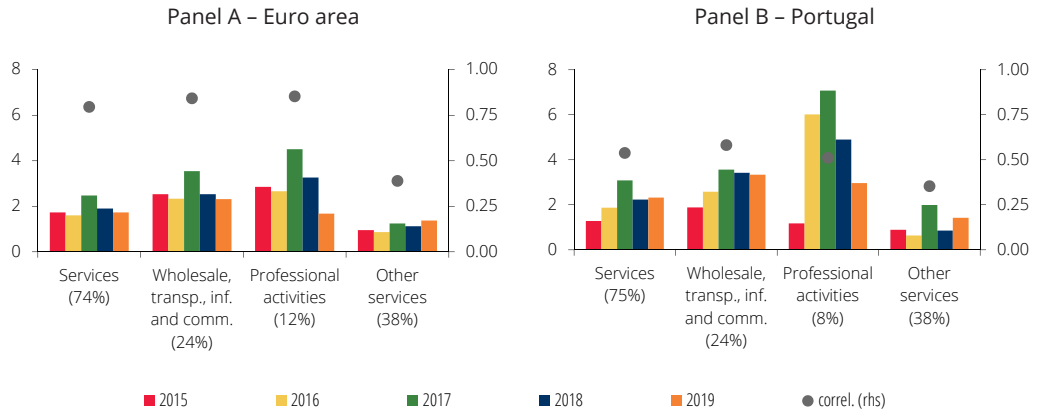
More specifically, the activity of professional and other support service activities has slowed down significantly in the last two years, having recorded very high growth in 2017. The activity of this subsector is mainly geared towards the intermediate consumption of other subsectors, namely the manufacturing sector. According to the latest data from the input-output tables for domestic production (2017), only 28% of the subsector's production is directly used for final expenditure, especially investment and exports, historically showing a relatively high correlation with GVA in the manufacturing sector compared to most of the other services subsectors.

In the last two years, the trade, transport, information and communication subsectors have also recorded a slight slowdown in Portugal (the slowdown from the 2017 peak was more noticeable in the euro area). These subsectors also present a relatively high historical correlation with manufacturing, although in this case around 50% of production is used directly for final consumption of households and general government, which may justify the maintenance of relatively solid growth (Chart C3.4, Panel B).

Activity in most of the remaining services subsectors, usually less correlated with manufacturing, has remained resilient and even accelerated in 2019. Historically, these other services have shown a relatively acyclic behaviour compared to the economic activity in general and an average growth rate below the sector's average. Even so, with the recent acceleration, the growth rate in 2019 was higher than its historical average.

The resilience of activity in most of the services subsectors is in line with domestic demand behaviour, which has been supported by favourable labour market conditions, accommodative monetary and financial conditions, and by a slightly expansionary fiscal policy in the euro area.

Chart C3.4 • GVA in volume of some services subsectors in the euro area and Portugal and correlation with the manufacturing sector | Annual rate of change in percentage and correlation coefficient



Source: Eurostat (Banco de Portugal calculations). | Notes: (i) The values in parentheses represent the weight of the subsectors GVA in the total GVA of the economy in 2019; (ii) Correlations are calculated using the historical sample of quarterly data from 1996 to 2019. The dots identify the maximum correlation of the year-on-year rate of change of the GVA of each services subsector with the year-on-year rate of change of the GVA of the manufacturing industry. In all services subsectors in Portugal and in the euro area, the maximum correlation occurs between the GVA of the manufacturing industry in *t-1* and the GVA of services in *t* (except in the case of "Other services" in Portugal, where the lag is 2 quarters instead of 1).

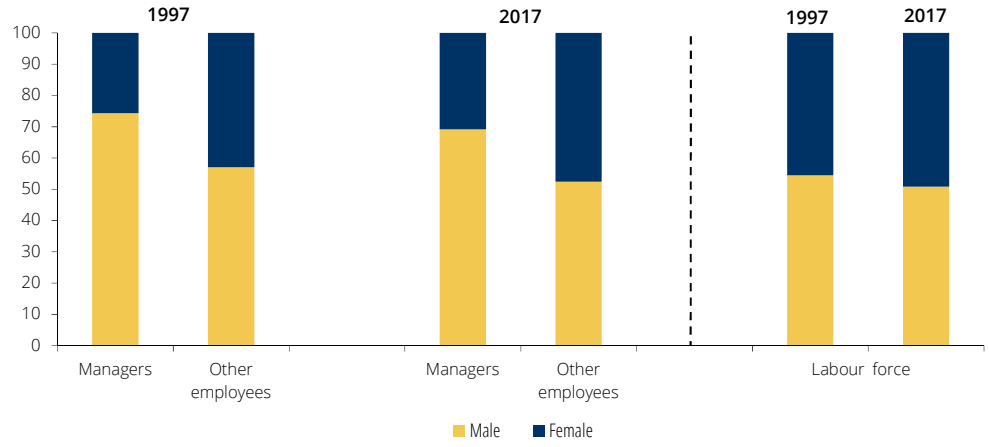
The analysis above shows the clear dichotomy that has characterised the behaviour of manufacturing and services in the last two years. This decoupling has been seen not only in Portugal but also in most of the advanced economies.

Box 4 • A characterisation of top managers in Portugal

Various empirical and theoretical studies consider management practices to be a determining factor in the performance of firms, and are therefore highly relevant to explain productivity differentials between countries. Given the central role of top management in defining these practices, this box aims to briefly characterise managers in Portugal and the developments observed over the last two decades, based on the information contained in the *Relatório Único (Quadros de Pessoal)*.[39] The analysis, of a descriptive nature, focuses on gender, age and level of education, comparing these characteristics of managers to those observed in the other workers. In order to establish a benchmark of comparison, the charts also include data from the Labour Force Survey on the characterisation of the labour force.

Chart C4.1 reveals that the percentage of female managers has increased marginally in Portugal over the past two decades, remaining at a relatively low level (approximately 31%, compared with female representation close to 50% amongst other employees), despite the significant increase in their qualifications. This result is broadly based across all sectors of activity and firms of different size classes.

Chart C4.1 • Breakdown of managers and other employees by gender | In percentage

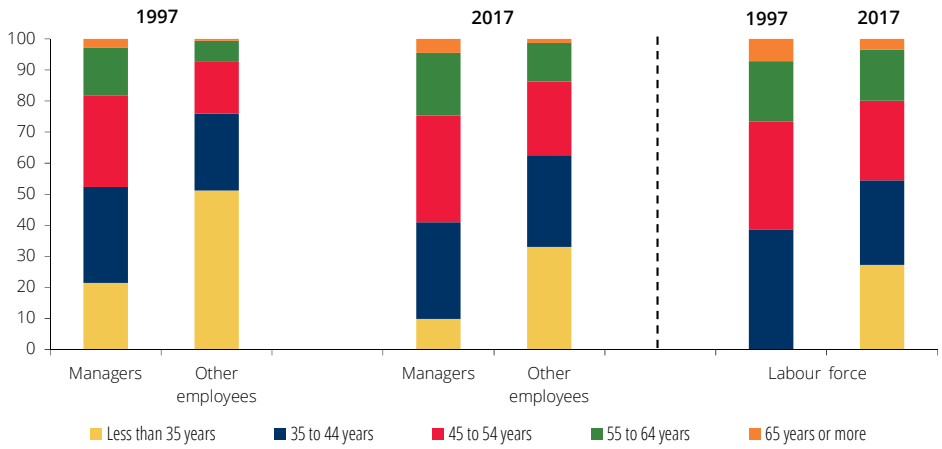


Sources: Statistics Portugal and *Quadros de Pessoal*.

In a context of an ageing population, the mean and median age of managers has increased by around 3 years over the last two decades, largely due to the decrease in the percentage of managers aged under 35 (representing only 10% of managers in 2017, 11 p.p. less than in 1997). Chart C4.2 also shows a relatively greater prevalence of higher age brackets for managers, which is consistent with the requirement for higher levels of education and years of experience in managerial roles. More specifically, approximately 60% of managers are over 44 years of age, compared with fewer than 40% in the case of other employees. In terms of breakdown by firms, there are no noteworthy differences, with the exception being a higher prevalence of managers from intermediate age ranges in large-sized firms.

39. *Quadros de Pessoal* is the microeconomic data gathered by the Ministry of Labour and Social Security, which includes all private firms with at least one paid employee.

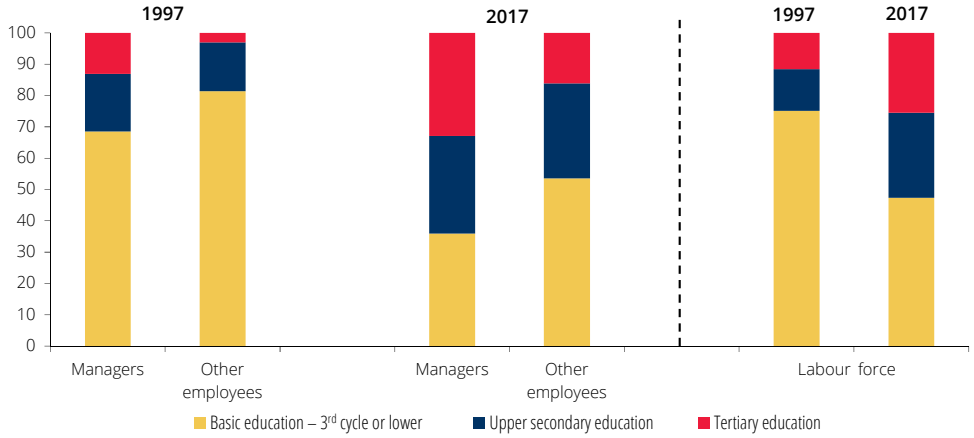
Chart C4.2 • Breakdown of managers and other employees by age bracket | In percentage



Sources: Statistics Portugal and *Quadros de Pessoal*.

The improved levels of education of the Portuguese population observed over the past 20 years is also reflected in top managers, as shown in Chart C4.3. The increase in the years of schooling of Portuguese managers has been noteworthy, with particular emphasis on the over 30 p.p. fall in the percentage of managers with an educational attainment below upper-secondary, which was slightly above 35% in 2017. In turn, a comparison between the level of educational attainment of managers with other workers reveals that, as expected, managers have on average more years of schooling, with emphasis on the number of graduates. Finally, a comparison by age group shows that the average level of education is higher in younger managers.

Chart C4.3 • Breakdown of managers and other employees by educational attainment | In percentage

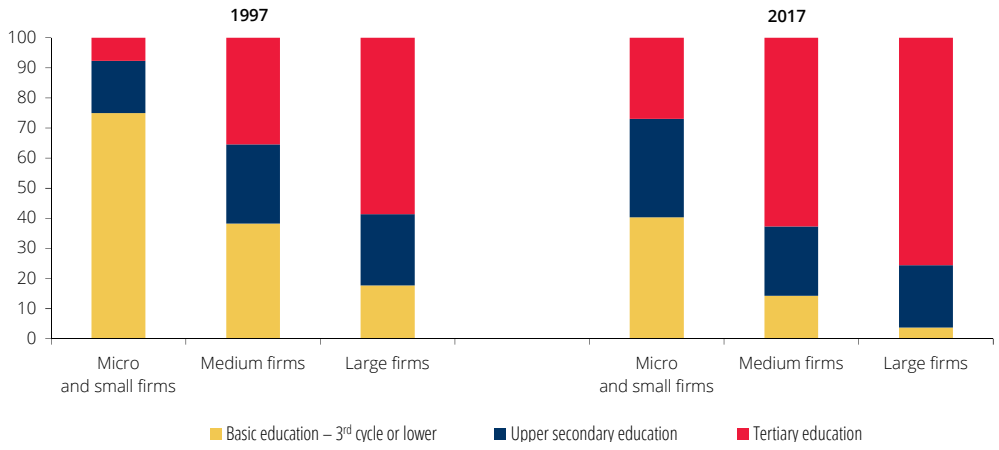


Sources: Statistics Portugal and *Quadros de Pessoal*.

Finally, Chart C4.4 points to a positive correlation between managers' average level of schooling and the firm size. Thus, in large firms, over 75% of managers are graduates and the percentage of managers with an educational attainment lower than upper-secondary is lower than 5%. In

contrast, in micro and small enterprises, which account for the vast majority of enterprises in Portugal, fewer than 30% of managers have a tertiary education qualification and a considerable percentage (approximately 40%) have not completed upper-secondary education.

Chart C4.4 • Breakdown of managers and other employees by educational attainment and firm size | In percentage



Source: *Quadros de Pessoal*.

In sum, the evidence presented suggests positive developments in the characteristics of top management in Portugal over the last two decades, particularly due to the increase in female representation in corporate management and the trend towards increasing levels of management education. As far as the role of women is concerned, it is important to underline that, in addition to the social benefits associated with greater equality, several studies point to productivity gains in enterprises that are not managed exclusively by men (see Bloom and Van Reenen, 2006[40]). Finally, it is important to note that the quality of management does not depend solely on the characteristics of the managers themselves, but also on the human capital of the firm, thus reinforcing the importance of increasing levels of education across the labour force (see Bloom and Van Reenen, 2010[41]).

40. "Management practices, work-life balance, and productivity: a review of some recent evidence", *Oxford Review of Economic Policy*.
41. "Why do management practices differ across firms and countries?", *Journal of Economic Perspectives*.

Box 5 • Innovation indicators in Portugal

The economic literature points to innovation as an important determinant of growth. Originally, this perspective was inspired by the concept of "creative destruction" formulated by Joseph Schumpeter in the first half of the 20th century, according to which new technologies and the products deriving thereof lead to a sharp reduction in activity in firms producing goods which have been made obsolete in the meantime. However, after some time, growth of the activity associated with the new products more than compensates for the initial destruction, generating a net growth. Market power also evolves over time, being high for firms with new products but becoming diluted over time with the entry of new firms and the widespread use of new technologies.

However, innovation is not only a way for firms to differentiate their products from those of competitors. It can also improve the manufacturing processes of existing products by incorporating new technologies or better management methods. Innovation in business models or processes can be as or more important and disruptive than innovation in products and services, promoting firms' competitiveness in domestic and external markets. For most firms, innovation does not depend on the scientific component geared towards research and development (R&D), but rather on the ability to combine existing knowledge in the fields of engineering, materials, production and design, among others. In addition, in terms of policy, it is generally acknowledged that there are positive externalities in innovation that justify government intervention. There are complementarities between science policies centred on R&D and the development and dissemination of technological innovations based mainly on collaborative relationships between entities part of the scientific and technological system and firms.

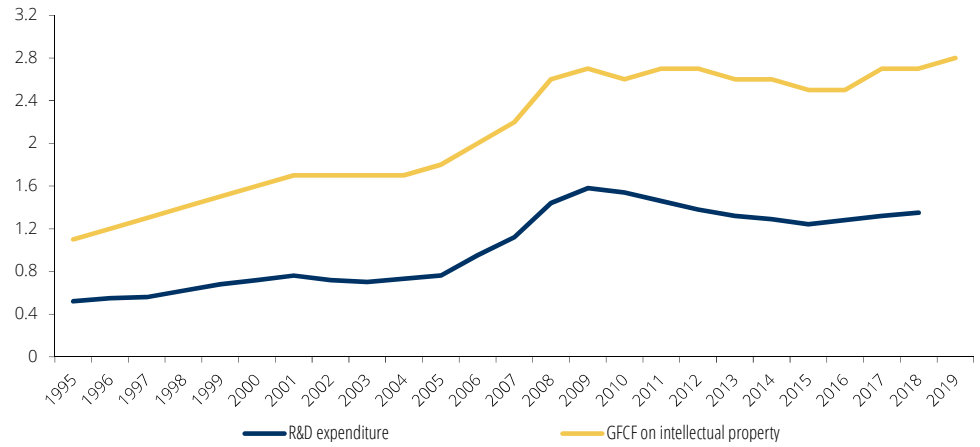
Such considerations are particularly appropriate in a context of widespread low rates of output growth in advanced economies, where much of the debate focuses on prescriptions for the regeneration of the productive sector. These issues are also highly relevant in the Portuguese economy, where average productivity levels are lower than those in the EU and the drive for internationalisation became a key driver for growth.

One of the most common indicators for analysing this issue and for making international comparisons is R&D expenditure as a percentage of GDP. The evolution of this indicator in Portugal is shown in Chart C5.1. It was on the rise until 2009, when it reached 1.6% of GDP. Later, coinciding with the adjustment period of the Portuguese economy, a contraction was recorded until 2015 followed by a recovery to 1.4% of GDP in 2018. In addition, gross fixed capital formation in intellectual property products as a percentage of GDP, which allows for a broader perspective, including the perspective of National Accounts, can be analysed. This indicator showed a globally similar behaviour to R&D expenditure, albeit with a more marked recovery in recent years. In 2018, in terms of R&D expenditure against the other EU countries, Portugal was in an intermediate position but considerably below the average, which corresponds to 2.1% of GDP (Chart C5.2). The ranking of countries differs when gross fixed capital formation in intellectual property products is taken into consideration, but Portugal has remained in an intermediate position and below the EU average.

As mentioned above, R&D expenditure indicators are partial. In particular, they do not include all the dimensions of innovation and do not take into account the results of this process. In order to address these flaws, it is important to resort to more comprehensive indicators, synthesised incomposite indicators. The European Innovation Scoreboard (EIS) provides a comparative analysis of innovation systems' performance and their strengths and weaknesses in national and regional

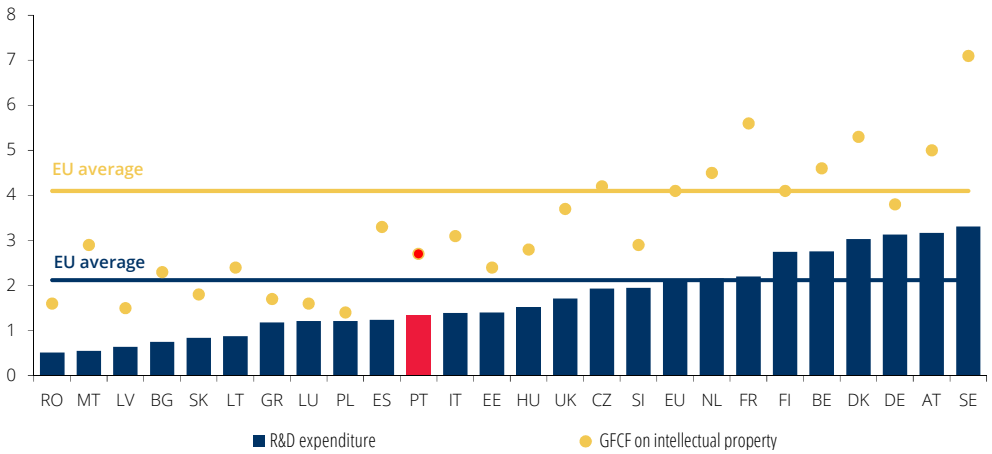
dimensions for EU Member States. This evaluation is based on 27 indicators, distinguishing between 10 dimensions of innovation organised into four main groups: Framework conditions, which look at the determinants of innovation, including human resources, attractiveness of research systems, and an innovation-friendly environment; Investments, including public and private investment in research and innovation and distinguishing between venture capital and firm investments; Innovation activities, which measure efforts at SME level (in terms of new products and processes), considering the innovation effort, linkages and intellectual assets; Impacts, which illustrate how innovation translates into benefits for the economy as a whole in terms of employment and effect on sales. This composite indicator is based on aggregated variables published by Eurostat and other recognised sources, but may present some difficulties in terms of international comparison. For example, firms from different countries do not always identify in-house innovation in the same way. Notwithstanding, the indicator is globally robust. The latest issue of this biannual report was published in June 2019.

Chart C5.1 • R&D expenditure and gross fixed capital formation on intellectual property in Portugal | As a percentage of GDP



Source: Eurostat.

Chart C5.2 • R&D expenditure and gross fixed capital formation on intellectual property in the European Union in 2018 | As a percentage of GDP

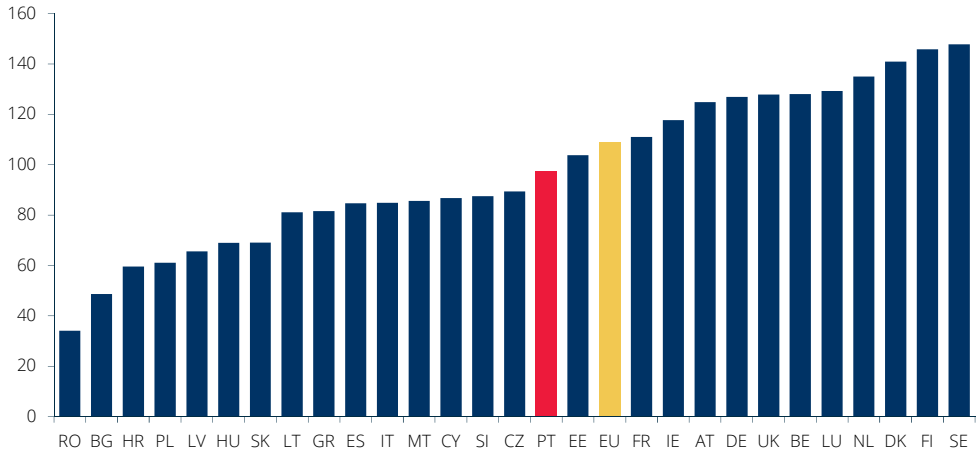


Source: Eurostat. | Note: The country-acronym correspondence is as follows: Austria (AT), Belgium (BE), Bulgaria (BG), Czech Republic (CZ), Denmark (DK), Estonia (EE), European Union (EU), Finland (FI), France (FR), Germany (DE), Greece (GR), Hungary (HU), Italy (IT), Latvia (LV), Lithuania (LT), Luxembourg (LU), Malta (MT), Poland (PL), Portugal (PT), Romania (RO), Slovakia (SK), Slovenia (SI), Spain (ES), Sweden (SE), The Netherlands (NL) and United Kingdom (UK). Data for Croatia, Cyprus and Ireland are not available.

Portugal's relative position in the context of this indicator in 2018 is intermediate (Chart C5.3), i.e. in comparison with other Member States, it is slightly above what is signalled by R&D expenditure as a percentage of GDP. For Portugal, there is also a positive development in the composite innovation indicator compared to the one recorded in 2011. The leading countries in the innovation indicator are Denmark, Finland and Sweden, and at the other end of the distribution are Romania and Bulgaria. There are significant differences in the dimensions of innovation.

Although Portugal falls below the composite innovation indicator for the EU in 2018, it is relatively close in terms of the framework conditions (slightly outperforming the EU in research systems and significantly in terms of the innovation-friendly environment) (Chart C5.4). Financing and innovation activities at firm level also fall short of EU figures, except for the innovation effort in firms, which saw the already very positive situation recorded in 2011 strengthened in 2018. Finally, in terms of impact on employment and, mostly, on sales, the indicator puts Portugal in a lower position than the EU average in 2018.

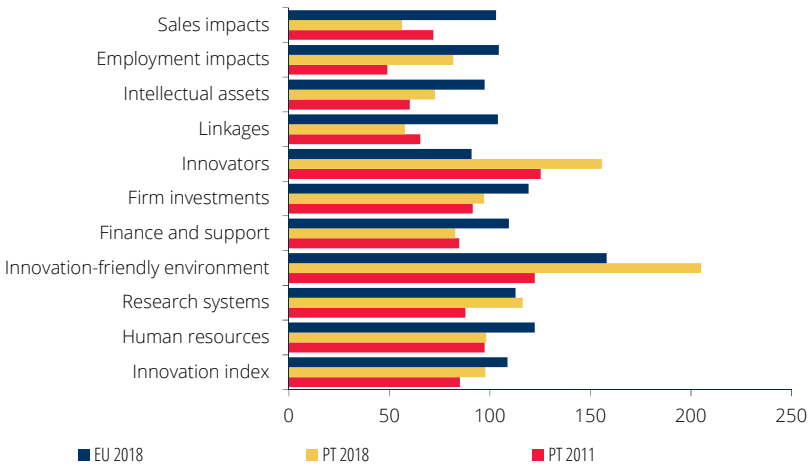
Chart C5.3 • Innovation index in 2018 | Values relative to the EU average (index: EU in 2011 = 100)



Source: *European Innovation Scoreboard*. | Note: The country-acronym correspondence is as follows: Austria (AT), Belgium (BE), Bulgaria (BG), Croatia (HR), Cyprus (CY), Czech Republic (CZ), Denmark (DK), Estonia (EE), European Union (EU), Finland (FI), France (FR), Germany (DE), Greece (GR), Hungary (HU), Ireland (IE), Italy (IT), Latvia (LV), Lithuania (LT), Luxembourg (LU), Malta (MT), Poland (PL), Portugal (PT), Romania (RO), Slovakia (SK), Slovenia (SI), Spain (ES), Sweden (SE), The Netherlands (NL) and United Kingdom (UK).

In summary, although some dimensions of success are highlighted, there is a great deal of room for improvement in terms of volume and efficiency in the use of resources allocated to innovation in Portugal. Access to and proper use of European funds for these purposes has made progress but can be improved. In addition, there is some difficulty in transposing the results of the research produced into sales and job creation in firms. In this context, the best practices in place in the country in terms of research centres that link firms and universities, hosting emerging technology-based firms, should be extended. In addition, the commitment of sectoral organisations to the dissemination of technology among firms, the sharing of technology among sectors and the role of business management in valuing innovation as a means of gaining international competitive advantage should be strengthened.

