ECONOMIC BULLETIN

OCT. 2023

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1 Projections for the Portuguese economy: 2023-25

The Portuguese economy is expected to grow at a pace below potential over the projection horizon, with GDP rates of change standing at 2.1% in 2023, 1.5% in 2024 and 2.1% in 2025 (Table I.1.1). Inflation is expected to decline further, with HICP annual changes projected at 5.4% in 2023, 3.6% in 2024 and 2.1% in 2025. Compared with projections in the June 2023 *Economic Bulletin*, economic growth has been revised downwards (0.6 p.p. in 2023, 0.9 p.p. in 2024 and 0.2 p.p. in 2025) and inflation is revised upwards (0.2 p.p. in 2023 and 0.3 p.p. in 2024).

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

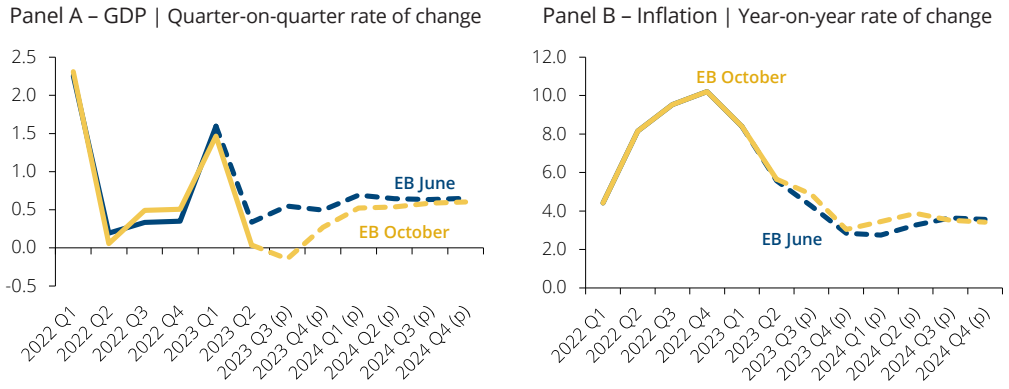
	Weights 2022	EB October 2023				EB June 2023			
		2022	2023 (p)	2024 (p)	2025 (p)	2022	2023 (p)	2024 (p)	2025 (p)
Gross domestic product	100.0	6.8	2.1	1.5	2.1	6.7	2.7	2.4	2.3
Private consumption	64.2	5.6	1.0	1.3	1.6	5.8	1.6	1.7	1.7
Public consumption	17.6	1.4	1.2	1.2	0.8	1.7	1.5	1.4	0.9
Gross fixed capital formation	20.1	3.0	1.5	5.0	5.0	3.0	3.1	5.3	5.4
Domestic demand	102.4	4.4	0.9	2.1	2.1	4.5	1.1	2.4	2.3
Exports	49.6	17.4	4.1	2.1	3.9	16.7	7.8	4.2	4.0
Imports	52.0	11.1	1.3	3.4	3.9	11.1	4.0	4.2	3.9
Employment (a)		1.5	0.8	0.2	0.4	2.0	0.6	0.6	0.5
Unemployment rate (b)		6.0	6.5	6.7	6.9	6.0	6.8	6.7	6.7
Current and capital account (% of GDP)		-0.2	3.0	2.7	3.0	-0.4	3.8	3.5	3.8
Trade balance (% of GDP)		-1.9	1.1	0.6	0.8	-2.1	1.7	1.6	1.8
Harmonised index of consumer prices		8.1	5.4	3.6	2.1	8.1	5.2	3.3	2.1
Energy		23.8	-8.0	5.5	0.7	23.8	-12.3	0.8	-0.2
Food		11.4	9.0	4.8	2.2	11.4	9.0	4.6	2.4
Excluding energy		6.7	6.6	3.4	2.2	6.7	6.8	3.5	2.3
Excluding energy and food		5.0	5.6	2.9	2.2	5.0	5.7	3.1	2.3

Sources: Banco de Portugal and Statistics Portugal. | Notes: (p) – projected. Cut-off date for macroeconomic projections: 22 September. 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.

Following the buoyancy at the beginning of 2023, economic activity stagnated in the second and third quarters and is expected to remain subdued until the end of the year (Chart I.1.1 – Panel A). The economic slowdown in Portugal reflects the weaker momentum in major trading partners, the cumulative effects of inflation, and greater monetary policy tightening, leading to a deterioration in financing conditions in the euro area and in Portugal (Box 1). This more unfavourable performance than that projected in the June issue of the *Economic Bulletin* can be explained by exports and, to a lesser extent, private consumption and gross fixed capital formation (GFCF), particularly the public component. The revision of annual growth in 2023 resulted from the incorporation of the most recent national accounts data and lower growth estimated for the second half of the year, particularly in exports, considering the assessment of recent conjunctural information (Chart I.1.2). The revision of growth prospects for 2024 stemmed mostly from the less favourable performance of activity over 2023 and, to a lesser extent, from the revision of external and financial assumptions and the less favourable export profile assumed for the beginning of the year. The pass-through of policy

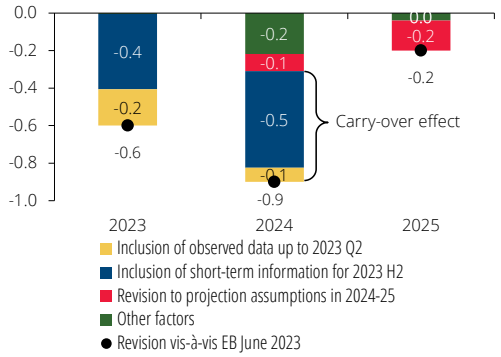
interest rate hikes to financing conditions faced by households and firms will continue to constrain activity in 2024 and 2025, with its effects partly offset by the favourable impact of gradually declining inflation on households' purchasing power, accelerating inflows from EU funds and the assumption of more buoyant external demand. Compared with the euro area, the Portuguese economy will continue to show higher growth in the period 2024-25, with an average annual differential of 0.5 p.p.

Chart I.1.1 • Quarterly projections for GDP and inflation



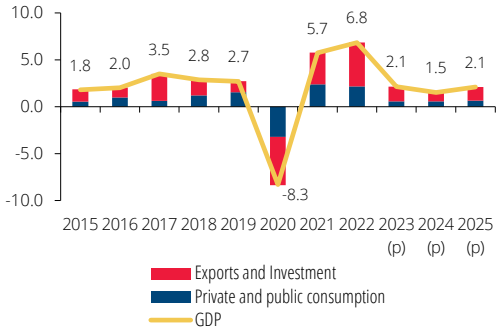
Sources: Banco de Portugal and Statistics Portugal. | Note: (p) – projected.

Chart I.1.2 • Revision to GDP growth and contributions | Percentual points



Sources: Banco de Portugal and Statistics Portugal. | Note: The yellow bar reflects the impact on the projection of incorporating the revised annual and quarterly national accounts data released on 22 September. Includes the impact of the second quarter projection error.

Chart I.1.3 • GDP annual rate of change and contributions from demand components net of import content | Percentage and percentual points



Sources: Banco de Portugal and Statistics Portugal. | Notes: (p) – projected. 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. The weights of demand aggregates, net of imports, in GDP in 2022 corresponded to 48% for private consumption, 15% for public consumption, 11% for investment and 26% for exports.

Inflation has continued to decrease in recent months and this trend is expected to continue until the end of 2023 (Chart I.1.1 – Panel B). This decline has reflected developments in goods prices, mainly energy and food, with the rate of change of services prices remaining elevated. In the second half of 2023 and the first half of 2024, the upward revision of year-on-year HICP rates compared with the June issue of the *Economic Bulletin* stems from the energy component, reflecting the revision of

the assumption for oil prices (Box 1). Over the remainder of the horizon, the projected quarterly rates continue to point to inflation converging in 2025 to levels consistent with price stability in a context of tight monetary policy and inflation expectations anchored in the ECB's target. Over the horizon, the inflation profile in Portugal closely follows that projected by the ECB for the euro area.

Growth based on investment and exports is projected to continue. Over the projection horizon, the contribution of these components to GDP change is expected to remain higher than the contribution of consumption (Chart I.1.3).

Private consumption is expected to grow at a slower pace than GDP, with increases of 1.0% in 2023, 1.3% in 2024 and 1.6% in 2025 (Table I.1.1). Disposable income is expected to record real gains of around 1% in 2023 and 1.8% on average in 2024-25, benefiting from a moderation in the private consumption deflator and from rising employment and wages per employee, albeit at a slower pace than in the most recent period. By contrast, the tightening of financing conditions will limit consumer spending. Higher interest rates imply an increase in debt servicing and restrict access to new loans, especially affecting spending on durable goods in 2024-25. Developments in financial conditions also generally contribute to an increased propensity to save. The saving rate is expected to stabilise at 6.6% in 2023 and to rise gradually to 7.4% in 2025, slightly higher than during the pre-pandemic years (6.9% on average in 2015-19). Public consumption is expected to grow by 1.2% in 2023 and 2024 and 0.8% in 2025.

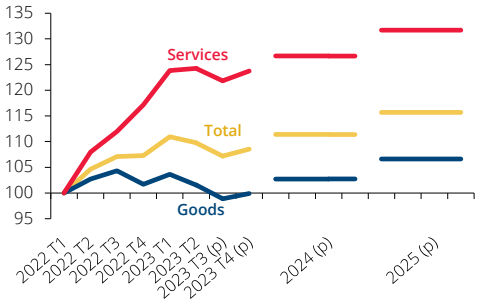
GFCF is expected to decelerate in 2023 to a growth rate of 1.5%, against a background of more expensive financing and slowing global demand (Table I.1.1). Projections for 2024-25 point to rates of change of 5%, boosted by the acceleration in global demand and the implementation of European funds. By component, residential GFCF is expected to contract in 2023 (2.9%) – reflecting a deterioration in housing affordability through credit, in a context of rising interest rates and house prices (Box 2) – and a modest recovery only in 2025 (1.4%). Business GFCF slows down in 2023 to 0.6%, but a more robust pace of growth is expected in 2024-25 (4.6% on average). Public investment is expected to grow by around 15% in 2023-24 and 8% in 2025.

The current and capital account is expected to show surpluses of around 3% of GDP in 2023-25 (Table I.1.1). The improvement compared to the previous year is due to the increase in EU transfers and a return to positive balances of trade in goods and services. Developments in the goods and services account in 2023 benefit from the recovery from the terms-of-trade loss of recent years and high growth in services exports. Compared with the pre-pandemic period (2015-19), the economy's higher net lending over the projection horizon reflects increases in the saving rate – especially from the public sector – and in capital transfers from abroad, which exceed the projected increase in the investment rate (Chart I.1.5).

The labour market is expected to maintain favourable developments with higher employment and real wage gains. Employment is projected to grow by 0.8% in 2023, 0.2% in 2024 and 0.4% in 2025, less than projected in June for 2024-25 (Table I.1.1). Gains in productivity per worker are expected to be higher than in the pre-pandemic years. These developments are expected to benefit from some ongoing trends, such as the increase and modernisation of the productive capital stock, the spread of new technologies and greater investment in digitalisation, advances in education levels of the working age population and the reallocation of employment to the most productive sectors.

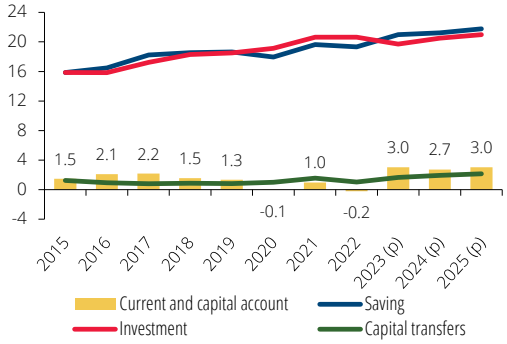
The increase in employment is framed by an increase in the working-age population (with immigration flows compensating for developments in the natural population change) and in the participation rate. The unemployment rate is expected to follow a slightly upward path, to stand at 6.9% in 2025. This rate remains below the trend.

Chart I.1.4 • Goods and services exports | Index 2022 Q1=100



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

Chart I.1.5 • Current and capital account, saving and investment | Percentage of GDP



Sources: Statistics Portugal and Banco de Portugal. | Notes: (p) – projected. The current and capital account corresponds – except for discrepancies related to methodological differences between the Balance of Payments and National Accounts statistics – to the net lending/net borrowing of the economy and equals the difference between residents' savings and investment, plus capital transfers (includes the net acquisition of non-financial non-produced assets).

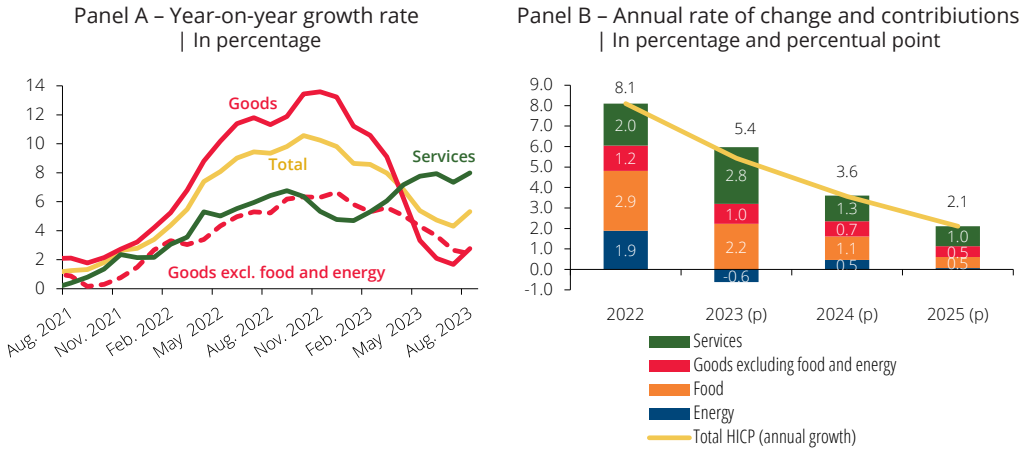
The average wage per employee in the economy is expected to increase by 7.6% in 2023 and, in line with the expected decline in inflation, to decelerate to growth rates of 4.8% in 2024 and 3.6% in 2025. These projections – which incorporate the evolution of the minimum wage announced by the government (7.8% in 2023, 6.6% in 2024 and 5.6% in 2025) – translate into gains in real wage per capita of 1.7% on average, slightly above expected productivity growth.[1]

Inflation will remain on a downward path, reaching figures consistent with the ECB's price stability objective in 2025. Inflation has been falling sharply, but this hides differentiated developments in the main components (Chart I.1.6 – Panel A). The goods component has been responding to the reduction in external inflationary pressures, in particular energy and food prices, and benefiting from the dissipation of constraints in global supply chains (Box 3). The zero VAT measure also contributed to moderating food prices (Box 4). By contrast, the pace of growth in services prices, particularly those related to tourism, has increased in recent months amid high demand, resulting in greater persistence of underlying inflation – as measured by changes in the HICP excluding food and energy – relative to total inflation.

