ECONOMIC BULLETIN

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1 Projections for the Portuguese economy: 2023-26

The Portuguese economy is expected to grow by 2.1% in 2023, with a projected slowdown to 1.2% in 2024, and a recovery in growth in subsequent years, to 2.2% in 2025 and 2.0% in 2026 (Table I.1.1). Inflation will remain on a downward path, with the annual change in the HICP falling from 5.3% in 2023 to 2.9% in 2024 and 2.0% in 2025–26. Compared to the October 2023 issue of the *Economic Bulletin*, economic growth and inflation were revised downwards, by 0.3 p.p. and 0.7 p.p. respectively.

Table I.1.1 • Projections of Banco de Portugal for 2023-26| Annual rate of change, in percentage (unless otherwise stated)

	Weights 2022	EB December 2023					EB October 2023			
		2022	2023 (p)	2024 (p)	2025 (p)	2026 (p)	2022	2023 (p)	2024 (p)	2025 (p)
Gross domestic product	100.0	6.8	2.1	1.2	2.2	2.0	6.8	2.1	1.5	2.1
Private consumption	64.2	5.6	1.0	1.0	1.7	1.5	5.6	1.0	1.3	1.6
Public consumption	17.6	1.4	1.1	1.0	0.9	0.9	1.4	1.2	1.2	0.8
Gross fixed capital formation	20.1	3.0	0.9	2.4	5.2	4.1	3.0	1.5	5.0	5.0
Domestic demand	102.4	4.4	0.7	1.4	2.2	1.9	4.4	0.9	2.1	2.1
Exports	49.6	17.4	4.3	2.4	4.0	3.0	17.4	4.1	2.1	3.9
Imports	52.0	11.1	1.3	2.8	4.1	2.8	11.1	1.3	3.4	3.9
Employment (a)		1.5	0.8	0.1	0.3	0.3	1.5	0.8	0.2	0.4
Unemployment rate (b)		6.1	6.5	7.1	7.3	7.2	6.0	6.5	6.7	6.9
Current and capital account (% of GDP)		-0.2	3.0	3.5	3.7	4.0	-0.2	3.0	2.7	3.0
Trade balance (% of GDP)		-1.9	1.2	1.3	1.5	1.8	-1.9	1.1	0.6	0.8
Harmonised index of consumer prices		8.1	5.3	2.9	2.0	2.0	8.1	5.4	3.6	2.1
Energy		23.8	-8.8	3.5	0.2	-0.1	23.8	-8.0	5.5	0.7
Food		11.4	9.2	4.4	2.2	2.2	11.4	9.0	4.8	2.2
Excluding energy		6.7	6.6	2.9	2.1	2.1	6.7	6.6	3.4	2.2
Excluding energy and food		5.0	5.4	2.3	2.1	2.1	5.0	5.6	2.9	2.2

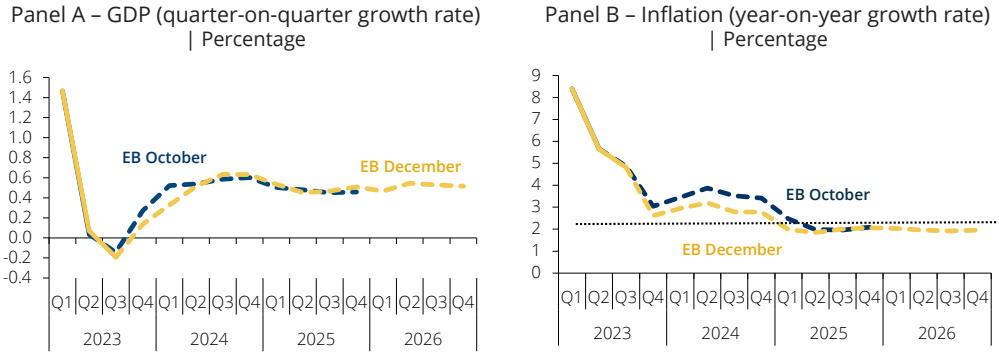
	EB December 2023					EB June 2023			
	2022	2023 (p)	2024 (p)	2025 (p)	2026 (p)	2022	2023 (p)	2024 (p)	2025 (p)
Budget balance (% of GDP)	-0.3	1.1	0.1	0.2	0.3	-0.4	-0.1	0.2	0.2
Public debt (% of GDP)	112.4	101.4	96.8	92.3	87.9	113.9	103.4	97.1	92.5

Sources: Banco de Portugal and Statistics Portugal. | Notes: (p) – projected. The projections are an integral part of the Eurosystem's projection exercise for the euro area released on 14 December (see "Eurosystem staff macroeconomic projections for the euro area", December 2023). Cut-off date for macroeconomic projections: 29 November. The projection corresponds to the most likely value conditional on the set of hypotheses considered. 2022 weights at current prices. (a) According to the National Accounts concept. (b) As a percentage of the labour force.

The economy stagnated in the second and third quarters of 2023 and is expected to grow modestly in the fourth quarter (Chart I.1.1). Recent developments in activity reflect the weakness of external demand, the cumulative effects of inflation and monetary policy tightening, which spilled over to the financing conditions of economic agents (Box 1). The rise in interest rates has a quicker negative impact on the industrial sector, with services showing greater resilience (Box 2). This resilience in services has supported the maintenance of a favourable labour market, despite a recent slight slowdown in employment.

Quarterly growth will recover very gradually over the course of 2024. The recovery will benefit from an acceleration in external demand, the impact of lower inflation on real household income – despite the expected rise in real interest rates – and the boost to investment from European funds. Over the medium term, growth will benefit from the fading out of the effects of monetary policy tightening.

Chart I.1.1 • Quarterly projections for GDP and inflation



Sources: Banco de Portugal and Statistics Portugal. | Note: The dashed lines correspond to the projected values in the EB of December and October 2023.

Key fiscal indicators are expected to continue yielding favourable developments over the projection horizon.[1] Estimates indicate that this year's budget surplus could reach 1.1% of GDP, above the 0.8% projected in the State Budget for 2024 (Table I.1.1). Despite this positive base effect, the less favourable macroeconomic scenario places the balance forecast for 2024 at 0.1%, close to the 0.2% considered in the State Budget for 2024. In 2023, the improvement in the balance stems from the unwinding of pandemic-related measures and, to a lesser extent, the positive cyclical contribution. In 2024, the decline in the budget surplus will result from a slowdown in economic activity and an expansionary policy stance, with the new measures adopted being of a permanent nature. Interest expenditure as a ratio to GDP will increase by 0.2 p.p. in 2023 and 0.1 p.p. in 2024. The public debt ratio is projected to stand close to 100% of GDP at the end of 2023 and to decline further over the remainder of the projection horizon, on the back of primary surpluses of around 2.5% of GDP and the maintenance of a negative differential between the implicit interest rate on debt and nominal GDP growth.

The Portuguese economy is expected to continue to grow above the euro area, by 0.5 p.p. on average between 2024 and 2026. This differential is accounted for by higher growth in GFCF and exports, reflecting favourable investment opportunities and conditions in the country and more benign developments in export market shares. The contribution of apparent labour productivity to growth is expected to be higher in Portugal, reflecting, among other factors, the downward trend in the average schooling gap of the population in relation to the euro area.

