ECONOMIC BULLETIN

MAR. 2023

BANCO DE PORTUGAL
EUROSYSTEM

ECONOMIC BULLETIN

MARCH 2023

BANCO DE PORTUGAL
EUROSYSTEM

Lisboa, 2023 • www.bportugal.pt

Economic Bulletin | March 2023 • **Banco de Portugal** Rua do Comércio, 148 | 1100-150 Lisboa • **www.bportugal.pt** • **Edition** Economics and Research Department • **Design** Communication and Museum Department | Design Unit • **Translation** International Relations Department | Translation Unit • **ISSN (online)** 2182-035x

Contents

I Projections for the Portuguese economy: 2023-25

1 Overview

The Portuguese economy is expected to grow by 1.8% in 2023, and 2% in 2024 and 2025, after 6.7% in 2022. Inflation is projected to decline gradually, from 8.1% in 2022 to 5.5% in 2023, 3.2% in 2024 and 2.1% in 2025 (Table I.1.1). Since the end of 2022, energy costs have been falling, contributing to an improvement in the terms-of-trade of the economy and a reduction in external pressures on consumer prices. GDP growth is expected to increase in the course of 2023 and inflation is expected to decline from 8.4% in the first quarter to 3.2% in the fourth quarter (Chart I.1.1). In 2024–25, the unwinding of supply bottlenecks, lower uncertainty, the recovery in real household income and the inflow of European funds are expected to contribute to the acceleration of GDP, partly hindered by tighter financial conditions. The deceleration in external prices is expected to pass through to consumer prices across the board, leading to a decline in inflation in 2024 and 2025.

Table I.1.1 • Projections of Banco de Portugal for 2023-25 | Annual rate of change, in percentage (unless otherwise stated)

	Weights 2022	EB March 2023				EB December 2022			
		2022	2023 (p)	2024 (p)	2025 (p)	2022 (p)	2023 (p)	2024 (p)	2025 (p)
Gross domestic product	100.0	6.7	1.8	2.0	2.0	6.8	1.5	2.0	1.9
Private consumption	63.9	5.7	0.3	1.0	1.3	5.9	0.2	0.8	1.1
Public consumption	18.1	2.4	1.8	1.1	0.8	2.0	1.9	1.2	0.9
Gross fixed capital formation	20.2	2.7	2.3	5.2	4.2	1.3	2.9	5.4	4.3
Domestic demand	102.5	4.5	0.8	1.8	1.8	4.3	0.9	1.8	1.7
Exports	50.0	16.7	4.7	3.7	3.9	17.7	4.3	3.7	3.9
Imports	52.5	11.0	2.4	3.4	3.5	11.1	3.0	3.2	3.4
Employment (a)		2.0	0.1	0.2	0.2	2.3	0.0	0.2	0.1
Unemployment rate (b)		6.0	7.0	6.9	6.7	5.9	5.9	5.9	5.9
Current and capital account (% of GDP)		-0.4	1.9	2.3	2.7	-0.6	1.7	1.7	2.2
Trade balance (% of GDP)		-2.1	-0.2	0.1	0.5	-2.2	-0.9	-0.3	0.1
Harmonised index of consumer prices		8.1	5.5	3.2	2.1	8.1	5.8	3.3	2.1
Energy goods		23.8	-7.6	2.8	-0.6	24.3	3.6	3.6	0.0
Excluding energy goods		6.7	6.7	3.2	2.4	6.7	6.0	3.3	2.3

Sources: Banco de Portugal and Statistics Portugal. | Notes: (p) — projected. Cut-off date for macroeconomic projections: 10 March. For each aggregate, this table shows the projection corresponding to the most likely value, conditional on the set of assumptions. (a) According to the national accounts concept. (b) In percentage of the labour force.

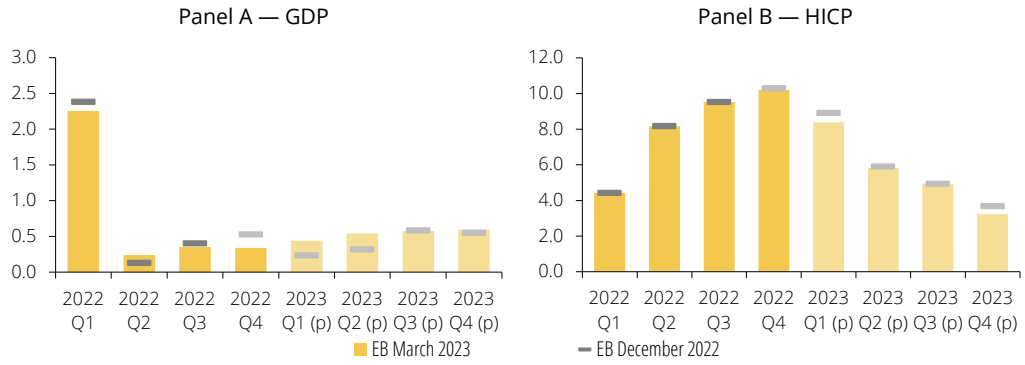
The Portuguese economy is expected to continue to converge with the euro area over the projection horizon. Higher economic growth in Portugal reflects the buoyancy of services exports, the maintenance of sustained external market share gains, the recovery in investment – benefiting from the increased inflow of funds – and total factor productivity growth, associated with an improvement in the labour force's skills. By contrast, consumption growth is expected to be more subdued in Portugal than in the euro area, conditioned by greater exposure to rising interest rates, due to the significant share of variable rate loans.

The main features of the projection are consistent with an improvement in macroeconomic balances – domestic and external – and with a sustained growth path for the Portuguese economy over the horizon. In 2023–25, Portugal is expected to return to an external account surplus – with a balance projected at 2.3 % on average in this period – which will contribute to the downward trend in its external debt position. These developments reflect an increase in savings

by households and firms. The public debt-to-GDP ratio is expected to continue to decline, standing below 100% at the end of the projection horizon. Inflation is expected to be in line with price stability in 2025.

Over the next few quarters, the decrease in inflation is expected to rely mainly on developments in energy and food prices, but its magnitude is uncertain. Other goods and services' prices developments are expected to take longer to moderate due to lagged effects from energy prices, recovering profit margins and wage growth. The persistence of strong price increases in the euro area, particularly for components with less volatile prices, has fuelled expectations of tighter monetary policy over the projection horizon. The short-term interest rate considered in the external assumptions exceeds 4% in the second half of 2023 and remains above 3% at the end of the horizon. Compared with the past, the effect of rising interest rates is expected to be mitigated by the reduction in private sector indebtedness observed since 2011, to ratios close to those in the euro area as a percentage of GDP. The savings accumulated by economic agents and the gradual recovery of the most affected sectors during the pandemic also help to mitigate the impact of monetary policy normalisation. The labour market is expected to remain robust, in a context of continuing high employment and gains in average real wages, underpinning households' disposable income.

Chart I.1.1 • Quarterly projections for GDP and inflation | GDP quarter-on-quarter percentage change and HICP year-on-year percentage change



Sources: Banco de Portugal and Statistics Portugal. | Notes: (p) — projected. The darker tones represent observed data and the lighter ones refer to the projection.

Compared with the December 2022 Economic Bulletin, GDP growth was revised upwards and inflation was revised downwards for 2023. The National Account data released by Statistics Portugal at the end of February showed reductions in private consumption and goods exports in the last quarter of 2022. These developments had not been anticipated in the previous exercise, implying a slightly lower GDP growth in 2022 (-0.1 p.p.). Nevertheless, GDP growth is revised upwards by 0.3 p.p. in 2023, reflecting more favourable developments in tourism exports and to a lesser extent, in private consumption at the beginning of the year. The reduction in inflation in 2023 is more significant than projected in the December exercise, reflecting the adjustment in energy markets, visible in the data already observed and in assumptions for oil and gas prices in international markets. Excluding energy, however, consumer prices are projected to increase more than expected in December (0.7 p.p.), reflecting stronger domestic pressures. In 2024-25, projections for GDP growth and inflation are virtually unchanged.

Downside risks to activity and upside risks to inflation prevail over the projection horizon. The main downside risks to activity include the impact of monetary policy normalisation, the increase in financial market frictions and the escalation of the conflict in Ukraine. The recent tensions in financial markets pose an additional risk to economic activity of uncertain scale. In the case of inflation, the main risk relates to stronger and more persistent developments in domestic inflationary pressures.

Economic policy coordination is essential to contain inflationary pressures. A sustained reduction in inflation in the euro area will remain the priority of the European Central Bank, which will act to maintain long-term inflation expectations anchored to the price stability objective. It is important to ensure consistency between monetary and fiscal policies. Support measures to mitigate the impact of high inflation should be temporary and targeted to support the most vulnerable, avoiding broad-based and persistent demand stimuli. The sustainability of public finances should remain a priority in a context of rising interest rates, high public debt and an ageing population.

The implementation of investments and reforms envisaged within the scope of the RRP is expected to continue according to schedule, contributing to higher productivity and sustained output growth.

2 External environment, financing conditions and policies

The outlook for global activity and trade has improved in 2023-25 compared to the December Bulletin projection, but growth figures remain below those of the pre-pandemic period. After the re-emergence of signs of weakness at the end of 2022, the global economy regains momentum in the near term as the effects of lower energy prices, the reopening of China, easing disruptions in production chains and rising confidence among economic agents materialise. Global GDP and trade growth at the end of the horizon stands at around 3%, which is historically low (Table I.2.1). External demand for Portuguese goods and services grows by 2.5% in 2023 and 3.1% in 2024 and 2025, in line with projections for global trade.

Economic activity in the euro area stagnated in the fourth quarter of 2022, but more favourable developments are expected over the course of 2023. The deceleration towards the end of last year reflected a decline in consumption and investment, amid high energy prices and uncertainty. Nevertheless, the change in economic activity in the fourth quarter of 2022 was greater than projected in December. Recent indicators signal an improvement in the short-term outlook, as reflected in the upward revision to the projection for 2023, which nevertheless remains moderate (1%). In the following years, activity accelerates as uncertainty dissipates, inflation decreases and supply disruptions ease (Chart I.2.1 – Panel A). However, tighter financing conditions limit the pace of growth. The March ECB projections for 2024 and 2025 point to 1.6% growth in the euro area.

Euro area inflation has been declining over recent months as commodity price pressures fade, especially energy-wise. However, pressures on production chains as well as pressures related to the effects of the reopening of the economy still persist. Total inflation declined to 8.5% in February, but excluding food and energy, continued to rise, reaching 5.6%. The March ECB projections incorporate a reduction in total inflation, to 5.3% in 2023 – with the year-on-year rate of change standing at 3.5% in the fourth quarter –, 2.9% in 2024 and 2.1% in 2025 (Chart I.2.1 – Panel B). Inflation excluding food and energy goes down from 4.6% in 2023 to 2.5% in 2024 and 2.2% in 2025.

Table I.2.1 • Projection assumptions

		EB March 2023				EB December 2022			
		2022	2023	2024	2025	2022	2023	2024	2025
International environment									
World GDP	yoy	3.4	2.8	3.0	3.1	3.3	2.3	2.9	3.1
Euro area GDP	yoy	3.6	1.0	1.6	1.6	3.4	0.3	1.9	1.9
World trade	yoy	6.3	2.6	3.3	3.4	6.1	2.0	3.3	3.3
External demand	yoy	7.8	2.5	3.1	3.1	8.0	2.5	3.0	3.1
International prices									
Oil prices (in USD)	aav	103.7	82.6	77.9	73.8	104.6	86.4	79.7	76.0
Oil prices (in euros)	aav	98.6	77.7	73.4	69.6	99.7	83.9	77.4	73.8
Gas prices (in euros, MWh)	aav	123.0	50.4	52.6	44.7	122.5	123.6	98.4	68.9
Non-oil commodity prices in euros	yoy	19.4	-7.1	0.5	1.2	19.5	-8.7	0.7	1.4
Competitors' import prices	yoy	16.1	2.5	2.2	1.9	15.9	3.6	2.1	1.9
Monetary and financial conditions									
Short-term interest rate (3-month EURIBOR)	%	0.3	3.6	3.8	3.2	0.4	2.9	2.7	2.5
Implicit interest rate in public debt	%	1.9	2.3	2.4	2.4	1.9	2.2	2.2	2.2
Effective exchange rate index	yoy	-3.5	2.9	0.0	0.0	-3.6	0.9	0.0	0.0
Euro-dollar exchange rate	aav	1.05	1.06	1.06	1.06	1.05	1.03	1.03	1.03

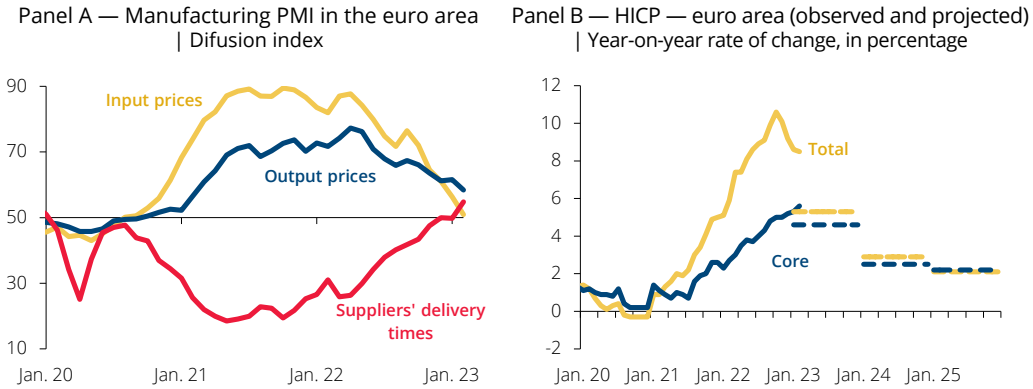
Sources: ECB and Refinitiv (Banco de Portugal calculations). | Notes: yoy — year-on-year rate of change, % — in percentage, aav — annual average value, MWh — megawatt-hour. Technical and external environment assumptions, as well as projections for euro area GDP and inflation, coincide with those in the ECB projection exercise released on March 16, which include information up to February 15. Interest rates, exchange rates and oil and gas prices assumptions were updated with data up to March 8. The technical assumptions for the price of oil, gas and non-energy commodities is based on futures markets. The import price of competitors corresponds to a weighted average of the export deflators of the countries from which Portugal imports, weighted by their share on total Portuguese imports (for more information, see "Trade consistency in the context of the Eurosystem projection exercises: an overview", *ECB Occasional Paper* 108, March 2010). The evolution of the 3-month EURIBOR is based on expectations implied in futures contracts. The implicit interest rate on public debt is computed as the ratio of interest expenditure for the year to the simple average of the stock of debt at the end of the same year and at the end of the preceding year. An increase in the exchange rate corresponds to an appreciation of the euro. The effective exchange rate of the euro is computed against 42 trading partner countries (41 partners in March projections with the integration of Coatia in the euro area in January 2023). The technical assumption for bilateral exchange rates assumes that the average levels observed in the 10 business days prior to the cut-off date are maintained over the projection horizon.