The persistence of underlying inflation has reflected domestic pressures, associated with wage dynamics – broadly based by sector of activity, but with greater weight in the cost structure of the services sector – and a slight widening of the aggregate profit margin, associated with developments in some sub-sectors (Charts I.1.7 and I.1.8). These pressures are expected to decrease over the projection horizon as a result of the gradual transmission of the tightening of monetary policy and the maintenance of anchored inflation expectations. The easing of domestic pressures, together with the assumption of a moderation in commodity prices and contained developments in import prices of other goods and services, implies a gradual reduction in inflation to around 2% in 2025, to which all main aggregates contribute (Chart I.1.6 – Panel B).

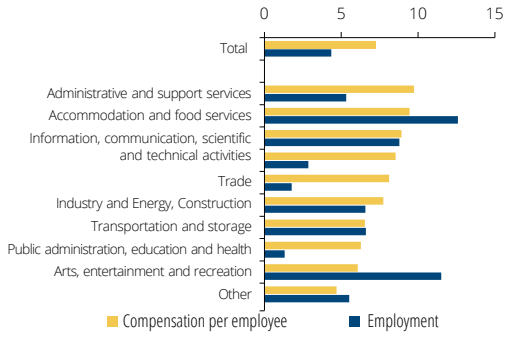
1. The private consumption deflator is used to calculate the real change in wages per employee.

Chart I.1.6 • Total HICP and main aggregates



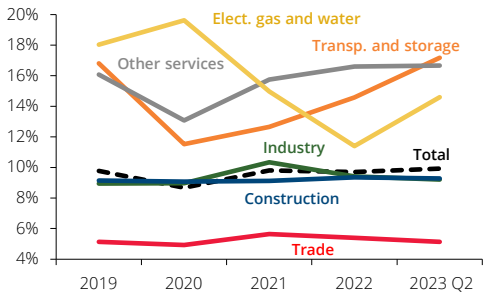
Sources: Banco de Portugal and Statistics Portugal. | Note: (p) – projected.

Chart I.1.7 • Compensation per employee and employment by sector of activity | Year-on-year rate of change in first half 2023, in percentage



Source: Statistics Portugal (based on declared wages to the Social Security system and from Caixa Geral de Aposentações subscribers). | Note: Compensation per employee refers to compensation per job and employment refers to employees (jobs).

Chart I.1.8 • Gross operating surplus/sales ratio by sector of activity | As a percentage



Source: Banco de Portugal – Quarterly statistics on non-financial companies from the Central Balance Sheet Database. | Notes: GOS corresponds to the difference between GVA and compensations paid. The GOS/sales ratios were calculated using an average weighted by the respective denominator. The information for 2023Q2 corresponds to the year ending in the quarter. For more details, see Box 2 – "Profit margins and inflation" of the June 2023 EB.

Risks surrounding the projection are on the downside for activity and balanced for inflation. The international and financial environment entails downside risks to activity, namely (i) the possibility of an escalation of geopolitical tensions, (ii) a more pronounced slowdown in China due to the housing crisis, (iii) more adverse impacts from the past tightening of financial conditions and (iv) greater monetary policy tightening amid more persistent inflation. For inflation, the upside risks identified – in particular the possibility of additional shocks to international commodity prices or a higher persistence of domestic pressures stemming from wages or profit margins – are mitigated by the possible materialisation of downside risks to economic activity.

Box 1 • External environment, financing conditions and policies

Global activity is expected to continue to grow at a moderate pace, influenced by tighter financial conditions and weak global trade growth. The assumptions of the September Eurosystem projection exercise point to global growth declining to 2.9% in 2023 and 2.7% in 2024 and rebounding to 3.0% in 2025, albeit remaining below its 2010-19 average (3.9%) (Table B1.1). This profile reflects the behaviour of advanced economies, as emerging market economies are expected to grow at a stable pace of around 3.9% in 2023-25. Following weak growth in the first half of 2023, projections point to a stagnation in the euro area in the second half, a more unfavourable development than assumed in the June issue of the *Economic Bulletin*. The annual rate of change in euro area GDP has been revised downwards in 2023 and 2024 – standing at 0.7% and 1.0%, respectively – and is expected to return to a pace close to potential in 2025.

Table B1.1 • ECB staff projection assumptions

		EB October 2023				Revisions from EB June 2023			
		2022	2023	2024	2025	2022	2023	2024	2025
International environment									
World GDP	yoy	3.3	2.9	2.7	3.0	0.0	0.0	-0.2	-0.2
Euro area GDP	yoy	3.4	0.7	1.0	1.5	-0.1	-0.2	-0.5	-0.1
World trade	yoy	6.0	0.3	3.1	3.2	0.0	-1.2	-0.3	-0.1
External demand	yoy	7.9	0.2	2.8	2.9	0.0	-0.9	-0.5	-0.1
International prices									
Oil prices	aav	98.6	76.0	74.8	71.2	0.0	4.0	7.9	6.4
Gas prices (MWh)	aav	123.1	42.9	54.2	47.5	0.0	0.5	2.4	1.0
Non-energy commodity prices	yoy	19.4	-16.2	-3.6	3.2	0.0	-2.3	-1.4	1.9
Competitors' import prices	yoy	15.9	-0.6	2.1	2.4	0.0	-0.5	-0.5	-0.1
Monetary and financial conditions									
Short-term interest rate (3-month EURIBOR)	%	0.3	3.4	3.7	3.1	0.0	0.0	0.3	0.2
Implicit interest rate in portuguese public debt	%	1.7	2.3	2.5	2.7	-0.2	0.0	0.1	0.3
Effective exchange rate index	yoy	-3.5	5.3	1.6	0.0	0.0	1.5	1.4	0.0
Euro-dollar exchange rate	aav	1.05	1.09	1.09	1.09	0.0	0.4	0.7	0.7

Sources: Banco de Portugal and Eurosystem (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 September 14 (see "Eurosystem staff macroeconomic projections for the euro area", september 2023), which include information up to August 23. International prices are in euros. 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 41 trading partner countries. 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.

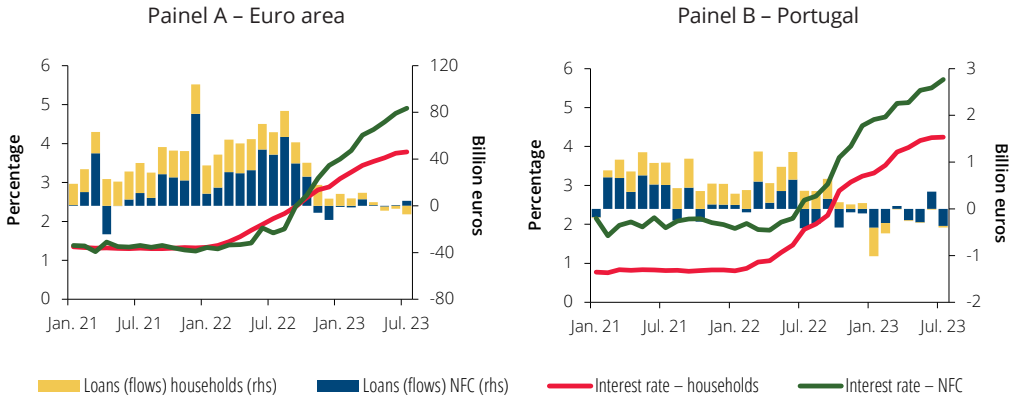
Global trade growth is projected to decline to 0.3% in 2023 and to recover to rates closer to world GDP in 2024-25 (Table B1.1). The anaemic developments in 2023 reflect the recomposition of global demand after the pandemic shock, with an increase in the share of services – whose import content is lower than that of expenditure on goods – and a fall in industrial activity, the sector most intensely engaged in international trade. Like global trade, growth in external demand for Portuguese goods and services is expected to be weak in 2023 (0.2%) but to recover to 2.8% in 2024 and 2.9% in 2025.

International prices continue to support a decline in inflation, despite the upward revision of energy prices. Oil and gas prices have been revised upwards, reflecting the impact of oil production cuts by

Saudi Arabia and Russia and the recent disruptions to liquefied natural gas production in Australia. The risk of gas supply disruptions in Europe remains low given the high levels of inventories. The prices of non-energy commodities are projected to fall by 16% in 2023, covering metals and food commodities. In line with these assumptions and declining inflationary pressures in their respective domestic markets, the import prices of Portugal's competitors are projected to decrease by 0.6% in 2023 and to increase by 2.1% in 2024 and 2.4% in 2025 (Table B1.1). In the euro area, headline inflation is projected to decrease to 5.6% in 2023, 3.2% in 2024 and 2.1% in 2025, implying upward revisions in 2023-24 from the previous *Economic Bulletin* (0.2 p.p. in both years) associated with the assumption of higher energy commodity prices. In contrast, inflation excluding energy and food has been revised downwards by 0.1 p.p. in 2024-25 – in line with the appreciation of the euro and prospects of a more pronounced economic slowdown – standing at 5.1% in 2023, 2.9% in 2024 and 2.2% in 2025.

The ECB's policy rate hikes have been reflected in higher financing costs for the private sector and weaker bank loan dynamics in the euro area. Interest rates on new loans to households (for house purchase) and firms have increased in the euro area and Portugal (Chart B1.1). Loan flows have weakened noticeably, amid lower demand from households and firms and less favourable credit supply conditions. Given that the transmission of monetary policy occurs with lags, part of the increases in official interest rates that have already occurred is expected not to have yet fully passed through to the financing conditions of the economy. According to the assumptions of the exercise, the annual average of the three-month EURIBOR will stand at 3.4% in 2023 and 3.7% in 2024 (revised upwards by 0.3 p.p. compared with the June issue of the *Economic Bulletin*), followed by a drop to 3.1% in 2025 (Table B1.1). The interest rate implied in Portuguese government debt is projected to increase gradually from 2.3% in 2023 to 2.7% in 2025.

Chart B1.1 • Interest rates on new loans and loans to households and NFC | Percentage and billion euros



Sources: ECB (Banco de Portugal calculations). | Notes: Loans (flows) – monthly flows of loans from monetary and financial institutions adjusted for loan sales, securitisation and notional cash pooling; Loans to households (house purchase, consumption and others) and to NFC. Interest rates – Bank interest rates on loans to households (house purchase) and to NFC. Data until Jul. 23.

Box 2 • Housing affordability measures

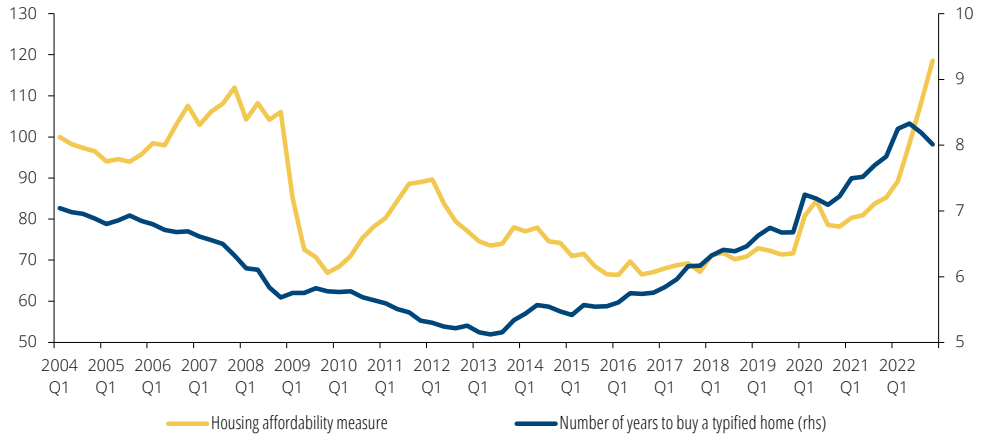
The increase in house prices and rising rents reduce housing affordability. In addition, the recent interest rate hike has reduced demand for housing. The literature proposes ways to measure housing affordability through credit or renting.[2]

Housing affordability through credit is measured by a financial strain indicator, which assesses the ability of an individual with average income to pay the estimated annual costs of purchasing a typified dwelling (112.4 m^2 – average useful floor area of a classic dwelling according to data from the 2021 Census) using bank credit, characterised by the observed interest rate and a given maturity. This indicator is defined as the ratio of a loan's instalment (V_t) to average disposable income (w_t), where t represents each quarter. The value of the instalment is given by $V_t = \frac{\frac{M_t \times i_t}{n}}{[1-\left(1+\frac{i_t}{n}\right)^{-nT}]}$, where:

M_t corresponds to the loan amount needed to purchase the dwelling at the median price per square metre[3]; i_t denotes the annual percentage rate of charge (APRC) for new housing loans; a loan maturity (T) of 35 years is considered and $n = 4$, given the quarterly frequency of the data used. Mortgage insurance or property taxes are omitted from the calculations given the frequency of these data, which has no impact on the qualitative evolution of the measure.