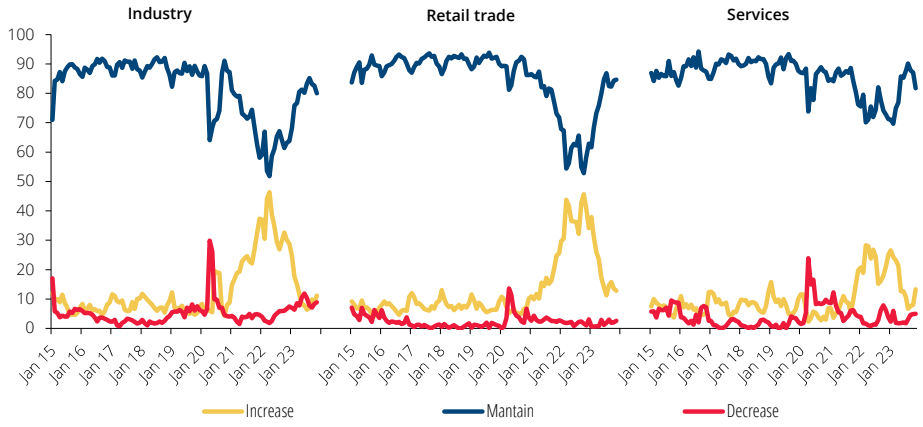
Inflation has decreased further (Chart I.1.1, Panel B). This decline reflects the pass-through to consumer prices of lower production costs – following the unwinding of adverse supply shocks – as well as an effective monetary policy transmission. Business surveys signal decreasing demand

1. The fiscal projections for Portugal presented in this Bulletin are prepared according to the rules of the Eurosystem projection exercises, incorporating only those measures that have been approved by the parliament or that have already been defined in detail by the government and are likely to pass the legislative process.

pressures, with an increasing share of firms reporting insufficient demand as a limiting factor, which impact on price-setting. Evidence points to a normalisation in the frequency of price adjustments, following a period of increases at a much higher than usual pace. In November, the share of entrepreneurs stating an intention to increase sales prices in the short term decreased to 13% in manufacturing, 11% in services and 13% in retail trade, close to the average of around 8% in these sectors in the period 2015-19 (Chart I.1.2).

After reaching 2.6% in the last quarter of 2023, inflation is expected to present temporarily higher values throughout 2024, before converging to 2% in 2025 (Chart I.1.1, Panel B). The higher figures in 2024 are the result of temporary effects on energy and food prices. In energy prices, they reflect the impact of the expected increase in electricity prices at the beginning of the year and base effects on fuels, given that the drop in prices in 2024 is not expected to be as substantial as that in the first half of 2023. In food prices, the rate of change in prices is also expected to increase in January with the end of the zero VAT measure.[2] Underlying inflation (i.e. excluding, energy and food) is expected to remain on a downward trend throughout 2024, reflecting the lagged effects of the reduction in costs and of monetary policy tightening. In 2025, total inflation is expected to be in line with the ECB's price stability objective (Table I.1.1). The profile for inflation in Portugal is close to that projected by the Eurosystem for the euro area.

Chart I.1.2 • Firms' expectations about sales prices | Percentage of firms reporting an intention to increase, maintain or decrease prices in the next three months



Source: European Commission.

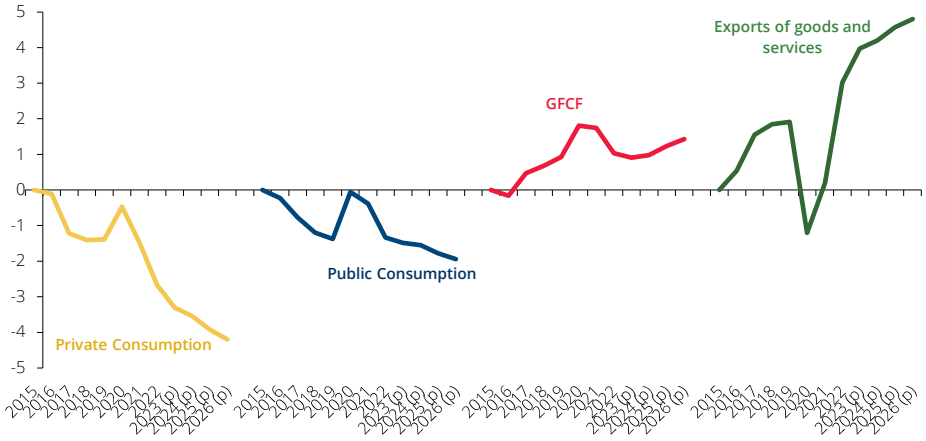
Risks surrounding the projection for economic activity are mostly on the downside, but more balanced for inflation. The growth of activity in Portugal could be lower than projected if the following identified external risks materialise: (i) heightened geopolitical tensions having an impact on commodity prices and confidence, (ii) a slower recovery in global trade amid risks of geopolitical fragmentation or a slowdown in the Chinese economy, (iii) a greater than expected impact of tighter financial conditions, and (iv) greater persistence of inflation, translating into high interest rates for a more protracted period. Domestic risks are associated with an uncertainty scenario in the conduct of economic policy and possible delays in the implementation of European

2. See the box entitled "The impact of zero VAT on prices", *Economic Bulletin*, October 2023.

funds. In the case of inflation, upside risks associated with energy market disruptions are offset by downside risks to economic growth with a negative impact on prices.

Growth in the Portuguese economy is expected to be based on the buoyancy of investment and exports (Chart I.1.3). Conversely, the share of private consumption and public consumption is expected to decrease further.

Chart I.1.3 • Change in the weight in GDP of expenditure aggregates (net of imported content) | Compared to 2015, in percentage points



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

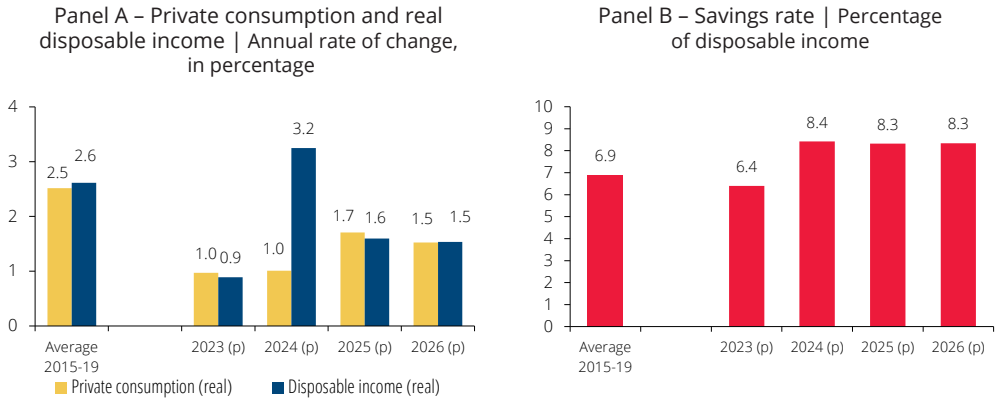
Private consumption is expected to grow moderately, amid gains in real disposable income and an increase in the saving rate (Chart I.1.4). After increasing by 0.9% in 2023, household real disposable income is expected to accelerate in 2024 to 3.2% and to slow down in subsequent years to 1.6%, a growth rate below that of the pre-pandemic period (2.6% average in 2015-19). These developments reflect progressively lower increases in employment and nominal wages as well as more contained price growth. The State Budget measures for 2024, in particular the reduction of taxes on households and the increase in social benefits, also add substantially to the increase in disposable income in 2024 and 2025.