External inflationary pressures are expected to be markedly lower in 2023. The assumptions for competitors' import prices incorporate a 2.5% change in 2023 (16.1% in the previous year) and close to 2% in 2024–25. Energy prices are expected to fall, particularly natural gas, amid the rebalancing of this market (Chart I.2.2 – Panels A and B). By the end of 2025, prices will be about 40% lower than before the invasion of Ukraine for natural gas futures and 25% lower for oil futures.

Expectations of tighter monetary policy are reflected in higher short-term interest rates in 2023–25 (Chart I.2.2 – Panel C). The ECB's recent decisions have accentuated the expectation that key interest rates will have to reach restrictive levels for inflation to converge towards the medium-term target of 2%. Assumptions for the 3-month EURIBOR have been revised upwards over the whole projection horizon. This rate is projected to rise to 3.6% on average in 2023, 3.8% in 2024, and decrease to 3.2% in 2025 (corresponding to revisions of 70, 108 and 70 b.p. respectively compared to assumptions in the December projections).[1] The rise in ECB interest rates has been passed through to rates on new loans and, to a lesser extent, to households and firms' time deposits.

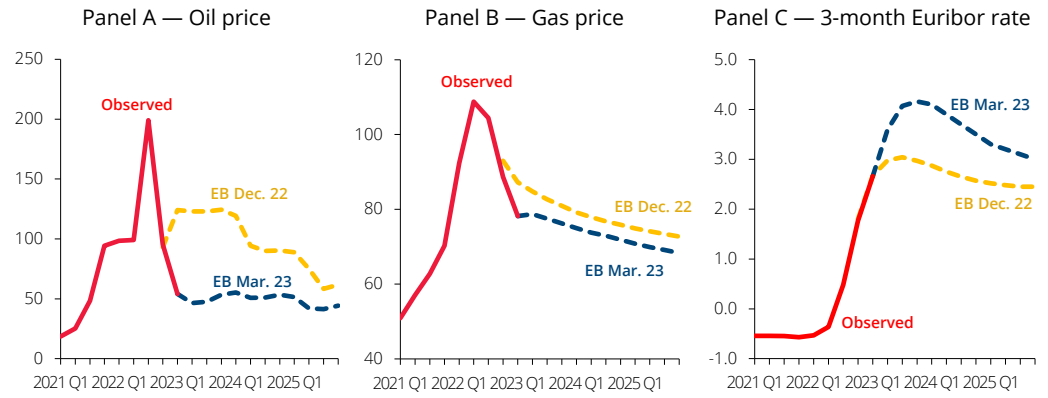
1. After the cut-off date of this Bulletin, financial market turbulence increased, resulting in a downward revision of the assumptions for the short-term interest rate vis-à-vis those implicit in this Bulletin. Considering an update with a cut-off date of 20 March 2023, the 3-month EURIBOR interest rate would stand at 3% in 2023, 2.9 % in 2024 and 2.7% in 2025.

Chart I.2.1 • Euro area — Manufacturing supply constraints and HICP



Sources: Eurostat, IHS Markit and Banco de Portugal calculations. | Notes: Purchasing Managers' Index (PMI) for input and output prices and suppliers' delivery times; readings above 50 indicate an increase in prices and improvement in delivery times. Core inflation — HICP excluding food and energy. Dashed — ECB projections.

Chart I.2.2 • Projection assumptions for the prices of oil and gas, and the short-term interest rate | Euros and percentage



Sources: ECB, Refinitiv and Banco de Portugal calculations.

3 The Portuguese economy

Economic activity is expected to grow by 1.9% on average in 2023–25, constrained by high inflation and worsening financing conditions. In 2023, growth is expected to decline from 6.7% to 1.8%, largely reflecting the lower contribution (net of import content) from private consumption and exports – particularly tourism exports –, after having recovered to pre-pandemic levels (Table I.3.1). In the two years afterwards, growth is expected to increase to 2%, with a higher contribution from consumption and investment amid a recovery in disposable income, more stable financing conditions, lower uncertainty, and weaker inflationary pressures. A decomposition of projections based on a general equilibrium model corroborates the relevance of developments in supply to the faster pace of GDP growth in 2024–25 (Box 1).

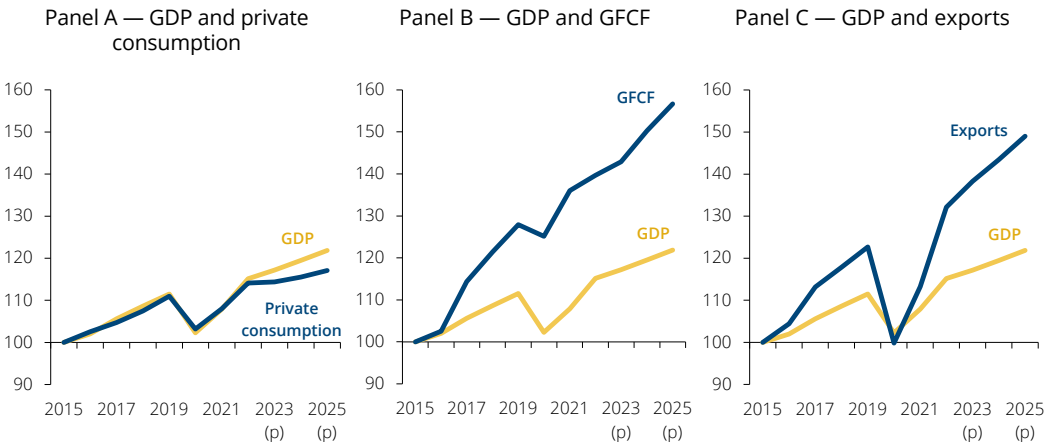
Over the projection horizon, investment and exports are expected to return to the growth paths observed in the pre-pandemic period, increasing their share of GDP and contributing to the sustained growth of the Portuguese economy (Chart I.3.1).

Table I.3.1 • GDP growth and contributions of the main expenditure aggregates | Annual rate of change, in percentage, and net of import content contributions, in percentage points

	2019	2020	2021	2022	2023 (p)	2024 (p)	2025 (p)
GDP	2.7	-8.3	5.5	6.7	1.8	2.0	2.0
Contribution to GDP growth:							
Private consumption	1.3	-3.2	1.6	2.0	0.0	0.4	0.5
Public consumption	0.2	0.0	0.6	0.3	0.2	0.2	0.1
Investment	0.4	-0.2	0.8	0.1	0.2	0.5	0.4
Goods and services exports	0.8	-5.0	2.5	4.3	1.4	0.9	0.9
Goods exports	0.2	-0.9	1.1	0.3	0.1	0.5	0.5
Services exports	0.5	-4.1	1.4	4.1	1.3	0.4	0.5

Sources: Banco de Portugal and Statistics Portugal. | Notes: Demand aggregates, net of imports, are obtained by subtracting an estimate of the imports used in each component. For more information on the methodology underlying this calculation, see Cardoso and Rua (2021) "Unveiling the real contribution of final demand to GDP growth", Banco de Portugal, *Economic Studies* — Vol. 7, No. 3.

Chart I.3.1 • GDP and the main expenditure aggregates | Index 2015=100



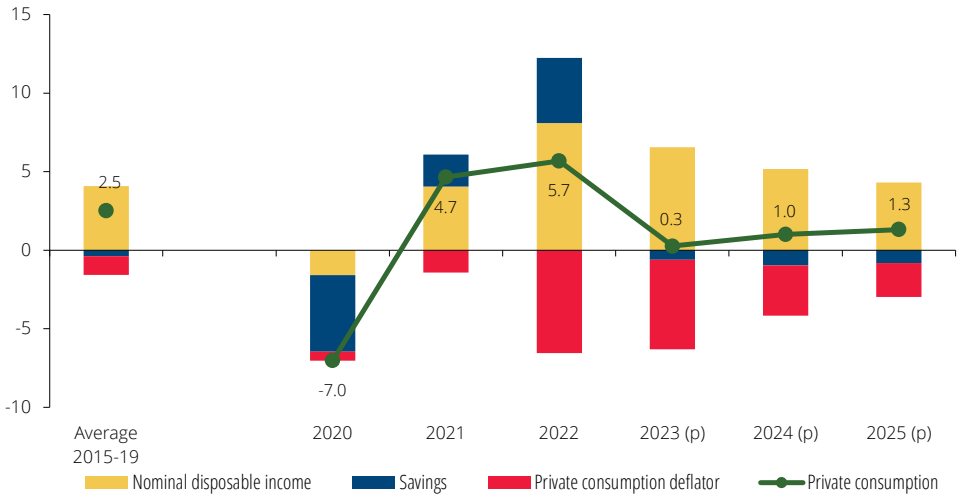
Sources: Banco de Portugal and Statistics Portugal. | Note: (p) — projected.

Private consumption is expected to rise by 0.3% in 2023, in a context of subdued real disposable income growth and a recovery in the savings rate (Chart I.3.2). Following the resilience observed throughout 2022, private consumption fell by 0.4% in the last quarter. This behaviour was broadly based across the durable goods and the non-durable consumption components. More adverse effects related to high inflation and deteriorating financial conditions, partly mitigated by the government support measures, are likely to have contributed to the reduction in consumption at the end of 2022. These factors are expected to continue to constrain consumption developments throughout 2023. In particular, the sharp rise in interest rates since mid-2022 restricts access to new loans and implies a further increase in debt service.

In 2024-25, private consumption is expected to accelerate but to grow at a slower pace than activity. The slowdown in prices and growth in wages per employee are expected to contribute to

a 1.8% increase in real disposable income on average, in 2024–25. In a context of lower uncertainty, private consumption is expected to grow by 1.2% on average in 2024–25, with the savings rate assumed to continue to recover to a level close to that observed before the pandemic.

Chart I.3.2 • Decomposition of private consumption growth | Annual rate of change, in percentage, and contributions, in percentage points



Sources: Banco de Portugal and Statistics Portugal. | Notes: (p) — projected. An increase in savings implies a negative contribution of savings to the change of private consumption.

Public consumption is expected to grow by 1.8% in 2023 (after 2.4% in 2022), decelerating over the projection horizon. The deceleration in 2023 is associated with lower growth in the number of civil servants. By contrast, less buoyant sales of goods and services by the general government (which are deducted from public consumption) after the post-pandemic recovery period drive an acceleration in expenditure on goods and services. In 2024 and 2025, public consumption is expected to grow by 1% on average, assuming a stabilisation in the number of civil servants and around 2% increase in expenditure on goods and services, in line with GDP.

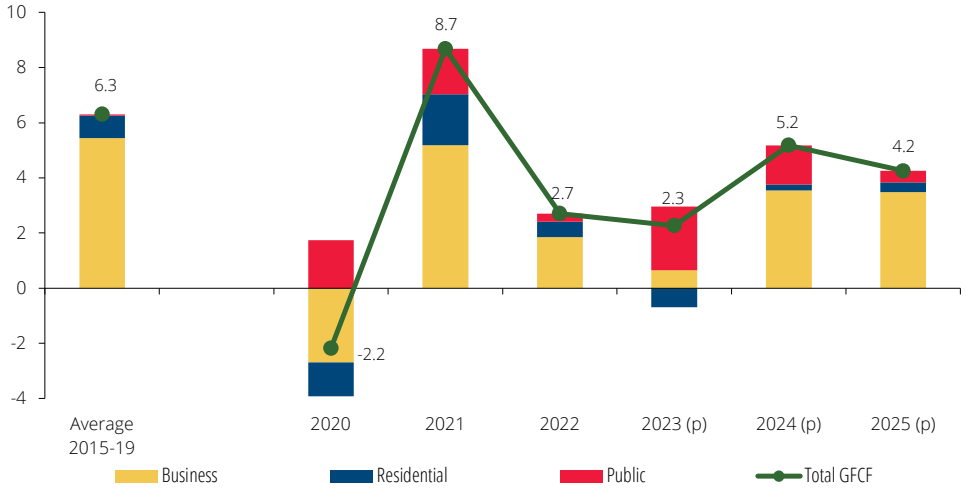
After increasing by 2.7% in 2022, investment is expected to grow by 2.3% in 2023 and 4.7% on average in 2024–25, benefiting from the inflow of EU funds, in particular those associated with the RRP (Chart I.3.3). Public investment is expected to receive a strong boost in 2023, in line with the State Budget. Afterwards, the projections assume progressively lower growth rates. The average growth of around 10% over the projection horizon is largely explained by the impact of the implementation of RRP-financed projects.

Business investment is expected to slow down in 2023 (0.9%, after 2.6% in 2022), reflecting tighter financial conditions and slowing global demand. Continued high uncertainty also leads to a more cautious stance on the part of firms, contributing to the postponement of investment decisions. The acceleration in demand, the gradual easing of production costs and the unwinding of supply chain constraints are expected to boost the momentum of this component from the second half of 2023 onwards, leading to growth of 5% on average in 2024–25.

Housing investment will be the expenditure component most affected by the increase in interest rates and is projected to decline by around 4% in 2023. Developments in this aggregate will also be conditioned on the demand side by the impact of inflation on households' purchasing

power and on the supply side, by high construction costs and labour shortages. In 2024–25, housing investment is expected to grow at a moderate pace (2%, on average), reflecting some recovery in demand, associated with higher disposable income growth and gradually declining interest rates.