Between 2015 and 2019, the level of the financial strain indicator was low, worsening from 2019 onwards. At the end of 2022, the indicator stood at high levels, approximately 11% above the peaks observed in 2007-08 (Chart B2.1) In parallel, the number of years required to buy a dwelling – given by the ratio of the dwelling's value to income – increased to 8 by the end of 2022.

Chart B2.1 • Housing affordability measure through credit and number of years to buy a typified home | Index 2004 Q1=100 and number



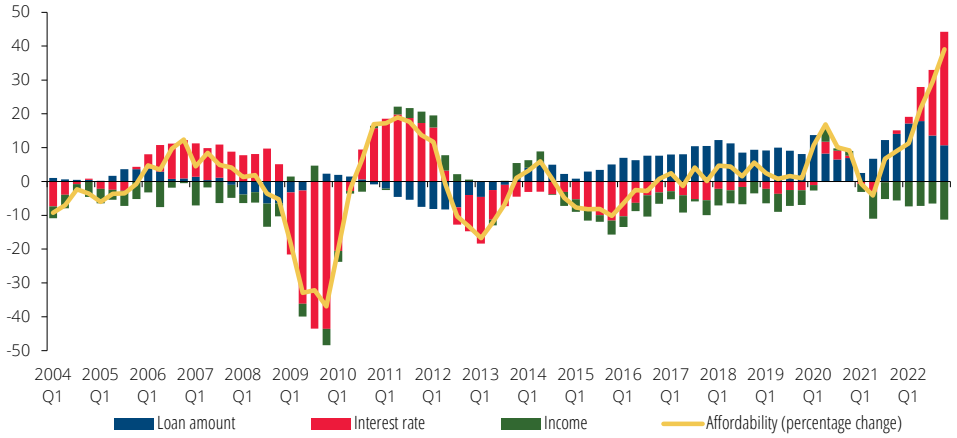
Sources: Banco de Portugal and Statistics Portugal. | Note: An increase in the index corresponds to a deterioration in housing affordability.

The change in the affordability indicator can be broken down into the individual effect of the loan amount, interest rate and income (Chart B2.2). Between 2016 and 2019, the measure of housing

2. See OECD (2021), *Overview of Affordable Housing Indicators.*
3. The long series of house prices is constructed using the median prices and the house price index of Statistics Portugal, as well as the price index of Confidencial Imobiliário.

affordability through credit remained relatively stable, with the impact of rising house prices being offset by lower interest rates and disposable income growth. In the recent period, affordability has deteriorated due to the combination of a continued rise in house prices and the interest rate hikes, despite nominal income growth.

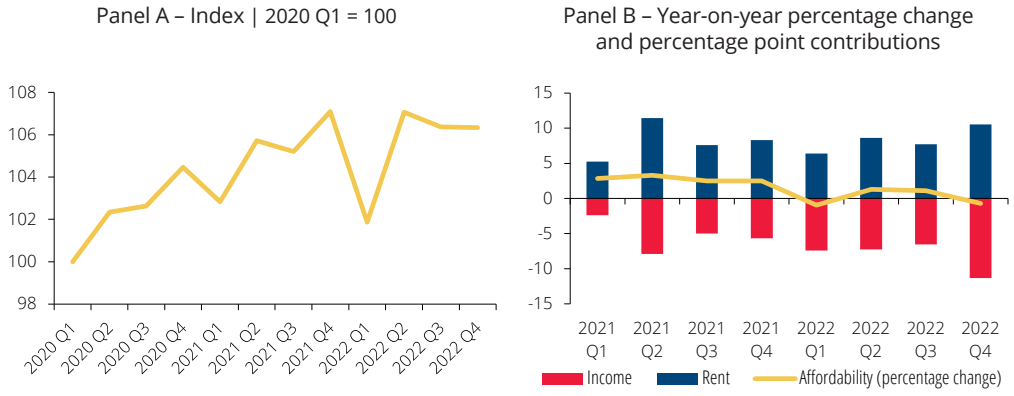
Chart B2.2 • Housing affordability measure through credit | Year-on-year percentage change and percentage point contributions



Sources: Banco de Portugal and Statistics Portugal. | Note: Positive (negative) changes correspond to a deterioration (improvement) in housing affordability through credit. For an identical decomposition of the driving factors of housing affordability for the United States, see the Home Ownership Affordability Monitor of the Federal Reserve Bank of Atlanta.

Housing affordability through renting can be assessed by the ratio of rents for new contracts to disposable income (Chart B2.3, panel A). Like house prices in Portugal, rents have also been very dynamic, with an annual growth of approximately 8% over the period 2021-22. This increase contributed to a deterioration in affordability through renting in 2021 but was largely offset by the increase in nominal disposable income in 2022 (Chart B2.3, panel B).

Chart B2.3 • Housing affordability measure through renting



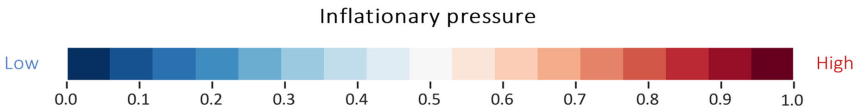
Sources: Banco de Portugal and Statistics Portugal. | Notes: Rent value calculated for a typified 112.4 square metre home using the median value of rents per square metre for new family dwelling leases. The short available time frame of the quarterly housing rent series invalidates a more historical analysis. An increase in the index corresponds to a deterioration in housing affordability. Positive (negative) changes correspond to a deterioration (improvement) in housing affordability through renting.

Box 3 • A heat map for monitoring inflationary pressures

Inflationary pressures in the Portuguese economy can be analysed using a heat map, a simple, quick and comparable visual tool of the evolution of multiple data. The heat map developed to monitor inflationary pressures in real time includes, in addition to HICP inflation and its main sub-components, monthly frequency indicators, typically identified as determinants of inflation. The selection of indicators has been validated by analysing the correlation with the HICP or the main sub-components.

The indicators have been grouped in categories to facilitate comparison with inflation dynamics and achieve representativeness of the different pressures that may affect prices. The categories are: energy commodity prices; food and related commodity prices; other relevant costs in price formation, including industrial producer prices; exchange rates; supply-side bottlenecks; domestic demand pressures; labour market variables; and inflation expectations of consumers and forecasters.

Figure B3.1 • Heatmap legend



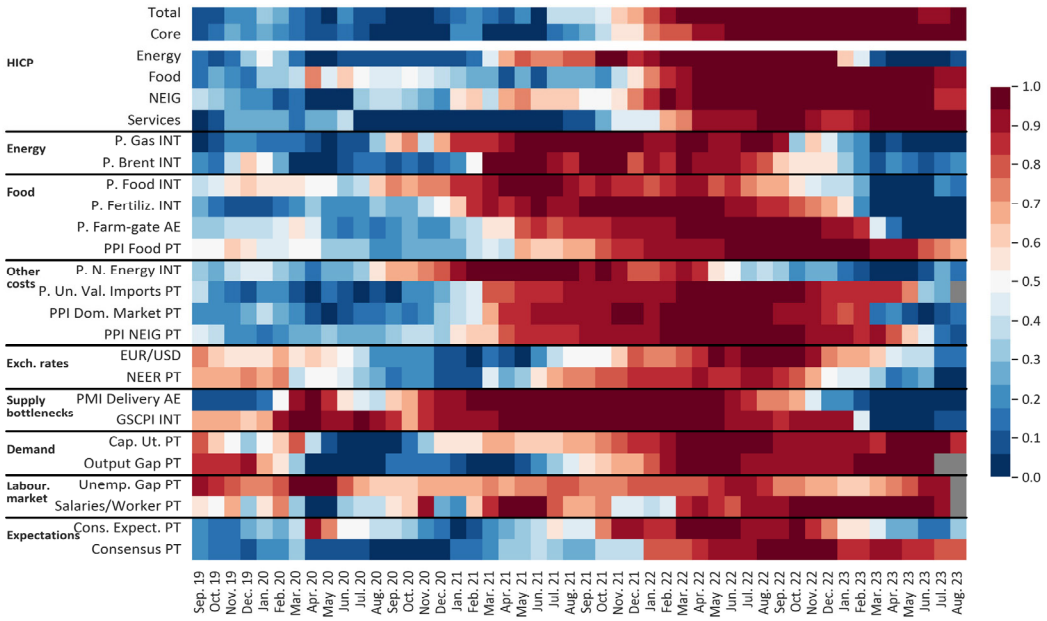
Source: Banco de Portugal.

Each indicator (standardised for the range between 0 and 1 through the definition of percentiles) has been mapped into a colour code, for which 11 areas of equal empirical probability have been chosen that increasingly represent the inflation risk (Figure B3.1). The colour denotes the position of each monthly observation within the historical distribution of each indicator. Blue illustrates that the observation is at a low percentile of the historical values of the series, indicating low inflationary pressure, and red reveals values at the highest percentiles of the historical distribution, signalling high inflationary pressure.

Using a four-year window, the results show the transmission of inflationary pressures along the pricing chain (Figure B3.2). The heat map illustrates the emergence of international price pressures at the start of 2021 – in particular for energy and food commodities – reflecting a strong, albeit asymmetric, post-pandemic recovery in global demand and supply dynamics which were more subdued and subject to a number of constraints. Supply-side constraints persisted from 2020 until the end of 2022, reflecting firms' difficulty in meeting the sharp and sudden increase in orders as well as disruptions in international freight transport, resulting in higher prices. These external inflationary pressures have been amplified by the effects of Russia's heinous military aggression against Ukraine from February 2022 onwards. The graphical analysis also shows the existence of time lags between external price shocks, which generally started in early 2021, and their pass-through to consumer prices, with inflation peaking in October 2022.

The heat map points to an easing of inflationary pressures from abroad in recent months. Their pass-through to the energy component of consumer prices is already clear and is expected to become more broadly based. However, domestic inflationary pressures have remained high and are visible in the labour market and in the dynamics of demand variables. The inflation forecasts from Consensus are still high, but consumer expectations are diminishing.

Figure B3.2 • Inflation and its drivers heatmap | Percentiles



Sources: ECB, EC, Consensus, Eurostat, IMF, HWWI, Statistics Portugal, Markit, NY FED, MTSSS, Refinitv and Banco de Portugal calculations. | Notes: Gray fields refer to unavailable data. Core inflation is measured by the total HICP excluding energy and food. NEIG refers to non-energy industrial goods. The abbreviations INT, PT and AE refer to International indicators, for Portugal and the Euro Area, respectively. P. Gas and P. Brent – average price of natural gas in euros and Brent in USD, respectively (Refinitv); P. Food and P. N. Energy – HWWI index for food and total excluding energy, respectively; P. Fertiliz. – fertilizer price index (IMF); P. Farm-gate – market prices of agricultural goods at producer and wholesale level (euros, ECB); PPI – Industrial Production Price Indices (Statistics Portugal); P. Un. Val. Imports – year-on-year rate of change of unit value indices of imports excluding petroleum products (Statistics Portugal); NEER – Nominal Effective Exchange Rate Index - Portugal (ECB); PMI Delivery – Purchasing Managers' Index, delivery time of suppliers in Industry (Markit); GSCPI – Global Supply Chain Pressure Index (NY FED); Cap. Ut. – Assessment of current production capacity in industry (EC), in differences from the average of the last 10 years, converted to monthly series; Output gap – output gap (% of potential output, BdP calculations), converted to monthly series; Unemp. gap – Unemployment gap (difference in relation to NAWRU, % of labour force, BdP calculations), converted to monthly series; Salaries / Worker – average remuneration per employee (MTSSS); Cons. Expect. – price trends over the next 12 months, consumer survey (EC); Consensus – average of forecasts for current year inflation rate in Portugal based on Consensus (Consensus Economics). The heatmap is build using data since January 2000, when available, in order to capture various economic cycles and obtain a long-term perspective for the evaluation of the series. Most variables are transformed into y-o-y growth rates except PMI Delivery, GSCPI, Cap. Ut., Output gap and Unemp. Gap. The indicators are normalized based on their empirical cumulative distribution function considering the total observations in the sample and are mapped into 11 areas with equal empirical probabilities (corresponding to the color associated with the value between 0 and 1 inclusive, with intervals of 0.1). Blue represents a value in a low percentile of the historical series – low inflationary pressure; and red indicates values in the highest percentiles of the historical distribution – high inflationary pressure.

Overall, with the current environment remaining in place and given the lagged effects of the determinants on the HICP, the heat map points to inflation continuing to decline in the short term.

Box 4 • The impact of zero VAT on prices

As part of the fiscal measures to support households' net income, the government has announced a temporary VAT exemption on a basket of 46 foods.[4] The measure entered into force on 18 April and is expected to remain in place until the end of the year.

The degree of pass-through of the VAT decrease to prices is an empirical issue, as it depends on the specific circumstances of the implementation and the structure of product markets. The pass-through of the zero VAT measure to the prices of the affected goods is assessed using granular information from the Harmonised Index of Consumer Prices (HICP) and information obtained from the online platforms of major retailers.

The VAT decrease was only reflected in the HICP in May, as the vast majority of prices is collected in the first half of each month. The most granular information available was used – at the 5-digit Classification of Individual Consumption by Purpose (COICOP) level. This information does not completely isolate the products affected by the measure; however, it is possible to estimate the impact on the sub-classes of the HICP that include these products by comparing them with price developments in markets where there was no VAT decrease in April (Spain and the euro area).

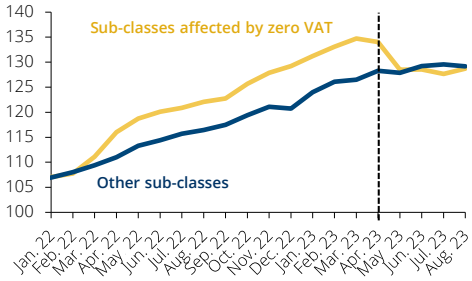
An analysis of the measure's impact needs to consider that upstream inflationary pressures – notably the prices of energy and food commodities, agricultural production and the food industry – were already declining when the tax rate changed. To disentangle whether the price changes observed in May reflect these developments and/or the VAT decrease, a comparison is made using: (i) price changes, over the same month, in food sub-classes not affected by the VAT decrease in Portugal (Chart B4.1) and (ii) changes in the prices of affected goods in the euro area and Spain (Chart B4.2). Although the VAT of some products in Spain changed in January 2023, using this country as a benchmark is justified by the similarity of weather conditions, which influence the prices of some of the sub-classes under review.