The distributional impact of fiscal measures and rising interest rates shapes the restrained response of aggregate consumption to the increase in income. On the one hand, one of the measures included in the State Budget for 2024 with the most material impact – changes to personal income tax – is estimated to benefit higher-income households more significantly, which have a lower propensity to spend these gains (Box 3).[3] On the other hand, the negative impact on consumption stemming from increased loan instalments for indebted households is likely to outweigh the positive impact of the higher financial income of households with accumulated savings. The impact of changes in these income components on consumption depends on the propensity to consume, which tends to be lower for income increases (asymmetric effect compared with reductions) and also lower

3. See also the box entitled "Tax impact of tax rate changes and personal income bracket limits underlying the State Budget/2024: simulation in the EUROMOD-JRC interface", *Analysis of the Draft State Budget for 2024* (in Portuguese only), Portuguese Public Finance Council.

for higher-income households and those without liquidity constraints.[4] Thus, households with accumulated savings are expected to increase consumption comparatively little relative to higher returns on financial investments, while indebted households are expected to reduce their spending more strongly in reaction to higher borrowing costs. Amid uncertainty, the saving rate is estimated to increase in 2024 for precautionary reasons and to remain above pre-pandemic figures over the remainder of the horizon, to which also contributes the incentive to save generated by higher returns on financial investments.

Chart I.1.4 • Private consumption, real disposable income and savings rate

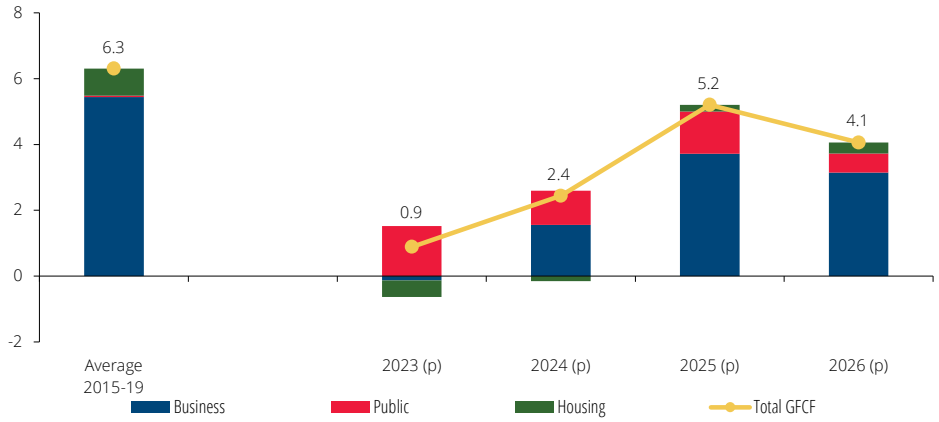


Sources: Banco de Portugal and Statistics Portugal. | Note: (p) – projected.

Investment growth declined in 2023, but is expected to recover in 2024-26, driven by a gradual improvement in the macro-financial environment and increased inflows of European funds. Recent developments were likely constrained by higher interest rates and stalling domestic and external activity (Chart I.1.5). The business component is expected to benefit from the recovery in global demand and from increasing investment needs to support the digital and energy transition of production processes, in a context of gradually fading effects of monetary policy tightening. The expectation of stronger growth in business and public GFCF in the coming years is also supported by increased inflows of European funds. The weakness in GFCF in housing is expected to be more protracted. Deteriorating housing affordability reduces demand and creates expectations of moderating selling prices, thereby penalising profitability and new investment in construction.

4. See the box entitled "Propensity to consume in Portugal and the euro area: an analysis with survey data", *Economic Bulletin*, May 2020, as well as Christelis et al. (2019), "Asymmetric consumption effects of transitory income shocks", *The Economic Journal*, Vol. 129, Issue 622, and Albuquerque and Green (2023), "Financial concerns and the marginal propensity to consume in COVID times: evidence from UK survey data", *Journal of Macroeconomics*, Vol. 78.

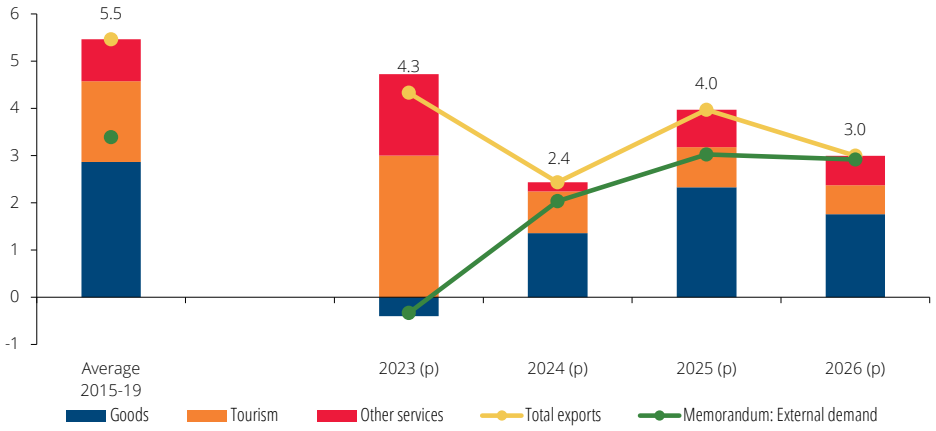
Chart I.1.5 • GFCF – Annual rate of change and contribution of the main components | Percentage and percentage points



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

Export growth in 2023-26 is expected to be more contained than in previous years, owing to weaker external demand (Chart I.1.6). Goods exports are estimated to have declined in 2023, in line with weak demand from major trading partners. In subsequent years, external demand will recover at a slower pace than in the pre-pandemic period and sustain higher growth rates in goods exports. The services component is expected to experience more moderate rates of change in 2024-26, following high growth in 2023, which still reflected the post-pandemic recovery in tourism. Additional gains in export market shares are projected for 2024–26, albeit smaller than those observed in the recent past. Market share gains over the past few years have been relatively wide-ranging, but the performance of tourism and some higher value-added sectors is noteworthy (Box 4). Imports will grow in line with overall demand weighted by import content, taking into account past average patterns.

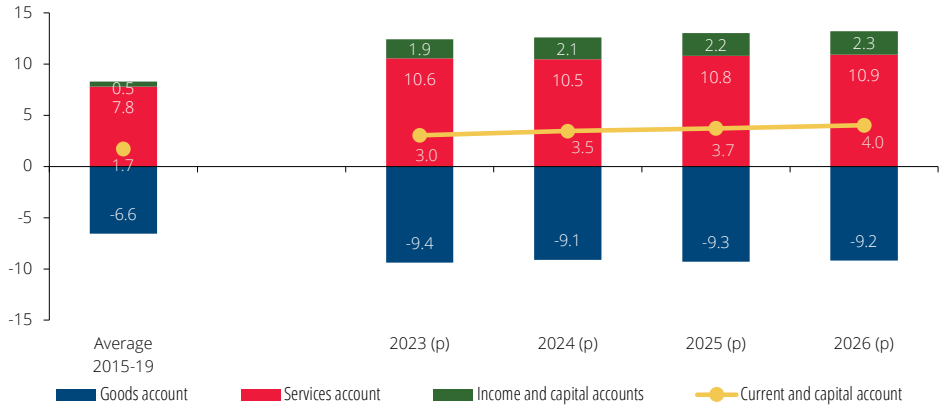
Chart I.1.6 • Exports – Annual rate of change and contribution of the main components | Percentage and percentage points



Sources: Banco de Portugal, ECB and Statistics Portugal. | Notes: (p) – projected.