Chart I.3.3 • GFCF and components | Annual rate of change, in percentage, and contributions, in percentage points

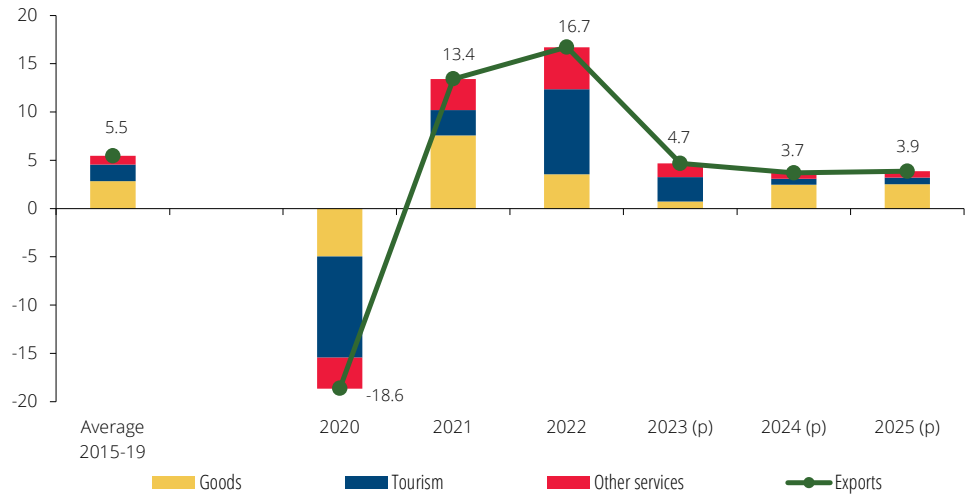


Sources: Banco de Portugal and Statistics Portugal. | Note: (p) — projected.

Against the background of a slowdown in the global economy, exports of goods and services are expected to grow above external demand over the horizon (4.1%, against 2.9% on average in 2023–25) (Chart I.3.4). After a strong performance in the first half of 2022, exports of goods weakened in the second half of the year, having recorded a fall in the last quarter of 2022 (-2.6%, quarter-on-quarter), larger than that of external demand for goods and services. In 2023, goods exports are expected to grow by 1.2% (after 5.1% in 2022) and accelerate to 4.1% on average in 2024-25, reflecting fading global value chains constraints and the improvement of the international environment. Exports of services are expected to be more buoyant over the horizon, mostly associated with tourism-related services. Tourism exports are expected to increase by 14.9% in 2023, decelerating thereafter, amid fading effects of pent-up demand built up during the pandemic. In 2023, tourism exports will benefit from a positive effect associated with World Youth Day, which will take place in Lisbon, in the third quarter of the year.

Imports of goods and services are expected to grow by 3.1% on average over the projection horizon, accelerating between 2023 and 2025, in line with final demand weighted by import content.

Chart I.3.4 • Exports of goods and services and components | Annual rate of change, in percentage, and contributions, in percentage points

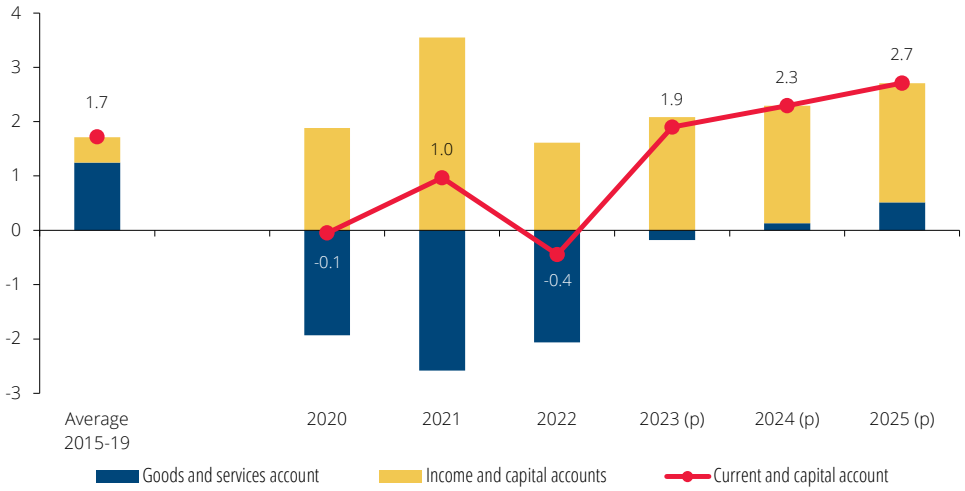


Sources: Banco de Portugal and Statistics Portugal. | Note: (p) — projected.

The current and capital account is expected to return to surpluses over the projection horizon, exceeding 2% of GDP on average, after a balance of -0.4% in 2022 (Chart I.3.5). The improvement compared with 2022 largely reflects the behaviour of the balance of goods and services. The negative impact of the pandemic on tourism flows (in 2020) and the loss in the terms-of-trade in 2021–22 led to an average deficit of 2.2% of GDP in this account, over that period. The goods and services account balance is projected to improve continuously over the horizon, reflecting a positive volume effect – associated in particular with buoyant tourism – and better terms-of-trade amid declining energy prices. At the end of the horizon, the goods and services account is expected to register a surplus of 0.5% of GDP, falling short of pre-pandemic average values (1.2% in 2015–19). The income and capital accounts balance will also increase from 2022 (to 2.1% on average in 2023–25), benefiting from the net inflow of EU funds associated with the Multiannual Financial Framework 2021–27, the Next Generation EU and, to a lesser extent, the Multiannual Financial Framework 2014–20 (which is at its final stage).

The labour market remains robust over the projection horizon. Employment is projected to change by 0.1% on average between 2023 and 2025. These changes are framed by the relative stabilisation of the working-age population (with immigration flows compensating for developments in the natural population change) and in participation and unemployment rates. The participation rate is assumed to rise again to a new all-time high in 2023 and to stabilise in 2024–25. The unemployment rate is expected to increase to 7% in 2023 (close to that observed in 2018–19), taking into account recent developments and the lagged impact of the slowdown in activity over the course of 2022. In 2024–25 the unemployment rate is expected to decrease, standing at 6.7% at the end of the horizon.

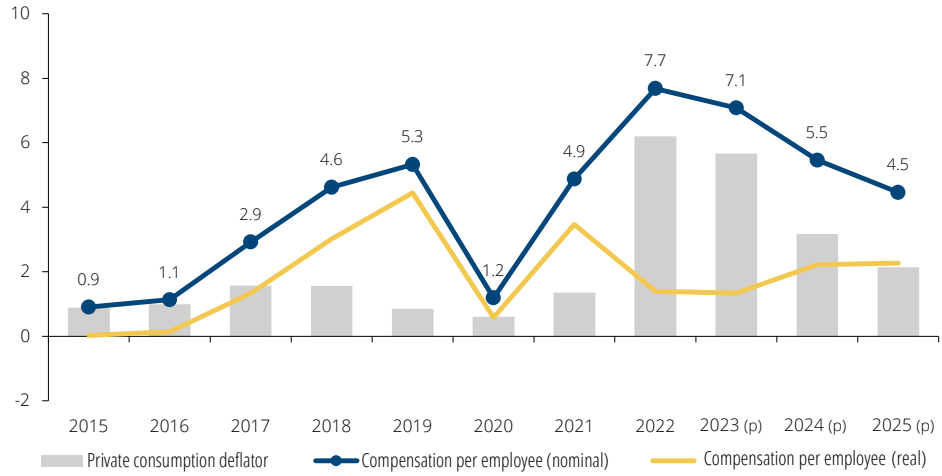
Chart I.3.5 • Current and capital account | In percentage of GDP



Source: Banco de Portugal. | Note: (p) — projected.

After rising by 7.7% in 2022, nominal compensation per employee in the private sector is expected to grow by 7.1% in 2023 and 5% on average in 2024–25 (Chart I.3.6). The projection incorporates minimum wage increases announced by the government (7.8% in 2023, 6.6% in 2024 and 5.6% in 2025). The labour market situation, persistent high inflation and workers' efforts to minimise the shock to their purchasing power also contribute to expected developments in 2023. In 2024–25, the expected decline in inflation is reflected in a reduction in wage pressures. In real terms, wages per employee in the private sector are expected to increase by 1.3% in 2023, taking into account the developments in the consumption deflator. For 2024–25, real wage growth is projected to grow by 2.2%, on average, closely in line with productivity growth.

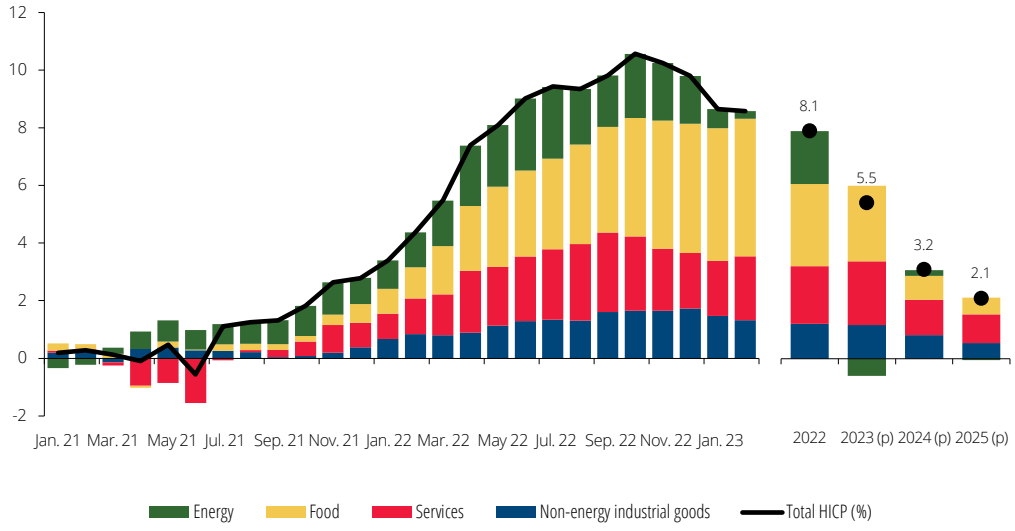
Chart I.3.6 • Compensation per employee in the private sector | Annual growth rate, in percentage



Sources: Banco de Portugal and Statistics Portugal. | Note: (p) — projected.

Inflation has been on a downward path since the end of 2022 but remains elevated (Chart I.3.7). The sharp increase in inflation (as measured by the HICP rate of change) to 8.1% in 2022 mostly reflected external pressures. Developments in HICP components with the highest import content (excluding energy) explained 4.2 p.p. of inflation in 2022. A similar exercise aggregating items based on their energy intensity suggests that the high energy-intensive components (excluding energy) and the energy component contributed 4.3 p.p. and 1.9 p.p. respectively to the change in the total HICP in the last year. The gradual easing of supply bottlenecks, lower costs for commodities and imported goods and the slowdown in global activity are expected to contribute to reducing external inflationary pressures. The recent decline in inflation is explained almost exclusively by developments in the energy component, reflecting the fall in oil and electricity prices at the beginning of 2023. Excluding energy, prices have grown at a high and relatively stable pace since the end of last year (close to 9%). This persistence magnifies the uncertainty surrounding the path of inflation in the short term. Food price dynamics have contributed to these developments, with year-on-year rates of changes of close to 20% at the beginning of 2023, higher than those observed in the euro area (Box 2). An analysis based on e-commerce prices shows that the cost of purchasing a basic food basket increased by around 30% between October 2021 and February 2023 (Box 3).

Chart I.3.7 • HICP growth rate and contributions | In percentage and percentage points



Sources: Banco de Portugal and Statistics Portugal. | Note: (p) — projected.

Inflation is projected to stand at 5.5% in 2023, declining to 3.2% in 2024 and 2.1% in 2025. Excluding energy, consumer prices are expected to increase by 6.7% in 2023 (as in 2022), growing close to the total HICP in the two subsequent years (3.2% and 2.4%). Energy price developments over the horizon reflect the assumptions for oil and gas prices, the dissipation of 2023 base effects and the end of the support measures impacting on energy prices in 2024. In the remaining components, prices are expected to decelerate at a slower pace, partly reflecting stronger domestic pressures. The impact of monetary policy and the maintenance of anchored long-term inflation expectations contribute to inflation converging to close to the ECB's medium-term target at the end of the projection horizon.

The GDP deflator is expected to accelerate to 6.1% in 2023, after 4.5% in the previous year, returning to rates closer to 2% at the end of the horizon. The stronger growth in 2023 reflects a recovery in firms' profit margins, after a reduction during the pandemic crisis, and an acceleration in unit labour costs against a tight labour market. These effects are expected to fade in the following years. Developments over the projection horizon are consistent with the shares of remuneration of labour and capital factors on GDP returning to pre-pandemic levels.

4 Risks

The balance of risks is tilted to the downside for economic activity and to the upside for inflation.

One of the main risks is associated with the effects of monetary policy normalisation on activity. Rising interest rates – in the euro area but also in major advanced economies – may imply a more severe tightening of financing conditions than envisaged in the projections of this Bulletin. This would expose the financial vulnerabilities of some economic agents and negatively impact private consumption and investment. It may also combine with greater financial markets turbulence, implying spillover effects between the financial and the business cycles.

The increase in geopolitical tensions also constitutes a risk to the projection. Russia's invasion of Ukraine remains a source of uncertainty and an escalation of the conflict could occur, resulting in further supply and commodity price shocks, negatively affecting agents' activity and confidence. However, the risk of gas shortages decreased, particularly in 2023, given countries' stockpiling and efforts to find alternative energy sources. A deterioration in China-US relations would also have a negative impact on activity.

Conversely, there are upside risks to activity from the strength of the labour market, margins accumulated during the pandemic by households and firms, and a stronger recovery in real wages. In addition, the reopening of China may imply more buoyant external demand for Portuguese goods and services, boosting economic growth.

Regarding inflation, the main upside risk is associated with stronger and more persistent than expected wage and profit margins, growth, with second-round effects on prices. By contrast, a faster pass-through of the recent falls in energy and food prices to other prices and a swifter resolution of disruptions in global value chains could lead to a sharper reduction in inflation, with positive effects on activity.