Developments in the aggregate price indices for exempted food sub-classes and for goods not covered by the measure in Portugal in the months preceding the tax change were fairly similar (Chart B4.1). However, the use of the group of sub-classes not covered by the measure as a control should consider the limitations associated with potential substitution and complementarity effects.

The prices of the sub-classes affected by the zero VAT measure showed predominantly negative changes in May (Chart B4.3). These changes are compared with a mechanical impact, corresponding to a hypothetical exercise with complete pass-through of the measure. A diverse behaviour was observed, with nine sub-classes recording a price reduction larger than that resulting from the mechanical impact, 14 showing a lower price reduction than this benchmark, and three sub-classes with increasing prices that month. The reasons behind these differences may be varied and a more careful analysis is therefore warranted by considering price developments in other economies.

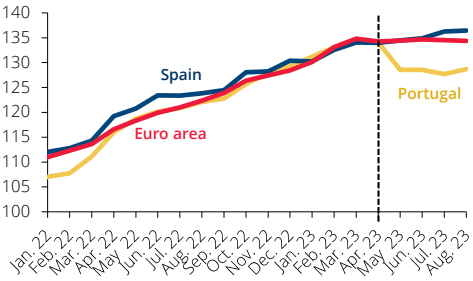
4. The list of products is: cereals and by-products and tubers (bread, potatoes, pasta, rice); dairy products (cows' milk, yoghurt or fermented milk, cheese); fruit (apples, bananas, oranges, pears, melons); pulses (kidney beans, black-eyed beans, chickpeas); vegetables (onions, tomatoes, cauliflower, lettuce, broccoli, carrots, courgette, leeks, pumpkins, turnip greens, Portuguese cabbage, spinach, turnip, peas); meat and fish (pork, chicken, turkey, beef, codfish, sardine, hake, horse mackerel, sea bream, mackerel); fats and oils (olive oil, vegetable oil, butter); other products (preserved tuna, hens' eggs, plant-based yoghurt and beverages, gluten-free products for people with coeliac disease).

Chart B4.1 • Food HICP in Portugal – sub-classes affected and not affected by the VAT reduction | Index 2017=100



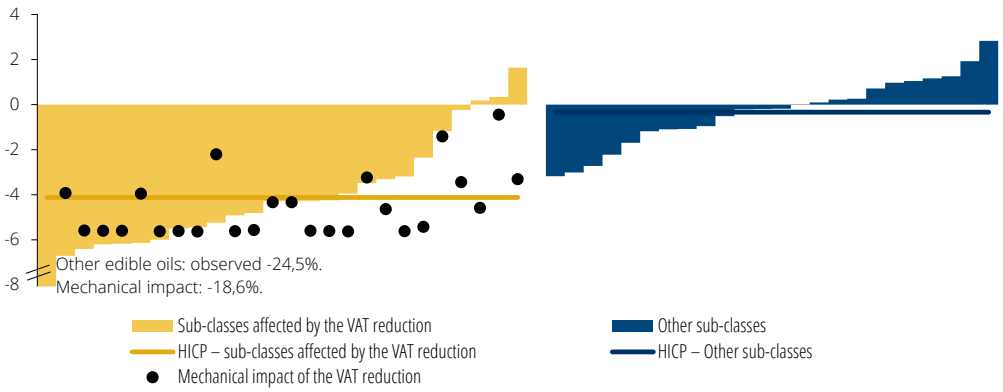
Sources: Statistics Portugal and Eurostat (Banco de Portugal calculations). | Note: Food excludes beverages and tobacco.

Chart B4.2 • Food HICP in Portugal – sub-classes affected by the VAT reduction – comparison with Spain and euro area | Index 2017=100



Sources: Statistics Portugal and Eurostat (Banco de Portugal calculations). | Notes: Food excludes beverages and tobacco. Regression results, using a dynamic difference-in-differences approach, point to the absence of statistically significant differences in the evolution of the prices of the sub-classes affected between Portugal and Spain/euro area in the period prior to the implementation of the measure.

Chart B4.3 • Food HICP in Portugal – sub-classes affected and not affected by the VAT reduction | Quarter-on-quarter rate of change in May 2023, in percentage



Sources: Statistics Portugal and Eurostat (Banco de Portugal calculations). | Notes: Food excludes beverages and tobacco. The items in each group are in ascending order of HICP quarter-on-quarter rates of change in May. The mechanical impact corresponds to the expected price change with full transmission of the measure, given by $(1+\tau_t)/(1+\tau_{t-1})-1$, where τ_t is the VAT rate in May and τ_{t-1} is the VAT rate prior to the change. The mechanical impact at the level analyzed (COICOP5) is obtained from the ratio between the HICP and the HICP at constant tax rates (HICP-CT) indices. The HICP-CT is published by Eurostat[5] and is calculated at COICOP 8 level. The HICP sub-classes considered include products not covered by the VAT reduction, so the figure presented as mechanical is only an approximation. This mechanical effect is an upper bound of the actual impact of the measure, corresponding to the extreme situation where the quantity consumed of the products is always the same regardless of the price, i.e. in economic jargon, consumption which is perfectly price inelastic. This situation hardly corresponds to that of any of the products consumed. Therefore, in practice there will be a lower reduction, which depends on the elasticity of demand and supply in each market, as well as substitution and complementarity effects between affected and not affected products.

A comparison of the prices of affected sub-classes in Portugal with those in Spain and the euro area shows very close developments before the measure entered into force, which is statistically confirmed

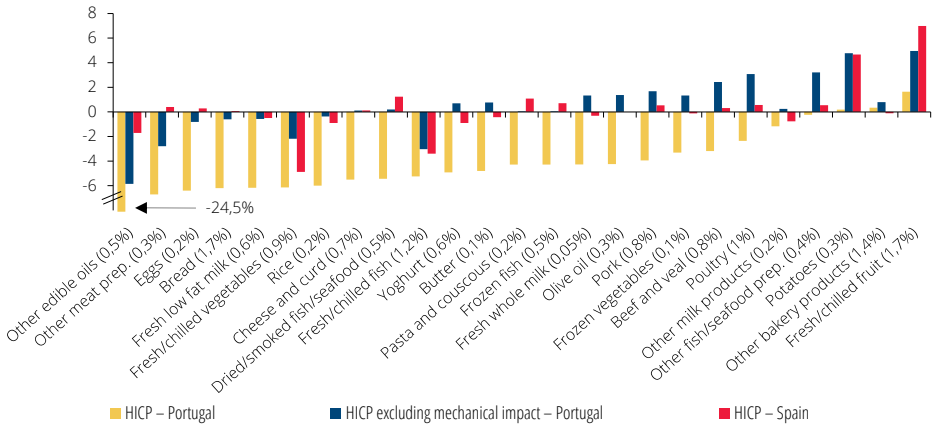
5. The HICP-CT (Harmonised Index of Consumer Prices at Constant Taxes) is an estimate of the HICP in the absence of tax changes, which is used to assess the contribution to inflation of changes in taxes on products (https://ec.europa.eu/eurostat/statistics-explained/index.php?title=HICP_at_constant_tax_rates#General_overview).

(Chart B4.2). This allows price developments in these economies to be used as a proxy of the counterfactual evolution in Portugal, i.e. what would have happened with no tax change. In Portugal, the clear decoupling of prices for exempted sub-classes in May 2023 shows the pass-through of the measure. Under the assumption that the prices of these products would have continued to evolve similarly across the three economic areas in absence of the VAT change, the price change in May in the sub-classes that previously had 6% VAT is estimated to have been 4.0 p.p. and 3.5 p.p. lower than in Spain and the euro area respectively. The standard deviations associated with these estimates are large, therefore the estimates should be interpreted with caution.

An analysis of data available up to August suggests that the tax change continued to have a negative impact on the prices of the affected sub-classes (Charts B4.1 and B4.2).

An item-by-item comparison with the other economies makes it clear that the prices of affected goods recorded declines in Portugal in May without parallel in Spain (Chart B4.4). When comparing the monthly rate of change of the prices of affected sub-classes excluding the mechanical impact of the tax exemption in Portugal with those observed in Spain, developments are closer for most sub-classes. The same conclusion can be reached in a comparison with the euro area. These results can be interpreted as evidence of the pass-through of the tax decrease to consumer prices.

Chart B4.4 • HICP of sub-classes affected by the VAT reduction – comparison with Spain
| Quarter-on-quarter rate of change in May 2023, in percentage

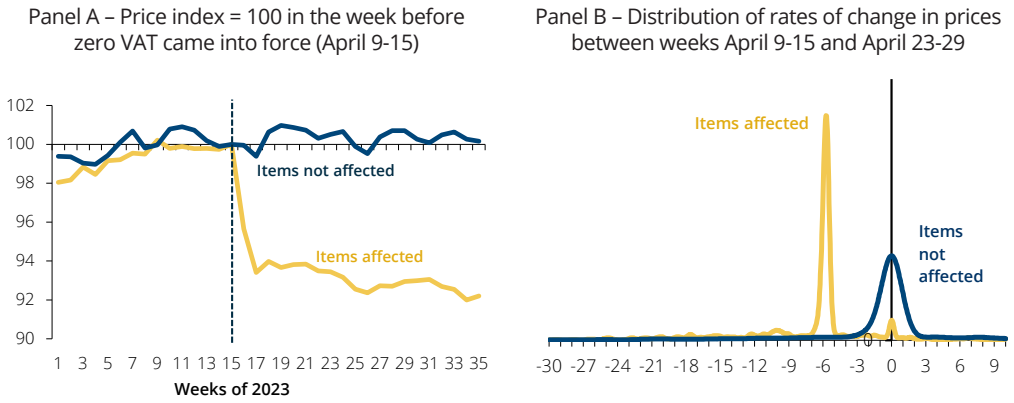


Sources: Statistics Portugal and Eurostat (Banco de Portugal calculations). | Notes: The sub-classes in each group are listed in ascending order of the quarter-on-quarter changes of the HICP in May in Portugal. The weight of each sub-class in the HICP in 2023 is shown in brackets.

An analysis of data on selling prices set daily on online platforms of major retailers – available at product/brand/retail level – confirms these findings. The advantage of this information is that it allows to identify exactly the products covered by the tax reduction and to analyse developments in their prices at a higher frequency. There were no significant differences in price developments in the group of products affected by the VAT reduction and the group of remaining products sold by large retailers in the weeks preceding the entry into force of the measure, but there was a sharp change in this trend upon its implementation (Chart B4.5 – Panel A). The average price of the group of affected goods decreased by approximately 6% in the week of 23 to 29 April compared with the week before the measure came into force, while that of the goods not affected by the measure remained almost unchanged. This differentiated impact persisted until the end of August. In the

week of 23 to 29 April, the vast majority of prices in the non-affected group had not changed, while the price changes of affected products were mostly concentrated in a range between -5% and -7% (Chart B4.5 – Panel B).

Chart B4.5 • Online prices of products affected by the VAT reduction and other products (food and others) sold by the main retailers



Source: Banco de Portugal (BPlim – database of prices set on the online platforms of the main retailers operating in Portugal). | Notes: In panel A, the dashed vertical line marks the week before the measure came into force (18 April). Items not affected by the measure include food products not covered and most other types of products sold in large retail chains. The indices shown correspond to the simple average of the indices of all the products considered in each group.

II Special issue

Housing in Portugal over the last 40 years: tenure status and access to credit

Housing in Portugal over the last 40 years: tenure status and access to credit[1,2]

The choice between owning and renting the main residence is one of families' major decisions. The availability of houses on the rental market, individual preferences, tax incentives, life cycle labour market prospects and household investment decisions are crucial to this choice.

The tenure status of the main residence and its evolution over the past 40 years is characterised using data from censuses carried out between 1981 and 2021. These data cover the entire population and make it possible to analyse households with different socio-demographic characteristics. The analysis of tenure status is complemented by Box "Reasons for owning or renting the main residence in Portugal", which uses data from the Portuguese Household Finance and Consumption Survey.

How is housing tenure currently characterised?

According to the latest census carried out in 2021, 70% of households living in Portugal are homeowners, 22% renters and 8% have other housing tenure status (mostly free use, such as housing provided by family) (Table 1).[3] Among homeowner households, 38% have a loan for house purchase.

The percentage of homeowner households is higher in Portugal than in the euro area on average (62%) (Chart 1). These differences are the result of a combination of the aforementioned factors over time, in particular the differences in social rental markets, a by-product of massive housing reconstruction after the Second World War, and the few tax incentives for house purchase in force in some countries. The Portuguese preference for home ownership, which may also be the result of these factors, seems clearly evident in the available data.

Households' financial life cycle begins with negative savings, as young people's income is relatively low and unstable, and households seek to maintain a relatively smooth pattern of consumption throughout their lives. At this stage, households are expected to take on debt to finance their level of desired consumption. However, some of these households postpone the purchase of a house until they have access to a loan. Later on, when the rise in income more than offsets the increase in expenditure, households show positive savings, partly to repay the loan previously taken out. Individuals typically reach the end of their working lives with positive net savings.