The economy's net lending is expected to average 3.6% of GDP in 2023-26 (Chart I.1.7). The goods and services account returned to a surplus in 2023, following deficits in 2020-22 (-2.1% of GDP on average), reflecting a positive volume effect on tourism flows and a recovery in terms of trade associated with lower energy commodity prices. In subsequent years, the surplus will remain close to or above pre-pandemic levels. The improvement in the current and capital account balance in 2023 also reflects developments in the capital account. Over the projection horizon, this account will benefit from the increase in net transfers of funds under the Recovery and Resilience Plan (RRP) and the current EU funds programme, from 1.7% of GDP in 2023 to 2.4% in 2026 (1% in 2015-19 on average). These developments are expected to contribute to the maintenance of the reduction path of the external debtor position.

Chart I.1.7 • Current and capital account | Percentage of GDP



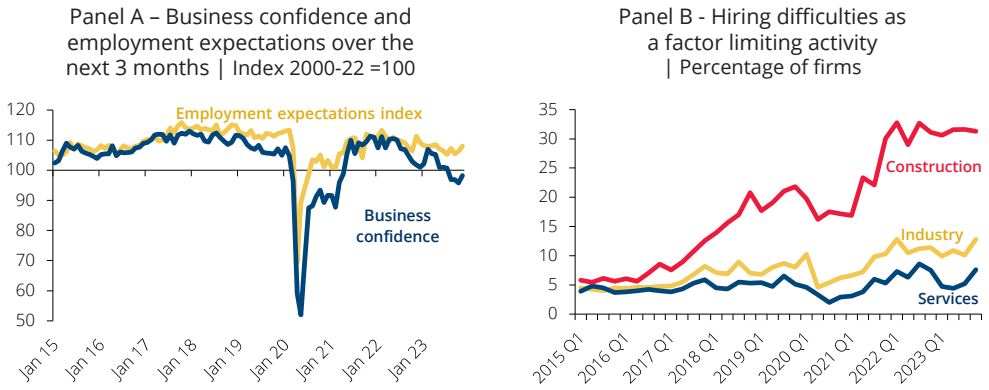
Sources: Banco de Portugal and Statistics Portugal. | Notes: (p) – projected.

The labour market situation will remain favourable despite the near stabilisation of employment, while real wages are expected to increase. In 2023 employment has remained resilient, although with signs of a slowdown in the second half of the year. In business surveys, entrepreneurs have reported a reduction in expectations of job creation, which was nevertheless contained vis-à-vis the deterioration in sectoral confidence, amid greater hiring difficulties (Chart I.1.8). The performance of employment is associated with the greater relative momentum in services, which are more labour--intensive. Growth in the number of workers in this sector remained above that in the total economy (year-on-year changes of 1.5% and 0.7% respectively in the first three quarters of 2023).

This Bulletin's projections incorporate a 0.8% increase in employment in 2023, followed by a deceleration to 0.1% in 2024 and 0.3% in 2025-26 (Table I.1.1). Labour supply is expected to continue to increase, supported by an increase in immigration and the participation rate, which offset the effect of population ageing. The unemployment rate is projected to rise to an average of 7.2% in 2024-26, close to the estimate of the trend unemployment rate.

The average nominal wage in the economy is expected to increase by 7.5% in 2023, 4.4% in 2024 and 3.8% in 2025-26, against a background of declining inflation. The projections incorporate the minimum wage announced for 2024 and included in the income agreement for 2025 and 2026 (€820, €855 and €900 respectively, implying rates of change of 7.9%, 4.3% and 5.3%). Real developments in compensation are expected to remain in line with projected productivity growth in 2024-26.

Chart I.1.8 • Business surveys



Source: European Commission. | Note: Business confidence aggregates the confidence indicators for industry, services, retail trade and construction (using the weights of these sectors in the Economic Sentiment Indicator). Last observation: November 2023 (Panel A), 2023 Q4 (Panel B).

The Portuguese economy has stagnated in recent quarters and the short-term outlook is uncertain, with downside risks prevailing. The weakness in activity reflects the impact of rising interest rates and slowing external demand, together with the fading impetus from the post-pandemic tourism upturn and the recovery from the terms of trade shock. The outlook is constrained by uncertainty about new outbreaks of geopolitical tensions and the domestic political situation. However, resilience factors remain in the labour market, in the stimulus provided by European funds and in the competitiveness of some key sectors. Falling inflation will contribute, together with employment and wage dynamics, to support real household income.

Box 1 • External environment, financing conditions and policies

Annual growth of the global economy is expected to remain close to 3% in 2023-26, with differences by region (Table C1.1). Global growth is underpinned by emerging market economies. Euro area activity has been stagnating since the end of 2022, which is expected to continue into the last quarter of 2023, but quarterly growth is projected to pick up at the beginning of 2024. This upswing should reflect greater buoyancy in exports and, in the second half of the year, a rebound in investment. Eurosystem projections point to annual growth in the euro area rising from 0.6% in 2023 to 0.8% in 2024 and 1.5% in 2025-26.

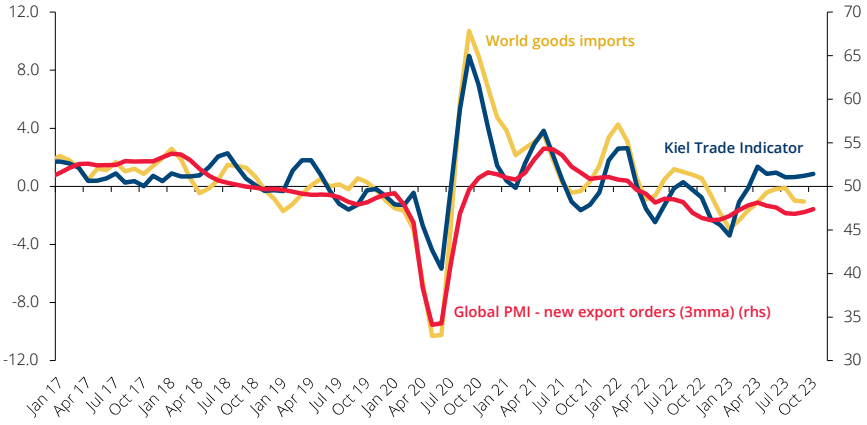
Table B1.1 • Eurosystem staff projection assumptions