This Bulletin's projections were finalised before the emergence of recent financial market tensions, which entail risks of worsening financing conditions and deteriorating confidence among economic agents. The potential impact on activity is difficult to gauge at this stage.

Box 1 • A general equilibrium view of GDP over the period 2023-25

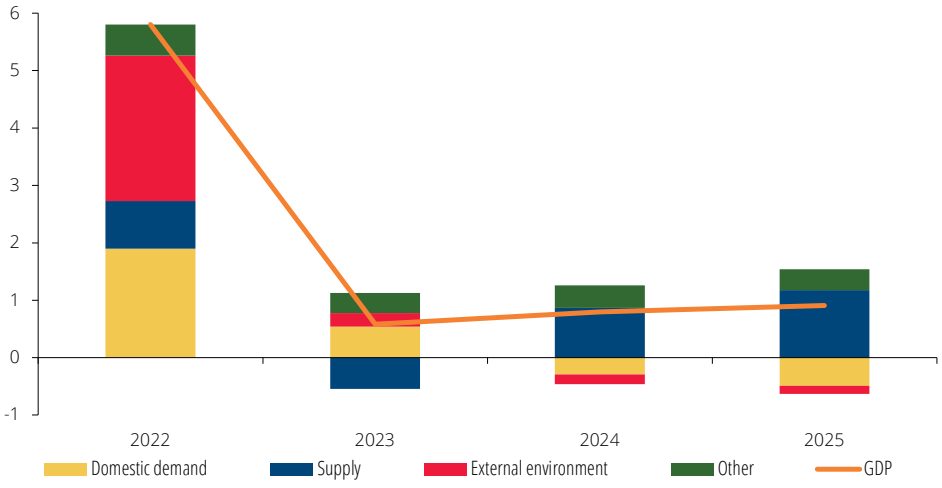
GDP developments projected in this *Economic Bulletin* are explained by exogenous factors aggregated into three categories: domestic demand, supply and the external environment (a residual aggregate proved to be negligible in determining the GDP over the period 2023-25).

The analysis is based upon the economic relations embedded in a dynamic stochastic general equilibrium model for the Portuguese economy, which assumes that firms, households and the Government, by interacting with each other in the markets, lead the economy to an equilibrium between demand and supply at all times.[2]

The three determinants mentioned above create demand and supply effects given the link between production and income. The model includes a common monetary policy rule that projects nominal interest rate changes should inflation in the euro area fail the medium-term target of 2%.

Chart C1.1. provides a breakdown of per capita GDP growth by the three categories. The 2023-25 period is characterised by a recovery in the savings rate, reflected in a decrease in the contribution of domestic demand to GDP growth over the horizon, from 1.9 p.p. in 2022 (still reflecting a rebound in consumption after the pandemic crisis), to 0.5 p.p. in 2023 and -0.4 p.p. on average in 2024 and 2025. Higher savings lead firms to adjust consumer goods production downwards, with negative effects on GDP, and to decrease the number of hours worked and the volume of imports used in the production process. The drop in the contribution of demand in 2023 compared to 2022 is mitigated by the assumed higher implementation of funds from the RRP and Multiannual Financial Framework 2021-27.

Chart C1.1 • Annual rate of change of GDP per capita and contributions | Deviations from the mean over the period 1999–2019 in percentage points



Sources: Banco de Portugal and Statistics Portugal. | Notes: "Domestic demand" reflects exogenous decisions by households and by the Government that directly impact the acquisition of private consumer goods and public consumption and investment. "Supply" is dominated by changes in markups and by a factor common to Portugal and the euro area, which corresponds to temporary shocks to the growth rate of technology. The "external environment" reflects nominal and real developments taking place in the foreign economy, including the evolution of the three-month EURIBOR. The sum of the contributions is equal to the deviation of the rate of change of GDP *per capita* from the average growth recorded between 1999 and 2019, which stands around 1%.

2. The model was estimated with twenty-six observed series, including real, nominal and financial variables. The period 2020-21 was considered to have been affected by exceptional exogenous factors, with an impact on the volatility of consumer preferences, non-stationary technology and external demand, which still produced effects in 2022 due to the estimated inertia. For further details, see Júlio and Maria (2022), "Pandemic shocks", Banco de Portugal *Economic Studies*, Vol. VIII, No 3.

The aggregate contribution of supply to the annual GDP growth rate fell from 0.8 p.p. in 2022 to -0.5 p.p. in 2023, standing at 0.9 p.p. in 2024 and 1.2 p.p. in 2025. This contribution results mainly from the effects associated with markups and global productivity developments.

An increase in markups, in particular those of labour and of consumer goods, leads to a surge in inflation, driving down the economy competitiveness, and to a decrease in the number of hours worked. These effects feature some inertia resulting from the interaction of the various economic actors in labour and product markets. Thus, wage pressures in the labour market and a recovery in corporate profit margins in 2022 and 2023, against a background of high inflation, have a negative impact on GDP growth. The aggregate contribution from all markups included in the model is -0.4 p.p. in 2022 and -0.8 p.p. in 2023 (which incorporates an impact from those of labour and consumer goods of -0.3 p.p. in 2022 and -0.7 p.p. in 2023). The aggregate contribution is estimated to reverse to -0.1 p.p. in 2024 and 0.5 p.p. in 2025 (comprising an impact from labour and consumer goods markups of -0.2 p.p. in 2024 and 0.3 p.p. in 2025), in a context of inflation convergence towards rates compatible with price stability and the maintenance of employment levels.

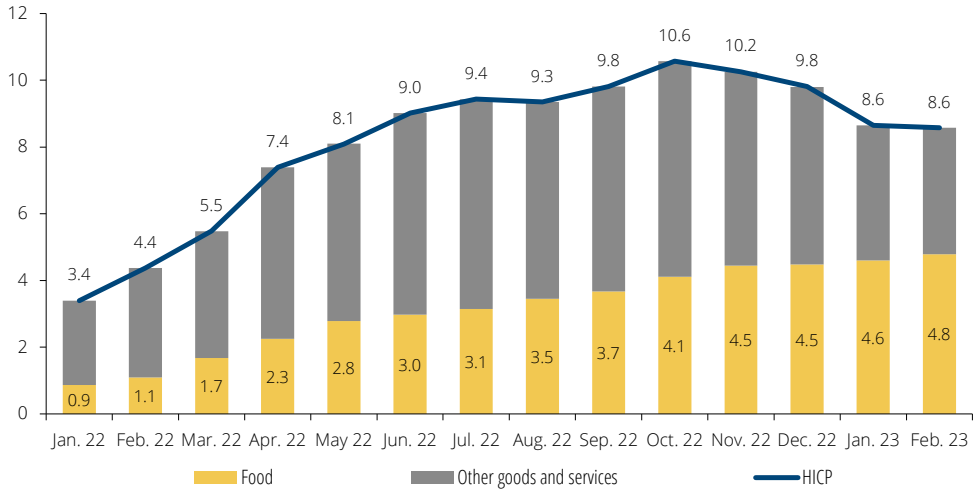
The impact of the Russian military aggression against Ukraine, in particular the increased geopolitical uncertainty and the energy crisis in Europe, contribute to a postponement of investment projects and a weakening in business activity, affecting the production efficiency of input factors. This context leads to a temporary deceleration in global productivity in 2023, after having increased in 2022, driven by improvements in the functioning of production chains, against the background of a post-pandemic reopening of the economy. The aggregate contribution of global productivity to GDP growth stands at 0.2 p.p. in 2023 (compared to 1.3 p.p. in 2022) and increases to 0.8 p.p. on average in 2024 and 2025, in line with assumptions of an upturn in economic activity in the euro area and the dissipation of uncertainty. In the model, the acceleration in productivity (common to Portugal and the euro area) yields an increase in production and in households' wealth and corporate profits. Consumption and GDP increase, as well as the number of hours worked and capital accumulation. Imports increase to meet firms' operating conditions.

The contribution of the external environment to GDP growth stands at 0.2 p.p. in 2023 and -0.2 p.p. on average in 2024 and 2025, compared to 2.5 p.p. in 2022. These developments are due to assumptions for GDP developments in the euro area and external demand addressed to Portuguese firms over the projection horizon, following high growth rates in 2022, and to the assumed monetary policy tightening, as the increase in nominal and real interest rates is passed on to the economy. In the model, the increase in the nominal short-term interest rate in the euro area has a negative impact on household consumption and firms' investment in Portugal by increasing the costs of debt service and of financing new projects, as well as the relative benefit of saving.

Box 2 • Food price developments and differential vis-à-vis the euro area

Food prices have largely contributed to the inflation spike in Portugal throughout 2022 (Chart C2.1). These goods represent almost a quarter of the basket of the Harmonized Index of Consumer Prices (HICP) in Portugal and their price increased by 11.4% in 2022 compared with the previous year. In recent months, despite the drop in overall inflation, the year-on-year rate of change of food prices continued to rise, standing at 19.0% in February 2023. By components, the year-on-year rate of change of unprocessed food prices stood at 21.8% and processed food at 17.9%, both reaching record highs. Food price developments are particularly important for lower-income households, as they account for a significant part of their expenditure.[3]

Chart C2.1 • HICP in Portugal — Year-on-year rate of change and contributions | Percentage and percentage points



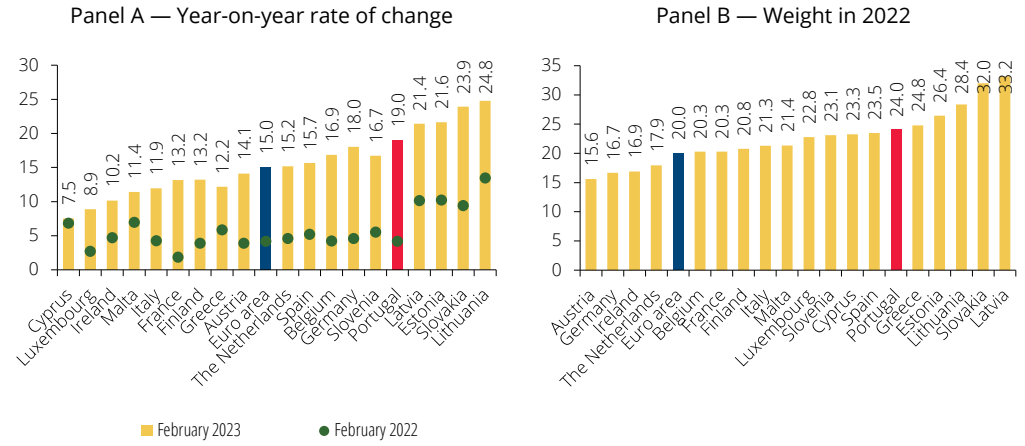
Source: Statistics Portugal.

Food prices accelerated in all euro area countries, driven by the rise in international food and energy prices, which escalated after the Russian invasion of Ukraine (Chart C2.2). Production and export capacity were negatively affected in the countries involved in the conflict, which are major suppliers of specific food commodities (maize, wheat, oilseeds) and fertilisers. The sharp rise in energy prices also spilled over to food prices, given its impact on transport costs and the intensive use of energy assets in agricultural production, food industries and fertiliser production. The impact of these global factors was uneven across regions and products and may have been intensified by local factors.

In February 2023 the year-on-year rate of change of food prices in Portugal was higher than in the euro area and most countries (Chart C2.2). Food prices have a higher weight in the Portuguese HICP basket than in that of the euro area (24% and 20% respectively), which contributes to amplifying the impact of the difference in price changes for these goods in the headline inflation differential.

3. For more details on the composition of the consumption basket by income level, see Box 6 "Inflation estimates by income level and age group" in the October 2022 issue of the *Economic Bulletin*.

Chart C2.2 • Food HICP — Year-on-year rate of change and weight in 2022 in euro area countries | Percentage



Sources: Eurostat and Statistics Portugal.

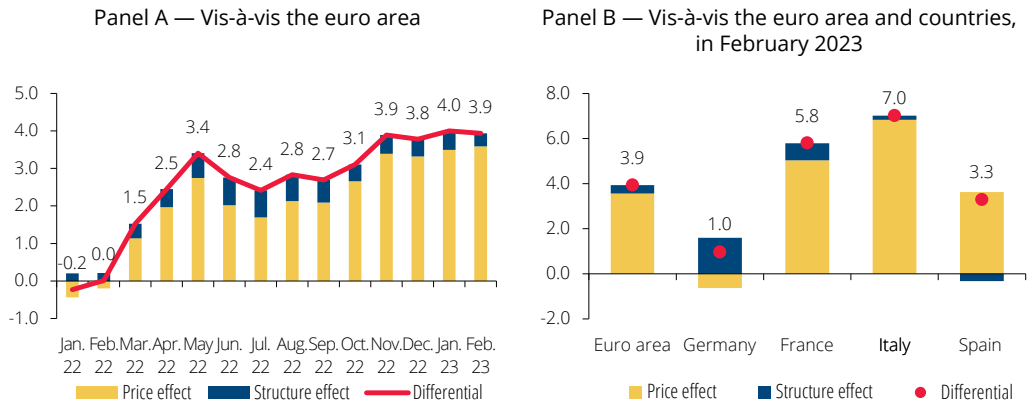
It is possible to break down the differential in food price changes between Portugal and the euro area into two effects for each basket item: a price effect and a structure effect. The price effect captures the contribution arising from differences in price changes for each item between Portugal and the euro area, while the structure effect captures the contribution due to the difference in weight of the item in the baskets of the two economies. A positive price effect indicates that the price of the specific item has increased more in Portugal than in the euro area. A positive structure effect reflects a higher weight in the Portuguese basket of an item with a price increase. The calculation was based on a breakdown of the food basket into 15 items.

The food inflation differential vis-à-vis the euro area over 2022 and early 2023 essentially reflected price effects (Chart C2.3). To a lesser extent, the structure effect also made a positive contribution to the differential. In February 2023 the differential stood at 3.9 p.p., with a contribution of 3.6 p.p. from the price effect and 0.3 p.p. from the structure effect. Compared to the major economies of the euro area, the differential in February 2023 was also positive (ranging from 1.0 p.p. compared with Germany to 7.0 p.p. compared with Spain) and generally reflected a price effect.