Chart C5.4 • Dimensions of the *European Innovation Scoreboard* | Values relative to the EU average in 2011 and 2018 (index: EU in 2011 = 100)



Source: *European Innovation Scoreboard*.

Box 6 • How digital is the Portuguese economy?

Digitalisation may be understood as the progressive integration of digital technologies into society, with effects upon the everyday lives of citizens and firms. From an economic point of view, digital transformation may be seen as a technological or supply shock with an impact on a number of aspects such as competitiveness, productivity and employment. The importance of the digitalisation of societies has been clearly illustrated by the current exceptional context dictated by the pandemic crisis, in which digital technologies have taken on a central role. According to the indicator discussed in this box, in 2019 Portugal was ranked 19th among the 28 European Union (EU) countries as regards the level of digitalisation in their society.

There is a broad consensus that digital technologies will become increasingly important for production processes in the future. These technologies will also take on a key role in how firms will relate to each other and to their final consumers. Against this background, it is to be expected that the international competitiveness of firms will increasingly depend on how quickly digital technologies are absorbed by production processes.

This box reviews the level of digitalisation of the Portuguese economy on the basis of the Digital Economy and Society Index (DESI) calculated by the European Commission.

The DESI was first calculated in 2014, on the basis of information made available up to 2013, and it is a composite index aggregating a number of indicators deemed important to gauge a country level of digitalisation. In addition to assessing the relative positioning of each country with respect to its level of digitalisation based on the DESI score and its subcomponents, the index also makes it possible to identify areas where room for improvement is greater and to monitor progress in this domain over time, taking advantage of the fact that the indicator is released on an annual basis.

The DESI is a composite indicator aggregating five broad dimensions (sub-indices) with different weights: (i) Connectivity, with a 25% weight in the composite indicator and covering, among other indicators, fixed and mobile broadband coverage and the share of subscribers; (ii) Human Capital, with a 25% weight, which includes the share of the population which has completed higher education in the IT and communication areas, as well as the share of internet users; (iii) Use of Internet Services, with a 15% weight, which covers, for instance, the share of the population which subscribes to online newspapers, shops online or uses the internet to access banking services; (iv) Integration of Digital Technology, with a 20% weight, which includes the level of integration of the most recent technologies in firms or the importance of e-commerce; (v) and, finally, Digital Public Services, with a 15% weight, which comprises the quality assessment of several public services made available online.

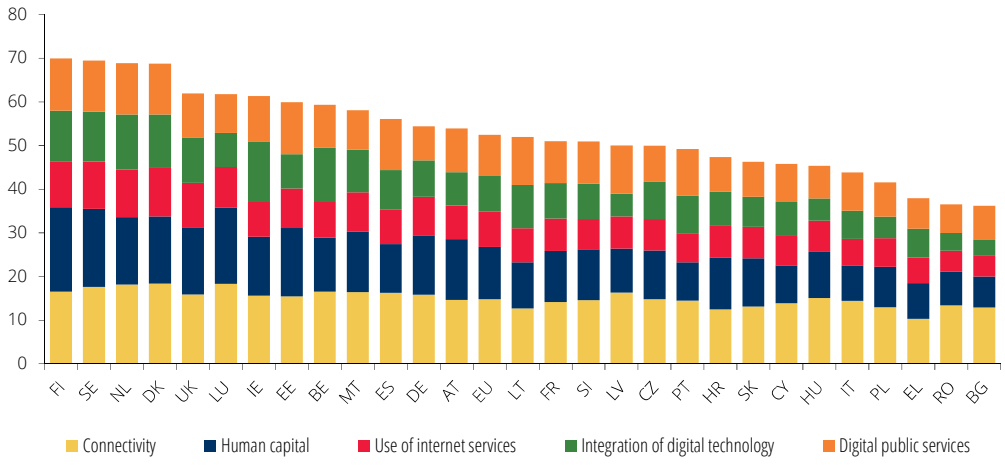
For each country, the values for each indicator are calculated on the basis of a normalisation procedure which consists of dividing the respective difference *vis-á-vis* the sample minimum for all countries, by the difference between the sample maximum and minimum. Following a weighting scheme which assigns different weights to each indicator, these normalised values are subsequently aggregated into the five aforementioned dimensions that ultimately result in the DESI. In this context, the DESI score cannot be interpreted on its own and it only allows for an assessment of the relative positioning of each country in the general index and its various sub-indices and indicators.

In 2019 Portugal ranked 19th among the 28 EU countries as regards the level of digitalisation of the economy and society (Chart C6.1). Finland ranked top, followed by Sweden and the Netherlands. Compared to 2014, Portugal slid down one position in the ranking, as a result of a fall in three dimensions (connectivity, use of internet services and digital public services) and an improvement in the other two (integration of digital technology and human capital).

The most substantial deterioration in the ranking was in connectivity (from the 13th to the 18th position), despite recent progress in the usage of ultra-fast fixed and mobile broadband (Chart C6.2). Indeed, Portugal ranked 2nd with respect to the percentage of ultra-fast broadband subscriptions in 2019. A decrease in digital public services was also observed, an area where Portugal still has the best relative performance, ranking 9th among the 28 EU countries. In fact, Portugal is still one of the countries where the share of users of internet government services is higher. A slight drop in the ranking as regards the use of internet services was also recorded. In this domain, it should be noted that the share of people who have never used internet in Portugal is twice the average figure observed for the EU, while the share of people who have used the internet at least once a week is still relatively low.

Conversely, Portugal saw advances in the integration of digital technology and human capital. In 2019, Portugal ranked 11th with respect to integration of digital technology (15th in 2014), scoring above the EU average. Progress has been more perceptible in e-commerce turnover, although this improvement has mostly been seen among larger enterprises. Finally, in human capital, the area in which (together with the use of internet services) Portugal has a lower ranking (23th position), it has moved up two positions since 2014. In this context, despite this progress, a high share of the Portuguese population still lack digital skills. This will tend to diminish as the young generations at present grow older, but only very gradually. At the same time, the share of IT and communication specialists is also below the EU average.[42]

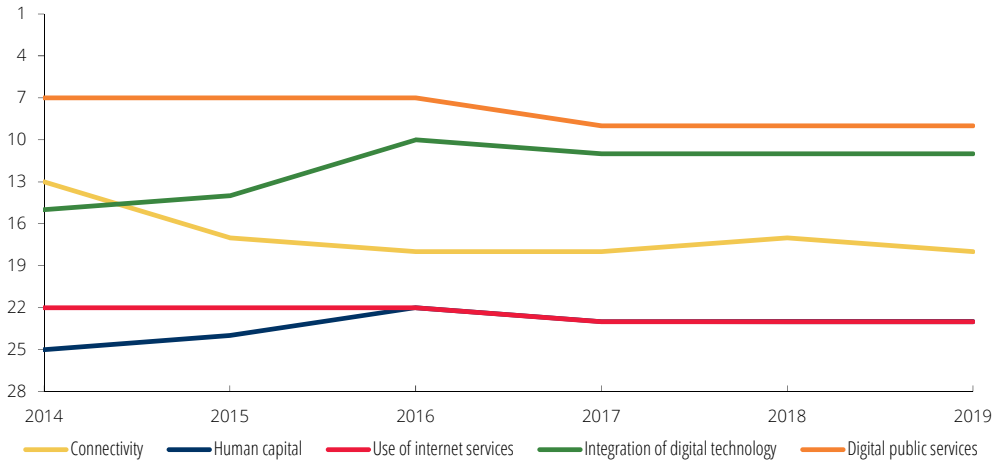
Table I.5.5 • Digital Economy and Society Index in 2019 in the European Union countries
| As a percentage



Source: European Commission.

42. In 2017, the last year for which information is available for all EU countries, 50% of the Portuguese population lacked basic digital skills and approximately 30% had no digital skills, while the EU average for these indicators was 43% and 17% respectively. The share of IT and communication specialists in 2017 was 2.2%, compared to 3.7% in the EU, on average.

Table I.5.1 • Evolution of the ranking of Portugal in the Digital Economy and Society Index dimensions (2014-2019) | Ranking in the 28 European Union countries



Source: European Commission.

6 Demand

The deceleration in economic activity in 2019 was chiefly due to a lower contribution from exports

In 2019 real GDP grew by 2.2%, representing a 0.4 p.p. deceleration from 2018 (Table I.6.1). The breakdown of growth, considering contributions net of imports, shows that the deceleration of GDP was chiefly due to a lower contribution from exports (-0.4 p.p.) – in a context of slowdown in global trade and external demand for Portuguese goods and services – and to a lesser extent from domestic demand (-0.1 p.p.), reflecting in particular a deceleration in private consumption (Chart I.6.1).

In intra-annual terms, economic growth was relatively similar in the two semesters. Despite accelerating in annual average terms, investment slowed down over the course of the year, although offset by exports, which were more buoyant in the second half of the year.

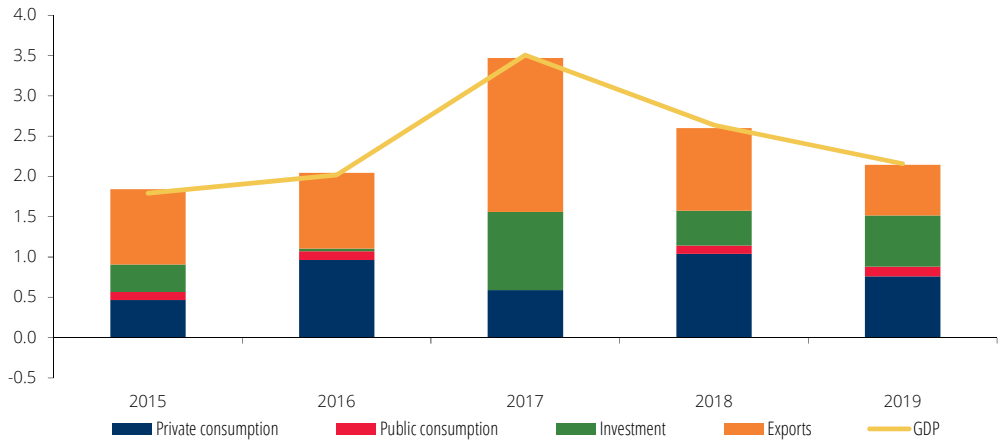
Table I.6.1 • GDP and its main components | Year-on-year rate of change as a percentage, unless otherwise stated

	% of GDP in 2018	Annual rate of change			Year-on-year rate of change			
		2017	2018	2019	2018 H1	2018 H2	2019 H1	2019 H2
GDP	100.0	3.5	2.6	2.2	2.8	2.5	2.2	2.1
Domestic demand	99.6	3.3	3.1	2.8	3.0	3.3	3.4	2.2
Private consumption	64.6	2.1	2.9	2.2	2.7	3.1	2.2	2.3
Public consumption	16.9	0.2	0.9	1.1	0.9	0.9	0.9	1.2
Investment	18.1	11.9	6.2	6.3	6.2	6.3	10.2	2.7
GFCF	17.5	11.5	5.8	6.3	6.2	5.5	8.7	3.9
Change in inventories [a]	0.6	0.1	0.1	0.0	0.0	0.2	0.3	-0.2
Exports	43.7	8.4	4.5	3.7	6.5	2.5	3.2	4.2
Imports	43.3	8.1	5.7	5.2	7.1	4.4	6.0	4.5
Contributions of domestic demand net of imports [b]		1.6	1.6	1.5	1.4	1.8	1.7	1.4
Contributions of net exports [b]		1.9	1.0	0.6	1.4	0.7	0.5	0.7
Memo item:								
GDP – change over the previous period					1.4	1.1	1.1	0.9
Domestic demand (exc. change in inventories)	99.0	3.2	3.0	2.7	3.0	3.1	3.1	2.4
GDP – Euro Area		2.7	1.9	1.2	2.4	1.4	1.3	1.2

Source: Statistics Portugal (Banco de Portugal calculations). | Notes: (a) Includes net aquisitions of valuables and it is expressed in contributions to the annual rate of change of real GDP, in percentage points. (b) Demand aggregates net of imports are obtained by subtracting an estimate by Banco de Portugal of the imports needed to meet each component. The computation of the import content was based on data for 2015. For more information, see the Box entitled "Uptade of the import content of global demand for the Portuguese economy" in the March 2019 issue of the *Economic Bulletin*.

As in the euro area, the slowdown in economic activity in Portugal was largely due to developments in external trade (Chapter 2). However, the growth of the main expenditure aggregates in Portugal was higher than the euro area's, with the exception of public consumption. Investment in Portugal grew by 3.1 p.p. more, while private consumption growth stood 0.9 p.p. above that seen in the euro area. Exports and imports also grew at a higher rate in Portugal (1.2 p.p. and 1.4 p.p. respectively).

Chart I.6.1 • Net of imports contributions to the growth rate of GDP | As a percentage and percentage points



Source: Statistics Portugal (Banco de Portugal calculations)

The deceleration in private consumption was driven by the car component

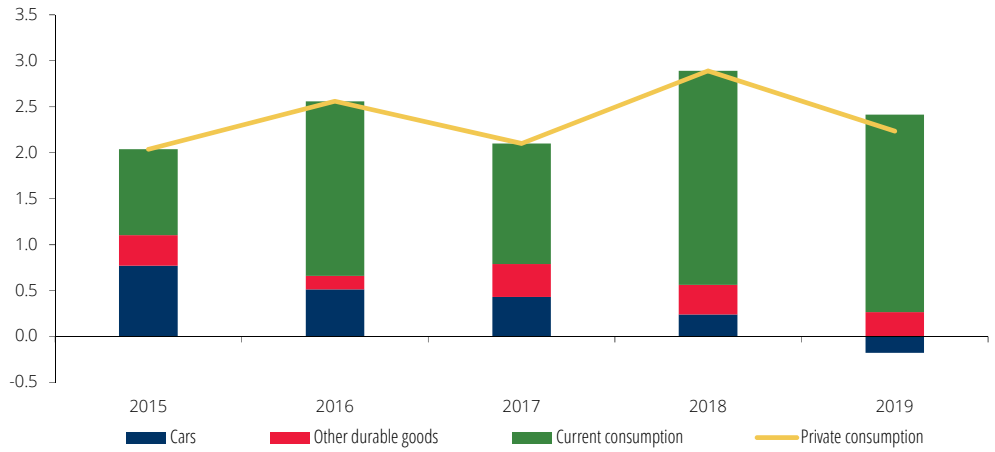
Private consumption grew by 2.2% in 2019, moving closer to the GDP growth rate. This corresponded to a 0.7 p.p. deceleration from the previous year. Private consumption slowed down amid falling consumer confidence, which nevertheless remained above its historical average. This decline mainly reflected a less positive assessment of the general economic situation over the following 12 months.

The deceleration in private consumption was accompanied by a deceleration in real disposable income, with the savings rate remaining at 6.7% (for an analysis of the propensity to consume in Portugal and the euro area based on survey data, see Box 7 "Propensity to consume in Portugal and the euro area: a survey-based analysis" in this Bulletin). These developments, along with continuing strong residential investment, resulted in a new decline in households' net lending capacity. Total household compensation grew at a slower pace in 2019 (4.5%, against 5.4% in 2018), due to the deceleration of employment. Compensation per employee grew at a faster pace, although relatively close to that seen in the previous year (Chapter 5).

The deceleration in private consumption was mainly due to the car component , which dropped by 3.6%, after six years of growing much more than total private consumption (cumulatively, consumer spending on this type of goods increased by more than 85% since 2013). This fall may have been related to the uncertainty over the car market's future prevailing technology, its tax framework, and the expansion of new mobility services and solutions.

Consumer spending on other durable goods also decelerated in 2019, but continued to be more dynamic than total consumption (5.8%, after 7.3% in 2018). Current consumption grew by 2.4%, i.e. 0.2 p.p. less than in 2018.

Chart I.6.2 • Contributions to the growth rate of private consumption | As a percentage and percentage points

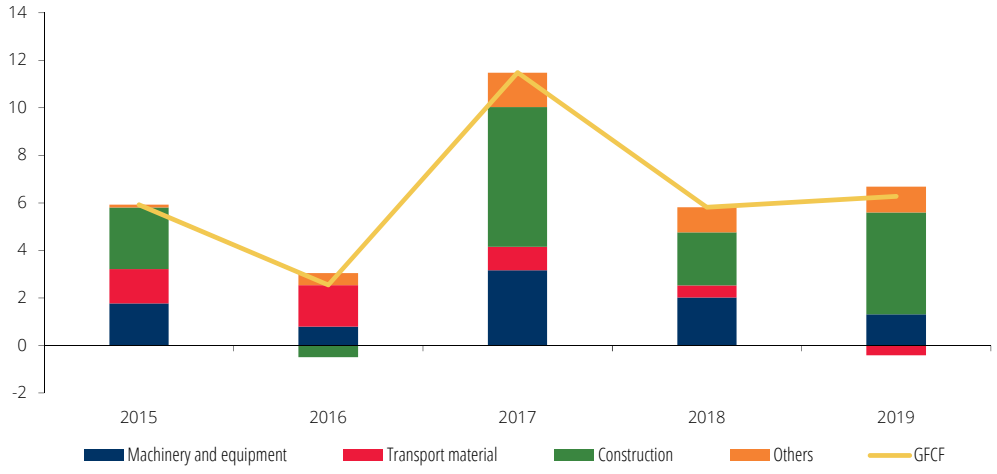


Source: Statistics Portugal (Banco de Portugal calculations).

Investment accelerated slightly, reflecting the dynamics of the construction component

Investment accelerated by 0.1 p.p. to an annual growth rate of 6.3% and was the expenditure component that grew most in 2019 and the only one that accelerated, albeit slightly. Investment growth reflects the behaviour of GFCF, which increased by 6.3% (5.8% in 2018) (Chart I.6.3). Changes in inventories made a nil contribution to GDP growth.

Chart I.6.3 • Contributions to the GFCF growth rate | As a percentage and percentage points



Source: Statistics Portugal.

This expenditure aggregate showed a deceleration profile over the course of 2019, which was broadly based across the different components. The context of global uncertainty associated with protectionist tensions and the slowdown in world trade over the year seem to have affected

investment decisions, particularly by the industrial sector and may help to explain the intra-annual deceleration profile of this expenditure component (see Box 3 "The industry-services decoupling: Portugal in the context of advanced economies" in this Bulletin).

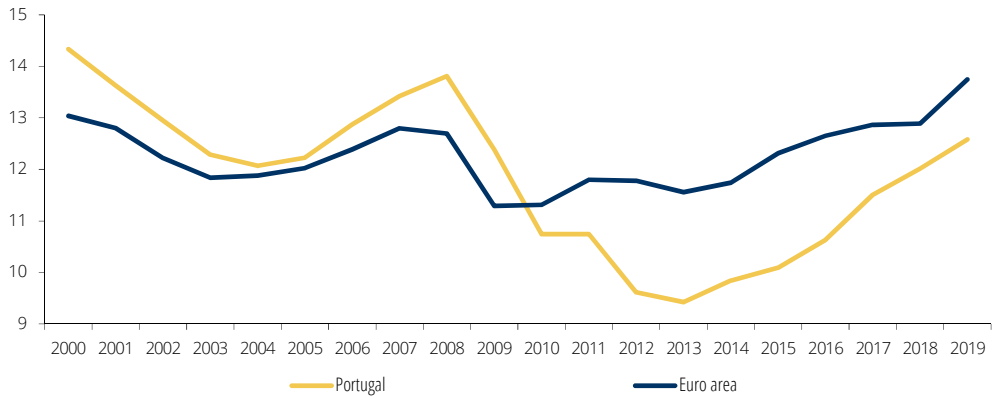
In the year as a whole, the acceleration in GFCF was supported by the behaviour of GFCF in construction, which recorded an annual rate of change of 8.9% (after 4.6% in 2018). This reflected a surge in public investment (Chapter 4) and a few major ongoing construction works, which in both cases benefited from Community cofinancing.[43] In 2019 the amounts involved in public procurement increased by 40%, after a slight fall in 2018. Residential investment growth also seems to have been sustained.

GFCF in machinery and equipment grew by 5.2% in 2019, losing momentum *vis-à-vis* 2018 (8.2% growth) and over the year. The deceleration was associated with a base effect, i.e. it was likely influenced by the completion of the large-scale investment projects of some enterprises, particularly in the car sector in 2018.

Finally, GFCF in transport equipment fell from the previous year (-4.6%, compared to a 5.6% increase in 2018 and annual average growth of around 20% in the 2013-17 period). This fall occurred mainly in the second half of the year and, in addition to a reduction in purchases of commercial vehicles, it reflected a base effect associated with the purchase of aeroplanes in the previous year.

By institutional sector, the acceleration in GFCF was due to greater corporate investment, which grew by 6.9%, after 5.9% in 2018. The continued momentum of this investment component in the year as a whole is linked to financing conditions that remained favourable (Chapter 3) and the need to recover and renew the capital stock, after a long period of retraction of investment. Hence, corporate gross fixed capital formation as a percentage of GDP in Portugal in 2019 increased further, extending a trend observed since 2014, but remaining below the levels observed in the euro area (Chart I.6.4).

Chart I.6.4 • Gross fixed capital formation in financial and non-financial corporations
| As a percentage of GDP



Source: Eurostat.

In turn, residential private GFCF continued to grow strongly (5.5%, i.e. 0.6 p.p. less than in 2018). Household investment in housing continued to be boosted by the benign situation of the labour

43. For further details, see Box 2 entitled "Impact of EU funds on the current and capital account: Portugal 2020 in perspective", in the March 2019 issue of the *Economic Bulletin*.

market (Chapter 5) and favourable financing conditions (Chapter 3). In addition, demand by non-residents and for tourism-related activities seems to have maintained a positive contribution to developments in this GFCF component. House prices continued to present high growth, particularly in certain segments and geographical areas.

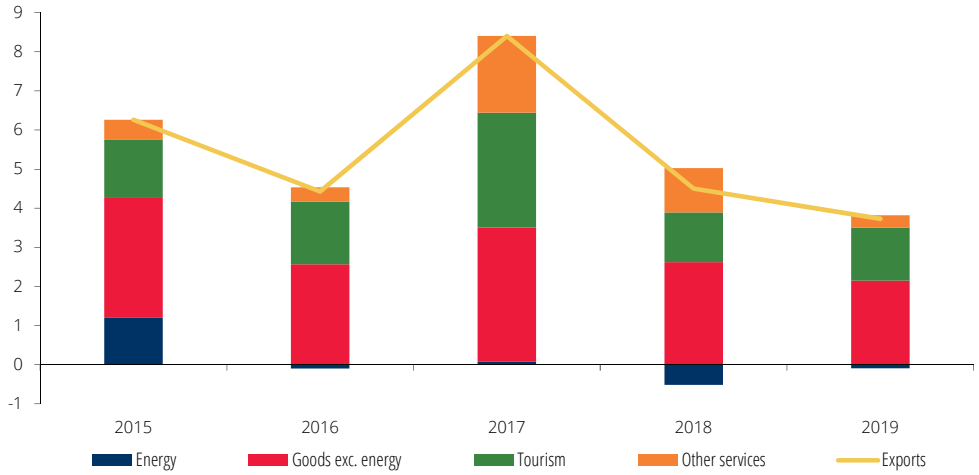
Public GFCF decelerated for the second consecutive year, growing by 2.9%, after 4.9% in 2018 (Chapter 4).

Cross-border trade was less buoyant, particularly exports

Cross-border goods and services trade flows decelerated in 2019, particularly exports, amid lower world trade growth (Chapter 2).

Real goods and services exports grew by 3.7% in 2019, i.e. 0.8 p.p. less than in the previous year (Chart I.6.5). This was due to a deceleration in external demand for Portuguese goods and services, which grew by 2.0%, after 3.4% in 2018.

Chart I.6.5 • Contributions to the growth rate of goods and services exports | As a percentage and percentage points



Source: Statistics Portugal.

The real growth rate of goods exports remained at 3.3%. On the one hand, the volume of energy exports declined less sharply, and on the other, exports of other goods recorded lower growth.

Using nominal data on international trade in goods,[44] the deceleration of the non-energy component of goods exports is due to a lower contribution from the car and intermediate goods components.

44. Aeroplanes on lease are disregarded because they only affect international goods trade statistics, and are excluded from goods flows in the national accounts and balance of payments. This exclusion is due to the leasing system not involving the transfer of property.

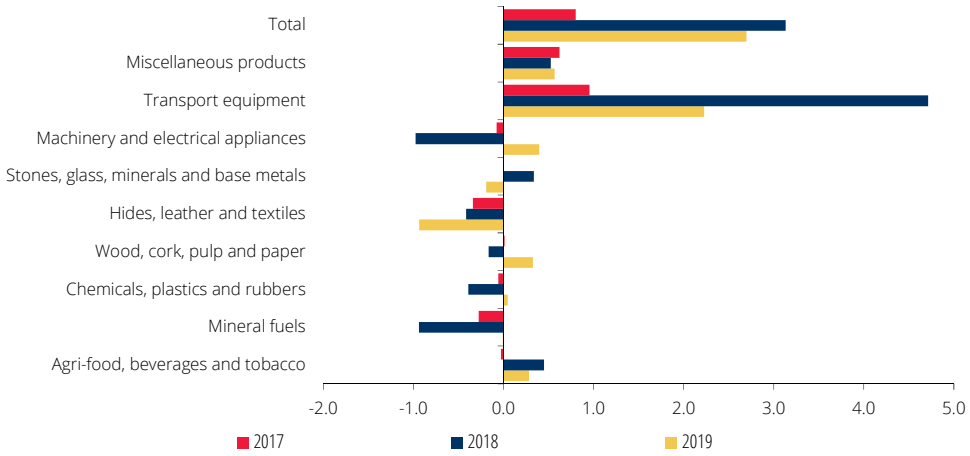
Car exports maintained quite a significant growth rate in 2019 (21.8%), albeit much lower than seen in 2018 (59.9%). In turn, exports of intermediate goods decelerated from 4.1% to 1.5%.