		EB December 2023					Revisions from EB October 2023		
		2022	2023	2024	2025	2026	2023	2024	2025
International environment									
World GDP	yoy	3.3	3.0	2.8	3.0	3.0	0.1	0.1	0.0
Euro area GDP	yoy	3.4	0.6	0.8	1.5	1.5	-0.1	-0.2	0.0
World trade	yoy	6.2	0.7	2.7	3.0	3.1	0.4	-0.4	-0.2
External demand	yoy	7.8	-0.3	2.0	3.0	2.9	-0.5	-0.8	0.1
International prices									
Oil prices	aav	98.6	77.7	73.9	70.6	67.9	1.8	-0.9	-0.6
Gas prices (MWh)	aav	123.1	41.5	47.4	44.2	36.9	-1.4	-6.8	-3.3
Non-oil commodity prices	yoy	19.4	-15.2	-2.6	2.4	1.7	1.0	1.0	-0.8
Competitors' import prices	yoy	15.8	-1.0	2.0	2.7	2.2	-0.4	-0.2	0.3
Monetary and financial conditions									
Short-term interest rate (3-month EURIBOR)	%	0.3	3.4	3.6	2.8	2.7	0.0	-0.1	-0.3
Implicit interest rate in portuguese public debt	%	1.7	2.1	2.3	2.4	2.4	-0.2	-0.2	-0.3
Effective exchange rate index	yoy	-3.7	4.9	1.4	0.0	0.0	-0.4	-0.2	0.0
Euro-dollar exchange rate	aav	1.05	1.08	1.08	1.08	1.08	0.0	0.0	0.0

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 December 14 ("Eurosystem staff macroeconomic projections for the euro area", December 2023), which include information up to November 24. International prices are in euros. The technical assumption for the price of oil, gas and non-energy commodities is based on futures markets. The import price of competitors corresponds to a weighted average of the export deflators of the countries from which Portugal imports, weighted by their share on total Portuguese imports (for more information, see "Trade consistency in the context of the Eurosystem projection exercises: an overview", *ECB Occasional Paper* 108, March 2010). The evolution of the 3-month EURIBOR is based on expectations implied in futures contracts. The implicit interest rate on public debt is computed as the ratio of interest expenditure for the year to the simple average of the stock of debt at the end of the same year and at the end of the preceding year. An increase in the exchange rate corresponds to an appreciation of the euro. The effective exchange rate of the euro is computed against 42 trading partner countries. Revisions in the euro-dollar exchange rate are in percentage. The technical assumption for bilateral exchange rates assumes that the average levels observed in the two weeks prior to the cut-off date are maintained over the projection horizon.

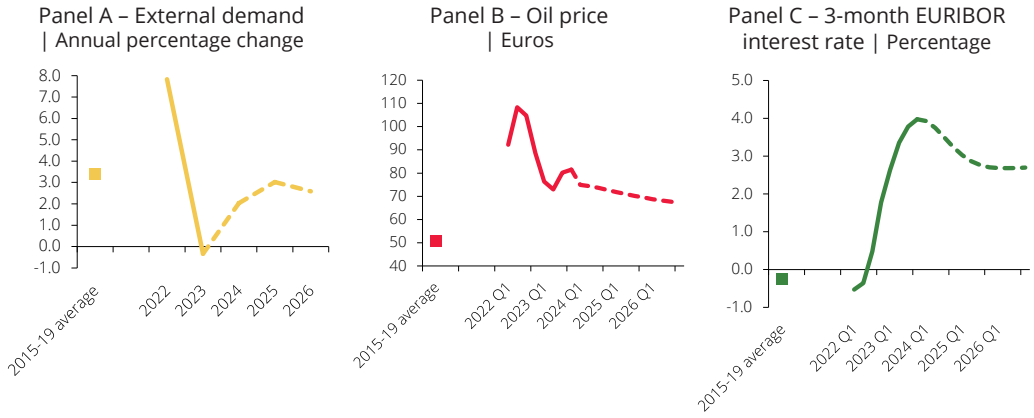
Following weak developments in 2023, global trade in goods and services is expected to accelerate to around 3% in 2024-26, close to the pace seen in 2015-19 (Table C1.1). This should reflect the fading out of the short-term factors that have contributed to weak growth in 2023, such as a sharper slowdown in the European and Asian economies most heavily involved in trade, the shift in global demand from goods to services and the slowdown in the intermediate goods trade, driven by the weakness of the industrial sector. Signs of greater buoyancy in a leading indicator of global trade in goods based on maritime trade confirm expectations of acceleration, but the PMI indicator for new manufacturing export orders continues to point to weakness in these flows, particularly in the euro area (Chart C1.1). External demand for Portuguese exports has a profile similar to that of global trade: after a slight fall in 2023, it is expected to pick up to 2.0% in 2024 and around 3% in 2025-26 (Chart C1.2 – Panel A). The growth of this variable has been revised down for 2023 and 2024 (Table C1.1).

Chart B1.1 • World goods imports, Kiel Trade Indicator and global PMI – manufacturing new export orders | Quarter-on-quarter percentage change and diffusion index



Sources: CPB Netherlands Bureau for Economic Policy Analysis; Kiel Institute (Banco de Portugal calculations). | Notes: Kiel Trade Indicator estimates trade flows using real time ship movement. World imports and Kiel Trade Indicator: quarter-on-quarter percentage change, representing the change in quarter ending in month t vis-à-vis the quarter ending in month t-3. Global PMI – manufacturing new export orders: diffusion index, figures below 50 indicate contraction.

Chart B1.2 • Assumptions for external demand, oil price and short-term interest rate



Sources: ECB and Refinitiv. | Note: Dotted lines refer to projection assumptions. These assumptions coincide with those in the ECB projection exercise released on December 14 ("Eurosystem staff macroeconomic projections for the euro area", December 2023), which include information up to November 24. The technical assumption for the price of oil is based on futures markets. The evolution of the 3-month EURIBOR is based on expectations implied in futures contracts.

Inflationary pressures as a result of international prices will be moderate (Table C1.1). Oil prices are expected to fall, associated with expectations of an increase in US supply and a slowdown in demand (Chart C1.2 – Panel B). High gas storage levels in Europe continue to provide security against the risk of supply disruptions. Non-energy commodity prices are expected to fall by 15.2% in 2023 and 2.6% in 2024, with contained increases over the rest of the horizon. Following a decrease in 2023, the import prices of Portugal's competitors are expected to rise by around 2% in 2024-26. Eurosystem projections point to a gradual downward trend in inflation in the euro area, from 5.4% in 2023 to 2.7% in 2024, 2.1% in 2025 and 1.9% in 2026. Inflation excluding energy and food shows a similar profile, falling from 5.0% in 2023 to 2.7% in 2024, 2.3% in 2025 and 2.1% in 2026.

Expectations implicit in futures contracts point to short-term interest rates starting to fall next quarter (Chart C1.2 – Panel C). On annual average terms, the 3-month EURIBOR rate

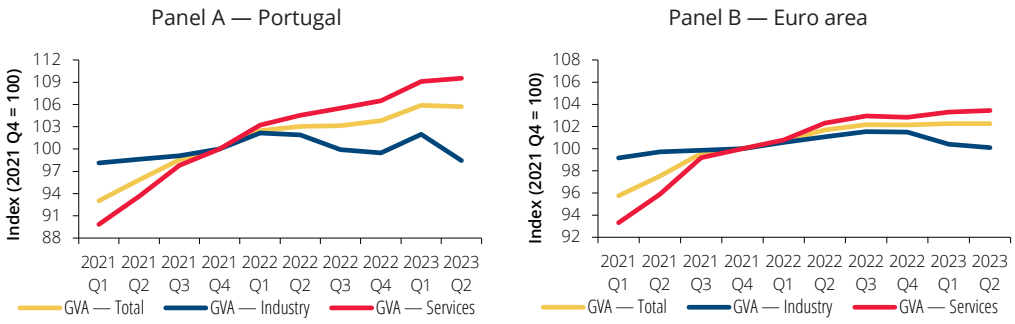
rises to 3.4% in 2023 and is likely to reach 3.6% in 2024, dropping to 2.8% in 2025 and 2.7% in 2026 (Table C1.1). Rises in ECB interest rates continued to be passed through to new lending and deposit rates to households and firms in Portugal. The implicit interest rate on Portuguese debt is expected to rise from 2.1% in 2023 to 2.4% in 2026..