The items that contributed the most to the inflation differential of food items vis-à-vis the euro area in February 2023 were, in order of importance: fish, fruit, bread and cereals, oils and fats, vegetables and meat (Chart C2.4). The contribution of unprocessed food (which includes meat, fish, fruit and vegetables) stands out, accounting for 3.2 p.p. of the 3.9 pp differential. In the case of processed food, the positive contribution of some items (bread and cereals, oils and fats) is partially offset by negative contributions of other goods, especially beverages and tobacco.

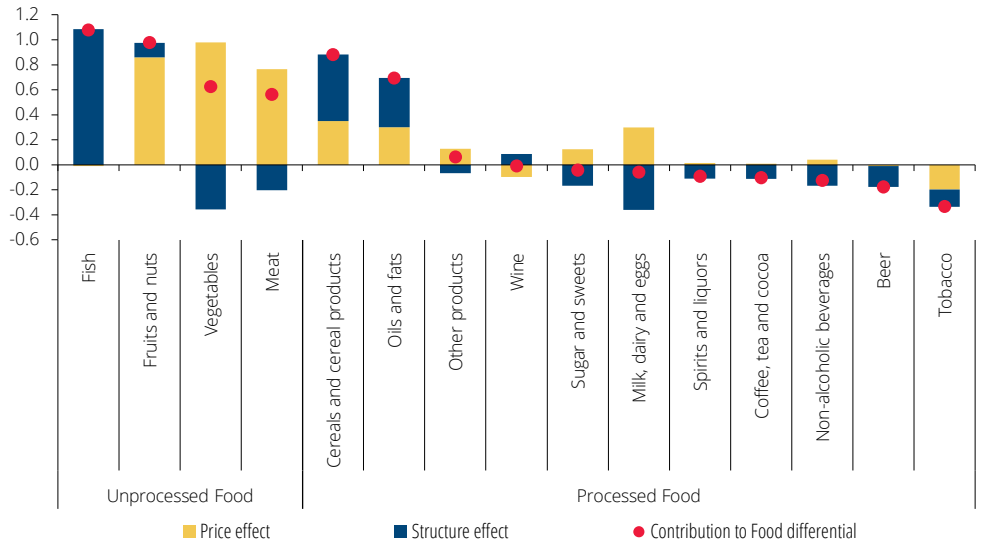
Positive structure effects prevail in fish, oils and fats and bread and cereals (Chart C2.4). Conversely, the structure effect is negative for cheese, milk and eggs, meat and vegetables.

Chart C2.3 • Food HICP year-on-year rate of change differential — price and structure effect | Percentage points



Sources: Eurostat and Statistics Portugal (Banco de Portugal calculations). | Note: The price effect of a food item is the difference between the contribution of that item to the Food HICP rate of change in Portugal and the contribution of that same item to the Food HICP considering the euro area change in price and the HICP weights in Portugal (i.e., it isolates the effect of the differences in the prices rates of change). The structure effect is the difference between the contribution of that item to the Food HICP considering the euro area change in price and the HICP weights in Portugal and the contribution of the item to the Euro area Food HICP (i.e., the only takes into account the differences in weights).

Chart C2.4 • Differential vis-à-vis the euro area of the year-on-year rate of HICP food and contributions in February 2023 | Percentage points



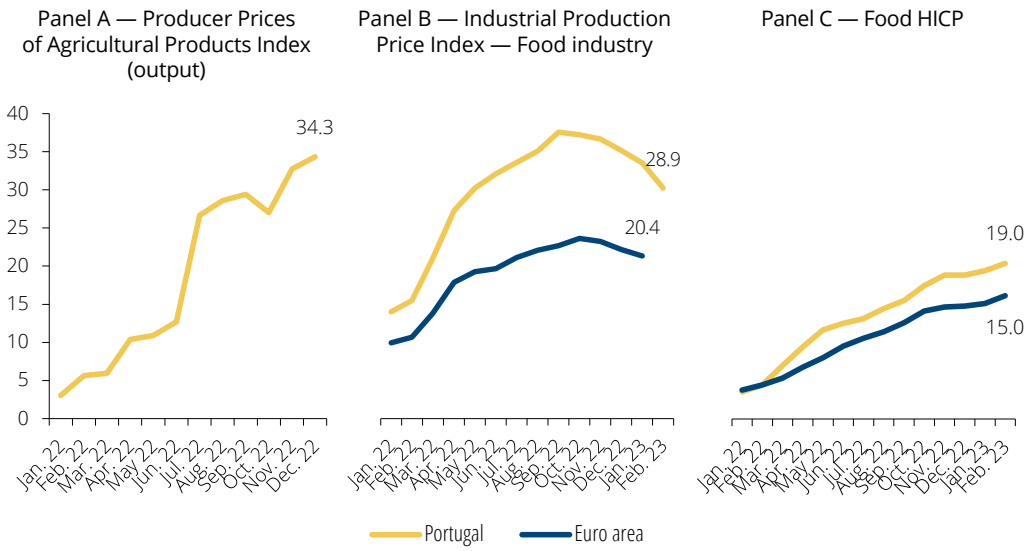
Sources: Eurostat and Statistics Portugal (Banco de Portugal calculations). | Notes: Fish, oils and fats and cereals and cereal products weigh 12.4%, 4.2% and 16.2% in the Portuguese Food HICP basket in 2022 (4.9%, 2.5% and 13.7%, respectively, in the euro area). Milk, dairy and eggs, meat and vegetables weigh 10.1%, 16.3& and 7.5% in the Portuguese Food HICP basket (11.1%, 16.8% and 9.2%, respectively, in the euro area).

Price effects are particularly significant for fruit, vegetables and meat (Chart C2.4). There was also a positive price effect for milk, cheese and eggs, and bread and cereals.

Food prices were particularly buoyant throughout the production chain in Portugal and in Europe. Until December 2022 the producer prices for agricultural goods continued on an upward trend in Portugal (with the year-on-year rate of change reaching 31.3% in the fourth quarter, compared

with 28.2% in the third quarter). In the European Union, in the third quarter of 2022 (latest available data), agricultural production prices were 29.8% higher than in the same quarter of the previous year. Food industry production prices, despite a slowdown in recent months, continued to show a high year-on-year rate of change in February 2023, higher than that in the euro area (Chart C2.5).

Chart C2.5 • Food prices along the supply chain | Year-on-year rate of change, in percentage



Sources: Eurostat and Statistics Portugal.

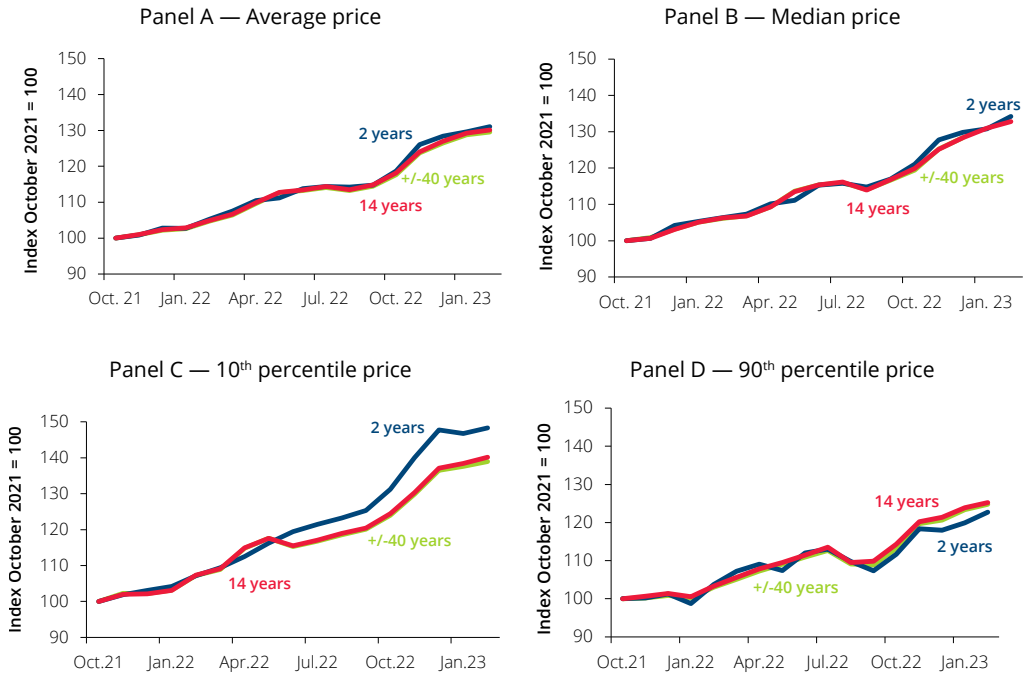
Box 3 • Recent developments in e-commerce prices of a basket of basic food products

In recent months food prices have continued to rise sharply. These increases tend to cause hardship to households, in particular those on lower incomes. Since October 2021, the Banco de Portugal has regularly monitored the cost of a basket of basic food items that meets basic individual needs, obtained from prices displayed on the online platforms of major food retailers operating in Portugal.[4]

The calculation of the acquisition cost of the basic food basket considers 25 products and the recommended monthly consumption quantities in the food basket of the Operational Programme to Support the Most Deprived People. The cost of the basic food consumption basket is calculated for various age groups and for the average, median and percentiles 10th and 90th of prices. The 10th and 90th percentiles reflect the cost of the basic consumer basket in scenarios where individuals systematically purchase the cheapest or most expensive products, both in terms of product range and retailers.

In cumulative terms, over the period October 2021 to February 2023 and considering the average and median prices, growth of the basket price was around 30% for the different age groups. Considering the prices of the cheapest baskets, the accumulated growth in this period was 48% for 2-year-old children and approximately 40% for adults and teenagers. For the most expensive baskets, the cumulative growth was around 25% for all age groups (Chart C3.1).

Chart C3.1 • Accumulated price change of the basic food consumption basket between October 2021 and February 2023 | Index October 2021=100

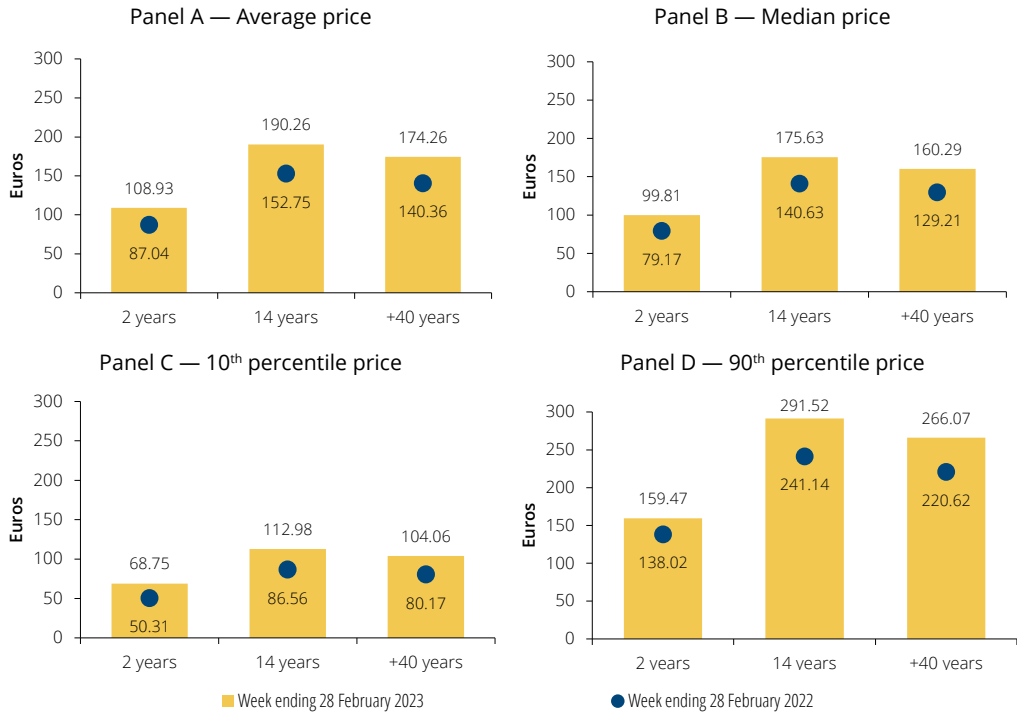


Source: Banco de Portugal.

4. For more details, see Box 5 - "Developments in e-commerce prices of a basket of basic food products" in the October 2022 issue of the *Economic Bulletin*..

Considering the average prices for the week ending 28 February 2023, the value of the basket was higher for the teenagers' group (€190.26) and lower for two-year-olds' (€108.93) (Chart C3.2). An adult consumer basket ranks between them at €174.26. This pattern is also evident when considering the median and the 10th and 90th percentiles of prices. The cost of baskets made up of the highest priced variety of products is approximately two and a half times higher than that of baskets made up of the lowest priced varieties. Considering the average prices, the change in the value of basic consumer baskets for 2-year-old children, teenagers and adults between the weeks ending 28 February 2022 and 28 February 2023 was €21.88, €37.51 and €33.90 respectively.

Chart C3.2 • Cost of the basic food consumption basket by age group | In euros



Source: Banco de Portugal.

II Special issue

The wage distribution in Portugal in the period 2006-2020

The wage distribution in Portugal in the period 2006-2020[1]

Between 2006 and 2020 the composition of the Portuguese labour market underwent major changes that have affected the wage distribution. These changes include the ageing of population, the increase in the female labour force participation rate, and the increase in educational attainment. In the period in consideration, the wage distribution was also affected by three recessions, with historical consequences in terms of employment destruction, and rising unemployment during the 2011-2013 recessionary period. Revisions to the labour code and in particular updates to the national minimum wage, notably the strong increase after 2014, are also relevant.

Given the importance of schooling in wage determination, this analysis focuses on the period between 2006 and 2020, for which the detailed educational attainment of employees with higher education are available in the *Quadros de Pessoal* data set. Moreover, information from the Labour Force Survey is used to depict some additional structural developments in the labour market since 2006.