Services exports decelerated by 2.2 p.p. to 4.5%. While tourism exports continued to grow robustly (7.6%), other services exports decelerated. According to nominal data on the balance of payments, the transport services item, and particularly passenger air transport services, contributed the most to this deceleration.

Developments in total goods and services exports translated into a further market share gain in 2019, above that seen in the previous year (1.7 p.p. compared with 1.1 p.p.).

Data used to calculate the market share of exports in real terms are available in aggregate terms only. The analysis of more detailed sector information (only available in nominal terms and for EU markets) shows that goods exports share gains in 2019 were largely associated with the car sector – as in the two previous years, due to the impact of rises in the productive capacity of large-sized sector enterprises – but also resulted from the performance of the machinery and electrical appliances and miscellaneous products sectors (Chart I.6.6). Tourism exports continued to record share gains, albeit fewer than in 2017 and 2018.

Chart I.6.6 • Contribution from each group of products to the market share of intra EU nominal goods exports



Sources: CPB and Statistics Portugal (Banco de Portugal calculations). | Note: For more details on the methodology used, see the Box entitled "Recent developments in the market share of Portuguese exports" in the June 2018 issue of the *Economic Bulletin*.

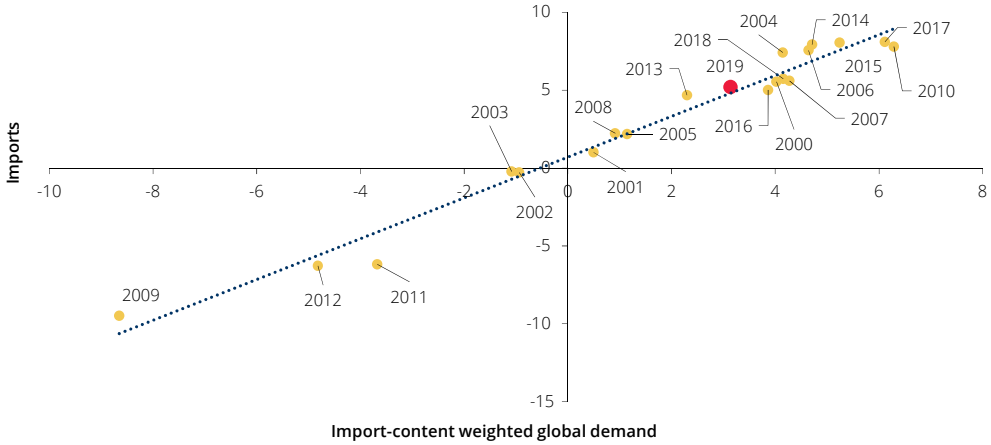
The deceleration in goods and services imports was less marked than in exports, rising by 5.2% in 2019 (5.7% in the previous year). These developments in purchases of goods and services abroad are in line with the historic elasticity versus import-content weighted global demand (Chart I.6.7).

The slowdown in imports was due to the goods component, which decelerated by 1.3 p.p. and grew by 4.4%, while services imports accelerated by 2.8 p.p., to 9.1%. Real non-energy imports decelerated to 4.6%, whereas real energy imports accelerated to 1.4%.

According to nominal data on international trade,[44] the deceleration in non-energy imports mainly affected the intermediate goods component, which grew by 1.4% in 2019, after 8.5% in 2018. Transport equipment also contributed to the deceleration in goods imports. The other capital goods, however, made a strong contribution to import growth, with a rate of change of 23.0%, after 8.8% in the previous year.

The acceleration of real services imports was broadly based across tourism imports (from 9.9% to 13.5%) and imports of other services (from 5.2% to 7.8%).

Chart I.6.7 • Imports and import-content weighted global demand | Annual rate of change, as a percentage



Source: Statistics Portugal and Banco de Portugal.

Box 7 • Propensity to consume in Portugal and the euro area: an analysis with survey data

In most countries, private consumption accounts for more than 50% of GDP. Thus, knowledge of how household consumption reacts to changes in income (propensity to consume) is crucial to understand the macroeconomic impact of shocks or policy changes affecting household income. One of the methods for estimating the propensity to consume is to ask households directly what their reaction would be to an increase in income.[45] To this end, the following question was included in the 2017 Portuguese Household Finance and Consumption Survey (ISFF, the Portuguese acronym for Inquérito à Situação Financeira das Famílias): Imagine you unexpectedly receive money from a lottery, equal to the amount of income your household receives in a month. What percentage would you spend over the next 12 months on goods and services, as opposed to any amount you would save for later or use to repay loans? This question was also included in the surveys of most of the other euro area countries that are part of the Household Finance and Consumption Survey (HFCS) project, in the 2017 editions. This Box provides an analysis of the data collected by means of this question.

The level of the propensity to consume depends on the nature of the shock, as well as on the characteristics of consumers. As to the nature of the shock, economic theory and empirical evidence suggest that the consumption reaction depends on whether the shock is permanent or transitory, anticipated or unanticipated, involving an increase or a reduction in income, on the magnitude of this variation and on the horizon taken into consideration to measure the consumption reaction. The survey data analysed in this Box only enable the assessment of the consumption reaction in the 12 months following a positive, transitory and unanticipated shock, of considerable magnitude as it accounts for the equivalent of one month of income. Moreover, it is important to bear in mind that households' responses refer to their total consumption, while in some economic models the propensity to consume refers only to the consumption of non-durable goods since durable goods are not modelled or seen as an investment.

With regard to the characteristics of consumers, empirical evidence in general suggests that households with few financial resources, which spend all their earnings in each period and have few liquid assets, have a higher propensity to consume, following unexpected transitory shocks, than households in a more robust financial situation. The conclusion in many of these studies is that the correlation between the cash-on-hand and the propensity to consume is more important than the correlation of the propensity to consume with other household characteristics. Theoretically, the positive relationship between the propensity to consume and the cash-on-hand is predicted, for example, in models where households face uncertainty and, as such, save for precautionary reasons, or where households face liquidity constraints.

The ISFF/HFCS allows for an assessment of the relationship between the propensity to consume and the resources that households have to cope with their expenses in the different euro area countries. To this end, households were grouped according to their resources into categories that depend on their ability to afford one month of expenses, based on their income or wealth. In this classification, two types of wealth were taken into account: Total wealth, i.e. the difference between the sum of real and financial assets and the value of total debt; and the liquid financial assets, which was measured by the difference between the value of deposits and the value of credit cards and credit lines debt.

45. For a summary of the different methods used in the literature to estimate the propensity to consume, see Jappelli, T. and L. Pistaferri (2010), "The Consumption Response to Income Changes", *NBER Working Paper* No 15739.

It was considered that a household faces a "hand-to-mouth" situation when its income is less than or equal to regular expenses,[46] and do not have enough liquid financial assets to afford one month of consumption of non-durable goods and services. These households were further broken down into two groups: "Poor hand-to-mouth" and "Wealthy hand-to-mouth" – depending on whether or not they have enough total wealth to afford one month of consumption of non-durable goods and services. The remaining households (i.e. those "Not hand-to-mouh") were also broken down into two groups: "Not hand-to-mouth but not savers" and "Not hand-to-mouth and savers". The former ones correspond to households with income less than or equal to regular expenses, but with financial assets of which they can easily dispose in the short term to afford one month of consumption of non-durable goods and services. The latter ones correspond to households with an income that is higher than their regular expenses. Briefly, with income, total expenditure, consumption of non-durable goods and services, total wealth and liquid financial assets represented by y, d, c, r and rf respectively, the following four groups of households were established:

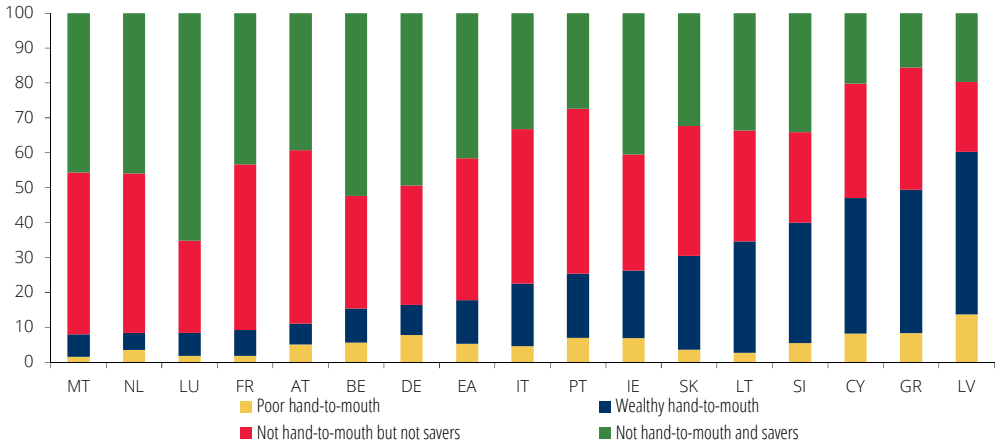
- Poor hand-to-mouth: $y \leq d$ and $rf < c$ and $r < c$
- Wealthy hand-to-mouth: $y \leq d$ and $rf < c$ and $r \geq c$
- Not hand-to-mouth but not savers: $y \leq d$ and $rf \geq c$
- Not hand-to-mouth and savers: $y > d$

For the euro area and for each of the countries in which these data are available, Chart C7.1 includes the composition of the households in the four groups. The countries are ranked in ascending order of the percentage of hand-to-mouth households, regardless of having low or high wealth. This percentage in Portugal is 25%, which is higher than in the euro area (18%). Among households not-hand-to-mouth, in Portugal, the majority corresponds to households that do not save, i.e. households with income less than or equal to regular expenses, while in the euro area, the percentage of households that save is similar to the percentage of households that do not save.

Chart C7.2 includes the mean values of the propensity to consume. In this chart, the countries follow the same order of the previous chart. First, it is observed that, in general, countries with a higher percentage of hand-to-mouth households are also those where the average propensity to consume across all households tends to be higher.[47] However, Portuguese data are an exception to this pattern. In fact, although the percentage of hand-to-mouth households is higher in Portugal than in the euro area, the propensity to consume is low when compared with the other countries. This may result from the fact that, in Portugal, a high percentage of households have debt and that debt service accounts for a high share of household income. In Portugal, on average, households indicated that within the 12 months after having received money from a lottery equal to one month of income, they would spend 33% of that money on consumption, which stands at a minimum compared to the other countries and contrasts with an average of 47% in the euro area.

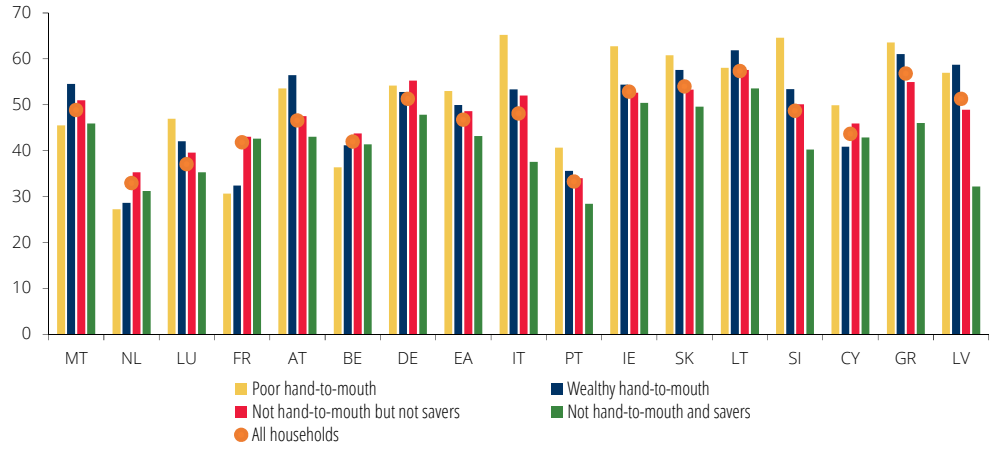
46. To assess the relationship between income and regular expenses, data from an ISFF/HFCS qualitative question, in which households reported whether regular expenses over the previous 12 months were higher, similar or lower than income, were used.
47. The Spearman's coefficient, i.e. the linear correlation between the rank of countries for each of the two variables, is positive and relatively high (58%).

Chart C7.1 • Distribution of households by groups of available resources | As a percentage



Source: ISFF/HFCS (2017). | Notes: Countries ranked in ascending order of the percentage of hand-to-mouth households. The euro area aggregate does not include Estonia, Finland and Spain. In Spain, HFCS data were not available at the time of the release and in Estonia and Finland the question regarding the propensity to consume was not included in the national surveys. The country-acronym correspondence is as follows: Austria (AT), Belgium (BE), Cyprus (CY), France (FR), Greece (GR), Germany (DE), Italy (IT), Ireland (IE), Latvia (LV), Lithuania (LT), Luxembourg (LU), Malta (MT), Netherlands (NL), Portugal (PT), Slovakia (SK) and Slovenia (SI). The acronym EA represents the euro area.

Chart C7.2 • Propensity to consume | Mean values, in percentage



Source: ISFF/HFCS (2017). | Notes: Countries ranked in ascending order of the percentage of hand-to-mouth households. The euro area aggregate does not include Estonia, Finland and Spain. In Spain, HFCS data were not available at the time of the release and in Estonia and Finland the question regarding the propensity to consume was not included in the national surveys. The country-acronym correspondence is as follows: Austria (AT), Belgium (BE), Cyprus (CY), France (FR), Greece (GR), Germany (DE), Italy (IT), Ireland (IE), Latvia (LV), Lithuania (LT), Luxembourg (LU), Malta (MT), Netherlands (NL), Portugal (PT), Slovakia (SK) and Slovenia (SI). The acronym EA represents the euro area.

When data for Portuguese households are analysed by groups of available resources, the results confirm that the households with the lowest available resources are those that would have a greater reaction to consumption after a transitory shock to income. In Portugal, the propensity to consume decreases from 41% in "Poor hand-to-mouth" households to 28% in "Not hand-to-mouth and savers" households. This positive correlation between the scarcity of resources and the propensity to consume is found in all the countries analysed, except Belgium, France and the

Netherlands. For all households in the euro area, the propensity to consume decreases from 53% in "Poor hand-to-mouth" households to 43% in "Not hand-to-mouth and savers" households.

In short, and as mentioned above, the results shown are crucially dependent on the hypotheses considered in the ISFF/HFCS question. Such results should not be generalised to other contexts that may involve income shocks of a different nature.[48] In most euro area countries, households' responses in terms of their consumption reaction within the 12 months after having received money from a lottery equal to one month of income are in line with the results of the economic literature, identifying a positive correlation between the level of cash-on-hand and the propensity to consume. Based on these responses, in Portugal average propensity to consume stands at 33%, ranging from around 40% for households with fewer available resources and less than 30% for households with more available resources.

48. In general, evidence indicates that the propensity to consume is higher for permanent shocks than for transitory shocks (Jappelli and Pistaferri, 2010). Additionally, some empirical findings point to a higher propensity to consume in the case of negative transitory shocks than in the case of positive shocks (see A. Fuster, G. Kaplan and B. Zafar (2018), "What Would You Do with $500? Spending Responses to Gains, Losses, News, and Loans", *Federal Reserve Bank of New York Staff Reports*, No 483).

7 Prices

The inflation rate declined in 2019, reaching particularly low levels

The inflation rate in Portugal, as measured by the year-on-year rate of change in the Harmonised Index of Consumer Prices (HICP), stood at 0.3% in 2019, down by 0.9 p.p. from the previous year (Table I.7.1).

Table I.7.1 • HICP - Main components | Growth rate, as a percentage

	Weights 2019	Annual growth rate			Year-on-year growth rate			
		2017	2018	2019	19 Q1	19 Q2	19 Q3	19 Q4
Total	100.0	1.6	1.2	0.3	0.8	0.6	-0.3	0.2
Goods	57.2	0.9	0.5	-0.3	0.2	-0.1	-0.8	-0.5
Food	23.0	1.7	1.0	0.6	1.2	0.4	0.3	0.5
Unprocessed food	6.2	2.2	1.3	0.2	1.7	-0.7	-0.6	0.4
Processed food	16.8	1.6	0.8	0.7	0.9	0.8	0.6	0.5
Industrial	34.3	0.3	0.2	-0.9	-0.4	-0.4	-1.4	-1.2
Non-energy	26.5	-0.8	-1.1	-0.6	-0.3	-0.5	-0.8	-0.8
Energy	7.8	3.7	4.8	-1.7	-0.5	-0.4	-3.3	-2.5
Services	42.8	2.5	2.1	1.1	1.5	1.6	0.2	1.1
Memo items:								
Total excluding energy	92.2	1.4	0.9	0.5	0.9	0.7	-0.1	0.4
Total excluding food and energy	69.3	1.2	0.8	0.4	0.8	0.8	-0.2	0.4
Total excluding food. energy and volatile tourism-related items	64.7	0.6	0.4	0.5	0.9	0.6	0.4	0.3
Total excluding administered prices	89.9	1.6	1.1	0.3	0.7	0.7	-0.4	0.3
Consumer Price Index (CPI)	–	1.4	1.0	0.3	0.8	0.5	-0.2	0.3
HICP – Euro Area	–	1.5	1.8	1.2	1.4	1.4	1.0	1.0

Sources: Eurostat and INE.

Lower inflation in 2019 was broadly based across most aggregates, excluding non-energy industrial goods. In particular, the contribution to inflation from developments in energy and services prices decreased, by 0.5 p.p. and 0.4 p.p. respectively.

Energy prices dropped by 1.7%, following 4.8% growth in the previous year, in line with developments in fuel and electricity prices. In the first case, these developments reflected the fall in oil prices in international markets and, in the latter case, the pricing revision in January and the partial VAT rate cut in July for low-voltage consumer contracts.

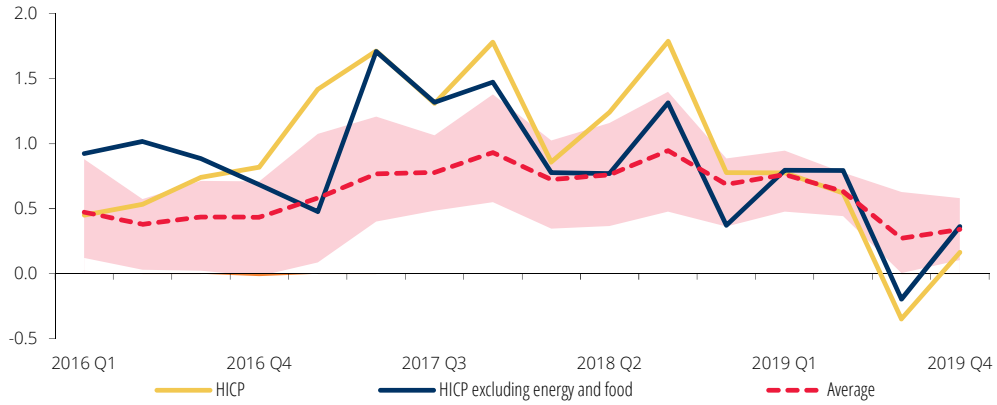
In services, there was a notable decrease in accommodation service prices,[49] by 2.2%, after substantial increases in the two previous years (7.3% in 2018 and 12% in 2017). These developments may be associated with the marked increase in production capacity in the sector in recent years, as well as the upturn in activity in competitor tourism destinations. The contribution of prices for these services to the reduction in total inflation was 0.4 p.p.

49. The full HICP item is "Hotels, motels, inns and similar accommodation services".

Price developments in the services aggregate also stemmed from the reduction in transport service prices – reflecting the impact of changes introduced in April in monthly transport pass prices under the public transport fare reduction programme – and communication service prices, due to price caps set in May on communications within the European Union, which were offset by increases in other items.

Even excluding the effects of more volatile components, with a negative impact in 2019, inflation in Portugal is still very contained. The simple average of a set of inflation trend measures points to the maintenance of underlying inflation levels below 1% over the past four years (Chart I.7.1).

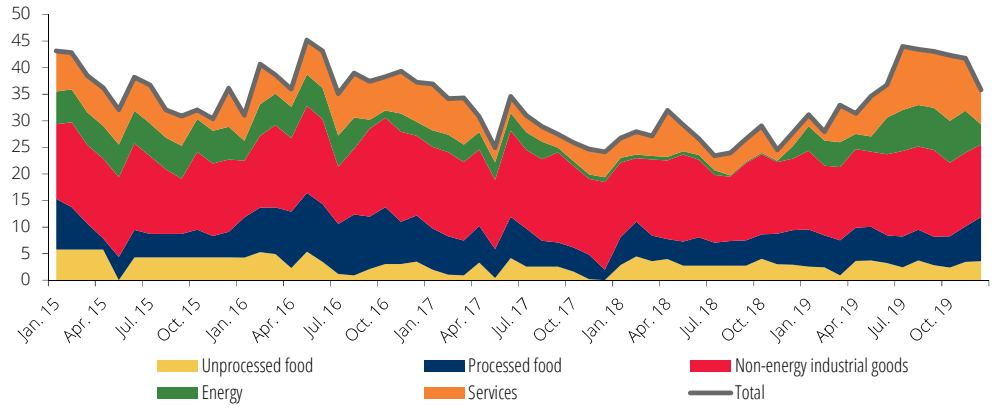
Chart I.7.1 • HICP and underlying inflation measures | Year-on-year growth rate, as a percentage



Source: Statistics Portugal (Banco de Portugal calculations). | Note: The shaded zone includes the following inflation measures: trimmed means at 5% and 12.5%, median, first principal component and HICP excluding food, energy and volatile components associated with tourism. The average is calculated as a simple average of these measures.

Looking at the distribution of year-on-year rates of change in HICP components, it can be seen that the reduction in inflation in 2019 reflected an increase in the weight of components with negative rates, by around 10 p.p., on annual average terms (Chart I.7.2). This rise was more noticeable in services, largely reflecting the aforementioned impact of the decline in accommodation service prices.

Chart I.7.2 • Weight of the HICP components with a negative annual growth rate
| As a percentage



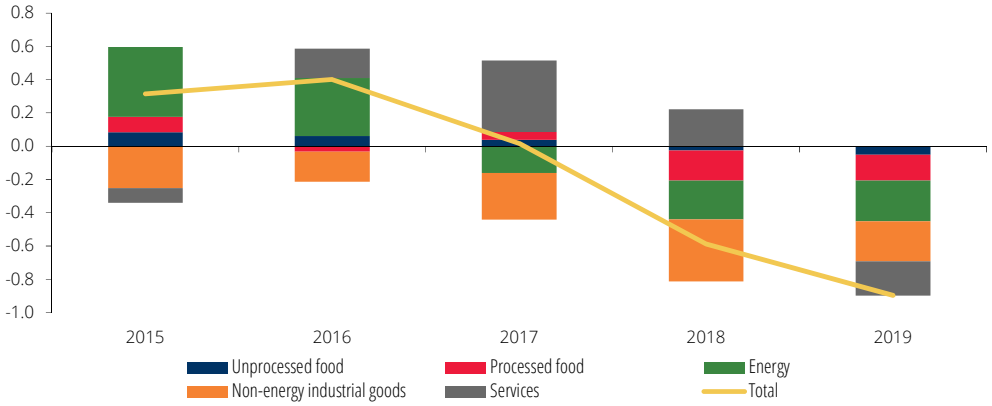
Source: Statistics Portugal (Banco de Portugal calculations).

The inflation differential *vis-à-vis* the euro area was more negative due to the services aggregate

The low inflation rate environment persisted in the euro area (Chapter 2), to which contributed factors such as the weakening of the pass-through channel of wage costs to prices and the low level of inflation expectations.[50] In 2019 the inflation differential in Portugal *vis-à-vis* the euro area stood in negative territory, at 0.9 p.p., after -0.6 p.p. in 2018. All components made a negative contribution to the inflation differential in 2019, with the services component being the main factor behind the increase in the differential (Chart I.7.3).

In the euro area as a whole, Portugal posted the lowest inflation rate in 2019, both taking into account changes to the total HICP and to the HICP excluding energy and food. However, underlying inflation rates in most outlying countries in the euro area stood at particularly low levels, compared to countries perceived as more creditworthy (Chart I.7.4). In the period 2001-12, the inflation rate in peripheral countries was, on average, higher than in central countries. Since the sovereign debt crisis in the euro area, peripheral countries have posted lower underlying inflation rates, which was still the case in 2019.

Chart I.7.3 • Inflation diferential between Portugal and the euro area | In percentage points



Sources: Eurostat and Statistics Portugal.