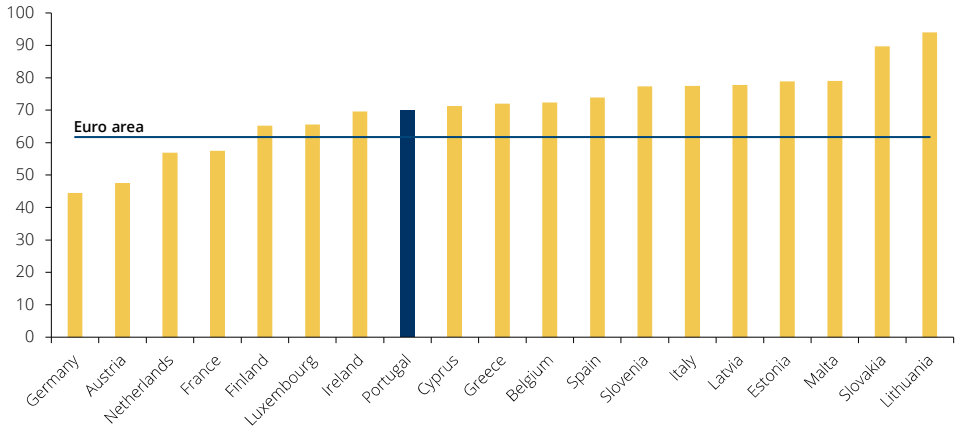
1. Prepared by Sónia Costa, Luísa Farinha, Nuno Lourenço and Renata Mesquita.
2. This Special issue used census data provided by Statistics Portugal.
3. This Special issue has attached tables with detailed information on housing tenure status in Portugal.

Table 1 • Distribution of households with different characteristics, by housing tenure status in 2021 | Percentage of total households in each class

	Homeowners	Of which: with a housing loan	Renters	Other	By memory: structure of the total population (%)
Total	70	38	22	8	100
Age of the household representative					
24 and less	29	48	56	15	1
25-34	42	73	45	14	8
35-44	62	77	27	10	16
45-54	72	65	20	8	20
55-64	74	36	19	7	20
65-74	78	11	17	5	18
75 and over	79	3	16	5	17
Education of the household representative					
Lower than secondary	71	24	22	7	59
Secondary	65	59	25	9	21
Tertiary	71	59	20	8	21
Region of residence					
Metropolitan areas of Lisbon and Porto	64	46	29	7	45
Remaining regions	75	33	17	8	55
Household size					
1 person	64	24	26	10	25
More than 1 person	72	42	21	7	75

Source: Statistics Portugal (Census). | Note: The household representative is the household member considered as such by the other members.

Chart 1 • Homeowner households in the euro area countries in 2020/21 | Percentage

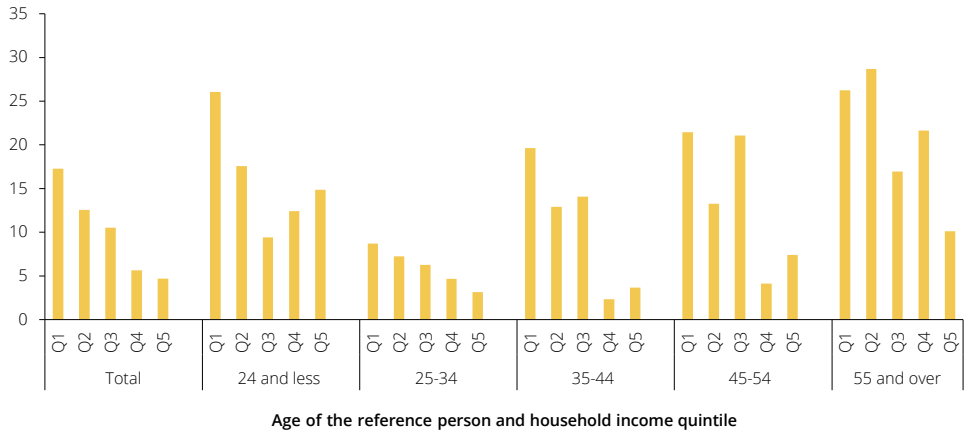


Source: ECB (Household Finance and Consumption Survey, wave 2021).

Unsurprisingly, the percentage of homeowners is higher in households with an older representative person and in those with more than one person (Table 1). A reflex of life cycle behaviour is also the fact that, among homeowners, the percentage of those with loans increases with age up to the 35-44 age group and decreases in the following age groups. In 2021 the percentage of homeowners with loans increases from 48% in the up to 24 age group to 77% in the 35-44 age group and is residual in the 75 and older group. This pattern reflects the fact that households typically take out a loan to buy their first home and then repay it over the following decades.

The percentage of homeowners with a loan is positively related to income, only decreasing at higher incomes. Among homeowners, the percentage who inherited or received their main residence as a gift is higher at lower incomes (Chart 2). In line with the positive relationship between income and the percentage of homeowners with a loan, the latter percentage also increases with education within each age group and is much higher in households with more than one person, as well as in households in the Lisbon and Porto metropolitan areas.

Chart 2 • Homeowner households who inherited or received the house as a gift, by income quintile and age group with which they inherited | Percentage of total homeowners in each class



Sources: Banco de Portugal and Statistics Portugal (Portuguese Household Financial and Consumption Survey of 2020). | Note: The reference person was selected among household members according to the Canberra definition (United Nations, 2011). In most cases corresponds to the person with the highest income in the household.

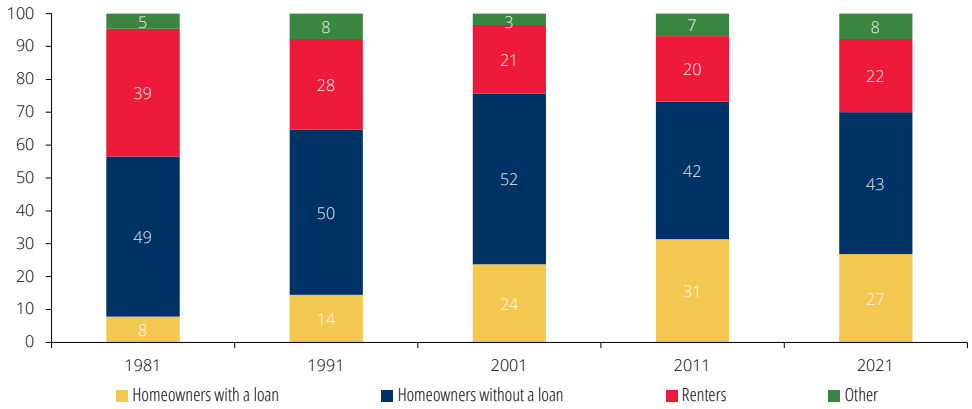
The other forms of housing tenure – renting or free use – are more common for younger households (56% and 15% in the under-25 group) and in single-person households (Table 1). Within each age group, renting is more common among households with less schooling. Given that the rental market is more developed in the larger cities, in Lisbon and Porto metropolitan areas renting is more common than in the other regions (29% compared to 17%).

How has housing tenure developed over the past 40 years?

The percentage of homeowners rose from 57% in 1981 to 65% in 1991 and 76% in 2001. Symmetrically, the percentage of renters fell by almost 20 percentage points between 1981 and 2001 (from 39% to 21%) (Chart 3). The increase in the rate of homeowners between 1981 and 2001 benefitted from policies to encourage home ownership in the 1980s and 1990s, more access to credit in the context of financial market liberalisation and modernisation from the 1980s onwards, and the fall in interest rates during the period of convergence of inflation to euro area levels. During this period, the sharp increase in the percentage of homeowners also reflected the lack of an active rental market. This was the result of rent freezing, regulations favouring renter protection, where the rules were the automatic extension of agreements, very low rents and strong restrictions on landlords terminating agreements. The increase in the percentage of homeowners between 1981 and 2001 was common to all types of households, albeit more pronounced among

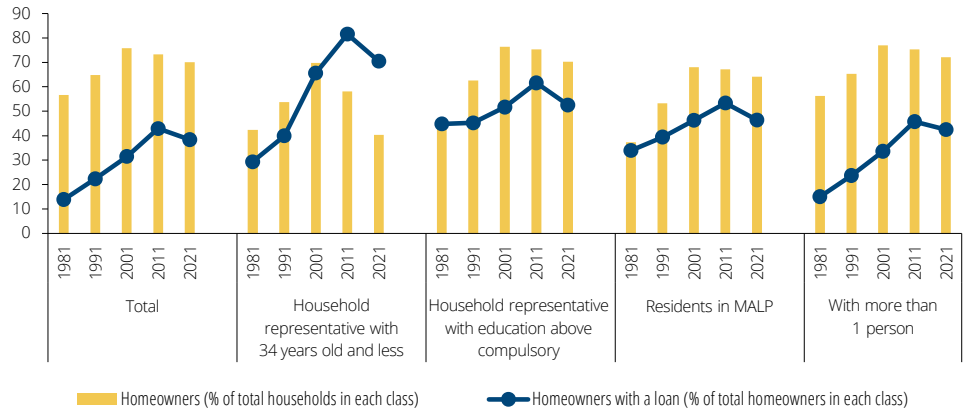
younger households, in the Lisbon and Porto metropolitan areas, households with more than one person and households with higher levels of education (Chart 4).[4]

Chart 3 • Housing tenure status between 1981 and 2021 | Percentage of households



Source: Statistics Portugal (Census).

Chart 4 • Homeowner households and homeowners with a loan between 1981 and 2021, for some groups of households | Percentage



Source: Statistics Portugal (Census). | Note: The household representative is the household member considered as such by the other members.

Since 2001, the percentage of homeowners has fallen slightly (73% in 2011 and 70% in 2021, compared to 76% in 2001) and the percentage of renters has remained steady (Chart 3). Since the mid-2000s, and especially since 2011, measures have been introduced to boost the rental

4. Given the sharp increase in schooling over the last decades and to compare indicators over time, the household representative was categorised according to whether he/she had more than compulsory schooling or less than or equal to compulsory schooling. In Portugal, compulsory schooling went from four years of primary education to six years of primary education in 1964, to lower-secondary education in 1986 and to upper-secondary education in 2009. For those born up to 1956, compulsory schooling was considered to be four years of primary education, for those born between 1967 and 1976 it was considered to be six years of primary education, for those born between 1987 and 1996 it was considered to be lower-secondary education and for those born after 1996 it was considered to be upper-secondary education. In some cases this classification is an approximation, as census data do not include ages, but only age groups. In particular, for those born between 1974 and 1976, the level considered should have been the lower-secondary education instead of six years of primary education, and for those born between 1991 and 1996, it should have been upper-secondary education instead of lower-secondary education.

market, in particular greater freedom for the parties to set the duration of rental agreements and the definition of a transition period for updating older rents, in accordance with renters' income and age. Some renter groups, such as the elderly, people with disabilities or low-income households, remain protected by regulations limiting rent updating.[5]

The drop in the percentage of homeowners after 2001 was concentrated in households where the representative person is under 65 years, and in particular those aged under 35 (Chart 4). Younger households were particularly affected by the rise in unemployment over the period 2000-14, as a result of the weak economic growth of the early 2000s and the sovereign debt crisis. In households where the representative person is under 35, the percentage of homeowners in 2021 fell to the 1981 level. In this period, the percentage of renters in the younger age groups has risen sharply, while in the older age groups it continued to fall.

In 1981, 14% of homeowners had a loan to purchase their home. This percentage rose to 22% in 1991 and 31% in 2001, reached a maximum of 43% in 2011 and fell to 38% in 2021 (Chart 4). This more recent evolution contributed to a decline in the outstanding amount of loans for house purchase as a percentage of disposable income from 125% in 2011 to 94% in 2021. At the same time, for households with a loan, the average debt-service-to-income ratio associated with these loans fell from 19% to 14% over the same period.

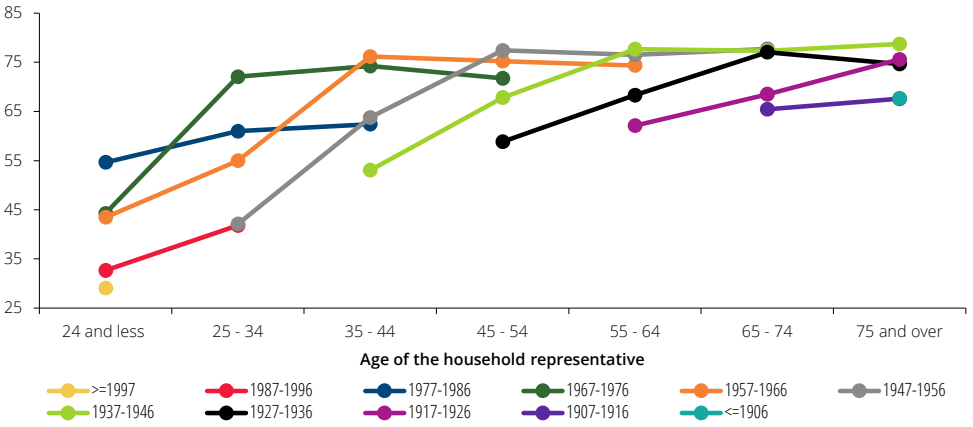
The increase in the percentage of homeowners with loans by 2011 was higher among young people. Among them, it was higher in lower-education levels, i.e. in lower income groups typically with greater restrictions on access to credit. Among younger homeowner households, the percentage with loans fell between 2011 and 2021, but remained much higher than at the beginning of the 1990s (70% in the under-35 age group, compared to 40% in 1991 and a maximum of 82% in 2011) (Chart 4). Until 2011 the highest percentage of homeowners with loans was in the 25-34 age group (83%), but in 2021 the highest percentage was in the 35-44 age group (77%).

How has home ownership developed across birth cohorts?

Another way of analysing home ownership developments is to classify households by birth cohort and monitor these cohorts throughout their lives. Chart 5 includes the percentage of homeowners for 11 groups of households born in the following periods: before 1907, 1907-16, 1917-26, (...), 1987-1996 and after 1996.[6] The data illustrate the typical profile of an increase in the percentage of homeowners in the first half of their life cycle and a stabilisation or decline in this percentage after a certain age. Among the cohorts that can be observed for longer periods, the difference in the percentage of homeowners is more pronounced at younger ages than at older ages.

5. See Rodrigues et al. (2022) and Xerez et al. (2019) for a summary of the legislation implemented.
6. The analysis was carried out using census data, only available every 10 years. This means that the charts do not include data on all individuals born in a given year at all ages, but only include the ages that coincide with the years of the census. For instance, individuals born in 1956 are observed at ages 25, 35, 45, 55 and 65, but not at the other ages. Therefore, the value for 25- to 34-year-olds in the 1947-56 cohort refers to the average value for 25-year-olds born in 1956, 26-year-olds born in 1955, and so on.