This analysis suggests that real wage growth between 2006 and 2020 was heterogeneous across sociodemographic groups, with the highest wages recording lower growth. A higher wage growth among younger workers and those with basic education reflects the greatest share of employees earning the national minimum wage in these groups. In this period, wage inequality also dropped in Portugal, with a significant increase in the lower percentiles. The education transition in Portugal, reflected in a significant increase in the supply of higher skills, seems to have contributed to a decrease in the wage differential associated with education, which nevertheless remains high.

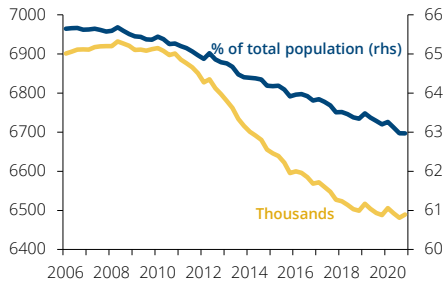
Major labour market developments in the period 2006-2020

Demographic developments in Portugal resulted in a 7.6% fall in the working-age population between 2006 and 2020 (Chart 1); about 500 thousand less individuals, a sharper decrease than that recorded for the overall population (-2.2%). In addition, the ageing of the working-age and employed population was also observed. In 2020 employees' average age increased by four years, to 43 (Chart 2).

The impact of the drop in the working-age population on the labour supply was largely offset by the increase in the participation rate in the various age groups, except for youngsters (Chart 3). The decrease in the youth participation rate, especially in recent years, resulted from the strong increase in those in education or training and the significant decline in school dropout rates to levels below the euro area average. In this context, the extension of compulsory education in 2009 until the age of 18 or the completion of secondary education are worth noting.

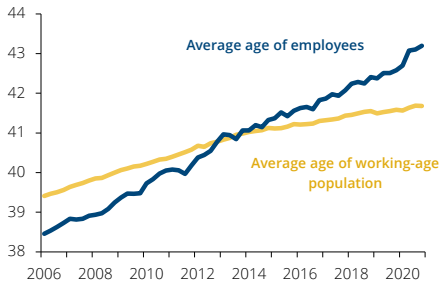
1. Prepared by Sónia Félix, Fernando Martins, Domingos Seward and Marta Silva.

Chart 1 • Working-age population | Thousands and percentage of total population



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

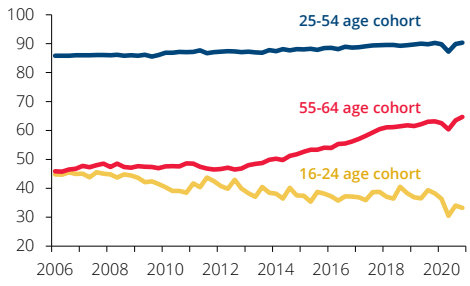
Chart 2 • Average age of working-age population and employees | Years



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

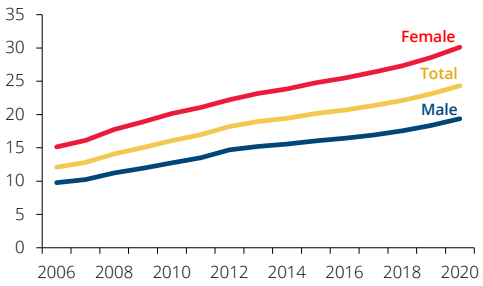
Between 2006 and 2020 the share of the working age population with higher education more than doubled, from 12% to 26%. This increase was broadly based across age groups but particularly pronounced in individuals aged 25-44. The ongoing growth in the participation rate of women with a higher schooling level than that of men on average, contributes to a more skilled labour force. In 2020 the percentage of working women in total population was 46%, 6 percentage points less than that of men, but 2 percentage points more than in 2006. In this period the gap between the share of women and men with higher education widened. In the private sector, the share of women with higher education increased from 15% in 2006 to 30% in 2020, while for men increased from 10% to 19% (Chart 4).

Chart 3 • Participation rate | Percentage of total population



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

Chart 4 • Employees with higher education in private sector | Percentage



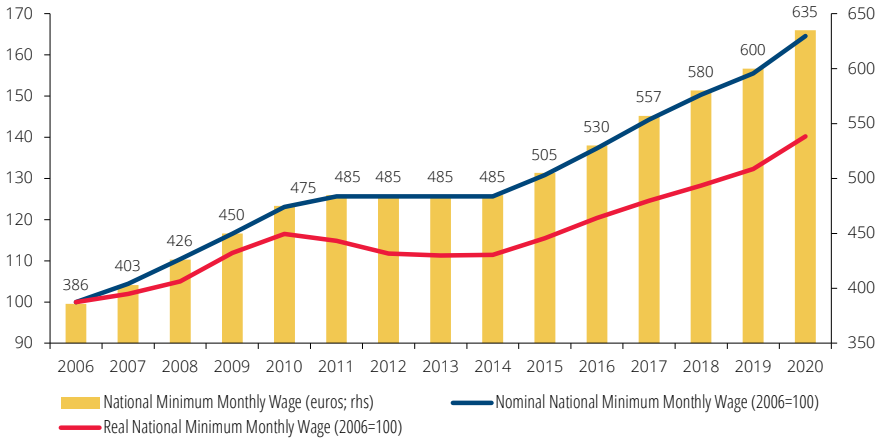
Source: *Quadros de Pessoal* – Statistics Portugal (calculations by Banco de Portugal).

The wage distribution over this period was affected by three economic recessions (2008-2009, 2011-2013, and 2020) with a differentiated impact on the labour market. In particular, during the 2011-2013 recession the employment dropped by 8.2%, while the unemployment rate reached an all-time high of 17.1% in 2013. In the 2020 pandemic crisis, the impact on employment and wages was mitigated by its cyclical nature and the support measures. The simplified layoff scheme led to reduced wages for some employees in the covered firms but allowed for job retention.

Finally, one of the factors that contributed the most to the change in the wage distribution over this period was the rise in the national minimum wage. Between 2006 and 2011 the national

minimum wage grew at an average annual rate of 4.7 per cent, in nominal terms, with differences between sub-periods. After a freeze between 2011 and the end of 2014, the national minimum wage increased by 4.7% on average between 2015 and 2020 (Chart 5). Box 1 in this Special issue presents a more detailed overview of the developments in the national minimum wage.

Chart 5 • National minimum wage | Euros and 2006=100



Source: GEP/MTSSS (calculations by Banco de Portugal). | Notes: In october 2014, the national minimum wage was updated to 505 euros. The real national minimum wage is calculated using the consumer price index.

The wage distribution in the period 2006-2020

Data

Quadros de Pessoal is the data source used to analyse the wage distribution. It is an annual compulsory report by all firms with at least one employee.

This administrative data set is collected by the Ministry of Labour, Solidarity and Social Security and is available since 1985 with respect to the month of October. Firms report information on their main sector of activity, location, legal form and founding year, as well as detailed data on their establishments and employees. As regards employees, the following must be reported: schooling, gender, age, occupation, admission date, type of contract, workload hours (normal and overtime), and wages. Information on wages is broken down by base wage, regular and irregular benefits, and overtime compensation.

The sample considered in this Special issue includes firms located in mainland Portugal, except for those whose main activity is agriculture or fisheries. This analysis considers full-time employees aged between 18 and 64 and with up to 50 years of tenure. Employees that earned a wage lower than 80% of the national minimum wage in the reference month and those who are reported in more than one firm in the same year are excluded. The final sample includes 559,833 firms and 4,389,129 employees between 2006 and 2020, for a total of 28,921,203 observations.

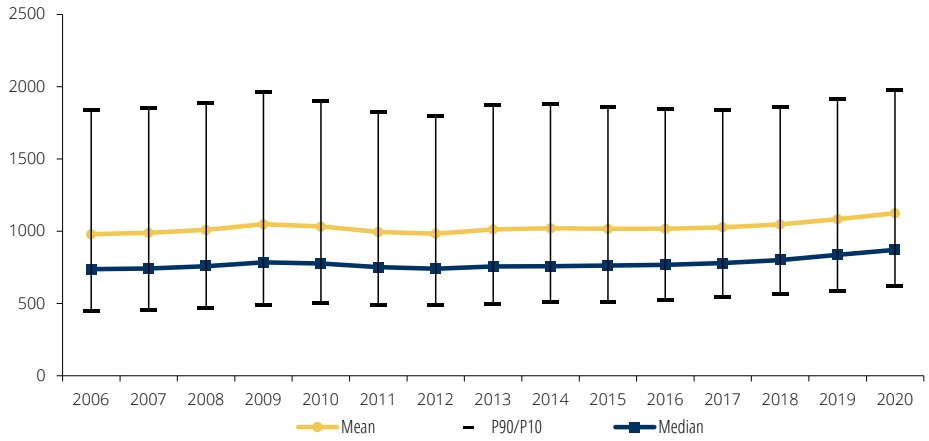
The total wage is calculated as the sum of the base wage, regular and irregular benefits, and overtime compensation. In the period under consideration, the average weight of the base wage in total wage decreased from 77.6% to 75.7%. Real wages are calculated based on the Consumer

Price Index (October 2006=100) with respect to October of each year. In the remainder of this text, wages are always reported in terms of their real value, unless explicitly stated.

Wage inequality between 2006 and 2020

Chart 6 depicts the wage distribution developments between 2006 and 2020, highlighting the behaviour of the average and median wage and the 10th and 90th percentiles. In real terms, the average annual growth of the median wage is slightly higher than that of the average wage over this period (1.2% and 1.0% respectively). The real wage of the 10th percentile recorded a higher average annual growth than the 90th percentile (2.3% and 0.5% respectively), leading to greater wage compression

Chart 6 • Distribution of the real wage from 2006 to 2020 in private sector | Euros (2006=100)

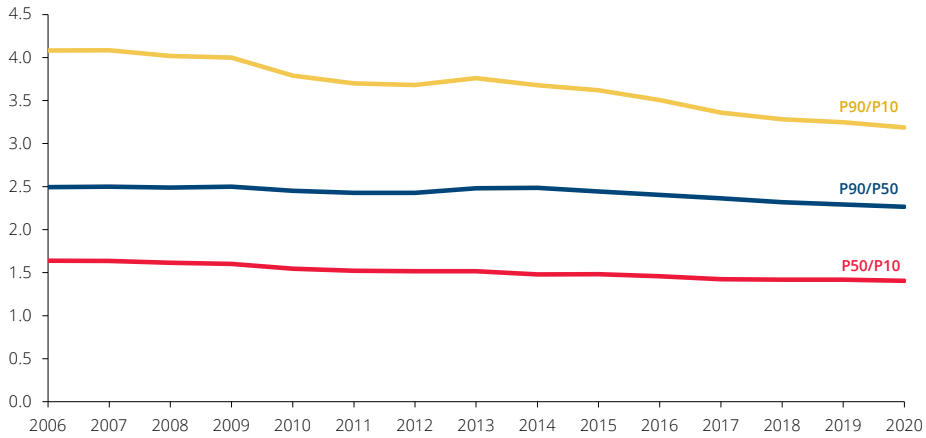


Source: *Quadros de Pessoal* – Statistics Portugal (calculations by Banco de Portugal). | Note: The real wage is calculated using the consumer price index (october 2006=100) in october each year.

Chart 7 shows that wage inequality has declined between 2006 and 2020. The ratio between the 90th and the 10th percentiles of wage distribution fell significantly from 4.1 in 2006 to 3.2 in 2020. This decline was sharpest on the left-hand side of the distribution, with the 10th percentile as a percentage of the median increasing from 61 per cent to 71 per cent. This wage compression is related to the significant increase in lower percentiles, prompted by the revision of the national minimum wage, and the lower increase in median wages (Centeno, Duarte, Novo, 2011, Oliveira, 2022, and PlanAPP, 2023). According to OECD data (OECD, 2023), the ratio between the 90th and the 10th percentiles of total wages distribution dropped in most euro area countries during the period under consideration. France, Italy, Belgium, and Finland are the exceptions to this trend, while Portugal and Lithuania were the countries where this indicator declined the most.

Wage inequality indicators have also dropped in different sociodemographic groups (Ferreira, Lopes and Tavares, 2021). Wage inequality fell over the past decade for men and women (Chart 8). The ratio between the 90th percentile and the 10th percentile of the wage distribution is higher for men than for women, having decreased by similar magnitudes over the period under analysis. By educational attainment, it is observed a greater inequality for employees with higher education and a more marked reduction for employees with secondary education (Chart 9).

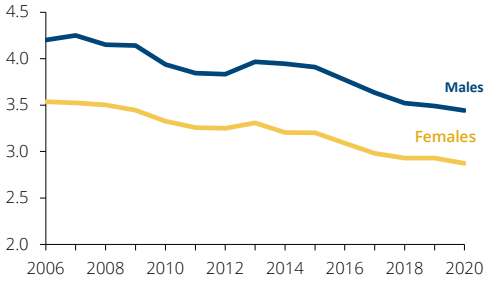
Chart 7 • Wage inequality indicators | Ratios of percentiles



Source: *Quadros de Pessoal* – Statistics Portugal (calculations by Banco de Portugal). | Note: Ratios of percentiles of real wages.

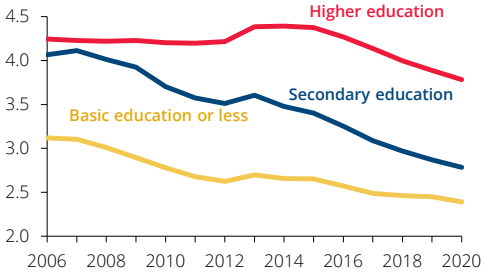
The narrowing of the wage gap between employees with intermediate schooling and those with lower schooling levels is the result of the increase in average educational attainment in Portugal, which occurred more significantly from the mid-1990s onwards, and of the decreasing differentiating capacity of secondary education in the labour market (Alves, Centeno and Novo, 2010). This evidence results from the ongoing educational transition and suggests that secondary education is less capable of providing access to better-paid jobs.

Chart 8 • Real wage inequality indicators by gender | Ratio between 90 and 10 percentiles



Source: *Quadros de Pessoal* – Statistics Portugal (calculations by Banco de Portugal).