Box 2 • Analysis of the impact of monetary policy on GVA by sector of activity

Since 2022, economic activity in Portugal and the euro area has been characterised by a gradual recovery following the reopening of the economy in the aftermath of the pandemic. However, the recovery has been marked by greater resilience in services than in industry.[5] In the second quarter of 2023, the Gross Value Added (GVA) of services in Portugal, excluding public administration, education and health, was 9.5% above the level recorded at the end of 2021, while the GVA of industry was 2.5% below (Panel A – Chart B2.1). Compared to the pre-pandemic period (2019 Q4), services grew by 8.2% and industry was 1.2% below. This decoupling is also seen in the euro area, albeit to a lesser extent (Panel B – Chart B2.1).

Several factors explain these dynamics. The lifting of restrictions imposed to contain the pandemic led to a strong recovery in demand for services that involve more intensive contact, which were the most affected during this period. On the other hand, these dynamics may be affected by the monetary policy decisions that the European Central Bank (ECB) has taken in recent months.

Chart B2.1 • GVA in volume by sector of activity | Index (2021 Q4 = 100)



Sources: Eurostat. | Note: Chained data in volume.

By raising its key interest rates, the ECB increases the financing costs for firms and households, trying to encourage savings and restrict demand for goods and services, thereby reducing pressure on prices. The slowdown in economic activity may, however, vary across sectors of activity.

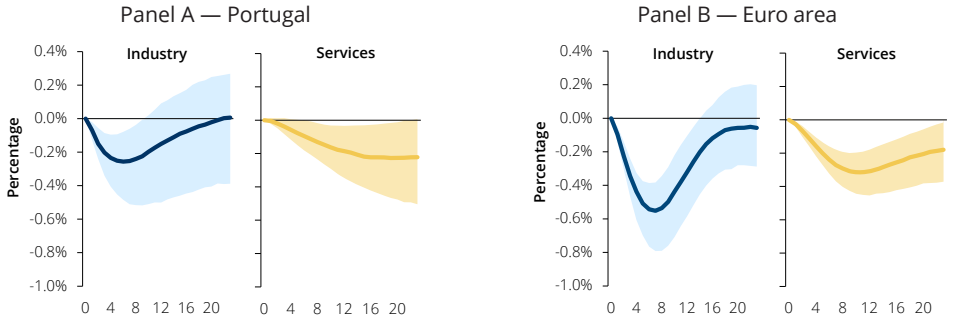
To assess the impact of monetary policy on the GVA by sector of activity, a BVAR (Bayesian Vector Autoregressive) model was estimated with quarterly data from 1999 to 2019 for each of the economies. This model includes the following variables: the price of oil in euro, the 3-month EURIBOR interest rate, the nominal effective exchange rate, an external demand indicator, GVA in volume for industry,

5. This decoupling was also discussed in Box 3 "The industry-services decoupling: Portugal in the context of advanced economies" in the May 2020 issue of the *Economic Bulletin*, both for Portugal and other advanced economies.

services (excluding public administration, education and health) and construction, and the private consumption deflator.

As expected, the monetary policy shock of one standard deviation in the interest rate has a negative and statistically significant impact on industry GVA and services GVA (Chart B2.2). However, although the maximum impacts on industry and services are not statistically different, the impact is quicker in industry. In Portugal, the maximum reduction in GVA in the industrial sector is 0.25% after six quarters, while in services it is 0.22% after nineteen quarters. This difference is greater in the case of the euro area as the shock has a maximum impact of -0.55% on industry after seven quarters, while in services it represents -0.31% after ten quarters. Note that the impact of monetary policy seems to be greater in the euro area than in Portugal. The literature on the heterogenous effects of monetary policy across countries presents the industrial mix of each economy, the flexibility of the labour market and the importance of exports as possible causes for this evidence, among others.[6]

Chart B2.2 • Impact of monetary policy on GVA by sector of activity | Percentage



Sources: Eurostat and ECB (calculations by Banco de Portugal). | Notes: (i) The solid line represents the impulse response function of a one-standard-deviation in the 3-month interest rate, corresponding to a shock of 27 basis points. The shaded region shows the 90% confidence interval. The horizontal axis corresponds to quarters. (ii) The variables (excluding the private consumption deflator and the 3-month Euribor interest rate) are considered in logarithm. The nominal effective exchange rate and the external demand indicator are specific to the economy under analysis. In the estimation for Portugal, the private consumption deflator for the euro area is included as an exogenous variable. Eight lags of the variables are included, following the indication given by the tests performed (AIC and BIC). (iii) For the identification of structural shocks, a Cholesky decomposition was used following the order of the variables presented above. This method assumes that the shock associated with each variable has a contemporaneous impact only on the variables that follow them in the ordering. For example, the monetary policy shock will have an impact in the same period on all variables except the price of oil. (iv) To test the robustness of the results, the model was also estimated with the €STR interest rate and the Harmonized Index of Consumer Prices (HICP) replacing the 3-month Euribor interest rate and the private consumption deflator, respectively, with no significant change in the results.

The different impact across sectors of activity is a result mentioned in economic literature.[7] Several similar analyses show that the sectoral structure of the economy affects the transmission of monetary policy through various mechanisms. The industrial sector is typically more capital-intensive than the services sector and is therefore more exposed to changes in financing conditions in investment and production decisions. Moreover, household consumption of industrial goods, particularly durable goods, involves more often the use of credit than consumption of services.

The analysis presented suggests that the dichotomy characterising the current behaviour of industry and services may be due, to some extent, to the different impacts of monetary policy. This decoupling is apparent both in Portugal and in the euro area economy.

6. For reference, see Georgiadis, G., "Examining asymmetries in the transmission of monetary policy in the euro area: Evidence from a mixed cross-section global VAR model", *European Economic Review*, 75, 2015, pp. 195-215 and Mandler, M., Scharnagl, M. and Volz U., "Heterogeneity in euro area monetary policy transmission: results from a large multicountry BVAR model", *Journal of Money, Credit and Banking*, 54 (2-3), 2022, pp. 627-649.
7. For reference, see Peersman, G. and Smets, F., "The Industry Effects of Monetary Policy in the Euro Area", *The Economic Journal*, 115(503), 2005, pp. 319-342; and Hauptmeier S. and Holm-Hadulla F., "Industry structure and the real effects of monetary policy", *Economic Bulletin ECB*, 7/2023 Edition.