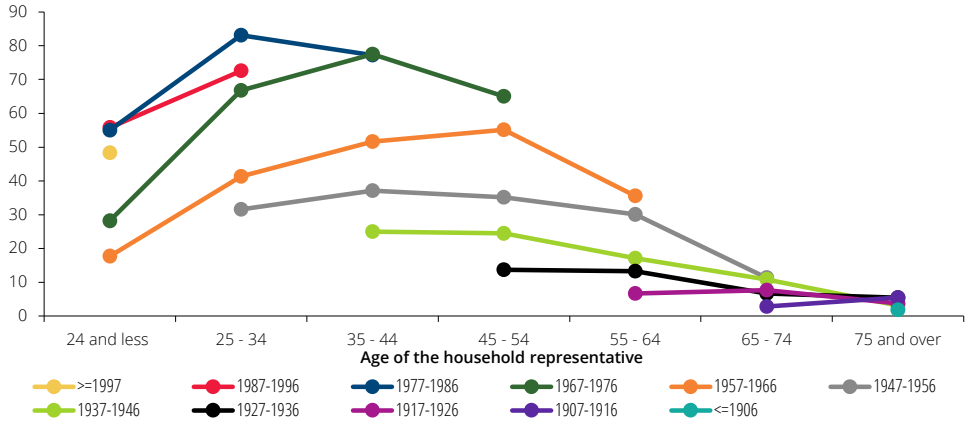
Chart 5 • Homeowner households, by age group and decade of birth of the household representative | Percentage



Source: Statistics Portugal (Census). | Note: The household representative is the household member considered as such by the other members.

The 1967-76 cohort is that when households became homeowners the earliest. In this cohort, around 70% of households were homeowners by the age of 25-34, i.e. around 2001. At the same age, previous cohorts had a much lower percentage of homeowners (55% and 42%, for those born in 1957-66 and 1947-56, respectively). These cohorts only reached home ownership percentages of around 70% in 2001. As described above, in more recent cohorts, the percentage of young homeowners dropped significantly. At the age of 25-34, the percentage of homeowners in the 1977-86 cohort stood at 61% and in the 1987-96 cohort at 42%, the same level as in the 1947-56 cohort. In turn, the percentage of homeowners under the age of 25 fell to less than 35% in the cohorts born after 1986, compared to between 45% and 55% in the cohorts born in the previous three decades.

Chart 6 • Homeowner households with a loan, by age group and decade of birth of the household representative | Percentage



Source: Statistics Portugal (Census). | Note: The household representative is the household member considered as such by the other members.

In the most recent cohorts, the percentage of young homeowners with a loan is much higher than in older cohorts (Chart 6). In the three most recent cohorts, born after 1976 (and reaching the age of 25 after the 1990s), the percentage of homeowners with a loan and under the age of 25

is around 50%, compared to around 30% and 20% in the two previous cohorts. In particular, the cohort born in 1977-86 has the highest percentage of homeowners who took out a loan for house purchase and did so at an earlier age.

Main findings

At the beginning of the 1980s, less than 60% of households owned their main residence and almost 40% lived in rented accommodation. The next 20 years saw a marked change in housing tenure in favour of home ownership. This trend was determined by the country's economic growth, which was passed on to household income, greater access to credit because of financial market liberalisation and joining the European Union, as well as the existence of a highly regulated rental market that was not very attractive to landlords, limiting the supply of rental housing. These developments led to a drop in the average age at which people purchased a home and to an increase in the percentage of homeowners with a loan.

However, these trends have not continued over the last two decades. In 2021 the percentage of homeowners stood at 70%, a progressive fall against 2001 and 2011 values (76% and 73%). Given households' preference for purchasing a home at a young age and maintaining this housing tenure over a lifetime, this fall mainly reflects a marked change in the tenure status among young households in the most recent cohorts. The home ownership rate among 25- to 34-year-olds fell from 70% in the 1967-76 cohort to 60% and 40% in the cohorts born in the following 10 and 20 years. Unlike the cohorts born between 1947 and 1966, most homeowners in the recent cohorts have loan charges associated with their home before the age of 35.

Box 1 • Reasons for owning or renting the main residence in Portugal

In the 2020 wave of the Portuguese Household Finance and Consumption Survey, the owners and renters of the main residence were asked about their reasons for deciding to purchase or rent and for the reasons why they maintain this tenure status at the time of the interview.

Portuguese households tend to favour owning their homes. The main reason given for deciding to become homeowners is that they "preferred to live in their own home regardless of whether the purchase was a good investment or not" and for deciding to be a renter is that they "would have preferred to buy but did not have the financial means to do so" (45% of homeowner households and 64% of renter households, respectively) (Table B1.1).[7] These reasons are the most relevant regardless of age and, in the case of renters, also the time of the decision.

In the case of homeowners, another relevant reason in all periods is "buying a house was a good investment" and more recently "the loan instalment was lower than the rent". This latter reason gained importance after 2000 and in particular, in the 2011-20 period (39%, compared to 14% overall), which is in line with the very low interest rates in the last decade. Moreover, it becomes less important with the age when the purchase was made, probably reflecting greater liquidity constraints at younger ages.[8] Accordingly, in the case of renters, the reason "the rent was lower than the loan payment" is also slightly less important with age.

For renters, the other reasons of some relevance when making a decision were "did not want to go into debt" (11% of households) and "preferred to rent, regardless of financial matters" (10% of households). The reason "did not want to go into debt" was given by a higher number of households after 2000 than in the preceding period and is more frequent in the younger and older age groups than in the middle-aged group.

Once the decision to purchase or rent a home has been made, a major reason why households do not change their housing tenure status is that they do not want to move. For homeowners this was the main reason (51%), and for renters it is the second main reason (12%) (Table B1.2). Not wanting to move gains importance with age. In the case of homeowners, it increases from 26% in the 34 years and under group to 71% in the 75 years and over group, and in the case of renters, from 2% to 18% in the same age groups.

For homeowners, the second most important reason for not becoming a renter is "because financially it makes sense to be a homeowner" (27%). This reason is more relevant at younger ages (where it was selected by more than 40% of households and is more important than not wanting to move) and in the higher income quintiles.

7. When interpreting these results, it is important to consider that since the question is only for homeowners in 2020 and refers to a time in the past, the sample is biased towards more recent decisions (many of the households that made decisions in the past may no longer exist or have changed their housing tenure in the meantime). Therefore, it is also likely that among older owners some bias may exist towards those whose reason for buying was "preferred to live in a home of their own regardless of whether or not the purchase was a good investment".
8. When age data are cross-referenced with the time of the decision, it is clear that the importance of this reason decreases with age in all periods. More recently (2011-20) this reason is mentioned by more than half of the households where the reference person is under 35 (52%, compared to 34% and 4% for households aged 35-54 or over 54).

Table B1.1 • Reason for being a homeowner or a renter, by time of decision and age group at the time of decision | Percentage of households in each class

	Total	Age group at the time of purchase or rental			Time period of purchase or rental				
		34 and less	35-54 years old	55 and over	1980 and before	1981-1990	1991-2000	2001-2010	2011-2020
Reason for having taken the decision to become a homeowner									
Would have preferred to rent but there were no houses to rent	2	2	2	4	2	3	4	1	0
Loan installment was lower than the rent	14	17	12	3	2	6	9	21	39
Buying a house was a good investment	38	39	37	44	28	32	42	41	36
Preferred to live in their own home regardless of whether the purchase was a good investment or not	45	43	48	49	68	58	45	37	24
	100	100	100	100	100	100	100	100	100
Reason for having taken the decision to become a renter									
Preferred to rent, regardless of financial matters	10	9	10	12	11	21	3	7	22
Preferred to hold cash rather than investing it in a house	2	1	3	1	2	1	4	1	0
Did not want to go into debt	11	14	7	11	9	7	7	15	16
Considered that buying a house was not a good investment	3	4	3	6	3	0	5	4	3
The rent was lower than the loan installment	10	10	9	7	10	11	14	6	15
Would have preferred to buy but did not have the financial means to do so	64	61	69	63	66	60	67	67	45
	100	100	100	100	100	100	100	100	100

Sources: Banco de Portugal and Statistics Portugal (Portuguese Household Financial and Consumption Survey of 2020). | Notes: The age group is that of the household reference person. The reference person was selected among household members according to the Canberra definition (United Nations, 2011). In most cases corresponds to the person with the highest income in the household.

For renters in all age groups and all income quintiles except for the highest, the primary reason for not purchasing is still, as at the time of the decision, the lack of adequate financial conditions (51%). In higher-income households, the most frequent reason for renting is that it is a temporary situation. The reason "it is a temporary situation, intends to buy soon" clearly increases in importance with income (from 1% in the first quintile to 25% in the last) and is paramount in the two youngest age groups than in the others (22% and 33%, compared to 7% for all households).

Table B1.2 • Reason for being a homeowner or a renter at the time of the interview, by age group and household income during that period | Percentage of households in each class

	Total	Age group at the time of the interview						Income quintiles at the time of the interview				
		34 and less	35-44	45-54	55-64	65-74	75 and over	Q1	Q2	Q3	Q4	Q5
Reason for being a homeowner at the time of the interview												
Would like to rent but there are no houses to rent	1	0	2	1	1	0	1	0	2	1	0	1
Because financially it makes sense to be a homeowner	27	48	41	32	21	19	11	16	23	32	31	30
Because prefers to have a house rather than the cash equivalent	8	5	13	8	8	7	3	6	6	9	7	10
Because prefers to be a homeowner even if financially it would make sense to live in a rented house	13	22	14	13	12	11	14	14	15	12	12	14
Because does not want to move, regardless of financial matters	51	26	31	46	58	62	71	64	54	46	49	47
	100	100	100	100	100	100	100	100	100	100	100	100
Reason for being a renter at the time of the interview												
Prefers to rent, regardless of financial matters	8	1	12	5	16	5	8	7	6	11	9	12
Does not want to move, regardless of financial matters	12	2	7	6	8	16	18	12	12	12	9	15
Prefers to hold cash instead of investing it in buying a house	1	0	0	0	0	2	0	1	0	0	0	3
Prefers not to go into debt	11	1	3	24	10	9	13	6	17	10	11	13
The rent is less than the loan installment	6	0	7	1	8	5	11	4	8	7	10	3
Considers that buying a house is not a good investment at the moment	5	9	11	6	3	1	5	6	1	2	13	7
Would prefer to buy but does not have the financial means to do so	51	65	26	53	54	61	45	64	56	50	31	22
It is a temporary situation, intends to buy soon	7	22	33	6	1	1	0	1	0	9	17	25
	100	100	100	100	100	100	100	100	100	100	100	100

Sources: Banco de Portugal and Statistics Portugal (Portuguese Household Financial and Consumption Survey of 2020). | Notes: The age group is that of the household reference person. The reference person was selected among household members according to the Canberra definition (United Nations, 2011). In most cases corresponds to the person with the highest income in the household.

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United Nations (2011), "Canberra Group Handbook on Household Income Statistics". *United Nations Economic Commission for Europe*, second edition.

Rodrigues, Paulo (Coord.) (2022), *The real estate market in Portugal*, Francisco Manuel dos Santos Foundation.

Xerez, R., Pereira, E., and Cardoso, F. D. (2019), *Home ownership in Portugal from an intergenerational perspective*, Calouste Gulbenkian Foundation.

Table A1 • Homeowner households between 1981 and 2021 | Percentage of total households in each class

						By memory: structure of the population (%)	
	1981	1991	2001	2011	2021	1981	2021
Total	57	65	76	73	70	100	100
Households with more than 1 person							
MALP – 34 years old and less and education equal to or below compulsory	30	44	64	46	30	5	1
MALP – 34 years old and less and education above compulsory	40	65	79	50	36	4	3
MALP – 35-64 years old and education equal to or below compulsory	38	53	66	64	58	17	6
MALP – 35-64 years old and education above compulsory	44	63	77	69	63	6	14
MALP – 65 years old and over and education equal to or below compulsory	37	48	62	80	81	4	5
MALP – 65 years old and over and education above compulsory	36	52	66	73	75	1	4
Remaining regions – 34 years old and less and education equal to or below compulsory	52	54	65	57	36	8	1
Remaining regions – 34 years old and less and education above compulsory	41	56	73	64	48	2	2
Remaining regions – 35-64 years old and education equal to or below compulsory	74	77	83	79	74	29	11
Remaining regions – 35-64 years old and education above compulsory	53	69	83	82	77	3	14
Remaining regions – 65 years old and over and education equal to or below compulsory	81	82	89	88	88	10	10
Remaining regions – 65 years old and over and education above compulsory	66	71	82	84	86	0	4
Households with 1 person							
MALP – 34 years old and less and education equal to or below compulsory	28	40	55	45	28	0	0
MALP – 34 years old and less and education above compulsory	36	59	71	57	40	0	1
MALP – 35-64 years old and education equal to or below compulsory	27	39	52	45	42	1	1
MALP – 35-64 years old and education above compulsory	33	54	67	69	63	0	4
MALP – 65 years old and over and education equal to or below compulsory	31	37	50	53	59	1	3
MALP – 65 years old and over and education above compulsory	27	41	55	62	68	0	2
Remaining regions – 34 years old and less and education equal to or below compulsory	59	51	58	46	30	0	0
Remaining regions – 34 years old and less and education above compulsory	36	46	60	50	36	0	1
Remaining regions – 35-64 years old and education equal to or below compulsory	71	72	77	64	58	2	2
Remaining regions – 35-64 years old and education above compulsory	49	57	71	69	63	0	3
Remaining regions – 65 years old and over and education equal to or below compulsory	78	77	84	80	81	4	5
Remaining regions – 65 years old and over and education above compulsory	63	64	73	73	75	0	2
By memory:							
Age of the household representative							
34 and less	42	54	70	58	40	20	10
35-64	58	67	77	75	70	58	55
65 and over	66	68	76	76	78	22	35
Education of the household representative							
Education equal to or below compulsory	59	65	75	72	70	83	47
Education above compulsory	44	63	76	75	70	17	53
Region of residence							
Metropolitan areas of Lisbon and Porto	37	53	68	67	64	40	45
Remaining regions	70	73	82	78	75	60	55
Household size							
1 person	59	61	69	65	64	11	25
More than 1 person	56	65	77	75	72	89	75

Source: Statistics Portugal (Census). | Note: The household representative is the household member considered as such by the other members.