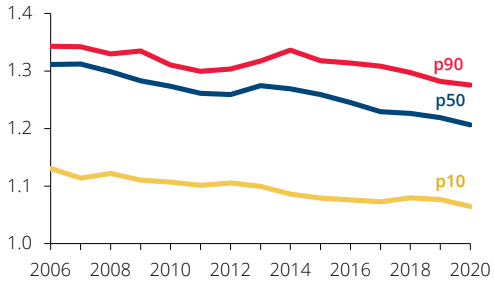
Chart 9 • Wage inequality by education | Ratio between 90 and 10 percentiles



Source: *Quadros de Pessoal* – Statistics Portugal (calculations by Banco de Portugal).

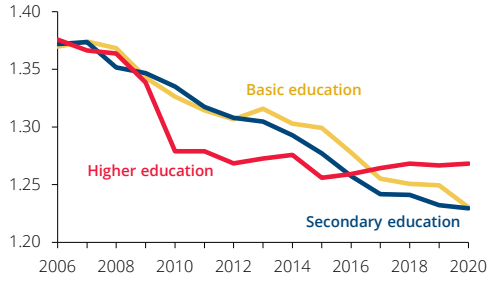
Women's wages also converged to men's between 2006 and 2020 (Chart 10). This convergence is observed both in the median wage and in the 10th and 90th percentiles. The convergence between median wages of men and women was considerable across all education levels but has recently stabilised for employees with higher education (Chart 11).

Chart 10 • Wage inequality between male and female | Ratio of real wage between male and female by percentile



Source: *Quadros de Pessoal* – Statistics Portugal (calculations by Banco de Portugal).

Chart 11 • Wage inequality between male and female by education | Ratio of real median wage between male and female by education



Source: *Quadros de Pessoal* – Statistics Portugal (calculations by Banco de Portugal).

Developments in the average real wage between 2006 and 2020

Developments in average real wages in the private sector showed different dynamics (Chart 6). The average real wage showed an upward profile between 2006 and 2009 and a significant drop between 2010 and 2012. After 2013, wages picked up again, particularly between 2018 and 2020. In the period under consideration, the average real wage in the private sector increases at an average annual growth of 1.0%.[2]

However, real wage growth was different across sociodemographic groups (Chart 12). Women's wages grew by an average of 1.4% per year, more than men's (0.8%), with a more significant increase in schooling among the female population. A higher wage growth for younger workers and those with basic education reflects the higher percentage of employees earning the national minimum wage in these groups (Box 1). Overall, higher wage groups experienced lower wage growth. Besides the effect of the national minimum wage, these wage dynamics reflect higher growth in the supply of higher skills, in a period characterised by important demographic changes and a significant increase in educational attainment.

The fall in real wages for employees with higher and secondary education (Chart 13) is of particular importance, in a context of a significant increase in the entry of youngsters with these levels of schooling into the labour market. The average real wage of employees with secondary education fell from €1,092 in 2006 to €1,047 in 2020. In 2006, the average real wage of highly educated employees was €1,745, €134 higher than in 2020.

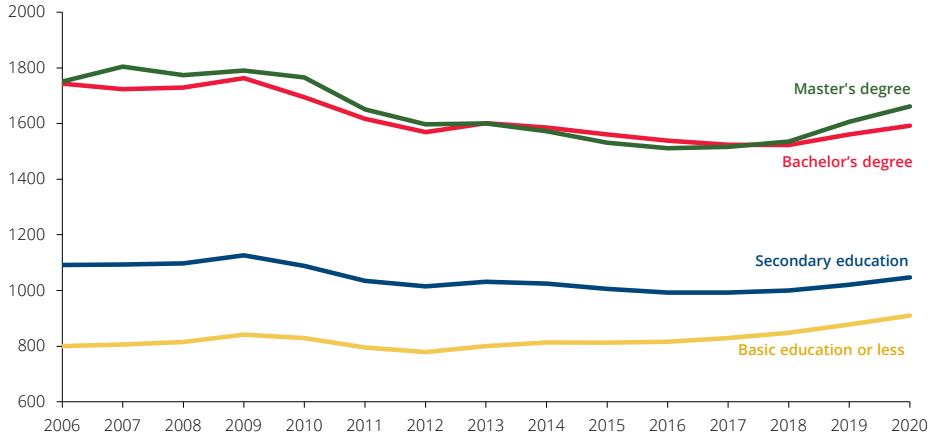
During this period, it is observed the entry of many youngsters with secondary education into the labour market. The percentage of youngsters with secondary education in total entries rose from 30% in 2006 to 40% in 2020, which partly explains the drop in the entries of young people with basic education or less, which fell from 41% to 27% (Chart 14). The entry of youngsters with higher education into the labour market showed a steady profile over the period, but a recomposition has taken place, with an increase in the number of entries of youngsters with a master's degree and a drop in those with a bachelor's degree. This resulted in a gradual increase of higher education levels in the employment structure (Chart 15).

2. Average annual inflation between 2006 and 2020, as measured by the Consumer Price Index, was 1.1%, and thus average wage growth was 2.1% in this period, in nominal terms. The average wage in Portugal in the private sector was €1,312 in 2020, in nominal terms.

Chart 12 • Real average wage in 2006 and average annual rate of growth in 2006-2020 by gender, age, and education | Euros and growth rate in percentage

Source: *Quadros de Pessoal* – Statistics Portugal (calculations by Banco de Portugal).

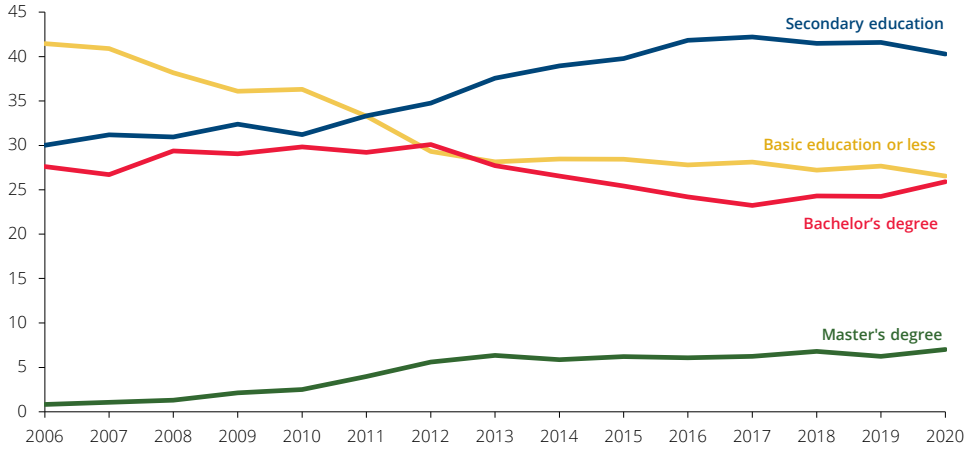
Chart 13 • Evolution of real average wage between 2006 and 2020 by education | Euros (2006=100)



Source: *Quadros de Pessoal* – Statistics Portugal (calculations by Banco de Portugal). | Note: The average wage of doctorates is not included due to its residual share in the sample.

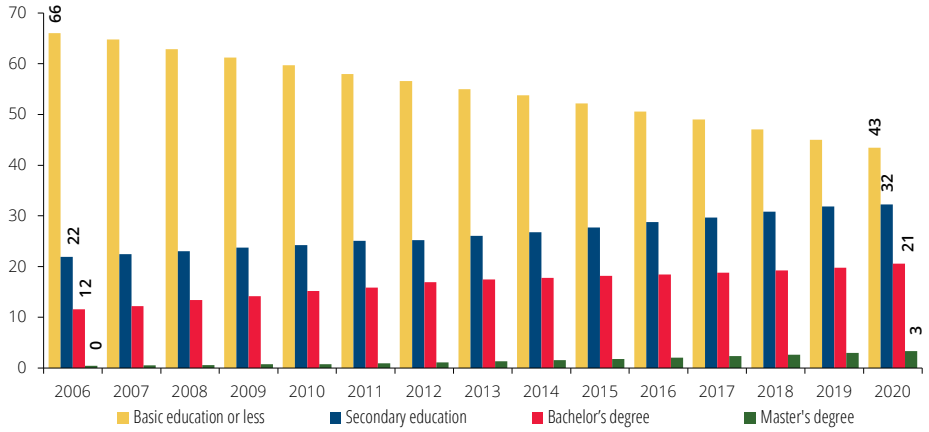
The significant entry of youngsters with secondary education into the labour market led to a lower differentiation between secondary and basic education, as well as to a decrease in the wage gap between these two schooling levels (Chart 16). The period under consideration is also characterised by the implementation of the Bologna Process in 2006, which changed the configuration of university education in Portugal, namely by shortening the length of bachelor's studies to three years (exceptionally to four years). Moreover, the creation of a second study cycle (master's degree) made the duration of the first two study cycles (bachelor's and master's degree) equal to the pre-Bologna bachelor's degree. This has contributed to reduce the wage gap between employees with a bachelor's degree and employees with secondary education, as well as to a positive wage gap between employees with a master's degree and employees with a bachelor's degree. In 2020, the average real wage of a worker with a bachelor's degree was 52% higher than that of a worker with secondary education (60% in 2006).

Chart 14 • Youth entrants in the labor market (private sector) between 2006 and 2020 by education | Percentage of total number of youth entrants in the labor market (private sector)



Source: *Quadros de Pessoal* – Statistics Portugal (calculations by Banco de Portugal). | Notes: Entrance in the labor market (approximated by year of first observation in the dataset) with age equal to 30 or less. The entrance wage of doctorates is not included due to their residual share in the sample.

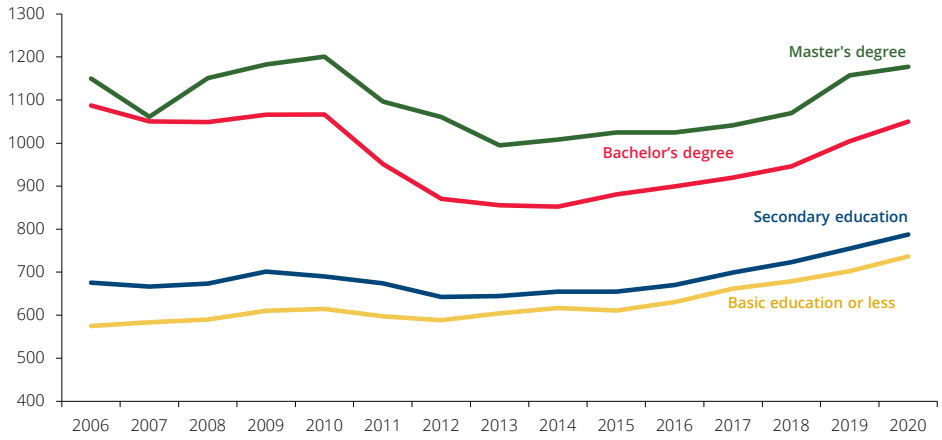
Chart 15 • Evolution of structure of employees in private sector in 2006-2020 by education | Percentage of number of employees



Source: *Quadros de Pessoal* – Statistics Portugal (calculations by Banco de Portugal). | Note: Doctorates are not included due to their residual share in the sample.

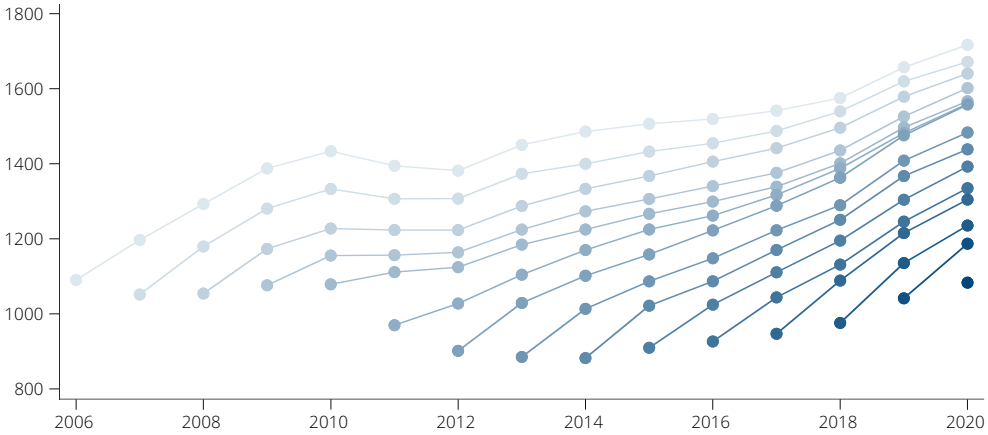
In the following exercise, individuals are aggregated by year of entry into the labour market and followed over time. This analysis focuses on the evolution of wages of workers with higher education, aged 30 years or less appearing in the dataset for the first time in this period. The results show a very sharp decline in the average entry wage of these workers between 2010 and 2014 (Chart 17, lowest dot in each line), followed by a catch-up. In the most recent period, the average real entry wage is still lower than between 2006 and 2010, but the upward wage profile in the years that followed (movement along each curve) was more pronounced. This may be associated with a gradual adjustment of labour demand to the significant increase in the supply of highly educated employees.

Chart 16 • Average real wage at entry by education | Euros (2006=100)



Source: *Quadros de Pessoal* – Statistics Portugal (calculations by Banco de Portugal). | Note: The average wage of doctorates is not included due to its residual share in the sample.