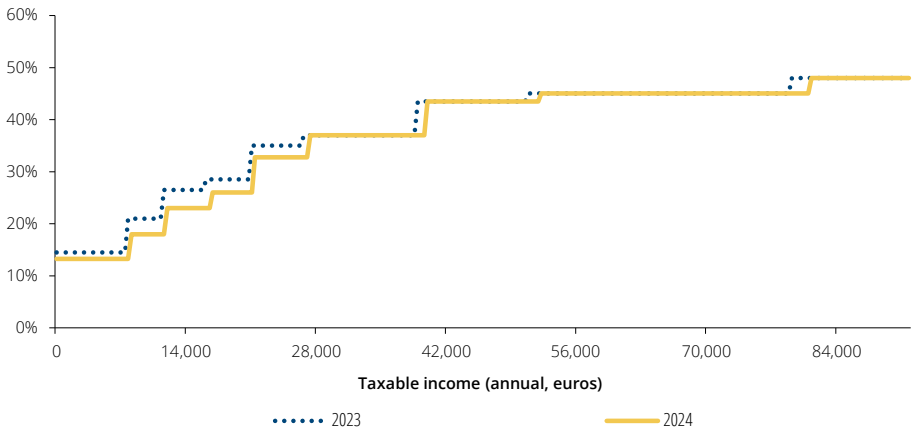
Box 3 • The impact of changes to personal income tax and social benefits in the 2024 State Budget on the income distribution in Portugal

The 2024 State Budget includes an across-the-board reduction in personal income tax (PIT) and an increase in social benefits, such as the social integration income (RSI, in the Portuguese acronym), the solidarity supplement for the elderly (CSI, in the Portuguese acronym) and the child benefit. We use the EUROMOD[8] microsimulation model and EU-SILC data to quantify the direct impacts of this set of measures on the households' disposable income distribution, against a no-policy change scenario, except for the increase in the minimum wage and the social support index, and not considering temporary measures.

On the revenue side, changes to PIT include cutting marginal tax rates (up to the fifth income bracket) and updating tax brackets by 3% to keep up with expected inflation in 2024 (Chart C3.1), as well as updating the net income guarantee ("mínimo de existência") in line with the minimum wage in force in 2024 (€820 per month). Taken together, these changes lead to a decrease in the average PIT rate from 15% to 14%.

These PIT changes represent, on average, an increase of around 2% in household disposable income, twice as much as in 2023 (Chart C3.2). In distributional terms, the PIT changes benefit higher-income earners relatively more: 2.4% and 2.0% in the ninth and tenth deciles, compared to 0.2% and 0.5% in the first and second deciles. This is because the impact of the reduction in tax rates, the most dominant in all income deciles, increases throughout the distribution (up to the ninth decile). In fact, although the increase in the net income guarantee benefits relatively more individuals in the bottom half of the distribution, its impact is quite modest compared to the one of the measures on tax brackets and rates.

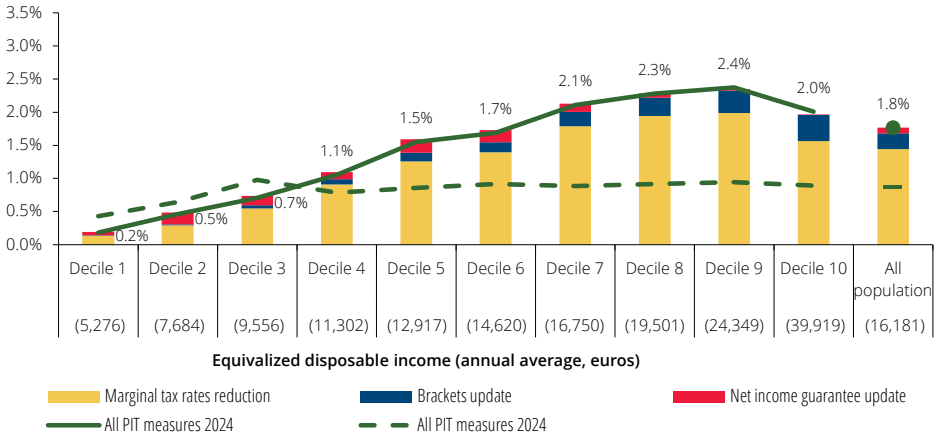
Chart B3.1 • PIT rates and brackets | 2023 and 2024



Source: PIT legislation and 2024 State Budget. | Notes: Taxable income already considers allowances, amog which the net income guarantee.

8. For further details on the EUROMOD, see Sutherland and Figari (2013), "EUROMOD: the European Union tax benefit microsimulation model", *International Journal of Microsimulation*, International Microsimulation Association, 1(6), 4–26 and visit https://euromod-web.jrc.ec.europa.eu/.

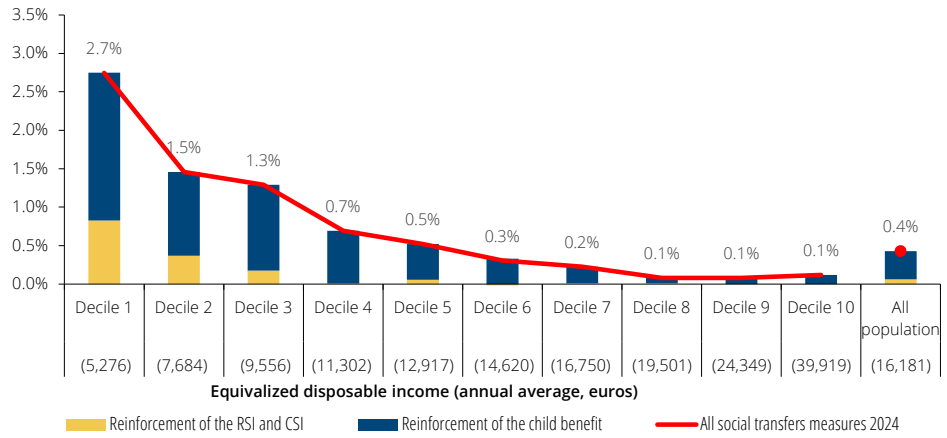
Chart B3.2 • Cumulative impact of the PIT measures | In percentage of the equivalized disposabble income



Source: Banco de Portugal calculations based on EUROMOD simulations and EU-SILC 2021 data. | Notes: The quantification of the direct effects of the measures on the disposable income distribution is made against a no-policy change baseline scenario, where temporary meausures are, by their nature, absent, and only the minimum wage and the social support index were updated. Households are distributed by deciles according to their equivalized disposable income in the baseline scenario. The calculation of the equivalized disposable income uses the OECD modified scale where the first adult has a weight of 1, additional members aged 14 or more a weight of 0.5 and children aged up to 14 a weight of 0.3.

On the expenditure side, the increase in social benefits includes a raise in the reference values of the social integration income and the solidarity supplement for the elderly – to €229.5 and €550 per month respectively – and an increase in the child benefit of €22 per month per child and young adult. The overall average impact of these changes on households' disposable income is 0.4%, with the impact of the increase in the child benefit prevailing (Chart C3.3). In terms of distribution, the effect of the increase in benefits is positive for all income deciles, but its effect declines across the distribution of disposable income, benefiting relatively more lower income households. For households in the first decile, the increase in these social benefits represents an increase in their disposable income close to 3%, dropping to 1.5% in the second decile. If we consider the removal of the temporary measures in force in 2023 – the extraordinary support of €15 per month for households with children and young adults and the support of €360 per year for vulnerable households – the overall net effect on the disposable income of households in the first and second deciles would be negative (-1.8% and -0.9%).