Table A2 • Homeowner households with a loan between 1981 and 2021 | Percentage of total homeowners in each class

	1981	1991	2001	2011	2021
Total	14	22	31	43	38
Households with more than 1 person					
MALP – 34 years old and less and education equal to or below compulsory	39	51	70	57	43
MALP – 34 years old and less and education above compulsory	66	67	81	77	59
MALP – 35-64 years old and education equal to or below compulsory	26	32	41	20	22
MALP – 35-64 years old and education above compulsory	57	52	57	57	49
MALP – 65 years old and over and education equal to or below compulsory	8	15	11	4	2
MALP – 65 years old and over and education above compulsory	15	18	15	10	9
Remaining regions – 34 years old and less and education equal to or below compulsory	12	19	47	76	61
Remaining regions – 34 years old and less and education above compulsory	36	43	67	83	72
Remaining regions – 35-64 years old and education equal to or below compulsory	6	12	20	36	41
Remaining regions – 35-64 years old and education above compulsory	29	37	44	63	62
Remaining regions – 65 years old and over and education equal to or below compulsory	1	4	3	5	4
Remaining regions – 65 years old and over and education above compulsory	4	9	9	13	12
Households with 1 person					
MALP – 34 years old and less and education equal to or below compulsory	29	52	61	72	52
MALP – 34 years old and less and education above compulsory	54	58	74	82	69
MALP – 35-64 years old and education equal to or below compulsory	13	24	29	41	43
MALP – 35-64 years old and education above compulsory	45	49	54	66	61
MALP – 65 years old and over and education equal to or below compulsory	5	13	9	10	6
MALP – 65 years old and over and education above compulsory	12	15	12	15	12
Remaining regions – 34 years old and less and education equal to or below compulsory	5	13	27	57	43
Remaining regions – 34 years old and less and education above compulsory	19	37	58	77	59
Remaining regions – 35-64 years old and education equal to or below compulsory	2	5	8	20	22
Remaining regions – 35-64 years old and education above compulsory	13	27	38	57	49
Remaining regions – 65 years old and over and education equal to or below compulsory	1	3	2	4	2
Remaining regions – 65 years old and over and education above compulsory	3	6	5	10	9
By memory:					
Age of the household representative	29	40	66	82	70
34 and less	15	25	35	54	57
35-64	2	7	6	8	7
65 and over					
Education of the household representative					
Education equal to or below compulsory	9	15	21	28	22
Education above compulsory	45	45	52	62	52
Region of residence					
Metropolitan areas of Lisbon and Porto	34	39	46	53	46
Remaining regions	7	13	22	36	33
Household size					
1 person	4	12	19	30	24
More than 1 person	15	24	34	46	42

Source: Statistics Portugal (Census). | Note: The household representative is the household member considered as such by the other members.

Table A3 • Renter households of the main residence between 1981 and 2021 | Percentage of total households in each class

	1981	1991	2001	2011	2021
Total	39	28	21	20	22
Households with more than 1 person					
MALP – 34 years old and less and education equal to or below compulsory	64	42	29	37	48
MALP – 34 years old and less and education above compulsory	56	25	16	35	45
MALP – 35-64 years old and education equal to or below compulsory	59	41	31	22	26
MALP – 35-64 years old and education above compulsory	54	33	20	20	24
MALP – 65 years old and over and education equal to or below compulsory	60	46	36	12	12
MALP – 65 years old and over and education above compulsory	63	44	33	19	17
Remaining regions – 34 years old and less and education equal to or below compulsory	39	31	27	30	49
Remaining regions – 34 years old and less and education above compulsory	50	30	19	24	37
Remaining regions – 35-64 years old and education equal to or below compulsory	22	16	14	14	18
Remaining regions – 35-64 years old and education above compulsory	42	25	14	11	15
Remaining regions – 65 years old and over and education equal to or below compulsory	15	12	9	8	8
Remaining regions – 65 years old and over and education above compulsory	31	24	17	12	9
Households with 1 person					
MALP – 34 years old and less and education equal to or below compulsory	65	46	40	44	55
MALP – 34 years old and less and education above compulsory	59	30	23	31	44
MALP – 35-64 years old and education equal to or below compulsory	68	51	44	45	46
MALP – 35-64 years old and education above compulsory	64	41	30	23	27
MALP – 65 years old and over and education equal to or below compulsory	64	54	46	40	34
MALP – 65 years old and over and education above compulsory	70	53	42	32	25
Remaining regions – 34 years old and less and education equal to or below compulsory	30	29	33	37	48
Remaining regions – 34 years old and less and education above compulsory	52	39	32	35	45
Remaining regions – 35-64 years old and education equal to or below compulsory	22	17	18	22	26
Remaining regions – 35-64 years old and education above compulsory	43	33	24	20	24
Remaining regions – 65 years old and over and education equal to or below compulsory	17	14	12	12	12
Remaining regions – 65 years old and over and education above compulsory	33	28	23	19	17
By memory:					
Age of the household representative					
34 and less	50	33	23	31	46
35-64	38	27	20	18	22
65 and over	30	25	21	19	17
Education of the household representative					
Education equal to or below compulsory	36	27	21	21	23
Education above compulsory	52	31	20	18	22
Region of residence					
Metropolitan areas of Lisbon and Porto	59	40	29	27	29
Remaining regions	25	19	15	15	17
Household size					
1 person	35	30	27	26	26
More than 1 person	39	27	20	18	21

Source: Statistics Portugal (Census). | Note: The household representative is the household member considered as such by the other members.

III Policy insights

Prospects for old-age pensions in Portugal

Prospects for old-age pensions in Portugal[1]

Expenditure on old-age pensions is expected to decline in the future despite the ageing of the population.

The sustainability of social security is a concern in countries facing an ageing population. This concern is increased when the funding of old-age pensions is predominantly public and based on contemporary contributions dependent on the number of workers in employment, such as in Portugal. In order to promote a lasting and effective social security, it is crucial to ensure, in addition to the financial stability of the system, that benefits are balanced intertemporally, taking into account the contributory effort and average life expectancy, and sufficient to meet the expenditure of pensioners.

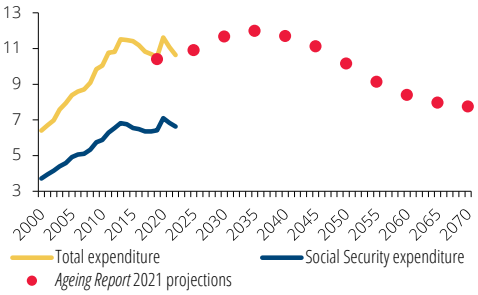
Social security expenditure on old-age pensions increased by 2.9 p.p. of GDP between 2000 and 2022 (Chart 1). This increase was concentrated in the period up to 2014, followed by a slight reduction that was fully reversed in the years affected by the pandemic. The evolution of total expenditure on old-age pensions, also taking into account the civil servants' system, was more marked, with a 4.2 p.p. increase. In the European Commission's projections, presented in the 2021 *Ageing Report*, assuming current rules remain in effect, total expenditure on old-age pensions is expected to increase by a further 1.3 p.p. of GDP by 2035, but to decline thereafter in spite of the ageing of the population. The effect of an increase in the share of older people in the labour force is counteracted by a reduction in average pensions relative to GDP per worker. An analysis of the ratio between the first pension at retirement and the last wage, known as the replacement rate, helps to understand this phenomenon.

In Portugal, the gross replacement rate for pensions stood at 74% in 2019, the second highest in the euro area (Chart 2). The European Commission estimates that the rate will be reduced by more than 30 p.p. by 2070 and converge with the euro area average. This reduction is the result of the legislative changes that took place from 2002 onwards, the full effect of which will only occur when the individuals who started contributing to social security after the introduction of these changes retire.

Understanding the impact of the main legislative changes on the initial pension remains topical and should take into account the uncertainty inherent in future developments. The analysis in this Policy insights is based on replacement rates for stylised cases, illustrating their variability according to the wage trajectory, length of the contributory record and retirement age.

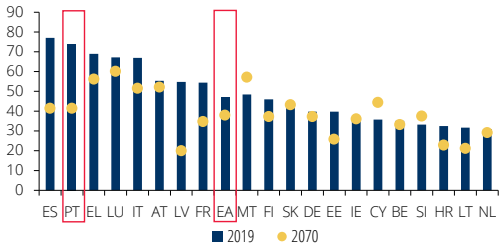
1. Prepared por Cláudia Braz and Sharmin Sazedj.

Chart 1 • Public expenditure on old age pensions: observed and projected values | As a percentage of GDP



Sources: Ministry of Finance, INE and European Commission (*Ageing Report* 2021). | Note: Total expenditure on old-age pensions includes amounts from Social Security and Caixa Geral de Aposentações and excludes the banking substitute scheme.

Chart 2 • Gross replacement rates in 2019 and 2070 | In percentage



Source: European Commission (*Ageing Report* 2021). | Note: In 2019, the Commission considers that individuals who retired had an average age of 64 years and 4 months, which was 2 years and 1 month less than the legal retirement age, and a career of 30 years and 4 months. These data compare with an average retirement age of 65 years and 4 months and 34 years and 2 months of contributory career, according to Social Security data. For 2070, the Commission assumes an average retirement age of 66 years and 5 months and an average contributory career of 33 years and 8 months.

The rules for calculating old-age pensions depend on the pension accrual rate, as well as on wages, the length of the contributory record and the retirement age of individuals.

The statutory pension, which is the first pension paid, is calculated by multiplying the reference remuneration by the pension accrual rate. Where retirement takes place before or after the statutory retirement age, a penalty or bonus factor respectively is added to the calculation formula. The reference remuneration is the average of the remunerations earned (with a cap of 40 years) updated with CPI excluding housing to the year of retirement. The overall pension accrual rate depends on the number of years of contributions and the reference remuneration, varying between 2% and 2.3% per year of contribution, up to 40 years. For people with less than 21 years of employment, the pension accrual rate is set at 2% per year, and a minimum of 15 years is required to qualify for a pension. Figure 1 systematises the rules for calculating the first pension.

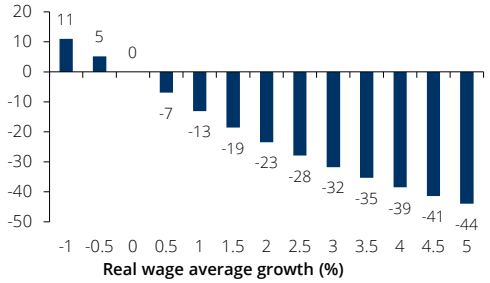
The changes introduced in the pension calculation formula reduced the reference remuneration as they now take into account the entire contributory record, despite increasing the pension accrual rate.

The current rules, described in Figure 1, apply to individuals who started making contributions to social security after 2001. Other individuals still benefit from a transitional scheme where the statutory pension is the result of a weighted average pension calculated on the basis of the previous and current rules. The biggest difference between the two calculation formulas is the number of years relevant to calculate the reference remuneration. The current rules take into consideration the entire

contributory record, while the previous scheme only considered the ten best years of the last 15. Considering a 40-year contributory record, the current rules result in a lower reference remuneration as long as there is real growth in income throughout the career (Chart 3).

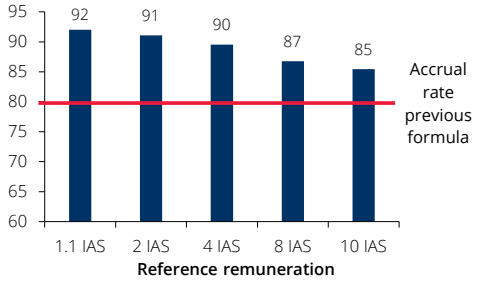
In addition, the current rules introduced a positive differentiation of pension accrual rates in favour of lower income beneficiaries, while the old rules used a flat rate of 2% per year worked, with a limit of 40 years (Chart 4). The pension accrual rate is higher under the current rules for any remuneration. Indeed, the pension accrual rate can reach a maximum of 92% for 40 years of contributions with very low pay (up to 1.1 times the Social Support Index, i.e. €528 per month in 2023) or decrease to 85% for remunerations ten times higher.

Chart 3 • Reference remuneration: percentage difference between the current and previous formula | In percentage



Source: Banco de Portugal calculations. | Note: Simulation conducted for a beneficiary enrolled in the system on January 1, 2002. It assumes a contributory career of 40 years and retirement at the legal age. The calculation of the legal retirement age is based on Eurostat's demographic projections of 2023 and corresponds to 68 years. The initial wage considered amounts to 600 euros and is in line with the average entry-level wages in the private sector in 2002. Wage growth remains constant throughout the contributory career.

Chart 4 • Pension accrual rate: with the previous and current calculation formula | In percentage



Source: Banco de Portugal calculations. | Notes: A contributory career of 40 years is assumed. IAS is the Social Support Index (*Indexante de Apoios Sociais*).

Replacement rates for individuals who started their working life after 2002 are lower, although they show great variability depending on wage growth over the course of the career.

The gross replacement rate for an individual who joined the scheme in 2002, entirely subject to the new pension calculation rules, varies significantly depending on average real wage. For a full contributory record of 40 years and retirement at the statutory age, the gross replacement rate decreases from 91%, when there is no change in the real wage, to less than half that when wage growth is 5% (Chart 5). Comparing those rates with those resulting from the previous calculation formula, it can be observed that, with a 1% change in real wages, there is an actual reduction in pensions under current rules, and that this reduction becomes more pronounced as wage growth increases. The net replacement rate is always higher than the gross rate, since the pension is subject only to personal income tax, while social contributions are deducted from an employee's gross wage, in addition to being subject to higher marginal rates of personal income tax due to tax progressivity.