Chart 17 • Real average wage of employees with higher education by year of entrance in labor market | Euros (2006=100)

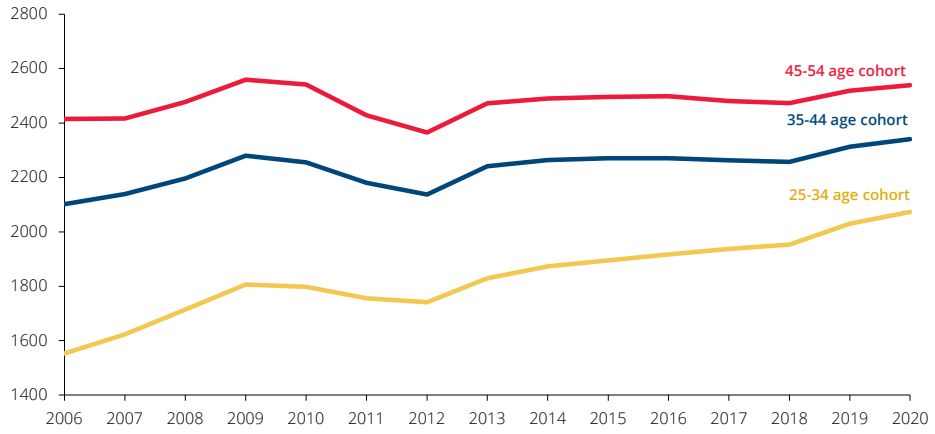


Source: *Quadros de Pessoal* – Statistics Portugal (calculations by Banco de Portugal). | Note: Entrance in the labor market (approximated by year of first observation in the dataset) with age equal to 30 or less.

In addition, the evolution of the average real wage of highly educated employees aged 25 to 54 is analysed. These employees are grouped into three age cohorts (25 to 34 years, 35 to 44 years and 45 to 54 years) according to their age in 2006, with those remaining in the dataset being tracked until 2020 for the entire period under analysis. Chart 18 shows a smoother profile for real wages in older age groups. Notwithstanding a pronounced growth in recent years, in 2020 the average real wage of 25- to 34-year-olds (€2,073) was still lower than the average real wage in 2006 for employees in the age group immediately above (€2,102). This illustrates the importance of entry-level wages in defining wages throughout working life. Naturally, numerous events may change individual wage trajectories. For example, evidence suggests that over the 2006-2020 period individuals who had changed jobs had an average wage growth of 5 per cent in the year of the change, which is higher than the 2 per cent average wage growth observed for employees who stayed in the same firm (Chart 19). This differential tends to be smaller in recessionary periods due to the decrease in the

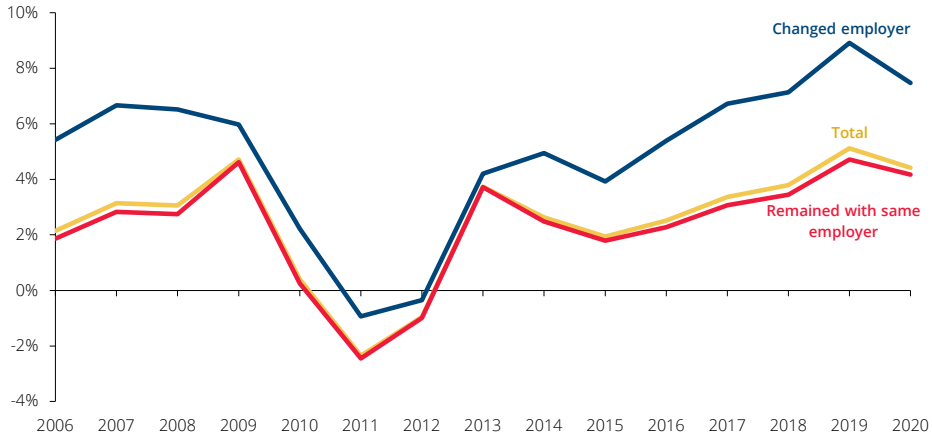
number of hirings. The average wage growth associated with changing jobs seems to be more significant for employees with higher education, 9% on average in the year of the change (Chart 20).

Chart 18 • Real average wage of employees with higher education by age cohort | Euros (2006=100)



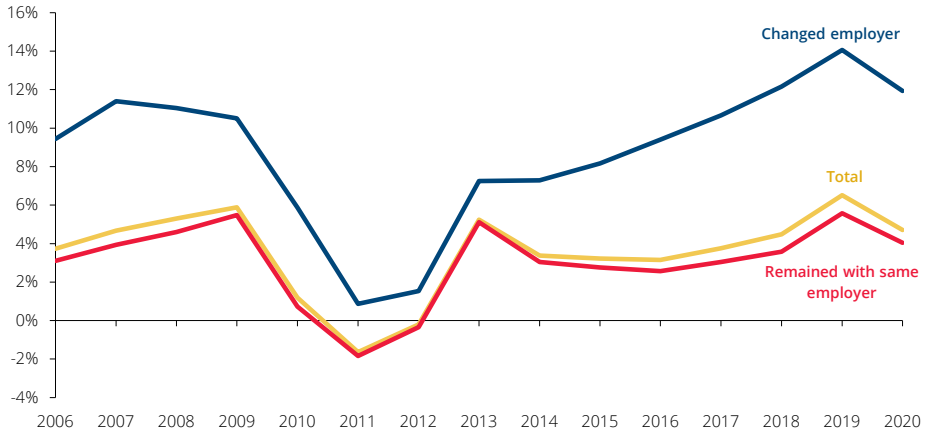
Source: *Quadros de Pessoal* – Statistics Portugal (calculations by Banco de Portugal). | Note: Employees are included in three age cohorts (25-34, 35-44, 45-54), according to their age in 2006. The real average wage of each of those cohorts is reported until 2020 for all employees who remain in the sample.

Chart 19 • Average rate of growth of real wage of employees that remain in the same firm and employees that switch firms | Percentage



Source: *Quadros de Pessoal* – Statistics Portugal (calculations by Banco de Portugal). | Note: The values are the average of the rates of growth of the wage of all employees in each year.

Chart 20 • Average rate of growth of real wage of employees with higher education that remain in the same firm and employees that switch firms | Percentage



Source: *Quadros de Pessoal* – Statistics Portugal (calculations by Banco de Portugal). | Note: The values are the average of the rates of growth of the wage of all employees in each year.

Final considerations

The wage distribution in Portugal between 2006 and 2020 reflects major developments in the labour market, in particular a remarkable increase in educational attainment, a continued upward trend in the female participation rate, and an ageing workforce, as well as a rise in the national minimum wage. The wage distribution also reflects the recessions that have occurred in this period, in particular the one between 2011 and 2013, which entailed a significant drop in employment and a rise in the unemployment rate to historical levels.

The significant rise in the national minimum wage since the end of 2014 contributed to the compression of the wage distribution in the period under consideration. The wage growth was stronger in the sociodemographic groups where this compensation is higher. As a result of these developments, wage inequality, as measured by conventional indicators, declined between 2006 and 2020. In this period the ratio between the 90th and 10th percentiles of real wage distribution fell significantly from 4.1 in 2006 to 3.2 in 2020. This decline was stronger on the left-hand side of the distribution, with the 10th percentile as a percentage of the median increasing from 61 per cent to 71 per cent.

The greater supply of individuals with higher education has been accompanied by a positive wage gap for employees with this level of education which, although lower than at the beginning of the period under analysis, remains high. In 2020 the average real wage of a worker with a bachelor's degree was 52% higher than that of an employee with secondary education (60% in 2006).

The evidence presented in this Special issue suggests that the lifetime earnings profile of employees depends on the timing (and conditions) of the entry into the labour market. In particular, it points to a drop in the average entry-level wage of employees with higher education between 2010 and 2014. In the most recent period, the average real entry-level wage for these employees is still lower than that observed between 2006 and 2010, despite an upward wage profile compatible with a gradual adjustment of labour demand to the significant increase in the supply of employees with higher levels of education.

References

Alves, N., Centeno, M. and Novo, A. (2010). "O Investimento em educação em Portugal: Retornos e Heterogeneidade". Banco de Portugal, *Economic Bulletin* – Spring 2010, 9-39.

Centeno, M., Duarte, C. and Novo, A. (2011). "O impacto do salário mínimo sobre os trabalhadores com salários mais baixos". Banco de Portugal, *Economic Bulletin* – Autumn 2011, 107-121.

Ferreira, P., Lopes, M. and Tavares, L. (2021). "O Salário Médio em Portugal: Retrato Atual e Evolução Recente". Calouste Gulbenkian Foundation.

Office of Strategy and Planning (2019). "Salário Mínimo Nacional – 45 anos depois. Balanço e perspetivas atuais sobre emprego e salários em Portugal". Ministry of Labour, Solidarity and Social Security.

OCDE (2023). "Main economic indicators", Volume 2023, Issue 3.

Oliveira, C. (2022). "How is the minimum wage shaping the wage distribution: bite, spillovers, and wage inequality". *GEE Papers* No 160.

PlanAPP (2023). "Os Salários em Portugal: evolução na última década".

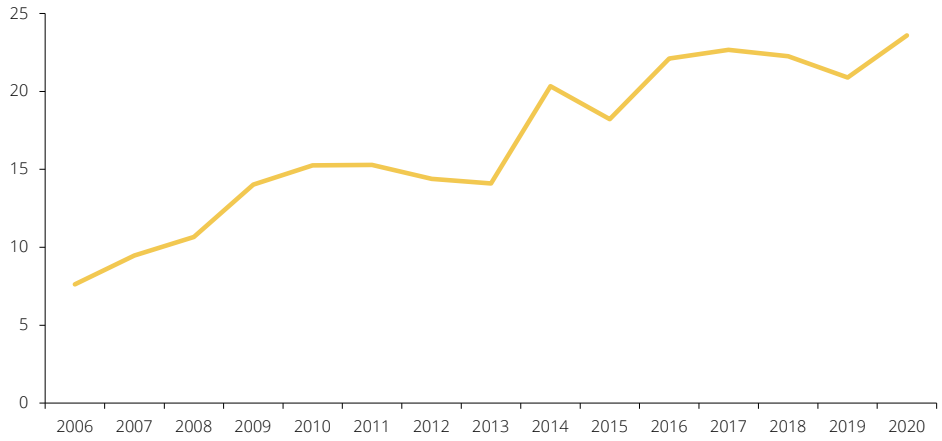
Box 1 • Developments in the national minimum wage over the period 2006-2020

The increased importance of the national minimum wage in the wage structure has had a substantial impact on the reduction of wage inequality. Following a freeze between 2011 and October 2014, the national minimum wage grew by an annual average of 4.7 per cent, in nominal terms, between 2015 and 2020 (4 per cent in real terms).

This rise resulted in a larger number of employees covered, i.e. in its greater prevalence in the wage structure. The percentage of employees covered rose from 7.6% in 2006 to 23.6% in 2020 (Chart C1.1).

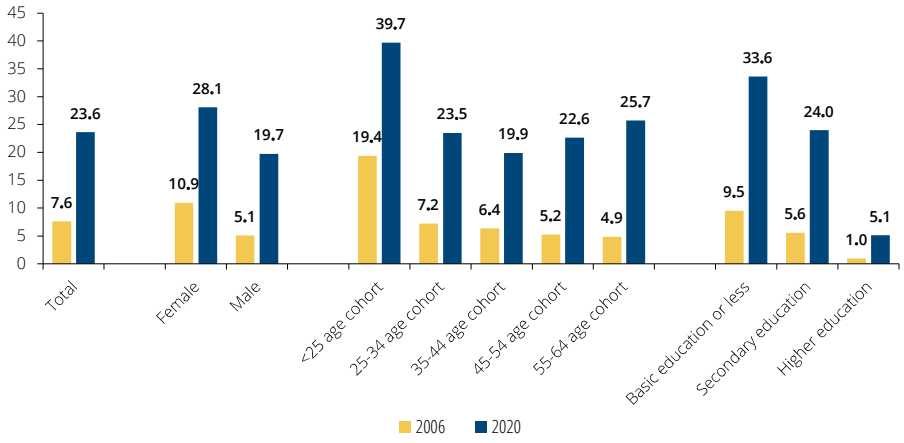
The prevalence of the national minimum wage shows a different profile according to the characteristics of the employees and firms, such as worker's education level and the sector of activity in which firms operate (GEP, 2019).

Chart C1.1 • The prevalence of national minimum wage | Percentage of employees with base wage equal to national minimum wage



Source: *Quadros de Pessoal* – Statistics Portugal (calculations by Banco de Portugal).

Chart C1.2 • Prevalence of national minimum wage from 2006 to 2020 by characteristics of employees | Percentage of employees with base wage equal to national minimum wage

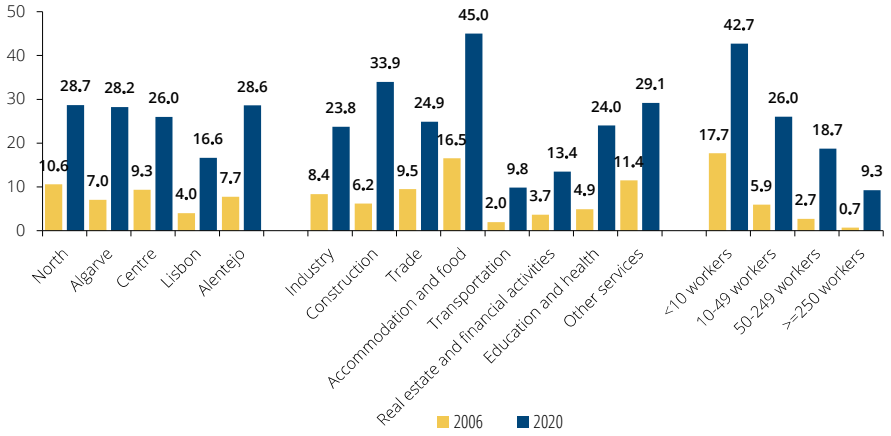


Source: *Quadros de Pessoal* – Statistics Portugal (calculations by Banco de Portugal).

Chart C1.2 shows that the share of employees earning the minimum wage is higher for women, youngsters, and those with a basic level of education or lower. These are also the socioeconomic groups with the most significant increase in the prevalence of the minimum wage between 2006 and 2020.

In terms of employer characteristics, the prevalence of the national minimum wage is higher in the accommodation and food service and construction sectors, as well as in smaller firms. These segments also observed the highest increases in prevalence in the period under consideration (Chart C1.3).

Chart C1.3 • Prevalence of minimum national wage from 2006 to 2020 by characteristics of employers | Percentage of employees with base wage equal to national minimum wage



Source: *Quadros de Pessoal* – Statistics Portugal (calculations by Banco de Portugal). | Note: Education and health excluding the institutions with employees which are only covered by the "Regime do Contrato de Trabalho em Funções Públicas".