External inflationary pressures remained very contained, with gains in terms of trade

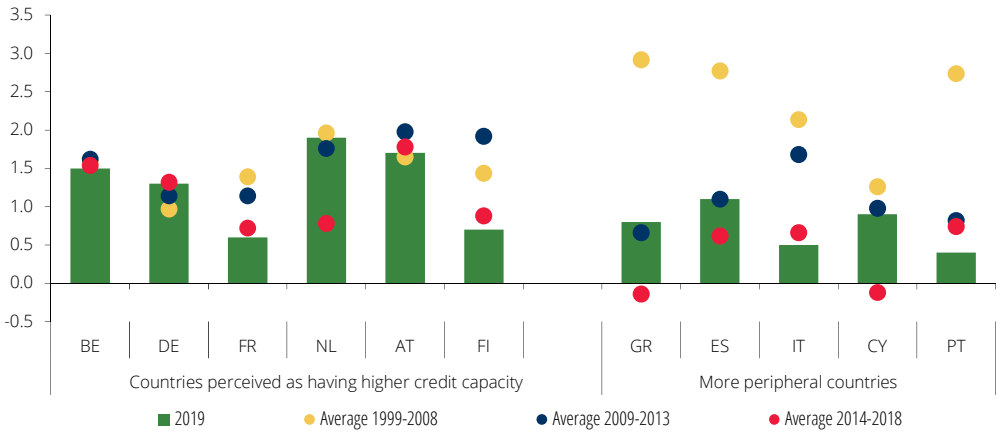
External inflationary pressures remained very contained in 2019 (Chart I.7.5).

The deflator of imports of goods excluding energy posted marginally negative changes in 2019, after a 0.6% rise in 2018. These developments are likely to be related to low global inflationary pressures. Import prices mostly affect consumer prices for non-energy industrial goods, which decreased again in 2019 (-0.6%, compared to a 1.1% reduction in 2018).

Oil prices in euro dropped by 5% in 2019, after two years of increases of more than 20%, which influenced the fall in consumer energy prices.

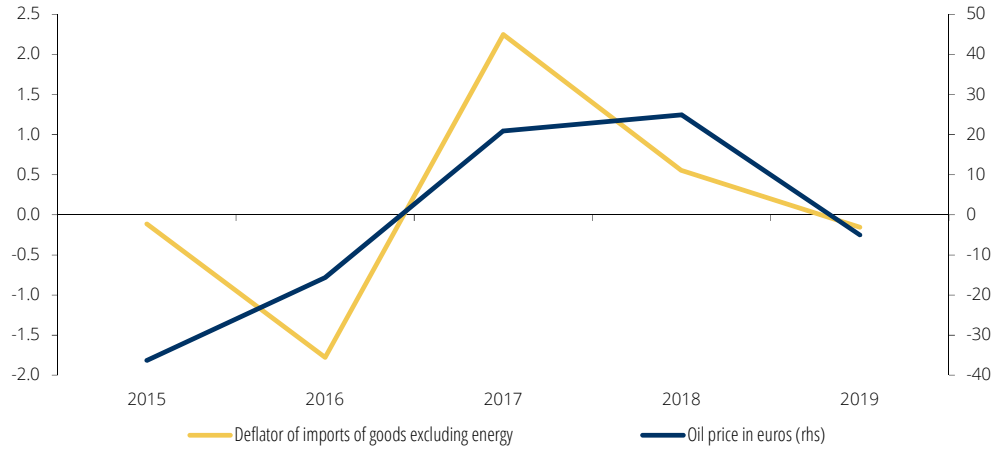
50. See Box 2 "Low inflation in the euro area: possible causes", *Economic Bulletin*, Banco de Portugal, December 2019.

Chart I.7.4 • HICP excluding food and energy - Euro area countries | Annual growth rate, as a percentage



Sources: Eurostat and Statistics Portugal. | Note: BE – Belgium, DE – Germany, FR – France, NL – Netherlands, AT – Austria, FI – Finland, GR – Greece, ES – Spain, IT – Italy, CY – Cyprus, PT – Portugal.

Chart I.7.5 • Deflator of imports excluding energy goods and oil price (in euros) | Annual growth rate, as a percentage



Sources: Bloomberg and Statistics Portugal (Banco de Portugal calculations).

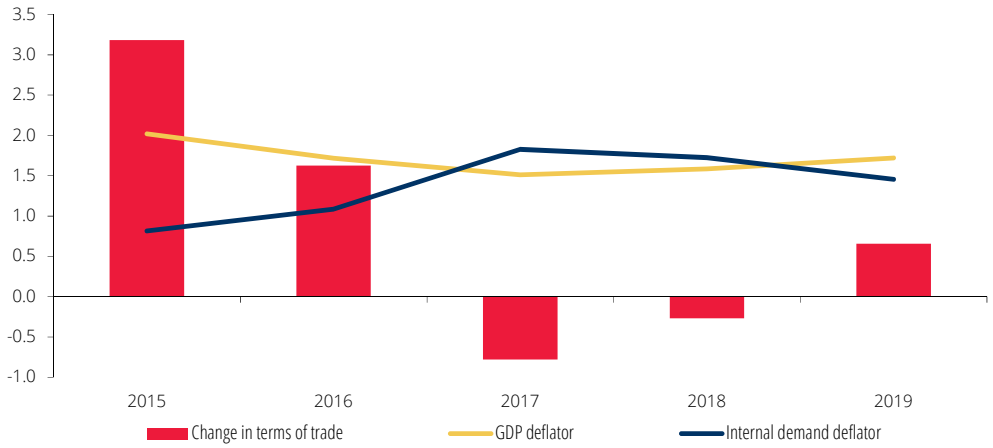
The acceleration in compensation was counteracted by the increase in productivity

In 2019 labour market slack decreased further, with a reduction in the unemployment rate and, more markedly, in the labour underutilisation rate (Chapter 5). In this context, compensation per employee accelerated somewhat again, with a 2.8% increase (after increases of 2.5% in 2018 and 2.1% in 2017). However, reflecting a more substantial rise in productivity per worker in 2019, after stabilising in the two previous years, the growth in unit labour costs was more subdued (Chapter 5). Available information points to the continued narrowing of the corporate profit margins in 2019. National account data show that the ratio of gross operating surplus

to GVA narrowed again.[51] This is supported by the analysis of corporate-level data (Box 8 "Recent developments in Portuguese firms' profitability", in this Bulletin).

The GDP deflator, a measure that summarises price developments in the economy, grew by 1.7%, compared to 1.6% in the previous year. This increase reflected gains in terms of trade (0.7%), partly associated with the aforementioned reduction in oil prices in euro (Chart I.7.6). Conversely, the private consumption deflator growth was smaller (1%), compared to 1.3% in 2018.[52]

Chart I.7.6 • GDP and internal demand deflators and terms of trade | Annual growth rate, as a percentage



Source: Statistics Portugal (Banco de Portugal calculations).

51. NFC gross operating surplus as a percentage of GVA went down by 0.8 p.p., after 1.6 p.p. and 0.8 p.p. decreases in the previous two years.
52. In 2019 changes in the private consumption deflator were well above the HICP inflation (1%, compared to 0.3%). This result is partly explained by developments in the "housing rents" component, whose weight in the private consumption deflator is higher than that in the HICP. This difference reflects the fact that the HICP only includes "actual rentals for housing", while private consumption also comprises the "imputed rentals" component.

Box 8 • Recent developments in the profitability of Portuguese enterprises

Profitability variables at enterprise level are good indicators of companies' economic and financial situation, as well as, of their level of resilience to adverse shocks and their propensity to invest. This box analyses developments in profitability of non-financial corporations in Portugal in 2019.

In order to perform this analysis, microdata from the quarterly survey for non-financial corporations (*Inquérito Trimestral às Empresas não Financeiras* – ITENF) are used, which includes accounting information for approximately 4,000 enterprises up to the end of 2019. By being quarterly, this survey is disseminated more frequently and provides more timely information than other sources of corporate information (e.g. the IES - Simplified Corporate Information (*Informação Empresarial Simplificada*)), being also the only survey with data for the year of 2019 at the cut-off date for this bulletin.

The ITENF sample is biased towards larger enterprises, since the selection criteria include minimum thresholds for the value of variables such as turnover, total assets, total exports and total imports. This survey also excludes enterprises from section A of the CAE (Portuguese acronym for economic activity classification) - Rev. 3.[53]. Thus, when analysing these results, such limitations should be considered.

The time period for this box covers the full years of 2017 to 2019. In order to ensure comparability, only non-financial corporations that were present in these three consecutive periods were included.

As a measure of profitability, it is used the ratio of gross operating surplus over gross value added (GOS/GVA).[54] The choice of this indicator is justified by the fact that the accounting GOS is the one which best approximates the concept of GOS on the National Accounts (NA).

The available information points to a reduction in the profitability of enterprises in the Portuguese economy since 2017. Albeit less marked, the profitability ratio for the total of enterprises analysed maintained its downward trend in 2019, recording a value of 50.2%, which compares to 50.5% in 2018 and to 52.1% in 2017.

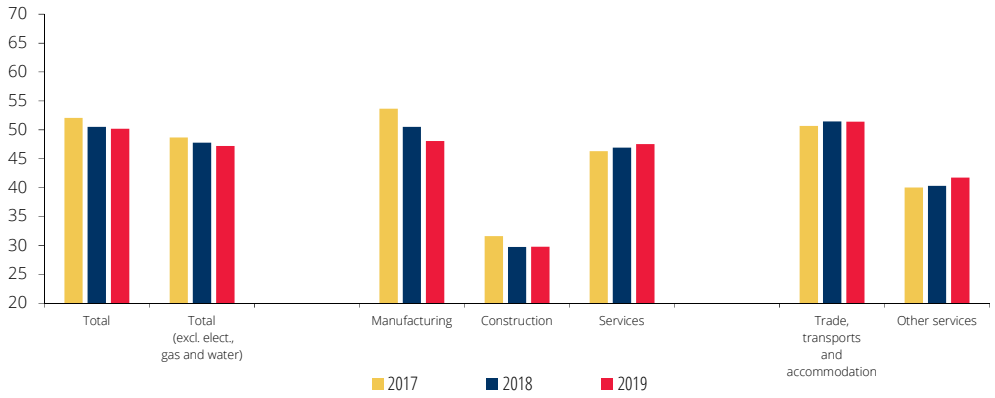
In the analysis by activity sector that is presented below, the electricity, gas and water sectors were excluded as they are highly volatile. In 2019, the reduction in aggregate profitability resulted from a fall in the GOS/GVA ratio of enterprises in the manufacturing industry, considering that, it stabilised in the construction sector and slightly increased in the services sector. Breaking down the services sector, it can be inferred that the profitability ratio stabilised in the sub-group which includes trade, transport, accommodation and food services, being the overall increase driven by developments observed in the other services (Chart C8.1).

In addition, a set of analyses was also performed on the basis of enterprise characteristics: by age (up to 10 years and over 10 years), size (SMEs and large enterprises) and export profile (Chart C8.2).

In the analysis by age, a slight fall in profitability was observed in 2019 for enterprises established for more than 10 years. On the other hand, younger enterprises recorded an increase in the ratio. Regarding the analysis of enterprise size, a reduction was observed in the profitability ratio of both large enterprises and micro, small and medium-sized enterprises (SMEs),[55] while more significant in the latter group.[56]

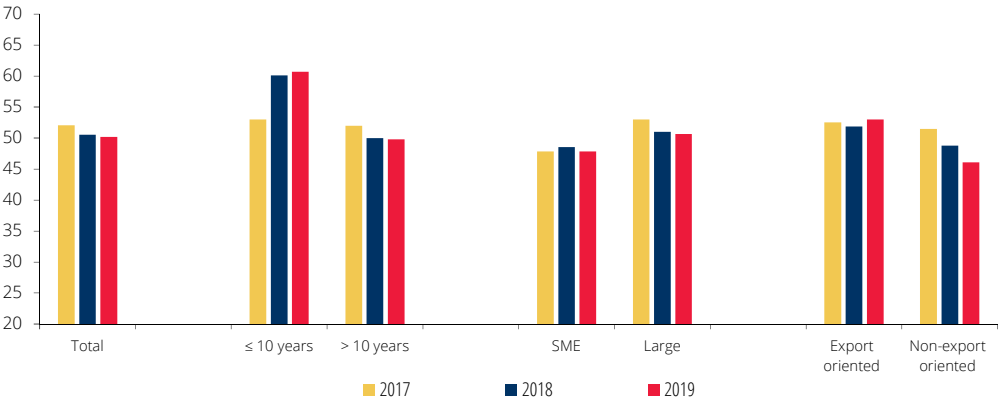
53. Section A of the CAE-Rev. 3 corresponds to the agriculture, livestock, hunting, forestry and fishing sectors.
54. For a more comprehensive analysis of non-financial corporations statistics in 2019, including developments in other profitability measures, see Statistical Press Release of the Banco de Portugal – Central balance sheet database statistics 4th quarter of 2019.
55. The criteria for this classification by size class were taken from the European Commission Recommendation of 6 May 2003 concerning the definition of micro, small and medium-sized enterprises. According to this recommendation, the category of micro, small and medium-sized enterprises (SMEs) comprises firms that employ fewer than 250 people and whose annual turnover does not exceed €50 million or whose total annual balance sheet does not exceed €43 million. Large enterprises are any enterprises which are not classified according to the conditions above.
56. Note that developments in profitability, especially in an analysis by size class of enterprise, may differ if another type of indicator is used.

Chart C8.1 • Firms' profitability by sector of activity | Gross operating surplus as a percentage of GVA



Source: Quarterly Survey of Non-financial Corporations – Statistics Portugal/Banco de Portugal.

Chart C8.2 • Firms' profitability by age, size and export status | Gross operating surplus as a percentage of GVA



Source: Quarterly Survey of Non-financial Corporations – Statistics Portugal/Banco de Portugal.

As far as differences of enterprises with and without an export profile are concerned, exporters were the ones that contributed to the fall in the profitability ratio in 2019.[57] In enterprises without an export profile, the ratio increased.

In conclusion, the fall in the profitability of enterprises in the most recent period was not, on average, particularly remarkable, and was due to developments in the manufacturing industry. The groups of enterprises that most contributed to the fall in the aggregate profitability ratio were older, smaller and more oriented towards external markets.

57. Enterprises with an export profile are considered those that export goods and services and comply with the following criteria: (i) enterprises in which at least 50% of turnover results from exports, or (ii) enterprises in which at least 10% of turnover results from exports and export value is greater than €150,000. Enterprises that did not meet these criteria were classified as not having an export profile.

8 Balance of payments

The Portuguese economy's net lending declined in 2019, mostly as a result of a lower goods and services account surplus

In 2019 the current and capital account showed a surplus of 0.9% of GDP, 0.5 p.p. less than in 2018 (Table I.8.1).

Table I.8.1 • Balance of payments | As a percentage of GDP

	2015	2016	2017	2018	2019
Current and capital account	1.5	2.1	2.2	1.4	0.9
Current account	0.2	1.2	1.3	0.4	-0.1
Goods and services account	1.4	1.7	1.5	0.7	0.4
Goods	-5.4	-5.4	-6.8	-7.8	-7.9
Energy	-2.4	-1.7	-2.2	-2.5	-2.6
Goods excluding energy	-3.1	-3.6	-4.6	-5.3	-5.3
Services	6.8	7.1	8.3	8.5	8.2
Travel and tourism	4.6	5.0	5.9	6.1	6.2
Other services	2.2	2.1	2.4	2.4	2.1
Primary income account	-2.9	-2.3	-2.3	-2.4	-2.5
Secondary income account	1.7	1.8	2.1	2.0	2.0
Capital account	1.2	0.9	0.9	1.0	1.0
Financial account	1.5	2.1	2.2	1.5	1.1
Errors and omissions	0.0	0.0	0.0	0.2	0.2

Sources: Statistics Portugal and Banco de Portugal.

The decline in the economy's net lending reflected an increase in investment above that of domestic savings. In 2019 investment stood at 18.9% of GDP, 0.8 p.p. higher than in 2018, while savings increased from 18.3% to 18.8% of GDP in 2019. By institutional sector, the decline was the result of a drop in the private sector's net lending. In contrast, the general government reduced its net borrowing, recording a positive balance in 2019.

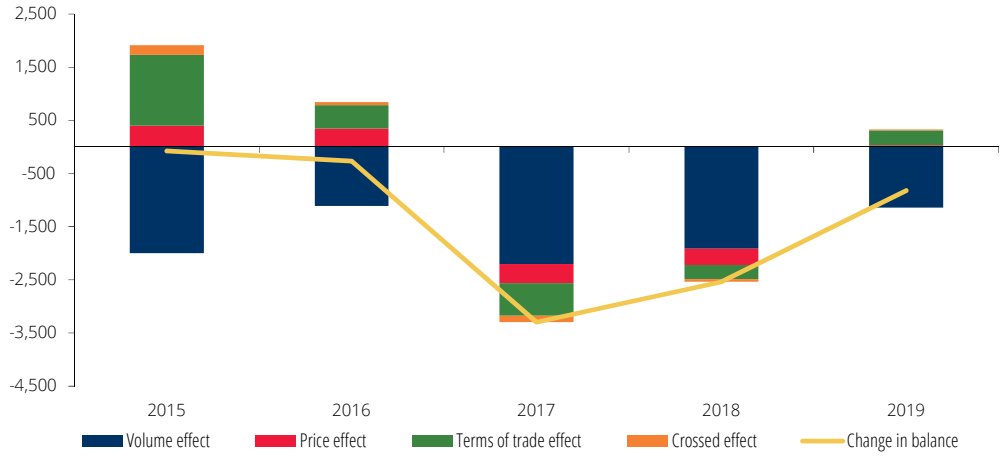
The current account recorded a slight deficit in 2019 for the first time since 2012. A lower goods and services account surplus and a higher primary income account deficit contributed to these developments.

The goods and services account surplus decreased from 0.7% of GDP in 2018 to 0.4% of GDP in 2019.[58] These developments reflected an increase in the goods account deficit, arising from developments in the energy goods balance, and a decline in the services account surplus, related to the behaviour of services excluding travel and tourism.

58. The goods and services account has experienced a surplus since 2013, which has no precedent in the past 50 years. See Special issue "A look into external account developments in Portugal", in the March 2020 issue of the *Economic Bulletin*.

The goods account deficit has increased in the past few years, owing to a negative volume effect, i.e. higher real growth in imports compared to exports (Chart I.8.1). In 2019 this effect was partly offset by positive developments in terms of trade.

Chart I.8.1 • Decomposition of the change in goods account balance | Million of euros



Sources: Statistics Portugal and Banco de Portugal. | Note: A positive change (negative) implies an increase (decrease) in the overall balance of the goods account. The change in the overall balance of goods account can be decomposed in four effects: (i) volume effect: effect of the change in quantities imported and exported, $[X_{t-1} \times vx_t] - [M_{t-1} \times vm_t]$; (ii) price effect: effect of the average price growth of external trade, $[X_{t-1} \times p_t] - [M_{t-1} \times p_t]$; (iii) terms of trade effect: effect of the relative change in exports and imports prices, $[X_{t-1} \times (px_t - p_t)] - [M_{t-1} \times (pm_t - p_t)]$; (iv) crossed effect: effect of the interaction between the change in quantities and in prices of exports and imports, $[X_{t-1} \times vx_t \times px_t)] - [M_{t-1} \times vm_t \times pm_t)]$. The following notation applies X_{t-1} and M_{t-1} are the exports and imports in year $t-1$ at current prices respectively; vx_t and vm_t are the change rates in volume of exports and imports in t, respectively; px_t and pm_t are the change rates of exports and imports prices in t, respectively; p_t is the average change rate of the prices of external trade in year t given by $p_t = (px_t + pm_t)/2$.

Regarding the services account, the balance of travel and tourism further increased, to 6.2% of GDP in 2019, supported by continued strong growth in tourism exports, although below 2018 levels (an annual rate of change of 8.1%, compared to 9.7% in 2018). This deceleration likely reflected developments in prices for tourism services (Chapter 7), in a context where demand for this type of service in the Portuguese economy remained buoyant and exports accelerated in real terms (Chapter 6). Imports of travel and tourism services continued to show very buoyant growth (15.6%, after 13.2% in 2018 in nominal terms).

In contrast, the surplus in the other services component declined from 2.4% to 2.2% of GDP, mainly owing to developments in items for other business services.

The slightly higher deficit in the primary income account reflects a decline in the profitability of direct investment assets

The slightly higher deficit in the primary income account was the result of developments in the investment income component[59]. In particular, the direct investment income component posted

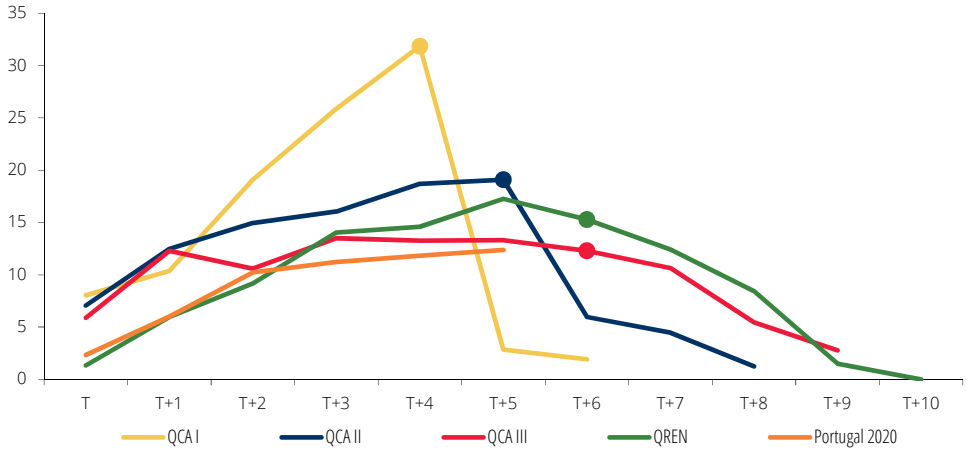
59. In addition to investment income, this account also comprises labour income and other primary income (including the component of subsidies received from the European Union), which remained stable as a percentage of GDP in 2019.

a higher deficit in 2019 (-1.8% of GDP, compared to -1.6% in 2018), given the lower profitability of investments in foreign direct investment assets. In contrast, the deficits of portfolio investment income and other investment decreased, namely in the interest component, reflecting a decline in the economy's external debt and the low interest rate environment (Chapter 3).

The surpluses in the secondary income account and the capital account remained stable in 2019, at 2.0% and 1.0% of GDP respectively.

The balance of transfers with the European Union (EU) (recorded in the primary and secondary income account and the capital account) increased slightly from 0.8% to 0.9% of GDP in 2019. Nevertheless, inflows of EU funds remained low, compared to the implementation profile in previous cycles of EU support. Indeed, the percentage of funds received under the current partnership agreement (Portugal 2020) remains below that observed in the past in the same phase of the programming period (Chart I.8.2).[60]

Chart I.8.2 • Rate of received funds by programming periods | As a percentage



Sources: Agência para o Desenvolvimento e Coesão, Banco de Portugal, Boletim Informativo QREN, Leaflet "Fundos Estruturais 10 anos em Portugal" by Direção Geral do Desenvolvimento Regional, DGRM e IFAP/GPE. | Notes: The dotted line represents projections. The rate of received funds corresponds to the ratio of the amount of funds received by the beneficiaries in each period to the total amount received in the programming period. The planned EU amount is used for the current programming period. The designation of the programming periods should be understood in a broad sense, covering in general the financial resources received through the set of instruments considered (ESIF and EAGF). Period T refers to the first year of the programming period. The circles denote the last year of the programming period. Note that the first two programming periods were shorter (5 e 6 years, respectively).

The lower financial account balance reflected developments in net external financing of non-financial corporations and the general government

In 2019 the financial account maintained a positive balance of 1.1% of GDP, which means that investment abroad remained higher than financing obtained (Chart I.8.3). However, this positive balance was lower than in 2018 (1.5% of GDP). This fall was the result of an increase in the net external financing of general government and non-financial corporations.

60. For a detailed analysis of the impact of funds received, see Box 2 entitled "Impact of EU funds on the current and capital account: Portugal 2020 in perspective", in the March 2019 issue of the *Economic Bulletin*.

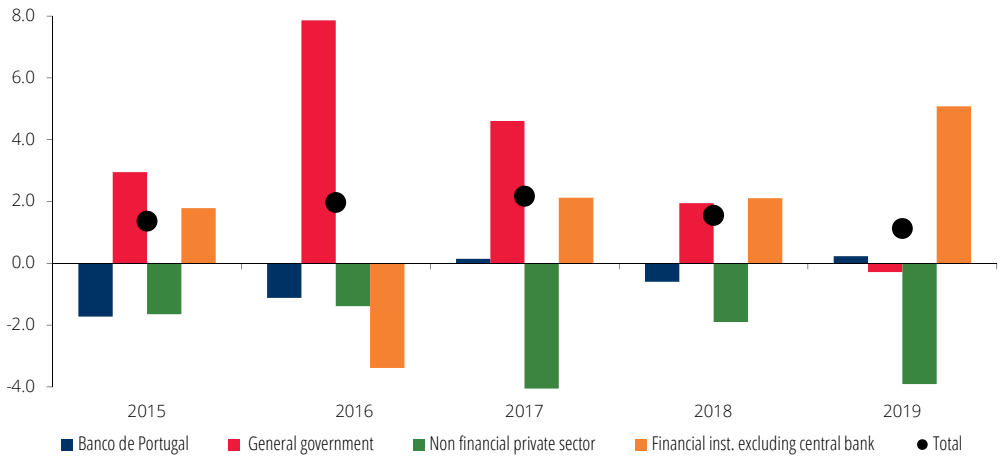
In 2019 the general government obtained net external financing to an amount of 0.3% of GDP, after a period of strong reduction in external indebtedness owing to the sector's lower net borrowing related to the process of fiscal consolidation and the effects of the Eurosystem's non-standard monetary policy measures.