Figure 1 • Current rules for the formation of old age pensions[1]

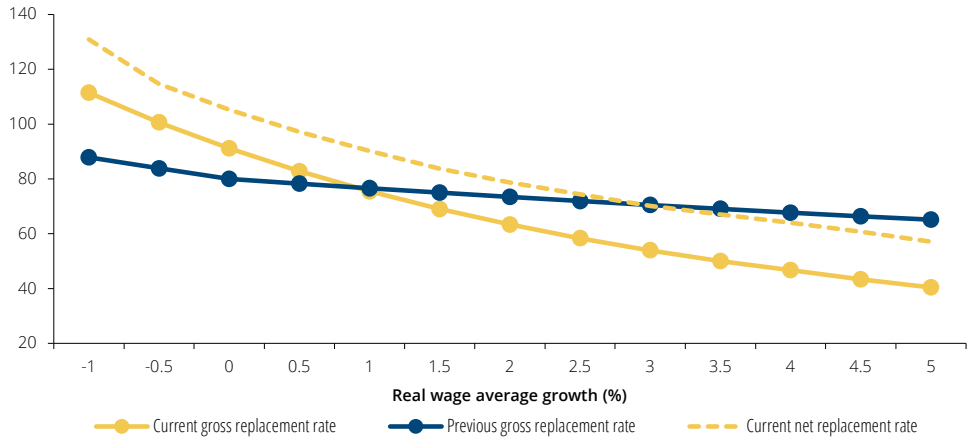
Statutory pension = Reference remuneration x Global accrual rate
x [Sustainability factor x (1-Global reduction rate)] or [1+ Global bonus rate]

Reference remuneration (RR) = Average of revalued earnings
of the entire career (with a 40-year limit)[2]

Age < legal retirement age	Age = legal retirement age[3]		Age > legal retirement age
15-40 years of contributions	**15-20 years of contributions**		**15-24 years of contributions**
Global reduction rate= 0.5% x no. of months of early retirement (65 years limit) Sustainability factor = Average life expectancy at 65 in 2000/average life expectancy at 65 in the year prior to retirement	Global accrual rate = 2% x no. of years		Global bonus rate = 0.33% x no. of months between retirement (70 years limit) and the legal retirement age
40 or + years of contributions	**20 or + years of contributions**		**25-34 years of contributions**
Global reduction rate= 0.5% x no. of months of early retirement (60 years limit) In case of not having 40 or more years of contributions at the age of 60, the sustainability factor also applies	RR	Global accrual rate	Global bonus rate = 0.5% x no. of months between retirement (70 years limit) and the legal retirement age
	Equal or < 1.1 IAS	No. of years x 2.3%	
	1.1 IAS to 2 IAS	No. of years x [(1.1 IAS x 2.3%) + (RR – 1.1 IAS) x 2.25%]	
	2 IAS to 4 IAS	No. of years x [(1.1 IAS x 2.3%) + (0.9 IAS x 2.25%) + (RR - 2 IAS) x 2.2%]	**35-39 years of contributions**
	4 IAS to 8 IAS	No. of years x [(1.1 IAS x 2.3%) + (0.9 IAS x 2.25%) + (2 IAS x 2.2%) + (RR - 4 IAS) x 2.1%]	Global bonus rate = 0.65% x no. of months between retirement (70 years limit) and the legal retirement age
	> 8 IAS	No. of years x [(1.1 IAS x 2.3%) + (0.9 IAS x 2.25%) + (2 IAS x 2.2%) + (4 IAS x 2.1%) + (RR -8 IAS) x 2%]	**40 ou + years of contributions** Global bonus rate = 1% x no. of months between retirement (70 years limit) and the legal retirement age

Source: Social Security (systematization by Banco de Portugal). | Notes: 1) According to the legislation, earnings are revalued for the retirement year with the Consumer Price Index excluding housing. This rate can be increased by a bonus of up to 50 basis points, depending on the average growth of social contributions. 2) The legal retirement age can be either equal to the normal pension access age or the personal retirement age for individuals with contributory careers of over 40 years. The normal retirement age is currently 66 years and 4 months and is adjusted based on the average life expectancy at age 65, observed between the 2nd and 3rd years prior to the start of retirement, in a two-thirds proportion. The personal retirement age involves a scheme that reduces the retirement age by four months for each calendar year that exceeds 40 years of contributory career, up to a limit of 60 years. IAS is the Social Support Index (*Indexante de Apoios Sociais*).

Chart 5 • Replacement rates as a function of average real wage growth | In percentage

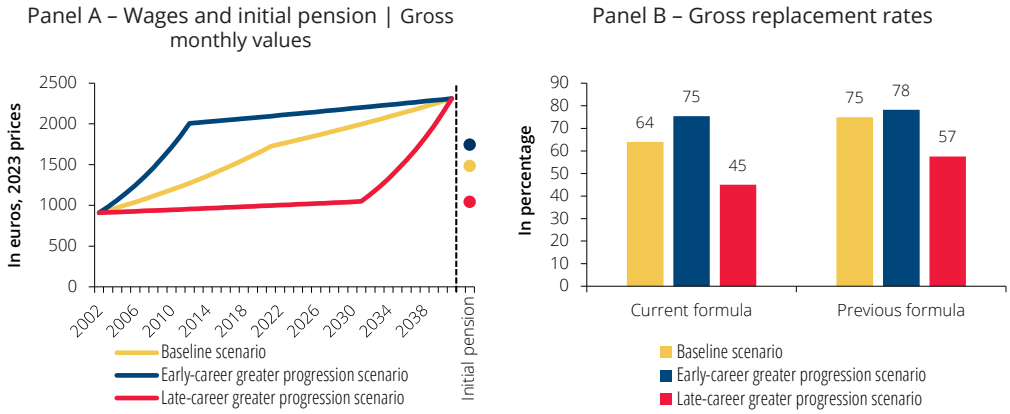


Source: Banco de Portugal calculations. | Note: Simulation carried out for a beneficiary enrolled in the system on January 1, 2002. It assumes a contributory career of 40 years and retirement at the legal age. The calculation of the legal retirement age is based on Eurostat's demographic projections of 2023 and corresponds to 68 years. The initial wage considered amounts to 600 euros and is in line with the average entry-level wages in the private sector in 2002. Wage growth remains constant throughout the contributory career. The rate of change in the Consumer Price Index, excluding housing, used in the calculations is 2%. For the net replacement rate, income tax rates on wages and pensions are assumed according to the current personal income tax table, updating the tax brackets by 2% per year. The employees' social security contribution rate is 11%.

The pace of career progression also influences the replacement rate, which is highest when wage growth is concentrated in the early years of working life.

The amount of the initial pension also depends on the pace of career progression. In the case of a private sector worker with real wage growth of 3.5% in the first half of their career, approximately the wage growth observed for people who entered the labour market in 2002, and a 1.5% wage growth in the second half, the replacement rate is 64% and the initial pension, calculated under the current rules, is 15% lower than what it would be on the basis of the previous rules (Chart 6). Keeping the initial and final wages of the baseline scenario, the replacement rate is higher when wage increases are more concentrated at the beginning of the career. In the case of an individual with faster progression in the first ten years of working life, the replacement rate goes up and reaches 75%. A person whose progression essentially occurred over the last ten years of their career has a replacement rate of only 45% and a pension 40% lower than a person making the most progress at the beginning of their career. The comparison with the replacement rates that would result from the previous calculation formula shows that the current rules are less beneficial the higher the end-of-career wage growth is.

Chart 6 • Sensitivity analysis to the wage progression profile



Source: Banco de Portugal calculations. | Note: The baseline scenario, which determines the final wage in all three scenarios, corresponds to real growth rates of 3.5% in the first half of the career and 1.5% in the second half.

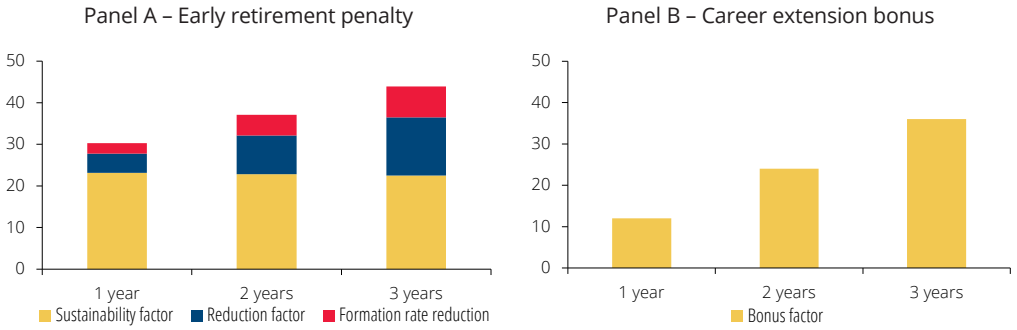
Current legislation values long contributory records and promotes longer working lives, thus contributing to improving the sustainability of the system.

The sustainability factor plays a key role in the pension system in Portugal and is used to adjust the value of pensions on the basis of the average life expectancy of the population. It was introduced by the legislative amendments of 2007 and currently applies to all individuals who retire before the statutory retirement age, with the exception of those who have for a contributory record of 40 years or more at the age of 60. The sustainability factor is determined by the ratio between average life expectancy at age 65 in 2000 and the year before retirement and is applied to the statutory pension. In 2023, this resulted in a reduction of around 14%. For an individual who began working in 2002, this reduction is estimated at around 23%, taking into account Eurostat's projections for average life expectancy (Chart 7, Panel A). In addition, the pension system sets down further penalties for those who choose to retire before the statutory retirement age. The pension accrual rate decreases if a person has a contributory record of less than 40 years and a penalty of 0.5% applies for each month of early retirement. Taken together, the reduction in the initial pension amounts to almost 45% for an individual who decides to retire three years early, after contributing for only 37 years.[2]

The system also incentivises extending professional careers. Individuals who retire after the statutory age receive a bonus on their pensions. This bonus varies with the number of years of contributions, and for each month beyond the statutory retirement age, the pension amount is increased by up to 1% (Chart 7, Panel B). This bonus ends at age 70 and the pension may not exceed 92% of the best reference remuneration used for calculating the pension.

2. There are still some special schemes that allow early retirement without penalty, or according to specific rules, such as long-term unemployment, very long careers, disability or specific schemes related to the type of profession.

Chart 7 • Penalty and bonus associated with retirement before or after the legal age
| In percentage



Source: Banco de Portugal calculations. | Note: Simulation carried out with the same assumptions as before. In the case of a beneficiary who retires at the age of 65 in 2038, which is an early retirement of 3 years, the penalty due to the sustainability factor, corresponding to the ratio between the average life expectancy at age 65 in 2000 and in 2037, is 23%. The reduction factor corresponds to a penalty of 0.5% per month of early retirement and amounts to 18% in this case. The penalty due to the reduction in the pension rate because of considering 37 years of contributory career is 8%. In the case of retirement at the age of 71, which is an extension of the career by 3 years, the bonus is 1% for each month beyond the legal retirement age, with a limit of 70 years, reaching 24% in this case.

Ensuring the financial and social sustainability of the social security system requires careful consideration by policy makers and the promotion of adequate knowledge among citizens.

The legislative changes introduced since 2002 have led to a reduction in the initial value of pensions compared with the rules hitherto in force, thus contributing to the long-term sustainability of the social security system. In particular, some changes stand out, such as the inclusion of the entire contributory record in the pension calculation formula, penalties to early retirement, mainly due to the sustainability factor, and the promotion of a working life beyond the statutory retirement age. The changes introduced in Portugal's pension system over the past two decades have also been more ambitious than those observed in other euro area countries. The analysis presented in this article shows the importance of policy makers carefully assessing possible changes to the pension system with a view to ensuring its financial and social sustainability. It also highlights the relevance for individuals of understanding the rules of the system and efficiently planning for retirement. These aspects can be facilitated by promoting greater clarity when providing information, implementing financial education programmes and stimulating private savings as a complement to public pensions.

Annex

Main legislative changes to old-age social security pensions:[3]

2002 (Decree-Law No 35/2002 of 19 February 2002)

- When calculating the reference remuneration, the entire contributory record (the best 40 years) is now taken into account, instead of the ten years of the last 15 with the highest income.
- The overall pension accrual rate now favours the lowest income brackets and the longest careers.

2007 (Decree-Law No 187/2007 of 10 May 2007)

- To determine the pension amount, a sustainability factor is applied, linked to changes in average life expectancy (resulting from the ratio between average life expectancy at age 65 in 2006 and the year before retirement). The application of the sustainability factor can be compensated by continuing to work after the retirement age (65 on this date) and benefiting from a monthly bonus rate, differentiated on the basis of the contributory record.
- Incentives for extending working lives beyond the retirement age are introduced, based on a monthly bonus rate and with a cap at age 70. The amount of the pension with bonus may not exceed 92% of the best reference remuneration used for calculating the pension.
- A reduction factor of 0.5% is set for each month of retirement before the retirement age (early retirement).
- Higher pensions are capped at 12 times the Social Support Index.

2013 (Decree-Law 167-E/2013 of 31 December 2013)

- The formula for calculating the sustainability factor is changed to use average life expectancy at age 65 in 2000.
- The sustainability factor applies to the statutory pensions of those who ask for their old-age pensions before the pensionable age.
- The normal retirement age is changed annually by two-thirds of the change in average life expectancy at age 65 as verified between the second and third years before retirement.
- From the age of 65 onwards, the normal pensionable age is reduced by four months for each calendar year beyond the 40 years of contributions. However this reduction does not enable access to old-age pensions before age 65.

2018 (Decree-Law No 119/2018 of 27 December 2018)

- The personal age of retirement is created, which provides for the possibility of reducing the pensionable age below 65 years old. The normal pensionable age in force is reduced by four months for each calendar year beyond the 40 years of contributions, down to age 60.
- The sustainability factor is eliminated for beneficiaries who have at least 40 years of contributions at age 60.

3. This list is not comprehensive and has been designed to highlight the features of the system that are most relevant for the simulations presented.