Non-financial corporations continued to favour the direct investment channel for their net financing, which went from 1.8% of GDP in 2018 to 2.6% of GDP in 2019. This inflow took place in the form of capital and debt, with real estate investment continuing to be significant. Net financing in the form of loans, although less robust, also increased, to 1% of GDP.

Conversely, financing obtained by banks through other investment was lower (0.2% of GDP, compared to 2.9% of GDP in 2018).

As for investment abroad, financial institutions continued to invest in foreign government bonds, with the increase from the previous year explained by greater investment by insurance corporations and pension funds (2.2% of GDP), mostly reflecting higher purchases of foreign government bonds. These purchases may reflect search for yield in an environment of very low nominal interest rates and narrowing bank margins.

Chart I.8.3 • Financial account balance, total and by institutional sector [(1)] | As a percentage of GDP



Sources: Statistics Portugal and Banco de Portugal. | Note: (1) A positive (negative) signal corresponds to a net outflow (inflow) of funds in the Portuguese economy. The outflows of funds can occur by net acquisitons of external assets and redemptions in external liabilities. The inflows of funds correspond to sales of external assets or increase of liabilities held by non residents.

The international investment position continued to improve

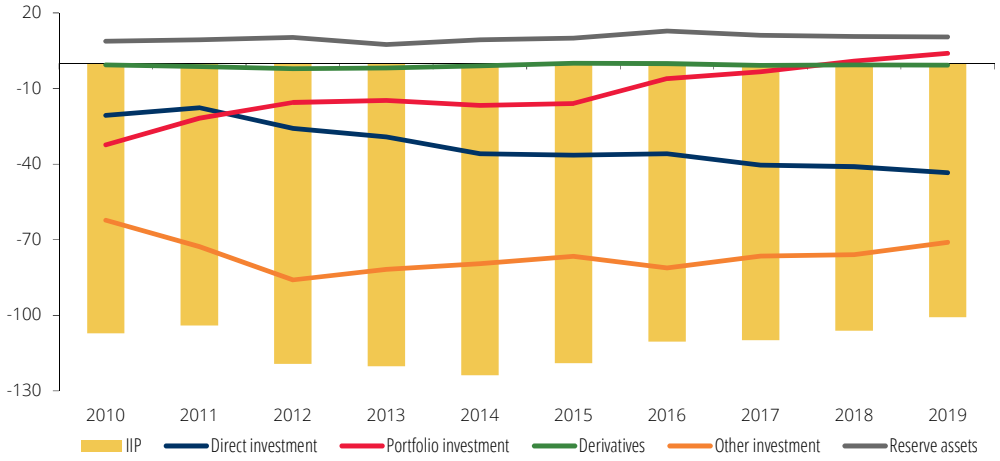
The external debtor position of the Portuguese economy continued to decline, with the ratio of the international investment position (IIP) to GDP increasing from -106.1% in 2018 to -100.8% at the end of 2019. As in previous years, this significant improvement resulted from financial account surpluses and mainly from the effect of nominal GDP growth.

The IIP's composition changed over the last decade (Chart I.8.4). In particular, the debtor position of portfolio investment decreased, even turning into a creditor position from 2018 onwards. The

net stock of other investment liabilities – including loans and deposits – is still the most significant (-71.1% of GDP). Conversely, the debtor position of direct investment increased (from 20.7% of GDP in 2010 to 43.4% of GDP in 2019); however, this component tends to be more stable, and is therefore less vulnerable to external shocks.

In spite of favourable developments, including in its composition, IIP levels are still very negative, by historical standards and compared to other countries, and are a vulnerability for the Portuguese economy.[61]

Chart I.8.4 • IIP by functional category | As a percentage of GDP



Sources: Statistics Portugal and Banco de Portugal.

61. For a detailed analysis of developments in the current and capital account and the Portuguese economy's external indebtedness, see Special issue "A look into external account developments in Portugal", in the March 2020 issue of the *Economic Bulletin*.

II Special issue

The economic impact of the pandemic crisis

The economic impact of the pandemic crisis

Introduction

This Special issue aims to contribute to the analysis of the channels through which the COVID-19 pandemic affects economic activity and to an understanding of the policy responses taken by the authorities, with particular emphasis on the Portuguese situation. The text consists of two separate parts which complement each other. Part 1 analyses the results of some macroeconomic studies incorporating variables of an epidemiological nature. These studies illustrate, in aggregate terms, the relationship between pandemic mitigation measures, economic policies and developments in economic activity. The first part of the text also includes a systematisation of the impact of economic policy responses in the international framework, discussing the need for risk-sharing mechanisms at the European Union (EU) level. Part 2 of the Special issue is of a microeconomic nature and focuses on the short-term consequences of the pandemic for Portuguese firms and households. This analysis consists of an exercise that simulates, in a stylised way, the effects of a temporary drop in the activity on the liquidity of firms and consequent risks of closure, and also of an evaluation of impacts on households' income. The use of individual information makes it possible to complement the macroeconomic approach and simulate the short-term impact of some of the mitigation measures designed by the authorities, while also highlighting the heterogeneous effects on the different economic agents. These exercises are not an evaluation of policies but rather mechanical simulations that are based on several simplifying hypotheses, which aim to reflect stylised scenarios.

The COVID-19 pandemic represented a major negative shock to global public health, with very adverse economic consequences for many countries. Although the risks associated with a pandemic crisis had long been touted, this was an event for which countries and most economic agents were not prepared. The shape and scale of the economic impacts of the crisis is not yet fully predictable. Every economic analysis depends very heavily on assumptions about the duration, intensity, and geographical spread of the pandemic. These variables have been studied by researchers in epidemiology and by health authorities, giving rise to policy recommendations that aim to make the number of patients in need of hospital care compatible at all times with existing resources in terms of facilities, equipment, and experts. This approach has led to the adoption of social confinement measures aimed at halting the spread of the disease, with rather positive results. However, this containment strategy tends to protract the time horizon of the outbreak and may also increase its likelihood of recurrence.

In economic terms, the pandemic and the corresponding social distancing measures imply a strong and abrupt reduction in the activity of firms in the short term, either because of the impossibility of keeping workers safe, or because of reduced demand or supply of intermediate products that are essential to the production process. The economic effect of the pandemic depends on the sectoral structure of the countries, affecting more, for example, those where the tourism sector is important, but impacts tends to be relatively generalised. This abrupt and simultaneous interruption of multiple activities in several countries has no recent historical precedent and, given the strong international

economic integration, it leads to a deep and generalised economic contraction. In this context, similar to what happened in the last economic and financial crisis, the disruption in international production chains causes the collapse of international trade flows in goods and services.

A protracted pandemic is set to inflict permanent losses in productive capacity as a result of a greater probability of business closures, due to liquidity problems or insolvency. Losses resulting from reduced sales are not followed by an equivalent reduction in costs, which leads to reductions in corporate equity. Lack of resources for a recapitalisation or if, in a context of heightened uncertainty, recovery prospects appear limited, the owners may opt for shutting down. In firms of a certain size and with expansion projects, such an option corresponds to a loss of technology and specific knowledge, as well as of client and supplier networks, hardly recoverable by new firms entering the market. Nevertheless, the full assessment of these impacts is hampered by the great heterogeneity across firms.

Concurrently, as mentioned in several recent studies, the pandemic and protracted social distancing measures greatly increase the level of uncertainty, leading to the postponement of investment decisions and a limited accumulation of physical capital, as well as the interruption of ongoing innovation processes. Similarly, social distancing measures make education and training activities more difficult, hampering the accumulation of human capital during this period of time. Therefore, this crisis will tend to cause permanent losses on output compared to a counterfactual scenario without pandemic, i.e., the crisis will have strong cyclical impacts but also negative effects in the long run.

Another important aspect of the economic issue is related to the impact of the crisis on international financial markets and the situation of credit institutions. The strong increase in uncertainty, the anticipation of heavy activity losses and economic agents' need for immediate liquidity leads to sales and refuge in less risky assets, with negative impacts on the price of financial assets and potential changes in exchange rates. These movements trigger reductions in the value of the asset portfolios of households, firms and credit institutions that interact with each other, reinforcing the contraction in the economic activity. The potential increase in non-performing loans sharpens the deterioration in the quality of banks' assets, making it difficult to comply with regulatory capital requirements. This aspect, together with a greater risk arising from granting new loans to households and firms, leads to a potential contraction in lending, with renewed recessionary effects on the economy. Therefore, also through this channel, a protracted pandemic crisis and the maintenance of high levels of uncertainty negatively affect the functioning of markets and the activity. The policy decisions in this area are also complex, in view of developments in aggregate variables and the specificities of the various credit institutions, all within a framework of intense international economic and regulatory connections.

The effects described above have an impact on households' income and on their consumption decisions, interacting with the conditions prevailing in the labour market. The interaction between households and firms is the foundation of the economic organisation, and the dynamics of the underlying circular flow of income and output, which largely determines the direction of cyclical fluctuations, is magnified by the specific nature of the pandemic crisis. Drastic drops in many households' income and high levels of uncertainty about their jobs and health conditions give rise to cuts in spending. In firms, the drop in demand for goods and services leads to lower sales and a deterioration in their expected outcomes, dampening activity and employment or leading to closure decisions. This set of decisions will have an impact on the price of goods and services traded in the economy. The complexity of these interactions is fuelled by the intervention of public authorities and the international dimension where agents operate. These effects among economic agents can only be handled in full in the context of macroeconomic

models where restrictions associated with the adjustment and equilibrium of the markets are explicitly considered, such as those referred to in Part 1 of the Special issue.

Despite being affected by a common pandemic shock, the reality that prevails in households is very heterogeneous. Factors such as the household composition in terms of age structure, employment status, activity sector or income, among others, give rise to a variety of effects of the pandemic crisis. In some situations, the crisis may not represent major changes in living conditions, in material terms, but in other cases it may trigger or increase the risk of poverty even in the short term. These concerns motivate the analysis developed in Part 2 of the Special issue.

The description of the various perspectives in the analysis of the effects of the pandemic and the solutions to mitigate them unequivocally points to the importance of considering, simultaneously, the short, medium and long term horizons, and also to the complementarity between the macroeconomic analysis anchored in models and the microeconomic based analyses focused on the behaviour of firms and individual households. The first explains the interconnections between different types of decisions and markets while the second one highlights the heterogeneity in each class of economic agents.

As detailed in Part 1 of the Special issue, policy-making authorities in the various countries and international institutions with authority in economic matters have sought to assess these different dimensions, by putting in place a wide range of policies aimed at mitigating the effect of the pandemic and the corresponding containment measures. First, with a view to preserve installed productive capacity in the short term, a number of measures have been introduced aimed at supporting firms' liquidity, most notably moratoriums on principal and interest payments on loans granted, the establishment of subsidised credit lines and public guarantees on new loans, tax deferrals, as well as the possibility of laying-off staff, on reduced pay, with costs being shared between firms and social security.

In this context, the exercise carried out in Part 2 indicates that the share of Portuguese firms without sufficient liquidity to cover fixed costs increases in tandem with the number of days of reduced activity. This percentage is higher in the group of larger enterprises and in the accommodation and food services sector. In a scenario where the adoption of the layoff is considered, this percentage drops substantially.

Measures to support liquidity will also allow firms to preserve their capital situation, promoting their long-term solvency and avoiding, as far as possible, the permanent destruction of productive capacity. In addition, in some countries, specific programmes for the recapitalisation of firms were launched to boost their investment and increase the probabilities of gaining market share in the post-pandemic period. The need to ensure that this support does not translate into disadvantages for firms in countries with lower financial resources is one of the most important challenges for EU authorities. These policies are of a microeconomic nature, specifying the conditions that firms must fulfil in order to access them. However, due to their size and scope, they have aggregate effects, including in terms of spending and contingent government liabilities.

At the same time, actions were taken to support the financial situation of households. Such actions aim to prevent the emergence and the rise in poverty levels, leading to social exclusion, with strong and long-lasting impacts on the welfare of individuals and effects on economic activity at the aggregate level. These policies include, primarily, support to jobs through temporary layoff schemes but also moratoriums on interest and principal payments on some existing loans to households and dedicated social benefits. Also, in this case the actions taken are of a microeconomic nature and entail conditionality, but they will have an aggregate impact by sustaining overall households' spending.

The exercise presented in Part 2 of the Special issue shows that, as would be expected, the reduction in productive activity resulting from measures to contain the pandemic has a negative impact on disposable income of Portuguese households and, consequently, on their consumption decisions. According to results obtained, this impact is transversal to all households, but it is sharper on households with higher income and those in younger age groups. Microeconomic evidence makes it possible to identify households whose income is not affected by the pandemic and those whose income shortfall in the short term is mitigated by income support measures, in particular the layoff.

In terms of macroeconomic policy, central banks took particularly important decisions in early days. The announcement and the creation of conditions for liquidity granting on a large scale aimed at stabilising international financial markets by sustaining asset prices, while also increasing agents' confidence. Consequently, in the context of the euro area, it is expected that interest rates applied to private agents and to States are stabilised, reducing the likelihood of financial fragmentation scenarios such as those that took place during the sovereign debt crisis. As discussed in Part 1 of the Special issue, these scenarios would increase currently existing risks and greatly affect economic activity developments in all countries, with also very adverse impacts on the balance sheets of credit institutions. In this scenario, some regulatory changes that mitigate pressures on banks' solvency were announced. Regulatory amendments interact with microeconomic policies to support firms and households, widening the potential impact of each of these interventions. On the fiscal front, the macroeconomic dimension of policies is linked to the operation of the so-called automatic stabilisers, in addition to expenses and contingent liabilities assumed through interventions in households and firms and to health expenditures associated to the pandemic.

As a result of the existing strong economic integration, virtually all policy decisions have external implications and are conditioned by countries' participation in different types of international agreements. However, global coordination has been almost non-existent in the context of the current pandemic crisis. Lack of leadership and integrated responses to common issues will make it difficult to solve the crisis. At the EU level, a common action plan has been put in place to tackle problems and to provide liquidity. However, in respect of the necessary strengthening of risk-sharing mechanisms between Member States, the process is not yet fully implemented, as discussed in Part 1 of the Special issue.

The study on the economic effects of the COVID-19 pandemic is still in its early stages. The first analysis of these impacts and the assessments made on the effects of the policies will be extended and reinforced as new information is collected and new studies are prepared and scrutinised. Future studies should consider the impact on the entire set of economic agents, i.e., not only households and firms but also financial institutions and sovereigns, as well as analyse longer time horizons. However, the economic policy must step in, in a timely manner, which under the current circumstances means taking decisions with partial information in an environment of high uncertainty. The magnitude of the economic shock caused by the pandemic and its social consequences in the short and long term required rapid interventions. Decisions taken are naturally subject to adjustments and improvements in accordance with changes in circumstances at any time. However, given the structure and size of the Portuguese economy, national policies cannot fail to take international reality into account, particularly within the EU. Similarly, considerations on the constraints of public and private resources in the medium and long term must not be overlooked.

The challenge posed to Portuguese society by the COVID-19 pandemic is very demanding. As proven by previous crises, the flexibility and responsiveness of firms, combined with strong social cohesion, will be decisive to minimise difficulties, in a framework of European integration strengthening.

1 Macroeconomic impact and policy responses

1.1 Macroeconomic impact

The novel coronavirus pandemic represents a shock to the world economy of unprecedented proportions in recent history. The epidemic initially affected China and other Asian countries but spread quickly to Europe and the USA. The containment measures implemented to contain the rate of spread of the virus and maintain the responsiveness of health systems have meant that a substantial part of the economic activity has been stopped for a period of time that may be prolonged. This reduction in activity is justified by the need to flatten the epidemiological curve (which plots the number of people infected at each moment) and therefore avoid bottlenecks in the healthcare systems and curb the death toll resulting from infections. In this context, notwithstanding the current scenario of transmission rates containment, the lower exposure to the virus of a large part of the population implies a high probability of new waves of contagion, until a vaccine or treatment against COVID-19 becomes available at global level.[1]

The severity of the economic consequences will depend on several factors, including the duration of the pandemic, the duration and extent of containment measures and the implementation of economic policy measures in response to the crisis, including measures to support the healthcare system, the liquidity of firms and households' income. To understand the channels through which the pandemic affects the economic activity and the trade-offs confronted by the economic agents and policy-makers is of utmost importance, notably for the design of an economic policy capable of properly mitigating the effects of the crisis.

The COVID-19 pandemic and containment measures represent unprecedented shocks on both the supply and demand side, amplified by the effect of reductions in confidence levels. On the supply side, disruptions are mainly due to containment measures, which reduce the mobility of agents and lead to the closure or reduction of the activity of a significant part of firms. Although teleworking is a possibility in some activities, productivity may be impaired in a social distancing context, and in many industries the only solution is to close firms.[2] In addition, the huge disruption in global value chains tends to aggravate the effects on the supply side, through interruptions in the supply of intermediate goods that are necessary for production.

The pandemic is also a sharp demand-side shock. A significant number of unemployed workers or in layoff schemes leads to a reduction in disposable income. At the same time, a sharp rise in uncertainty about the future financial situation of households encourages precautionary savings. This effect is amplified by the fact that containment measures reduce consumption opportunities, as most of the face-to-face retail businesses and activities that imply public gatherings are closed. On the firms' side, the increased uncertainty leads to a lower propensity to invest, which also depresses demand.

1. This was the case, for example, with the Spanish Flu, which hit in three pandemic waves between 1918 and 1920.
2. Dingel and Neiman (2020) estimate that about 34% of the work associated with jobs in the USA can be effectively done from home. For some European countries, Boeri, Caiumi and Paccagnalla (2020) estimate that the percentage of jobs that can be performed remotely is relatively low, around 30% in Germany, France, Sweden, and the United Kingdom, 25% in Spain and less than 24% in Italy.

The effect on inflation is difficult to assess due to the confluence of factors that influence prices in opposite directions. Supply contraction in markets where falls in activity were more intense is accompanied by dynamics in demand decisions that depend on the nature of goods and services. In this scenario, relevant changes in relative prices are to be expected. Moreover, the sharp changes in prices of some raw material, such as oil, add more uncertainty to developments in inflation rates.

Demand-side and supply-side shocks will also have a remarkable impact on international trade flows. As in the 2008 international economic and financial crisis, there is a collapse in the exchange of goods and services, also as a result of difficulties in establishing trade insurance. The reduction in trade flows is amplified by the fact that some of the economies most affected by the spread of the coronavirus play a key role in international value chains. Over the past two decades these chains have concentrated around China, Germany, and the USA, becoming more vulnerable to shocks that particularly affect these economies. The fact that the pandemic is not fully synchronised further implies that the disruption of activity at global level will be prolonged. In addition, there may be negative long-term effects of the pandemic on trade associated with, for example, the intensification of protectionist pressures overriding the expected reconfiguration of global value chains resulting from firms' decision to diversify supply sources and maintain greater stocks of intermediate products.

A core issue concerns the quantification of the macroeconomic impact of these different shocks and the consequent policy response. This quantification is particularly complex as a result of the particular nature of the pandemic shock and the high levels of uncertainty that still prevail. However, it is possible to infer some partial information through indicators that are particularly sensitive to economic agents' perspectives. The response from financial and commodity markets in recent weeks suggests that most economic agents anticipate a rather significant impact. The main stock indexes fell between 20% and 25% in March, when it became evident that the spread of the virus in Europe and North America would make the adoption of more drastic containment measures inevitable, while the oil price fell about 65% since the beginning of the year, pressured by very negative prospects for global demand. In the bond market, there was a first appreciation movement, particularly notorious in the USA, where the 10-year interest rate reached a new historical low, which was partially reversed in early March, possibly denoting some fear about the fiscal impact of the policy measures announced in the meantime. The rise in interest rates was more marked in euro area countries with higher public debt levels but was largely reversed following the ECB's announcement of measures.

The quantification of the magnitude of the impact of this shock can be framed by the analysis of what happened in previous pandemics, in particular with the Spanish Flu[3] However, the results of this literature have to be taken carefully, in view of the huge changes in the way the world economy works, and because the current disruption in economic activity has reached an unprecedented level and synchronisation.

Studies on the 1918-20 Spanish flu[4] show that, overall, the economic effects were severe and that timely containment measures can reduce the severity of the epidemic.

The study by Barro, Ursúa and Weng (2020) uses data concerning the Spanish Flu in several countries to infer the impacts of the COVID-19 pandemic. The results of the study point to an average -6.0% impact on GDP *per capita* over the 1918-1920 period and a positive but temporary

3. In the 20th century, there were three pandemics: the Spanish Flu of 1918, the Asian Flu of 1957, and the Hong Kong Flu of 1968. In the 21st century, four pandemics have already occurred: the Severe Acute Respiratory Syndrome (SARS) in 2002, the flu caused by the H1N1 virus in 2009, the Middle East Respiratory Syndrome (MERS) in 2012 and Ebola, which peaked in 2013-14.
4. It should be noted that the Spanish Flu hit a much higher percentage of the world's population than that recorded so far with the COVID-19 pandemic, whose mortality rate is still not clear. Moreover, medical technology advances that took place since then and a greater coverage of current healthcare systems must be considered.

effect on inflation, reversed after one quarter. The study by Correia, Luck and Verner (2020), which focuses on the economic consequences of the Spanish Flu in the USA, also presents remarkable and persistent economic effects of the pandemic, with relevant channels both on the supply side and on the demand side. The results also show that the cities that introduced containment measures earlier and more intensely were also those that posted faster growth rates in the aftermath of the pandemic, pointing to the global benefits of these measures, despite economic costs in the short term.[5] Moreover, in a study on the Spanish Flu in Denmark, Dahl et al. (2020) show that the most severely affected areas showed declines in income in the short term, suggesting that the epidemic led to a recession with activity fully recovered two to three years later.

Several very recent studies attempt to assess the macroeconomic impact of the COVID-19 pandemic using structural economic models, which have the advantage of making it possible to understand the transmission channels, their relative importance, and potential trade-offs. The outcome of these models tends to have significant macroeconomic effects, although the magnitude of the impact estimated in the studies presented in the first weeks of the pandemic is already out of date because it has proven to be more severe, leading to more extensive containment measures than initially considered. Overall, the results corroborate the desirability of introducing containment measures, despite the trade-off between the objectives of limiting contagion and mitigating the impact of stopping economic activities.[6] Most analyses also point to very persistent negative effects on activity, largely due to capacity destruction caused by the permanent closure of businesses and the interruption of the process of production factors accumulation, reflected, for example, in the postponement of investment (in physical capital, human capital and R&D) or in less firms established. Thus, a return to the pre-pandemic predicted path would not be envisaged in the coming years. However, there may be positive effects associated, for example, with greater digitalisation of economies with a positive impact on potential growth.

With respect to the trade-off underlying the decision on the degree of confinement, the key issue has to do with the existence of externalities that, because they are not taken into account on private agents' choices, lead to an equilibrium that does not correspond to social welfare maximisation. In this context, Alvarez, Argente and Lippi (2020) use a simple model to analyse the optimal choice of a decision maker who intends to halt the pandemic while simultaneously minimising the cost of lockdown measures, sometimes also referred to as social distancing.[7] The authors conclude that the optimal choice is deep lockdown, which should be imposed shortly after the first identified case and lifted progressively.[8]

5. It should be noted that the type of containment measures introduced at the time are similar to those that are used now in the COVID-19 pandemic, including the closure of schools, theatres and churches, the banning of public events with big gatherings, as well as funerals, mandatory quarantine for suspicious cases and restriction on the opening hours of several establishments, although the degree of implementation of these measures may have been different.
6. Glover et al. (2020) argue that containment policies have significant distributional impacts, which justifies that different groups of the population prefer different policies.
7. The model used to formalise the problem includes an epidemiological SIR model (Susceptible Infected and Recovered) and a linear economy and was parametrised using data from the COVID-19 pandemic. In this model, the only instrument available to the planner to curb the economy is the lockdown.
8. Toxvaerd (2020) also analyses spontaneous social distancing, that is, not imposed by the authorities, in an attempt by individuals to protect themselves from infection, concluding that even if social distancing is not imposed, it eventually occurs, causing the flattening of the epidemiological curve.

Jones, Philippon and Venkateswaran (2020) also analyse the optimal choice of a decision maker in the presence of externalities associated with the contagion and the costs of a pandemic. Similar to the article of Alvarez, Argente and Lippi (2020), the authors conclude that the optimal response from a social planner involves an early mitigation policy. This policy allows the mortality rate to be considerably reduced, despite a significant initial drop in consumption.[9] In the model used, households mitigate contagion by reducing consumption, reducing hours worked and working from home, but as they only consider the risk of being infected and not that of infecting others, and the corresponding impact on a possible bottlenecks in the healthcare system, their mitigation efforts are below the social optimum. This can be achieved by a social planner who takes both externalities into account.[10]

The work of Eichenbaum, Rebelo and Trabandt (2020) also illustrates the interaction between economic decisions of agents, authorities and the evolution of the epidemic, but, unlike the articles discussed above, the analysis focuses on competitive equilibrium.[11] According to the model used, decisions to reduce consumption and hours worked diminish the severity of the epidemic (measured by the death toll), but exacerbate the severity of the economic recession. While optimal containment measures amplify the economic downturn, they also increase welfare because they reduce the number of deaths caused by the epidemic, again providing support to the desirability of implementation of such measures.[12]

In the same way that containment policies make it possible to slow down contagion and contain the effects of the epidemic, the authorities can and must implement a set of policies that will mitigate the economic effects of containment measures. The work of Guerrieri, Lorenzoni, Straub and Werning (2020) analyses these policy choices in a multisectoral neo-Keynesian model with incomplete markets. In this model, supply shocks generate insufficient demand, which leads to a contraction in output and employment that is more significant than the size of the initial shock would suggest. This feature seems to describe quite well the current situation in several economies. In this context, the authors show that fiscal stimulus measures are less effective, and that the impact of monetary policy may have greater effects, provided it is not constrained by the lower bound on interest rates. In terms of the optimal policy analysis, containment measures in sectors with a high level of contacts and measures that guarantee full payment of wages to affected workers can be optimal, despite the less effective fiscal policy.

Most of the studies mentioned above assume that the shock associated with the pandemic is temporary. There is not much empirical evidence on the long-term effects of pandemics, and existing work present mixedresults. Recent work by Jordà, Singh and Taylor (2020) studies the long-term macroeconomic consequences of pandemics, focusing on the average effect of various pandemic events (especially in Europe) on the natural real interest rate. According to this analysis, the natural real interest rate falls in the decades following a pandemic, returning to the level that would have been expected should there be no pandemic, only four decades later. It should be noted, however, that the pandemic episodes considered are persistent and show an extremely high mortality rates, therefore the comparison with the current situation must be carefully made

9. The analysis uses an extension of the neoclassical model that includes an epidemiological SIR model.
10. Piguillem and Shi (2020) also analyse the optimal response to the pandemic, concluding that extreme containment measures are optimal despite high costs in terms of short-term output. The desire to moderate short-term costs leads to a reduced lockdown intensity but also to its extension in time, still with a significant reduction in activity. The possibility of random testing to complement or replace lockdown, generates welfare benefits.
11. This work uses a real macroeconomic model with only one sector and incorporates the SIR epidemiological model.
12. According to results, the optimal level of containment measures prevents about one million deaths in the USA.

1.2 Policy responses

1.2.1 Fiscal policy

The nature of the shock caused by the pandemic calls for a fiscal policy response different than usual. The effect of automatic stabilisers - resulting from an increase in transfers with unemployment subsidies and sick pay or an automatic decrease in tax revenue - will be important, but limited, given the magnitude of the direct effects of the pandemic and the necessary health containment measures in the meantime adopted.

Most governments in advanced economies have adopted a set of discretionary measures with a significant fiscal impact, which can be broadly divided into three groups, depending on their incidence: measures to support healthcare systems; social protection measures for households; and support measures for firms and the production sector (see the simplified taxonomy in Table II.1.1).

These policies do not represent a conventional stimulus for demand, which probably would not have a significant immediate impact in view of the current rationing of an important part of the supply (Guerrieri et al., 2020). In fact, the measures announced are aimed at resolving specific problems, directly resulting from the pandemic and health containment measures, which decisively condition the activity of many sectors of the economy.

The immediate priority focuses on the effort to save lives and mitigate the impact of the pandemic on the health of the population, causing a significant increase in expenditure, either with means of diagnosis and treatment, or with the investment in the search for a new vaccine. Furthermore, the measures appear to have two other major objectives: first, to minimize the negative effects of the shock on the most affected population groups; second, to ensure that economic activity is resumed with minimal disruption as soon as containment measures are lifted or mitigated.

The first objective is ensured by a set of social protection measures, which will help to minimise the asymmetric impact of the shock on households' income distribution and allow an effective implementation of the containment rules. These measures will be particularly important for workers in the most affected sectors of activity and for households with less savings or with more difficulties in accessing credit, as it becomes apparent in the case of Portuguese households analysed in Part 2 of this Special issue. In this context, the extension of the eligibility criteria for unemployment subsidies and the introduction of support to self-employed workers or others not covered by social security are noteworthy.

The second objective is more focused on the medium term, seeking to ensure that firms are prepared to resume normal levels of activity as soon as possible. Particularly noteworthy are the supporting measures for temporary layoff which allow to overcome the slow adjustment that characterises the labour market and maintain the production capacity available to resume the production process more quickly. On the other hand, it will be urgent to guarantee the financial sustainability of firms, seeking to avoid inefficient insolvencies and a potential ripple effect that could affect the financial system. In this context, the fiscal packages also include several financial support measures for firms, which seek to prevent liquidity problems from becoming solvency problems, including direct subsidies, deferral of tax payments, loans, loan security to be provided by the banking system and moratoriums on the compliance with the debt service. The speed in the operationalisation of these mechanisms is an important factor for their success. The social protection measures discussed above are also important for this objective since they allow to sustain the financial situation of households and the corresponding demand for goods and services in the medium term.

Chart II.1.5 • A taxonomy of fiscal policy measures adopted as a response to the effects of the COVID-19 pandemic

Health care systems
1. Ensure diagnostics and treatment to the whole population (universal service)
2. Increase and optimise human resources capacity
2.1. Simplifying recruitment processes
2.2. Mobilising inactive health care professionals
2.3. Increasing extra hours
2.4. Delaying non-urgent medical acts
3. Increase and optimise physical resources capacity
3.1. Increasing spending in diagnostics and treatment
3.2. Increasing diagnostics and treatment spaces (need to quarantine)
3.3. Imposing price limits on medicines and medical products
3.4. Improving digital technologies
3.5. Increasing R&D resources for vaccines and treatments
Social protection
1. Extending social benefits
1.1. Extending unemployment subsidies to previously non-eligible workers
1.2. Introducing benefits to independent workers and self-employed
1.3. Introducing temporary social benefits to individuals not included in social security systems (e.g. informal economy)
1.4. Easing access and increasing sick leaves
1.5. Improving administrative capacity to treat unemployment benefits processes
2. Minimising households' financial costs
2.1. Tax deferrals and deadline extension to fulfil fiscal and social security obligations
2.2. Conceding moratoriums on existing credits and easing conditions in the rental housing market
3. Protecting work relations
3.1. Subsidising temporary layoffs to workers in prophylactic quarantine or in need of providing family support
3.2. Extraordinary support to professional training
3.3. Promoting digital tools to support teleworking
Firms
1. Promoting access to liquidity
1.1. Opening subsidised and State-guaranteed credit lines (traditional financial system)
1.2. Creating support funds to specific sectors
1.3. Conceding credit through public banks or agencies
1.4. Frontloading disbursements of EU funds
2. Minimising firms' financial costs
2.1. Tax deferrals and deadline extension to fulfil fiscal and social security obligations
2.2. Conceding moratoriums on existing credits
2.3. Deferring reimbursements of EU funds
2.4. Suspending plans to recover tax liabilities or extending duration of existing payment plans
3. Protecting work relations
3.1. Introducing grants contingent on the number of jobs protected or hours worked
3.2. Easing rules on existing layoff mechanisms

Sources: IMF, OECD and national authorities websites.

The amount of measures announced represents a very significant fiscal stimulus in most advanced countries. The IMF estimates a direct impact on the fiscal deficit between 1 p.p. and 7 p.p. of GDP in the G7 economies. Moreover, it will be necessary to consider the amount with loans and capital injections,

which already have an immediate impact on public debt, to which the contingent liabilities arising from the guarantees granted may be added. Taken as a whole, the measures already announced may amount to more than 30 p.p. of GDP, in some countries.[13]

It should be noted that the periods that followed major fiscal shocks, such as those resulting from war efforts or reaction to major economic recessions, were marked by significant increases in public debt that took many years to be reversed. The literature suggests that this is an optimal response where the government has no access to contingent debt instruments and taxes have distortionary effects[14], although it is particularly important to consider the fiscal space available in each country.

1.2.2 European coordination and risk-sharing mechanisms

In the context of the current pandemic, many voices suggested the need for coordinated action by the different EU Member States, together with European institutions, in order to ensure coordination and risk-sharing mechanisms more explicitly, particularly in the context of the euro area.

In March 2020, the main European institutions took some important steps, such as the suspension of fiscal discipline rules by the European Commission and the announcement by the ECB of a new emergency government bond purchase programme (more details in the next section).

More recently, on 23 April, the European Council approved a set of measures proposed by the Eurogroup that will allow, albeit to a limited extent, the launch of some programmes aimed at financially supporting Member States in their efforts to combat the effects of the pandemic. It is worth highlighting the approval of the European Commission's programme for "temporary Support to mitigate Unemployment Risks in an Emergency" (called SURE), under which loans may be granted to Member States to complement national efforts related to support job maintenance. The total amount of loans reaches €100 billion, partially guaranteed by the Member States. Also noteworthy is the approval of the granting of guarantees to the European Investment Bank in the amount of €25 billion for loans amounting to €200 billion, to be granted to small and medium-sized enterprises in particular. Finally, a support programme for its Member States will be created under the European Stability Mechanism, which may reach 2% of each country's GDP (the total value may thus represent around €240 billion), with the aim to finance health expenses directly or indirectly related to COVID-19 treatment and prevention. However, it remains subject to the European fiscal and economic coordination and surveillance framework. It should be noted that the debt issued by the ESM is guaranteed by the Member States, which makes it easier to mobilise resources with long repayment terms and at low costs.

However, this ESM mechanism is still insufficient. First, it is not evident that all Member States will access to this support. The stigma associated with the request for assistance may persist, as it may highlight Member States' market financing difficulties, which may result in the absence of applications. Second, the resources made available are relatively modest and insufficient to finance all the significant economic policy measures that will be approved, or that appear necessary, in the various countries. It being clear that the access to other ESM programmes is still available, the recent but not yet approved proposals to amend the intergovernmental agreement establishing the ESM, continued not to speed up decision-making processes for

13. See IMF's Fiscal Monitor of April 2020.

14. In these conditions, it is preferable to increase the public debt and distribute the effects of fiscal shocks over time, in such a way that debt and taxes follow a process similar to a random walk. See Barro (1979), Aiyagari *et al.* (2002) or Marcet and Scott (2009).

financial assistance, thus the stigma associated with requests for assistance and a significant potential for turmoil remained, which did not contribute to strengthen the European safety net.

The European Council of 23 April also agreed on the need to establish a recovery fund, which will include the reprogramming and strengthening of the multiannual financial framework for 2021-27. It was announced that support to Member States could be obtained through a combination of loans and grants from the European Commission to fund programmes dealing with the effects of the pandemic. The increase in intrinsic liabilities can be partially and immediately funded by means of debt issued by the European Commission, guaranteed by the Member States. The Commission was mandated to submit a definite proposal soon.

The current pandemic crisis has made it more urgent to take decisions to strengthen the coordination and risk-sharing mechanisms in the Economic and Monetary Union. More than a decade after the beginning of the crisis, which revealed the weaknesses of the institutional framework of the Economic and Monetary Union, the Banking Union project has not yet been completed, therefore the risks generated in the banking systems of the various Member States are not yet fully shared. Despite the common supervision of banks being already in place and a common resolution fund being set up, there is still no agreement on a fully mutualised European deposit insurance scheme or on the creation of a European institution with sufficient autonomy and independence, responsible for said scheme and for bank resolutions (thus retaining the current powers of the Single Resolution Board), but also for prospective winding-up of banks. These would be major steps in internalising the costs and benefits of decisions taken in relation to banks at EU level. Some flexibility in relation to the banking resolution paradigm and the development of the so-called Capital Markets Union would also be prudent.

Although many of the steps described above could mitigate the economic arguments in favour of some form of conventional fiscal federalism in the Economic and Monetary Union, a European fiscal fund – capable of dealing with the consequences of a pandemic or other extreme events – could contribute to reinforcing the stabilising role of the fiscal policy, representing an important additional level of risk sharing between Member States.

1.2.3 Monetary policy

As happened during the international financial and sovereign debt crises, the ECB, the US Federal Reserve, and other central banks have acknowledged that one of their major roles is to prevent the collapse of forms of liquidity initially deemed to be safe. This crucial role of the central banks is played through ample liquidity provision or asset purchases designed to eliminate the lack of trust in other assets – not inherently safe – and which can lead to a collapse in private liquidity. This can be complemented by government initiatives in the form of guarantees on private liquidity (for example, deposit guarantee or units in money market funds) or direct purchases of assets supporting private liquidity.

Thus, since the beginning of March 2020, several measures have been taken by the major central banks in order to guarantee a wide provision of liquidity at lower costs and the proper functioning of the monetary policy transmission mechanism. First, foreign exchange swap lines were reinforced between central banks, aiming to facilitate the provision of liquidity in foreign currency to domestic banks in need. Several central banks with key interest rates further away from the effective lower threshold have dropped them; for example, the Federal Reserve benchmark rates moved from the [1.5%, 1.75%] range in early March to [0%, 0.25%] range since March 15, and the Bank of England's base rate was cut by 50 basis points to 0.25% on 11 March and to 0.10% on 19 March. The conditions for access

to liquidity by banks were also made easier, and asset purchase programmes were reinforced or resumed, which include both public and private debt, and even, in the case of the Bank of Japan, units in equity funds and real estate funds.

In the case of the ECB, on 12 March, it was decided to implement more favourable conditions in targeted longer-term refinancing operations and to conduct asset purchases worth €120 billion by end-2020. On 18 March, the ECB announced a new asset purchase programme called Pandemic Emergency Purchase Programme (PEPP), with an additional envelope of €750 billion and which, for the first time since the SMP, contemplates the purchase of government bonds issued by the Greek Government. This programme also eliminates the limits per issue and per issuer of sovereign debt that characterised the designated Public Sector Purchase Programme. It was also decided to buy commercial paper under the Corporate Sector Purchase Programme (CSPP) and to make conditions related to collateral eligible for banks' refinancing operations more flexible.

In the case of the US Federal Reserve, the possibility of granting direct loans to large enterprises is also highlighted, in close cooperation with the Treasury (through the establishment of special vehicles, with Treasury capital and benefiting from Federal Reserve loans) and also the purchase of securitisations whose underlying assets are various types of credit to households and small enterprises, the latter whenever they benefit from public guarantees. In the case of the United Kingdom, it should be noted that the Treasury and the Bank of England agreed to temporarily extend a credit line to address potential illiquidity in the short-term public debt market.

1.2.4 Regulatory, prudential and macroprudential measures

In addition to fiscal and monetary policy measures, macroprudential and other measures related to prudential supervision were taken in line with the objectives of the monetary policy and other economic policies. These measures helped relaxing a variety of liquidity and capital requirements of the banks, including the release of buffers previously built up, and less tightening of some lending standards, including on credit to consumption. The purpose is to encourage lending or to avoid tightening its credit supply conditions, although there are also measures that relieve the prudential reporting and the performance of certain exercises previously required (for example, stress tests) which, in the current context, would also be challenging from an operational point of view. There is also the explicit objective of not requiring additional capital reserves from banks, if loans to individuals and businesses are renegotiated in order to include temporary grace periods or if moratoriums are applied regarding the payment of instalments made possible by national laws. This unprecedented coordination results from the recognition of the huge importance of credit markets in the current context, which sets significant liquidity challenges on firms and households. However, such measures only mitigate the liquidity challenges of firms and households and are not a substitute for capital injections.

1.2.5 Concluding remarks

This extensive set of policy responses is unprecedented in the recent past, in terms of both financial envelope and scope. However, great uncertainty remains about the macroeconomic impacts of the pandemic and also the effects of actions taken. The ability to properly mitigate the effects of the economic crisis and foster conditions to relaunch the economies will require the authorities to make a massive effort to assess unintended effects - and make corrections and perform adjustments - but also to strengthen policies and anticipate new responses.

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2 Short-term impacts on Portuguese firms and households

The current public health crisis resulting from the COVID-19 pandemic represents a significant challenge for Portuguese firms and households. Against this background, many firms suspended or significantly reduced their activity, which resulted in a stiff drop in their revenues. This situation represents, in a first stage, a strong challenge for firms' liquidity, which continue to have permanent obligations, such as the wages of their employees. Probably many of these firms seek to reduce their fixed responsibilities by dismissing workers, especially those in more precarious employment relationships, or by not renewing fixed-term contracts. In a second phase, depending on the time extension of the current crisis, it is foreseeable that the reduction in revenue will be reflected in Portuguese firms' equity, whose leverage ratio is structurally extremely high. Given the current context of high uncertainty, it is expected that many of the most fragile firms will choose to cease their activity on a permanent basis, which, if it happens, will have a significant impact on employment. These decisions have necessarily consequences on the income of households and their ability to pay their fixed expenses, thus increasing social and macroeconomic disruptions.

Part 2 of the Special issue shows the results of two exercises in which the short-term consequences of the current context for firms and households were quantified. The exercises are based on common assumptions about the impact of the pandemic on the activity of firms in each sector and use microeconomic data that allow to consider the strong heterogeneity in the productive and social fabric. These assumptions largely reflect the results of the Fast and Exceptional Enterprise Survey (IREE) conducted by the Banco de Portugal and Statistics Portugal, made available on 15 April 2020.[15] The two exercises also analyse the impact of the main measures to mitigate the effects of the pandemic announced by the Government, in particular the simplified regime of temporary reduction of the normal working period or suspension of the employment contract (known as layoff) for firms in crisis and the moratorium on loans.[16] The exercise on households takes also into account the impact of the extraordinary support to the reduction of economic activity of the independent worker and the exceptional regime for late rent payments.[17] Other measures, namely non-governmental ones, are not considered in the analysis, given greater difficulty in defining their scope and access criteria.

In interpreting the results obtained, it is important to keep in mind that they do not result from policy evaluation exercises, but rather from mechanical simulations, based on simplifying hypotheses, which seek to translate plausible scenarios. The exercises carried out are mainly aimed at measuring the short-term impact of the pandemic on the financial situation of firms and households. The validity of the results is the shorter the further the starting point of the exercise is. The exercises also do not consider the costs implicit in financing the measures, namely the increase in public expenditure during layoff periods, which can be considerable and are covered in Part 1 of this Special issue.

The findings of the analysis indicate the share of firms that, in the current context of reduced activity, are unable to pay their fixed costs, as their cash reserves, deposits and undrawn credit lines are exhausted. Additionally, the amount of the liquidity shortfall and the number of employees associated with firms in which these resources are exhausted are quantified. The analysis is based on accounting data from

15. According to the survey, the sectors affected by the shock are "trade", "accommodation and food services" and "transport and storage".
16. Decree-law no.10-G/2020 and Decree-law no.10-J/2020, respectively.
17. Decree-law no. 12-A/2020 and Law no. 4-C/2020, respectively.

Simplified Business Information (IES) for the past available year (2018), which cover a population of about 430 thousand firms. Information from the Central Credit Register (CCR) was also used to quantify credit lines already approved and not used by firms. In the case of households, the impact of the pandemic on income and on households' ability to pay their basic spending and meet their short-term financial responsibilities is calculated. This analysis used data from the 2017 Portuguese Household Finance and Consumption Survey (ISFF).

2.1 Firms

This section presents a simulation exercise intended to quantify the share of firms that are likely to experience cash flow problems following the fall in economic activity caused by the pandemic, as well as the amount of the liquidity shortfall and the number of employees who are associated with those firms. Firms' net cash position depends on liquid financial assets being available, namely cash and deposits, and the ability to generate liquidity through the activity. In addition, firms can use external sources of financing such as the banking system or their shareholders. However, with the exception of credit lines already granted, these liquidity sources are associated with a greater degree of uncertainty.[18] The liquidity reserves of the firms in the short-term were considered to correspond to the sum of the amounts in cash, deposits and credit lines pre-contracted before the pandemic and the financial flows generated by the firm's activity. Regarding cash and deposits, the best estimate available at micro level is the IES data as at 31 December 2018. In aggregate terms, these reserves represent about 35% of the firms' annual gross margin. With regard to credit lines, the most recent CCR data for February 2020 were considered. These credit lines represent 12% of the firms' annual gross margin. The financial flows generated by the activity were projected from the values recorded in the 2018 IES, which are the best available estimate to approximate the situation existing at the starting point of the exercise, taken as 18 March 2020, the date on which the state of emergency was declared. These figures were affected according to assumptions for the slowdown in economic activity, differentiated by sector. These assumptions result from an exercise to gauge the impact of the containment measures on economic activity in April, considering a breakdown in 38 sectors. The shocks under consideration largely reflect the results of the Fast and Exceptional Enterprise Survey (IREE) carried out by the Banco de Portugal and Statistics Portugal in the week of April 6-10. In sectors not covered by the survey, the assumptions reflect some judgement based on dispersed information, including that conveyed by business associations (see Box 1).

The ability of firms to generate cash flow for their shareholders is usually measured based on the cash flow statement reported in the IES. However, this information is not available to the enterprise population since smaller firms are not bound to report. Alternatively, it is possible to obtain an approximate cash flow measure starting from earnings before interest, taxes on profits, depreciation and amortisation (EBITDA) and adding to this value the flows associated with tax payments, capital investments, variations in net working capital and variations in credit. In the exercise carried out, the EBITDA observed in 2018 was deemed to be the best estimate for a firm's ability to generate EBITDA every year. In addition, given the context and goal of the exercise, it was considered that firms do not pay taxes on profits during the horizon of the exercise, the working capital remains constant, capital

18. Credit lines are divided between irrevocable and potentially revocable, subject to certain conditions. In the context of the moratorium announced by the Government, all credit lines are deemed to be irrevocable. Moreover, it was assumed that interest payment on these credit lines should be deferred.

expenditures are interrupted, interest on loans is not paid and medium and long-term loans remain unchanged.[19] Under these circumstances the firm's ability to generate cash flow is equal to EBITDA.

Cash flow for shareholders was divided into two components: gross margin (i.e., sales less cost of goods sold) and fixed operating costs. Costs of goods sold (COGS) include the accounting headings of "costs of goods sold and materials consumed" and "supplies and external services". Fixed operating costs (FOC) are calculated on a residual basis and largely correspond to staff costs (86%). In aggregate terms, fixed costs represent 51% of firms' gross margin, a figure slightly higher than the financial reserves available in cash, deposits, and credit lines. In order to capture the impact of the drop in revenue on the firms' ability to generate liquidity, the gross margin of each firm undergoes, hypothetically, a random shock whose expected value is the same for all firms in the same sector.[20] By contrast with the gross margin, the fixed operating costs are deemed to be urgent and, therefore, the firm has to bear them irrespective of the volume of activity. Dividing the values of gross margin and fixed operating costs by the number of working days in a year gives a measure of the firm's daily cash flow generation ability that allows estimating the number of days on which the firm has sufficient liquidity to pay its fixed costs. Equation (1) presents the formula for calculating the firm's liquidity reserves as a function of the number of working days of the shock:

$$Liquidity = (Cash + Deposits + Credit\ lines) + \frac{(1 - Shock) \times (Sales - COGS) - FOC}{253} \times \#Days \quad (1)$$

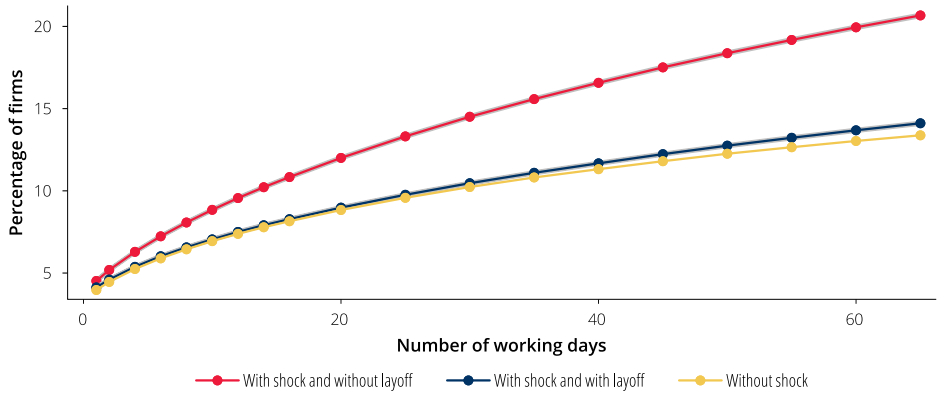
Chart II.2.1 shows the share of firms that have no sufficient liquidity reserves to pay their fixed costs, considering various scenarios for the number of days of activity breakdown.[21] Of note is that this metric is dominated by micro-enterprises, which make up the vast majority of Portuguese firms. Additionally, the percentage of firms with a liquidity deficit even without a shock is presented. This results from the fact that some firms have a gross margin below the fixed costs even in this scenario. This measure is presented as a reference to better assess the impact of the shock.

The results of the exercise unveil a deep heterogeneity. For 40% of the firms, the gross margin aftershocks is higher than fixed costs.[22] This means that these firms never have a liquidity shortfall in this exercise. For the remaining 60%, the ability to pay their fixed costs will depend on the time extension of the downturn and the liquidity reserves they have. However, these firms present a very heterogeneous situation, depending on their liquidity reserves and the size of the shock. Thus, at the end of three months (65 working days), only 20% of the firms have a liquidity shortfall. In the 40-day scenario, taken as a reference, the percentage is 17%. This figure, however, would be much higher if firms did not use their available liquidity reserves in the form of cash, deposits, or credit lines. In this case, all firms with a gross margin lower than fixed costs would be in liquidity shortfall (60%). This difference underlines the importance of firms having liquid financial assets as a precaution against unexpected adverse shocks. Chart II.2.1 also presents the share of firms with a liquidity shortfall after adopting the simplified layoff measure. This measure is aimed to give support to firms affected by the crisis and to contain rising unemployment. Among other benefits, this measure grants the

19. The assumptions about non-payment of taxes on profits, interest and outstanding principal are in line with measures decided by the Government, namely in Decree-Law No. 10-F / 2020, which establishes a special regime for the fulfilment of fiscal and social security obligations, and Decree-Law No. 10-J / 2020, which establishes a moratorium. The figures used did not consider the possibility of VAT payment deferral. EBITDA was additionally adjusted for extraordinary events.
20. Average sectoral shocks correspond to estimated impacts on activity by industry as a result of lockdown measures throughout the month of April (see Box 1). Random shocks were defined by using a breakdown of 38 sectors. Given the lack of information regarding heterogeneity at the firm level, it was considered that the shock followed a uniform distribution with the maximum amplitude compatible with the assumed expected value.
21. As the shock given to each firm is a random variable, depending on the simulation, the firm may have a liquidity shortfall or not. For each simulation, the different metrics used in the charts were calculated, which show the average value of the simulations. The results of the simulations do not differ much. This can be seen by the amplitude of the range between the 5th and 95th percentiles of the simulations for the different metrics.
22. These firms represent 76% of the assets but only 30% of employment.

firm exemption from social security payments for all workers in layoff and a 1/3 reduction in the remuneration to be paid, and the State undertakes to grant further additional financial support to the employer in the amount of 70% of the remainder.[23] In this exercise, in line with the provisions set forth in the Decree-Law, it was considered that all firms with a shock in their turnover above 40% apply for access to this scheme. For each firm it was assumed that only a fraction of its workers, equal to the shock value, actually go into layoff.[24] When considering the effect of this measure, the share of firms that have never a liquidity shortfall rises from 40% to 54%. Additionally, the share of firms with a liquidity shortfall evolves less sharply as longer periods of activity slowdown are considered.

Chart II.2.1 • Firms with a liquidity shortfall | Percentage



Notes: the number of working days is the number of days with a reduction in economic activity (see Box 1). The line called "without shock" relates to firms with a gross margin lower than fixed costs in IES 2018. This line is presented as a reference.

Chart II.2.2 presents the share of firms that are not able to pay their fixed costs in a scenario where the shock lasts for 40 working days, by size of firms and by sector of activity. Three cases were considered: absence of shock, occurrence of the shock without the simplified layoff measure and the occurrence of the shock with the simplified layoff measure.

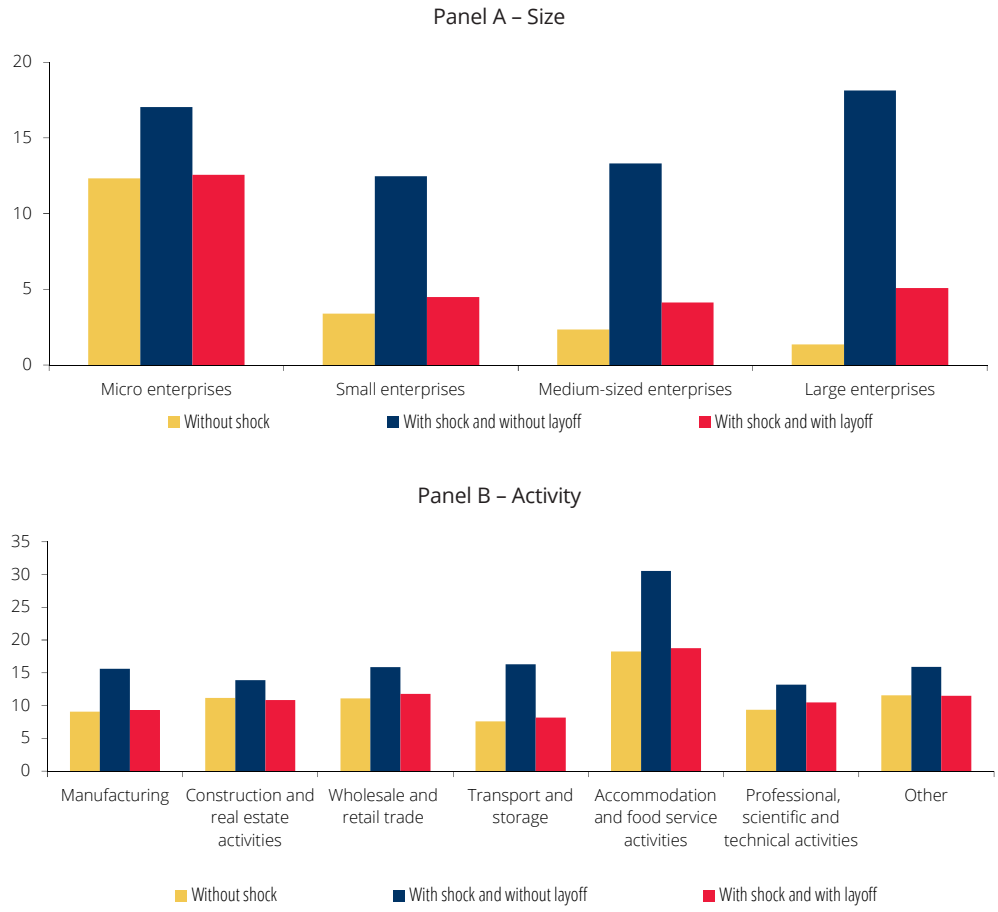
When considering the shock without the layoff measure, about 18% of large enterprises and 17% of micro-enterprises are unable to pay their fixed costs, which translates into increases of 17 and 5 p.p. compared to the situation before the pandemic, respectively. The sector with the highest share of firms with a liquidity shortfall is "accommodation and food services", rising to 31% of the firms (12 p.p. above that observed before the pandemic). The sectors "trade" and "manufacturing", both with a high weight in the economy, registered 16% of firms with liquidity shortfall, which represents an increase compared to the pre-pandemic situation of 5 and 7 p.p., respectively. When considering the simplified layoff measure, the percentage of firms with a liquidity shortfall drops from 17% to 12%. Large enterprises present a greater reduction, from 18% to only 5%. About 12% of micro-enterprises have a liquidity shortfall even after the layoff measure. By sector of activity, the biggest reduction is in "accommodation and food services", which goes from 31% to 19%. Still, this remains the sector where the percentage is the highest. The high number observed in this sector is particularly relevant since it is expected that, in this case, the economic shock caused by the pandemic may have highly persistent effects. The share of firms without sufficient liquidity in the

23. The extraordinary support to the normalisation of the productive activity was not considered in this exercise since its objective is to assess the cash flow situation of firms during the period of greater slowdown in their production activity. Additionally, it was considered that all firms opt for the extraordinary aid to keep the contract of employment instead of the extraordinary training plan.

24. Overall, it was estimated that about 135 thousand firms apply for access to the layoff regime. These firms are associated to about 1.2 million workers. In the exercise assumptions, 689 thousand workers effectively enter into a layoff situation.

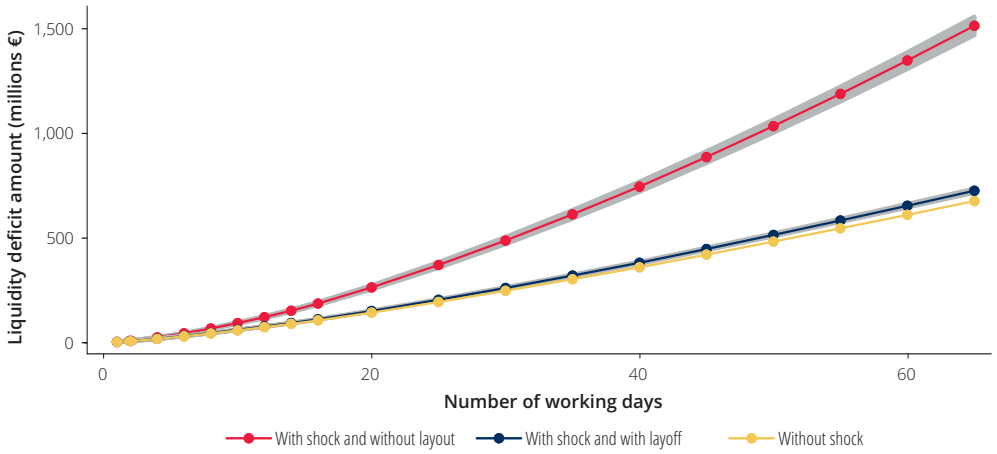
"trade" and "manufacturing" sectors is 12% and 9%, respectively. Large enterprises show the largest increase in the share of firms with post-shock shortfalls. This apparently unexpected result reflects, in part, an easier access to credit for larger enterprises, which allows them to manage liquidity more evenly.

Chart II.2.2 • Firms with a liquidity shortfall, by size and sector, in the 40-days scenario
| Percentage



An important metric for analysis is the aggregate amount of the liquidity shortfall. Chart II.2.3 shows the liquidity shortfall associated with firms with a shortfall, considering various scenarios in terms of time extension of the slowdown in productive activity. The aggregate value of the liquidity shortfall increases with the number of days, as a result of the increase in the number of firms with a shortfall and the increase in their liquidity shortfall. In line with what is observed for the share of firms with a deficit, the associated amounts evolve in a very non-linear manner with the number of days in the scenario, in particular when the layoff measure is not considered. In the 40-day scenario, the aggregate liquidity shortfall is €746 million, an increase of €386 million against what would occur in the absence of the shock. This figure drops to €382 million when the simplified layoff measure is considered. The estimated shortfall should not be interpreted as the amount of credit that firms will need, as many firms with access to credit may prefer not to exhaust their liquidity reserves.

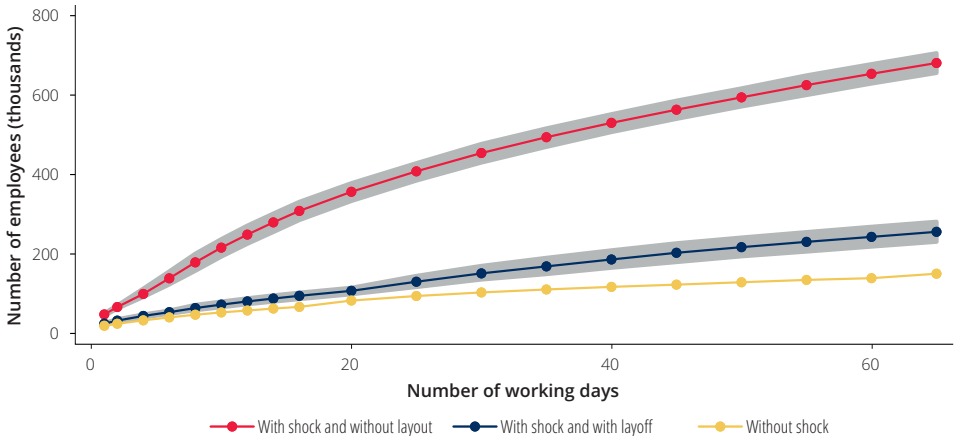
Chart II.2.3 • Aggregate liquidity shortfall



Notes: the number of working days is the number of days with a break in economic activity (see Box 1). The shaded area indicates the interval between the 5th and 95th percentiles of the shock simulations The line called "without shock" relates to firms with a gross margin lower than fixed costs in IES 2018. This line is presented as a reference.

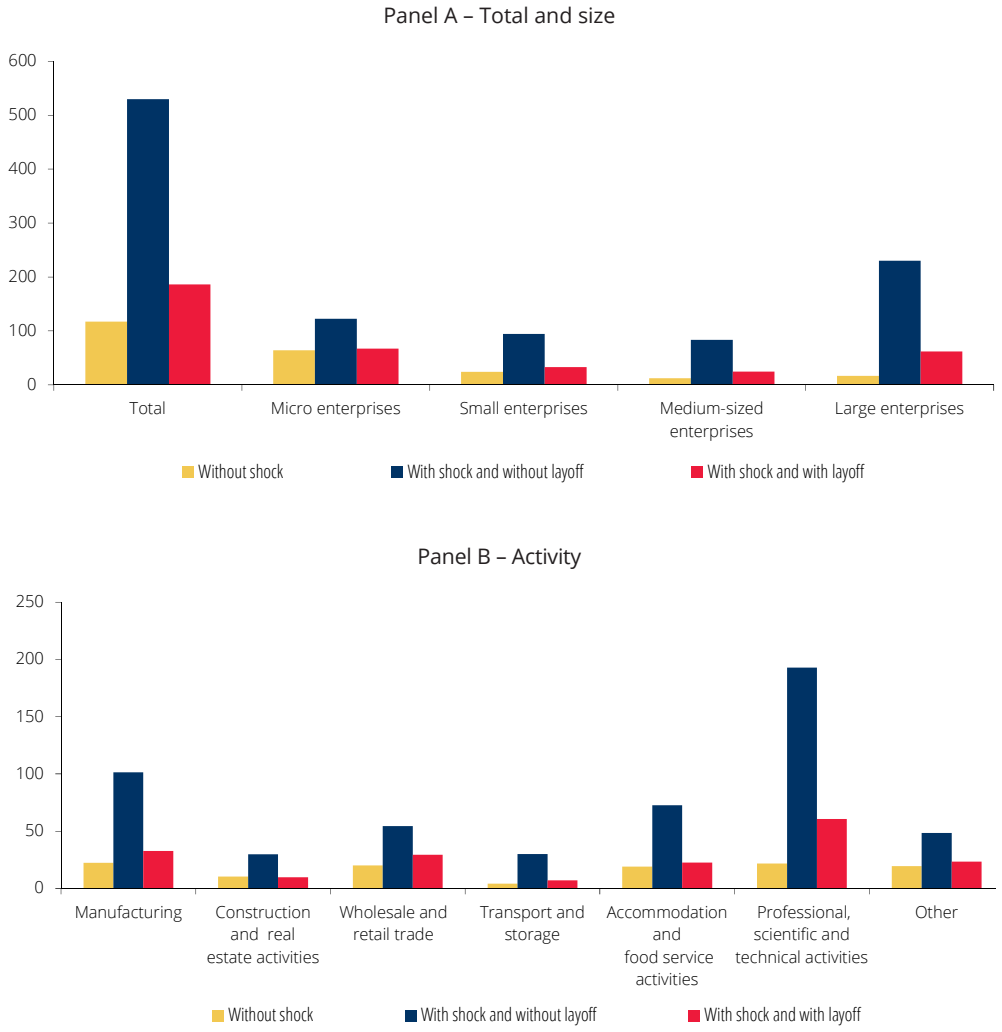
Finally, the number of workers in firms that are unable to pay their fixed costs was estimated (Chart II.2.4). As verified in the deficit amounts, this figure evolves in a non-linear manner with downtime, especially before considering the layoff measure. In the 40-day scenario, the total number of workers associated with these firms is 530 thousand and 186 thousand, depending on whether the simplified layoff measure is considered or not. Before the measure, the majority of potentially affected workers are in large enterprises (43%) (Chart II.2.5). After considering the measure, micro-enterprises are the largest category representing 36% of the total number of workers affected. By sector of activity, the industry with the highest percentage of workers affected before the measure is "consultancy, technical, scientific and administrative activities" with 193 thousand workers (36% of the total), followed by "manufacturing" with 101 thousand workers. After the layoff measure, the highest value is again in "consulting, technical, scientific and administrative activities", totalling 61 thousand workers. The "accommodation and food services" sector, one of the most affected, recorded a significant decrease when the layoff measure is considered (from 73 to 23 thousand workers).

Chart II.2.4 • Number of workers in firms with a liquidity shortfall



Notes: the number of working days is the number of days with a break in economic activity (see Box 1). The shaded area indicates the interval between the 5th and 95th percentiles of the shock simulations The line called "without shock" relates to firms with a gross margin lower than fixed costs in IES 2018. This line is presented as a reference.

Chart II.2.5 • Number of workers in firms with a liquidity shortfall, by size and activity, in the 40-days scenario | Thousands



2.2 Households

The reduction or interruption of economic activity resulting from the COVID-19 pandemic has a negative impact on the labour income of individuals and, as such, of households. In this section, the results of a simulation on the impact of the pandemic on households' income and on their ability to pay their expenses in the short term are presented. The results were obtained considering the introduction of some of the main government measures with direct effects on labour income and household spending. The measures considered consist, in the case of income, in the simplified layoff and in the extraordinary support to the reduction of the economic activity of the independent worker and, in the case of expenditure, in the moratorium on loans for the purchase of the main residence and the exceptional regime for situations of late payment of rents.

This exercise used data from the 2017 Portuguese Household Finance and Consumption Survey (ISFF, by its Portuguese acronym) and several simplifying assumptions. When analysing the results, it is important to keep in mind that the exercise is of a short-term nature and does not incorporate

general equilibrium effects. The simulations do not consider, in particular, the impact of the pandemic on the households' wealth, levels of indebtedness and, on other types of income, other than those from labour.

2.2.1 Effects on household income

To obtain the income of a particular household in the context of the pandemic, the labour income of each of its members was calculated when the pandemic started, which was subsequently added to the remaining household income that was assumed not to be affected by the pandemic.[25] In this section, and before the results are presented, the exercise is briefly described; the methodological annex contains a more detailed characterisation.

ISFF data does not allow for the identification of specific firms where individuals perform their activity, but it does allow to know which sector of activity is. Thus, it was assumed that all workers in the same sector have the same probability of working in firms that interrupt their activities due to the pandemic and that this probability is given by the percentage of activity reduction in the sector.[26] In addition, it was considered that when a firm's activity is not affected by the pandemic, workers' pay remains unchanged. In firms affected by the pandemic, it was assumed that workers receive their income associated with the simplified layoff regime or the extraordinary support to the reduction of the economic activity of the independent worker, if they are eligible for these supports.[27] For workers who are not covered by these measures, it was assumed that they would not receive any remuneration when the firm ceases to be active due to the pandemic. Depending on the employment status of individuals, this hypothesis can be interpreted as loss of employment, lack of income from self-employment or the existence of overdue wages.

Both the simplified layoff and the extraordinary support to the reduction of the economic activity of the independent worker guarantee that, in the event of a drop of at least 40% in the turnover, the worker will be entitled to a minimum income. The simplified layoff applies to employees and the extraordinary support for the reduction of the economic activity applies to independent workers or to the managing partners of firms without employees and with a turnover of less than €60 thousand. The income that the worker receives during the period of implementation of these measures is equivalent to 2/3 of his labour income, although there are pre-defined minimum and maximum values.

Table II.2.1 shows the short-term impact on disposable income and net labour income from the pandemic.[28] On average, the monthly income of households residing in Portugal decreased by 5.3%, as a result of an 8.2% reduction in labour income.

25. The impact of considering the effect of the pandemic on income from rents, businesses and financial assets would be negligible given that, according to 2017 ISFF data, they represent only about 4% of total household income, which contrasts with a weight of about 70% of labour income.
26. This hypothesis, which is equivalent to assuming that all companies in a given sector are affected in the same way as the sector average, makes the dispersion of income variation among individuals lower than in reality but does not affect the evolution of total income or of mean labour income by sector.
27. This hypothesis gives rise to a total of just over one million layoff workers in this exercise, which seems to be in line with the aggregate numbers that have been officially released.
28. All results presented refer to values extrapolated to the population, that is, they were obtained from the responses of each household in the sample, using a weight that indicates the number of households in the population with similar characteristics.

Table II.2.1 • Monthly household income, pre- and post-pandemic: short-term impact, after measures to support income

		Disposable income, mean values (euros)		Net labour income, mean values (euros)		Change (%)		By memory:
	% of total households	Pre-pandemic	Post-pandemic with measures to support income	Pre-pandemic	Post-pandemic with measures to support income	Disposable income	Net labour income	% of households with labour income
Total	100.0	1566	1482	871	800	-5.3	-8.2	67.9
Disposable income percentile								
<=20	20.0	407	398	97	89	-2.4	-8.6	34.1
20-40	20.0	846	824	329	310	-2.7	-5.9	55.2
40-60	20.0	1256	1214	680	644	-3.3	-5.3	75.9
60-80	20.0	1769	1679	1085	1008	-5.1	-7.1	87.2
80-90	10.0	2442	2301	1521	1400	-5.8	-7.9	85.6
>90	10.0	4665	4301	2813	2501	-7.8	-11.1	89.2
Age of the reference person								
<35	9.8	1410	1319	1025	947	-6.4	-7.6	94.9
35-44	19.3	1735	1566	1338	1193	-9.8	-10.9	96.8
45-54	20.3	1835	1728	1335	1243	-5.8	-6.9	94.0
55-64	18.4	1731	1650	1072	1002	-4.7	-6.5	79.8
65-74	16.0	1432	1408	225	204	-1.7	-9.3	28.7
>=75	16.2	1065	1059	51	46	-0.6	-10.8	9.8
Education of the reference person								
Lower than secondary	64.9	1207	1160	568	527	-3.9	-7.1	57.7
Secondary	15.6	1691	1582	1145	1052	-6.5	-8.2	89.1
Tertiary	19.5	2657	2475	1661	1505	-6.9	-9.4	84.9
Net wealth percentile								
<=20	20.0	927	892	516	486	-3.8	-5.8	65.1
20-40	20.0	1250	1165	759	685	-6.9	-9.7	67.2
40-60	20.0	1329	1270	744	693	-4.4	-6.8	67.3
60-80	20.0	1692	1599	926	846	-5.5	-8.6	68.2
80-90	10.0	1969	1878	1070	992	-4.6	-7.3	70.4
>90	10.0	3298	3101	1755	1586	-6.0	-9.6	73.5

The effect of the pandemic varies across household groups, as they differ in the number of individuals with labour income, as well as in their employment status and sectors of activity in which they work. The pandemic has no impact on income for a considerable share of households. This is particularly the case for households that have no labour income and those where all members work in sectors not affected by the pandemic, which represent about 50% of total households.

The impact of the pandemic on household disposable income is increasing with the level of this variable, as well as with the educational level of the reference person.[29] In the group of 20% of households with the lowest income, the mean disposable income decreased by 2.4%, which compares to a reduction of 7.8% in the group of 10% of households with the highest income

29. The reference person was selected among household members according to the Canberra definition. In most cases it corresponds to the individual with the highest income in the household.

(Table II.2.1). The lowest impact of the pandemic on low-income households stems from the lower weight of labour income in these households, where retirement pensions and other public transfers are of greater importance.

When only labour income is considered, households in the bottom quintile of disposable income have a slightly higher reduction than the mean (Table II.2.1). This suggests that, in this group of households, working individuals are relatively concentrated in sectors most affected by the pandemic or in segments that do not benefit from income support measures. The greatest reduction in mean labour income, however, occurs in higher income households, which partly reflects the fact that layoff income and the support to the independent worker is limited to a maximum value.

By age group, as expected, the reduction in disposable income is far more significant in households where the reference person is of working age than in the rest. In age groups over 65, the income of most households does not change due to the pandemic. Among the working-age individuals, the two youngest age groups, and in particular the 35-44 age group, are those with the greatest exposure to the pandemic and, therefore, the greatest reductions in both disposable income and labour income. (Table II.2.1). By net wealth classes, the reduction in both types of income is greater in the highest wealth class than in the lowest wealth class. In the remaining classes, however, there is no clear relationship between the impact of the pandemic and the level of wealth, although the percentage of households with labour income increases with the level of wealth.

2.2.2 Impact on households' ability to pay expenses

In addition to quantifying the impact of the pandemic on income reduction, it is important to assess whether households are able to finance their basic spending and meet their short-term financial obligations. For this purpose, an aggregate of expenditure was calculated for each household, which includes the consumption of non-durable goods and utilities, loan instalments and main residence rent payments. Households' ability to pay these expenses was assessed on the basis of income and liquid financial assets, measured by the value of deposits net of debt maturing in the short term (debts associated with credit cards and credit lines or bank overdrafts).[30]

As in the previous section, the analysis was carried out for a situation after the Government has implemented measures to mitigate the effects of the pandemic. In this case, in addition to measures with an impact on income, moratoriums on loans for the purchase of the main residence and on rents paid for the main residence were also considered.

The moratorium on the main residence loans allows individuals that have been placed in a reduction of the normal working period or in suspension of the employment contract, due to a business crisis, as well as workers eligible for the extraordinary support to the reduction of the economic activity of the independent worker, to suspend the instalment payment associated with the main residence loan, provided that they are not in default on those loans for more than 90 days. Should there be no event of default, the moratorium also applies to unemployed individuals registered with the Institute for Employment and Vocational Training (IEFP, by its Portuguese acronym). Thus, to simulate the impact of this moratorium, it was considered that the instalments of the main residence mortgages would be zero for households not defaulting on these loans for more than 90 days, and where any of the members was unemployed. Moreover, in the remaining non-defaulting households and where any of the members meets the requirements to be covered by simplified layoff measures or by the extraordinary support to the reduction of the economic activity of the independent worker, it was considered that the expected value of the loan instalment after the introduction of the moratorium depends on the likelihood of that individual performing his activity in a company affected by the pandemic.

30. In this aggregate, other financial assets, such as mutual funds, quoted shares or bonds were not considered, since in the context of high uncertainty resulting from the pandemic, the degree of liquidity of these assets, and their value, have dropped significantly.

With regard to rent charges, the exceptional regime for late rent payments provides that rent payments for the main residence may be suspended, provided that the household has had a reduction in income of at least 20% and that, therefore the rent will represent more than 35% of the household income value. Thus, for households that meet the requirements mentioned above, the effect of this measure was simulated considering that the value of the rent would be null.

Table II.2.2 includes, for all households and for households with different income levels and different age groups, the mean value per household of disposable income net of spending, as well as the ratio of liquid financial assets to monthly expenses, compared to its pre-pandemic value. The levels of these variables should be taken as indicative only, given the measurement errors typically associated with the collection of these data in surveys.[31]

Most households have accumulated wealth that can enable them to finance expenses in the event of reduced income. For households as a whole, the median value of the ratio of liquid financial assets to monthly expenses is 3.5, which means that half of households can finance a maximum of three and a half months of spending associated with the consumption of non-durable goods and utilities, debt servicing and rent charges, should there be no income. This ratio increases very significantly with the income and is highly heterogeneous within each income class, as illustrated by the difference between its median and mean values. Considering the median value, households in the lowest income quintile are able to pay just over a month of spending by using the liquid financial assets, while in the highest quintile households have sufficient resources to finance more than a year of spending, should there be no income. Households' ability to pay expenses based on income is also very heterogeneous. Before the pandemic, the mean income net of spending is €610 for households as a whole. This figure varies considerably with households' income, averaging a negative figure of €87 in the group of 20% of households with the lowest income, and €2,788 in the group of 10% of households with the highest income.

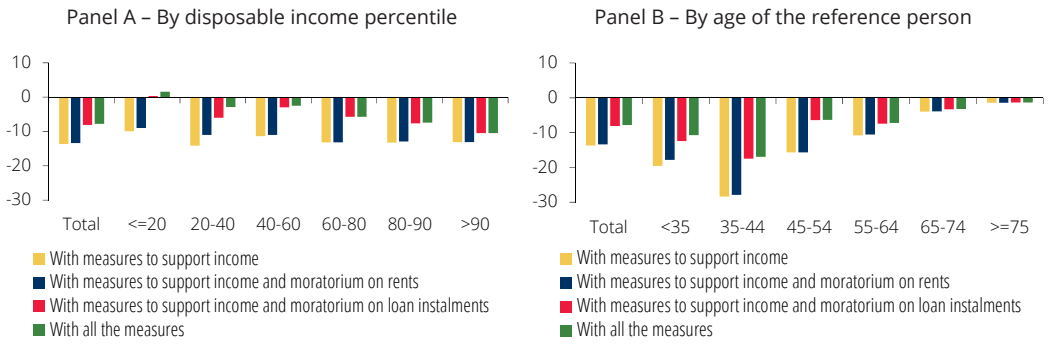
Table II.2.2 • Households' ability to pay expenses before the pandemic

	Disposable income less expenses, monthly mean value (EUR)	Ratio of liquid financial assets to monthly expenses	
		Median	Mean
Total	610	3.5	18.6
Disposable income percentile			
<=20	-87	1.2	14.7
20-40	160	2.2	13.4
40-60	368	3.1	16.2
60-80	683	4.0	18.0
80-90	1066	8.4	23.5
>90	2788	14.1	38.0
Age of the reference person			
<35	462	1.6	7.9
35-44	598	2.7	13.2
45-54	681	2.8	12.6
55-64	753	3.7	20.5
65-74	618	5.7	24.8
>=75	453	8.1	30.8

31. In the ISFF, as happens usually with the survey data, the aggregate values of both the consumption of non-durable goods and deposits are significantly lower than in other sources, such as National Accounts, while for income the divergence from other sources is more reduced. In the case of deposits the households' reluctance to report the data, as well as the possible underrepresentation of the wealthiest households in the sample compared to the population contribute to this situation. The underestimation of deposits should therefore be higher in the case of the wealthiest households for which the analysis carried out in this section is less relevant.

To assess the impact of the pandemic and of the mitigation measures on the income net of spending, Chart II.2.6 shows the change in the mean values of this indicator post-pandemic, compared to its value before the pandemic.[32] For households as a whole, the mean value of income net of spending decreases by 8% when all measures are considered and by about 14% when considering only income support measures. The difference between the two changes stems mainly from the effect of the moratorium on loan instalments for the purchase of the main residence since the moratorium on rents has little impact. The impact of the moratorium on rents is slightly more significant for households in the two lower income classes and for households in which the reference person is under 35 years old. However, even in these groups, the impact of the moratorium on loan instalments is greater. In respect of income classes, worth noting is that, should there be no moratoriums, although the reduction in income is greater for higher income households, income net of spending has relatively close reductions across groups, which results from the fact that spending has a greater weight in lower income households. This situation, together with the high weight that loan instalments have on low-income households' spending, contributes to the fact that moratorium on loans have a particularly favourable impact on the financial situation of these households. In fact, when considering the effect of moratoriums, the income net of spending has a slight increase in the lower income class, which contrasts with a reduction of about 10% in the highest income class. By age group, when all measures are considered, the greatest reduction in income net of spending, however, continues to occur in younger households and, in particular, in the age group ranging from 35 to 44 years old (reduction of about 17%).

Chart II.2.6 • Change in the mean value of income less expenses, post-pandemic compared to pre-pandemic | Percentage



2.3 Conclusions

The exercises carried out aim to assess the short-term consequences of the pandemic on the financial situation of firms and households, by using microeconomic data. Underlying these exercises are common assumptions about the impact of the pandemic on each sector's activity, which largely reflect the results of the Fast and Exceptional Enterprise Survey conducted in the week of 6-10 April. The two exercises also analyse the impact of the measures announced by the Government to mitigate the effects of the pandemic, in particular, the simplified layoff regime, the extraordinary support to

32. These calculations ignore possible changes in household consumption of non-durable goods following the pandemic. The effect of the pandemic on this aggregate is quite uncertain and probably very heterogeneous among households with different financial situations.

the reduction of the economic activity of the independent worker, the moratorium on loans and the moratorium on the payment of rents on the main residence.

The share of firms with insufficient liquidity to cover their costs increases with the number of days of reduction in activity, as their cash reserves, deposits and credit lines taken out are progressively depleted. In the absence of a layoff, 17% of firms are estimated to face a liquidity shortfall after 40 days of reduced activity. The share of firms with a liquidity shortfall after 40 working days is higher among large enterprises than in other size classes. The sector with the largest share of firms experiencing a deficit is "accommodation and food services". Considering the adoption of the simplified layoff, the share of firms with a deficit in the 40-working-day scenario drops to around 12%, which is similar to what was seen prior to the pandemic. The drop is more significant for large enterprises and the "accommodation, food services" sector, which, nonetheless, is still the sector with the largest share of firms with a liquidity shortfall. The high percentage of firms with a liquidity shortfall observed in this sector is particularly relevant given that it is expected that in this case the economic shock caused by the pandemic may have more persistent effects, which may go beyond the analysis horizon of this simulation exercise.

The aggregate value of the liquidity shortfall and the number of workers associated with the firms with a shortfall also increase markedly with the number of days of activity reduction. In a 40-day scenario and in the absence of a layoff, the amount of firms' liquidity shortfall is €746 million, €386 million more than in the pre-pandemic scenario. The number of workers associated with these firms amounts to 530 thousand. Considering the layoff, the amount of liquidity shortage drops to about half and the total number of workers associated with these firms drops to 186 thousand, the highest number figuring in "consultancy, technical, scientific and administrative activities".

The decline in productive activity resulting from measures to contain the pandemic has a negative impact on the disposable income of Portuguese households and, as a consequence, on their consumption decisions. The exercise carried out suggests that after considering the income support measures implemented by the Government (simplified layoff and extraordinary support to the reduction of the economic activity of the independent worker), the mean households' disposable income shows a reduction of about 5% and the labour income of about 8%. The negative impact on disposable income is transversal to households with different characteristics, however, it is more accentuated in households with higher income and in those of younger age groups.

For households as a whole, the mean value of income less expenses in non-durable goods, current services, loan instalments and rents on main residence, is reduced by about 8%, compared to its level before the pandemic, after considering the income support measures as well as the moratorium on loans for the purchase of primary residence and the exceptional regime for late rent payments. Across all income classes and age groups, the moratorium on loan instalments has a more substantial impact than the moratorium on rents. Overall, the moratoriums have a particularly favourable impact on lower-income households and younger households.

The results of the exercises depend a lot on the assumptions made for sectoral shocks, as well as on how simulations were implemented. In the case of households, the fact that the impact on the income of each individual's labour income is considered to be equivalent to the average impact for their sector and employment status reduces the dispersion of income variation among individuals, and may have an impact on results obtained for some groups. Moreover, the income after layoff may be overestimated in the case of employees who declare to Social Security an income lower than what they report in the ISFF. In the case of firms, the results are based on a liquidity approach and not a solvency approach, which has greater relevance in a perspective of activity continuity. Some of

the assumptions made for assessing liquidity (such as tax deferrals) do not make sense in a solvency analysis. In addition, the solvency analysis must take into account some aspects not considered in this exercise, such as the leverage of firms when the pandemic started, the impact of losses resulting from the pandemic on the leverage of firms, shareholders' expectations regarding the evolution of the business and the financial situation of the shareholders.

Finally, in any of the exercises, it is important to keep in mind that the analyses have a short-term horizon and do not incorporate general equilibrium effects. These effects can be particularly severe if we take into account, for example, the contagion effects between activity reductions in the various sectors, the link between drops in household income and demand addressed to firms, interaction with the financial sector or the budgetary costs of the policy measures implemented, as discussed in Part 1 of this Special issue.

Box 1 • Assumptions regarding shocks

The exercises for simulating the short-term impact of the pandemic crisis on the liquidity of firms and on the financial situation of households are based on common assumptions on the magnitude of sectoral shocks. These hypotheses result from an exercise to measure the impact of the containment measures on the GVA of each sector in the month of April.

In the analysis of the impact on GVA, a breakdown of the National Accounts, with 38 branches of activity, was considered and, in some sectors, with some additional breakdown. In particular, a breakdown of the "trade and repair"[33], sector was considered, "air transport" was isolated from the remaining subcategories of the "transport and storage" sector and "real estate intermediation activities" of the "real estate activities" sector, since this includes actual and imputed rents.

The shocks under review largely reflect the results of the Fast and Exceptional Enterprise Survey (IREE) conducted by the Banco de Portugal and Statistics Portugal during the week of 6 to 10 April. In the sectors covered by the responses to the IREE, the shock corresponds to the midpoint of the interval indicated by the firms in the answer to the question regarding the quantification of the impact on turnover.[34] In sectors not covered by the survey, the assumptions reflect some judgement based on dispersed information, including that conveyed by business associations. Particularly in the sectors "agriculture, forestry and fishing" and "financial and insurance activities" a drop in GVA of about 1/3 of that considered in "manufacturing" was assumed. Moreover, it was considered that in the sector "public administration and defence; compulsory social security" the shock is null, that is, the pandemic had no impact on GVA of these sectors. In "education", "human health services" and "social work activities", the impact on GVA relevant to the exercise of firms and households corresponds to that of private activities, which weigh 30% in these sectors. In this case, the impact on GVA was based on the information from the IREE.

Table C1.1 shows the GVA shocks that were considered in the simulation exercises. This table shows the average shocks in the first column. In the exercise of households, the percentage of reduction in GVA was interpreted as the percentage of reduction in the average activity of firms in each sector, and it was assumed that this percentage corresponds to the probability that an individual with labour income is affected by the pandemic and, depending on his employment status, the probability that the individual is covered by income-related mitigation measures. The second and third columns of Table C.1 show the lower and upper limits of the firm-level random shocks considered in the exercise of firms. These values were interpreted as the limits for the gross margin variation. Lacking information on heterogeneity at firm level, a shock with uniform distribution was assumed, for simplicity, with the largest dispersion that is compatible with the average shock at sector-level.

33. The disaggregation "retail trade of essential goods", "wholesale trade" and remaining categories was considered.

34. In the "transport and storage" sector, the aggregation of IREE information is based on the weights of GVA for the subcategories of this sector, since the structure of GVA is not comparable with the structure of turnover. It is assumed that the impact in the "artistic, entertainment and recreational activities" and the impact in "other service activities" represent the total impact in "other services".

Table C1.1 • Shocks by activity (reduction in activity %)

	Average shock (%)	Random shock (%)	
		Lower limit	Upper limit
01 – Agriculture, forestry and fishing	10.0	0.0	20.0
02 – Mining and quarrying	20.4	0.0	40.9
03 – Manufacture of food products, beverages and tobacco products	11.2	0.0	22.4
04 – Manufacture of textiles, wearing apparel and leather products	46.8	0.0	93.7
05 – Manufacture of wood and paper products, and printing	12.1	0.0	24.1
06 – Manufacture of coke, and refined petroleum products	63.0	26.0	100.0
07 – Manufacture of chemicals and chemical products	14.5	0.0	29.0
08 – Manufacture of basic pharmaceutical products and pharmaceutical preparations	-2.3	-2.3	-2.3
09 – Manufacture of rubber and plastics products, and other non-metallic mineral products	45.5	0.0	91.1
10 – Manufacture of basic metals and fabricated metal products, except machinery and equipment	35.1	0.0	70.2
11 – Manufacture of computer, electronic and optical products	34.3	0.0	68.7
12 – Manufacture of electrical equipment	34.6	0.0	69.2
13 – Manufacture of machinery and equipment n.e.c.	33.9	0.0	67.8
14 – Manufacture of transport equipment	78.7	57.4	100.0
15 – Manufacture of furniture; other manufacturing; repair and installation of machinery and equipment	48.8	0.0	97.6
16 – Electricity, gas, steam and air-conditioning supply	5.1	0.0	10.1
17 – Water, sewerage, waste management and remediation activities	23.1	0.0	46.2
18 – Construction	26.5	0.0	53.0
19 – Retail trade of essential goods	19.2	0.0	38.5
20 – Wholesale trade	19.7	0.0	39.4
21 – Retail trade of non-essential goods, repair of motor vehicles and motorcycles	74.4	48.8	100.0
22 – Accommodation and food service activities	70.3	40.5	100.0
23 – Transportation and storage (excluding air transport)	52.9	5.8	100.0
24 – Air transport	87.1	74.2	100.0
25 – Publishing, audiovisual and broadcasting activities	31.6	0.0	63.2
26 – Telecommunications	5.3	0.0	10.5
27 – Computer programming, consultancy and related activities; information service activities	8.2	0.0	16.3
28 – Financial and insurance activities	10.0	0.0	20.0
29 – Real estate activities	28.6	0.0	57.2
30 – Legal and accounting activities; activities of head offices; management consultancy activities; architecture and engineering activities; technical testing and analysis	19.4	0.0	38.8
31 – Scientific research and development	26.6	0.0	53.2
32 – Advertising and market research; other professional, scientific and technical activities; veterinary activities	39.2	0.0	78.3
33 – Administrative and support service activities	37.9	0.0	75.8
34 – Public administration and defence; compulsory social security	0.0	0.0	0.0
35 – Education	21.6	0.0	43.2
36 – Human health services	50.3	0.7	100.0
37 – Social work activities	17.1	0.0	34.2
38 – Other services activities	62.2	24.5	100.0

Methodological annex

A Simulation exercise of the impact of the pandemic on household income

The 2017 ISFF income figures refer to 2016. Labour income corresponds to employee and self-employed worker's income, net of income taxes and Social Security contributions. The disposable income includes, besides the labour income, all other income and regular transfers received by any member of the household, measured in net terms. In the ISFF there are some observations with missing net income values. For the purpose of this exercise, those values were estimated from the corresponding gross income and assuming tax rates that depend on the respective level of income.

The simulation of the impact of the pandemic and the mitigation measures on households' income was based on assumptions that depend on the employment status of each member of the household, as well as on the sector of activity in which they work. In the ISFF, data related to the employment status refer to the moment of the interview (which took place mainly between May and August 2017), in the case of individuals who are working at that time, or to their previous employment status, in the case of individuals who are not working but have worked before. In the exercise carried out, it was assumed, therefore, that the individuals who received labour income in 2016 had the same employment status in that year as at the time of the interview, or as at any time before, in case they were not working at the time of the interview. With these assumptions, a distribution of individuals by employment status and by sector of activity was obtained, remarkably close to that existing in other data sources, such as the National Accounts or the Employment Survey.

To implement the simulations, it was necessary to gather individuals according to specific groups of employment status. Section A1 describes these groups. How simulations were made for each group is detailed in section A2.

A1 **Classification of individuals according to employment status**

The ISFF makes it possible to know whether individuals are employees or self-employed. Individuals are classified in the first group when they work in a firm not owned by them, or for the State, and in the second one in the remaining cases. For employees, ISFF includes information on the type of employment contract, distinguishing permanent contracts, fixed-term contracts, and situations where there is no written contract. This latter group includes, among others, independent workers who carry out most of their activity for the same employer and have a dependent relationship with the employer. In turn, in the case of self-employed workers, the ISFF makes it possible to distinguish isolated workers from those who are employers. In addition, the survey includes some characteristics of the business /firm owned by individuals and in which they work, namely, the number of workers, their legal form, and the amount of annual turnover. Based on this set of information, the individuals who work were grouped into the following four groups: 1) "Permanent" workers; 2) Employees on fixed-term contracts; 3) Self-employed workers eligible for extraordinary support to independent workers and 4) Other workers.

The first group - "permanent" workers - includes employees with open-ended contracts, employees with no written contract (and who are not independent workers) as well as self-employed employers

and whose business/firm has more than five workers.[35] Thus it was assumed that the latter, even though they are classified as self-employed at ISFF, have a tax and contributory situation equivalent to that of employees. The second group includes employees with fixed-term contracts. In the third group, in order to apply in a simplified manner the provisions of Decree-Law No. 12-A/2020, regarding the extraordinary support to the reduction of the economic activity of the independent worker, have been included independent workers for more than one year and self-employed workers with a different legal form (for example, limited liability companies), with an annual turnover of less than €60 thousand and without employees. Finally, the fourth group includes the remaining self-employed workers not included in the previous groups.

A2 **Calculation of the effect of the pandemic on labour income considering the simplified layoff and the extraordinary support for the independent worker**

An individual's labour income is potentially affected by the pandemic if he works in a sector with reduced activity. In this exercise, it was assumed that all workers in the same sector are equally likely to work in firms that interrupt their activities due to the pandemic. In addition, it was assumed that all workers from affected firms start to receive, after the pandemic, the income associated with the simplified layoff regime or the extraordinary support to the reduction of the economic activity of the independent worker, should those supports apply to their employment status. In the case of workers who are not covered by these measures, it was assumed that they do not receive any remuneration when the firm ceases to be active due to the pandemic.

The income received by the worker during the implementation period of the income support measures is equivalent to 2/3 of his labour income, existing however pre-defined minimum and maximum values. In the case of the simplified layoff, the law establishes that the income to which the worker is entitled is between one and three minimum wages, while in the case of support to independent workers it is between the Social Support Index (IAS) and the minimum wage. Given that in the ISFF data there are individuals who report earnings below the minimum thresholds set by those Decree-Laws, it was considered that in these cases the labour income of these individuals would remain unchanged.

It was assumed that the simplified layoff applies to workers in group 1 ("permanent" workers) and workers in group 2 (employees with fixed-term contracts) whose contracts do not expire in the period under review (that is, within 1 month). In addition, it was assumed that group 3 workers are eligible for the extraordinary support to the reduction of the economic activity of the independent worker and that group 4 workers are not covered by any of the income support measures. The expected income of workers in groups 1, 2, 3 and 4 is thus given by expressions (1), (2), (4) and (6), respectively. In these expressions $Y_{ij}, YP_{ij}, YLO_{ij}$ and YAP_{ij} represent the income of worker i insector j, pre-pandemic, post-pandemic, considering the existence of income support measures, in case of being in a layoff situation and in case of receiving support to the independent worker,respectively. In turn, $Shock_j$ corresponds to the share of workers in the sector working in a firm that interrupted its activity due to the pandemic[36].

35. It should be noted that according to the Labour Code, an individual who works for an employer for a period that exceeds the experimental period and without a written contract, automatically becomes a permanent worker, that is, with an open-ended contract.

36. This percentage corresponds to the assumption concerning the average change in activity described in Box 1. The exercise of households was carried out based on an aggregation for 18 sectors from the 38 presented in Box 1, determined by the fact that the sectoral breakdown is less fine in ISFF.

$$E(YP_{ij}) = Y_{ij} \times (1 - Shock_j) + YLO_{ij} \times Shock_j \quad (1)$$

$$E(YP_{ij}) = Y_{ij} \times (1 - Shock_j) + \frac{5}{6} YLO_{ij} \times Shock_j \quad (2)$$

$$YLO_{ij} = \begin{cases} Y_{ij}, & if \quad \frac{2}{3} Y_{ij} < minimum\ wage\ and\ if\ full\ time\ worker \\ 3 \times minimum\ wage, & if \quad \frac{2}{3} Y_{ij} > 3 \times minimum\ wage \\ \frac{2}{3} Y_{ij}, & otherwise \end{cases} \quad (3)$$

$$E(YP_{ij}) = Y_{ij} \times (1 - Shock_j) + YAP_{ij} \times Shock_j \quad (4)$$

$$YAP_{ij} = \begin{cases} Y_{ij}, & if \quad Y_{ij} \leq 1.5 \times IAS \\ Min\left(\frac{2}{3} Y_{ij},\ minimum\ wage\right), & if \quad Y_{ij} > 1.5 \times IAS \end{cases} \quad (5)$$

$$E(YP_{ij}) = Y_{ij} \times (1 - Shock_j) \quad (6)$$

III Series

Quarterly series for the Portuguese economy: 1977-2019

Annual series on household wealth: 1980-2019

Quarterly series for the Portuguese economy: 1977-2019

Every year the Banco de Portugal discloses the update of the quarterly long series for the Portuguese economy. These series are distributed in three blocks: expenditure, disposable income and labour market.

The update released in this Bulletin maintains the same breakdown as the previous ones and includes, for the first time, quarterly figures for 2019.[1] The data is consistent with the latest version of the Quarterly National Sector Accounts published by Statistics Portugal on 25 March 2020 and mainly follows the methodological procedures described in detail in Cardoso and Sequeira (2015).[2] The revisions compared to the May 2019 issue of the *Economic Bulletin* largely reflect the change in the reference year of the National Accounts to 2016.[3]

As regards the main expenditure components, the series for the period from 1995 onwards match the quarterly data released by Statistics Portugal, both at current prices and in volume (chain- linked volume data with reference year 2016).

In turn, disposable income series are adjusted for seasonal and calendar effects (whenever a seasonal pattern was identified) and for this reason they may differ from the ones published by Statistics Portugal (in the Quarterly National Sector Accounts) from 1999 Q1 onwards.

In the labour market block, series are grouped according to two different measures: full-time equivalent (National Accounts concept) and thousands of individuals (Labour Force Survey concept). Note that the series measured in thousands of individuals, as well as the unemployment rate series, only differ from those published in the Labour Force Survey due to seasonal adjustments.

In general, seasonal adjustments were performed using the X13-ARIMA procedure (via the JDemetra+ software).

1. Quarterly series for the 1977-2019 period are only available in electronic format on the Banco de Portugal's webpage for this *Economic Bulletin*.
2. Cardoso, F. and Sequeira, A. (2015), "Quarterly series for the Portuguese economy: 1977-2014", *Occasional Paper* No 1, Banco de Portugal.
3. For further details, see Statistics Portugal's press release of 23 September 2019 entitled "Annual National Accounts – Benchmark year 2016" and the Box 5 entitled "Revision of the national accounts and balance of payments statistics" in the October 2019 *Economic Bulletin* of the Banco de Portugal.

Annual series on household wealth: 1980-2019

The annual series on household wealth, for the period 1980-2019, correspond to an update of the estimates published in the *Economic Bulletin* of May last year. These wealth estimates, published annually,[1] include the financial component (assets and liabilities) and housing (the main component of non-financial wealth). The concepts and methodology are identical to those described in Cardoso, F., Farinha. L. and Lameira, R. (2008)[2].

The financial series (assets and liabilities) presented here are consistent with the latest version of national financial accounts published by the Banco de Portugal, which are available for the 1994-2019 period. The financial series for the period before 1994 were estimated using the implicit rates of change in the previous wealth series and obtained in accordance with the methodology described in detail in Cardoso, F. and Cunha, V. (2005).

The methodology used to estimate housing wealth is based on a method normally utilised to calculate capital stock estimates – the perpetual inventory method. This method consists in successively accumulating fixed capital investment (in this case. in housing), postulating reasonable hypotheses for its service life and depreciation method.

The series on housing wealth was adjusted, so as to incorporate for the 2000-2017 period the estimates of the housing capital stock, published by Statistics Portugal[3]. Estimates made available by Statistics Portugal do not include the underlying value of land (which is included in the wealth series published here). In order to estimate the value of land, we considered the ratio defined for tax purposes (regarding housing evaluations for the IMI – municipal property tax), which corresponds to 25% of the housing overall value. The remaining years of the long series of housing wealth (for the 1980-1999 and 2018-2019 periods) were calculated in compliance with the rates of change in the stock series obtained through the above mentioned methodology, based on long series of GFCF in housing. The long series of GFCF in housing used to calculate the respective housing stock include the latest National Accounts (base 2016) data (for the 1995-2019 period).

1. The series are only available in electronic format on the Banco de Portugal's webpage for this *Economic Bulletin*.
2. Cardoso, F., Farinha, L. and Lameira, R. (2008), "Household wealth in Portugal: revised series", *Occasional Paper No 1*, Banco de Portugal. This publication corresponds to the revised series previously published in Cardoso, F. and Cunha, V. (2005), "Household wealth in Portugal: 1980-2004" *Working Paper No 4*, Banco de Portugal, where the calculation methodology is described in more detail.
3. Statistics Portugal published the capital stock accounts in November 2017 for the first time, available on the National Accounts area of its website. For further details. see: Statistics Portugal (2017), "Capital stock (Base 2011) 2000-2015", Press release of 24 November 2017.