Chart B3.3 • Cumulative impact of the social transfers measures | In percentage of the equivalized disposable income



Source: Banco de Portugal calculations based on EUROMOD simulations and EU-SILC 2021 data. | Notes: The quantification of the direct effects of the measures on the disposable income distribution is made against a no-policy change baseline scenario, where temporary meausures are, by their nature, absent, and only the minimum wage and the social support index were updated. Households are distributed by deciles according to their equivalized disposable income in the baseline scenario. The calculation of the equivalized disposable income uses the OECD modified scale where the first adult has a weight of 1, additional members aged 14 or more a weight of 0.5 and children aged up to 14 a weight of 0.3.

Box 4 • Performance of Portuguese exports of goods and services

Portuguese exports of goods and services grew more than external demand in real terms in 2021-22 and in the first half of 2023. This favourable performance extends the trend of market share gains observed since 2016, interrupted only by the pandemic shock in 2020 (Chart B4.1).[9]

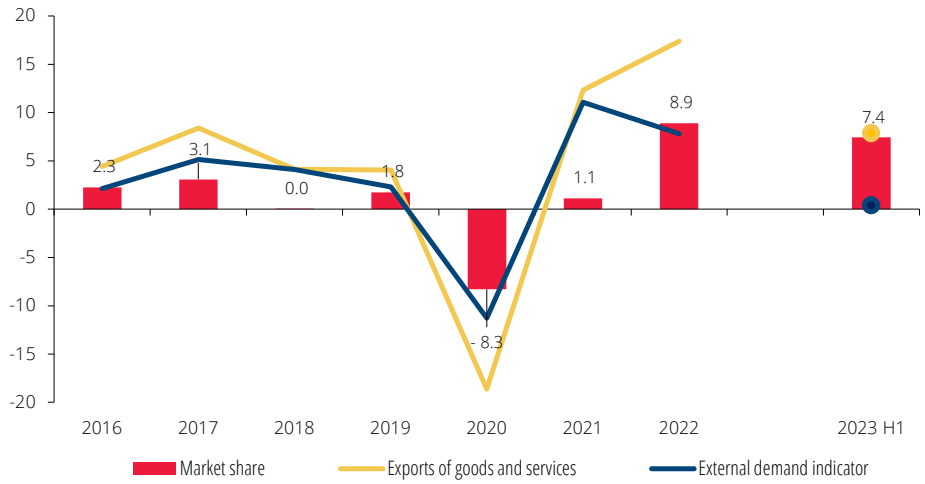
Assessing the performance of exports in volume is only possible in aggregate terms, being based on a comparison with an external demand indicator where imports from each country are weighted by their relevance as a destination for Portuguese exports, but where the sectoral composition is not considered.

The constant market share methodology allows for a detailed analysis of Portuguese exporters' shares by product/geographic market over the same period. However, data with the necessary breakdown are only available in nominal terms, therefore changes in market share may result from gains or losses in volume or from relative price changes. Notwithstanding possible differences in the dynamics of aggregated market shares in volume and in nominal terms, this analysis has the advantage of identifying the contributions of specific markets to changes in the aggregate share. Fuels were excluded from exports of goods as the price of this type of product varies sharply, affecting the findings of the analysis. Furthermore, recent detailed data on imports of goods by product are only available for European Union countries, which explains the decision to focus the

9. For an analysis of further back years, see Box – "Recent developments in the market share of Portuguese exports", *Economic Bulletin*, June 2018. Between 2008 and 2017, more than half of the accumulated real growth in exports of goods and services was associated with market share gains.

analysis on this market. The European Union's share of total exports of goods and services in 2022 was 64.4% (69.5% for goods and 55.4% for services).

Chart B4.1 • Exports of goods and services, external demand indicator and market share, in real terms | Rate of change in percentage



Sources: ECB and Statistics Portugal (National accounts) (Banco de Portugal calculations). | Note: The external demand indicator is calculated by the ECB as a weighted average of the volume growth of goods and services imports of the main trade partners of Portugal. Each partner is weighted by its share in total exports. The change in goods and services exports market share is calculated comparing the real change of Portuguese exports with the change of this external demand indicator.

The constant market share methodology breaks down the difference between the change in Portuguese exports to the EU and total imports from the EU into the "market share effect" and the "combined structure effect". The first corresponds to an aggregation of the market share changes in individual product/country's markets. The second assesses the impact of export specialisation on the differential, which will be positive if the country specialises in sectoral or geographic markets with greater buoyancy in global imports.

Between 2016 and the first half of 2023, Portuguese intra-EU exports of goods excluding fuel grew more on average than imports from the EU (Table B4.1). The differential was only negative in 2020-21, with the average for the period analysed standing at 1.4 p.p.. The breakdown of this differential shows that the market share effect was decisive – with an average contribution of 1.7 p.p. over the period, being positive every year except 2022. The contribution of the structure effect was slightly negative (-0.3 p.p. on average), pointing to a negligible impact of the relative specialisation of goods exports.

Table B4.1 • Exports of goods excluding energy to the EU – constant market share analysis | Rate of change in percentage and contributions in percentage points

		2016	2017	2018	2019	2020	2021	2022	2023 H1	2016–23 H1 (average)
Portuguese exports intra-EU	%	6.0	8.2	9.0	5.5	-8.1	17.6	19.8	5.0	7.9
EU total imports	%	2.8	7.9	5.0	2.6	-5.5	17.8	19.7	1.2	6.4
Diferential (total effect)	p.p.	3.2	0.4	4.0	2.9	-2.6	-0.2	0.0	3.8	1.4
Contributions:										
Market share effect	p.p.	2.8	1.0	4.5	3.1	0.5	0.4	-1.2	2.4	1.7
Combined strucuture effect	p.p.	0.4	-0.6	-0.5	-0.2	-3.1	-0.6	1.2	1.3	-0.3

Sources: Eurostat and Statistics Portugal (Banco de Portugal calculations). | Notes: Imports from 26 EU partners were considered, broken down by product (11 product groups, defined from the Combined Nomenclature), resulting in 286 individual country/product markets. The total effect is given by the difference between the growth rate of Portuguese goods exports to the EU and the growth rate of total goods imports from the EU and can be broken down in two effects: (i) a market share effect that measures the impact of the change in market share in each market (country/product), calculated as the difference between the growth rate of Portuguese exports and the growth rate of imports in each individual market, weighted by the share of each individual market in the total Portuguese exports to EU; and (ii) a combined structure effect that measures the impact of the relative concentration of Portuguese exports in individual markets country/product with growth above or below the average imports to EU. For more details on the methodology see Amador, J. e Cabral, S. (2008), "The Portuguese export performance in perspective: a constant market share analysis", *Economic Bulletin*, Banco de Portugal, Autumn 2008.

The main contributors to the market share effect were gains in markets for machinery and electrical appliances, transport equipment, minerals and base metals, miscellaneous products (essentially optical and medical instruments and furniture) and agri-food (Chart B4.2). These results reveal the competitiveness of Portuguese firms in the individual markets considered. These products accounted for 62.2% of total intra-UE exports of goods excluding fuels in 2022. On the other hand, there were relatively systematic share losses over the period under analysis in apparel and clothing accessories, footwear and accessories, stone, plaster, ceramics and glass markets. The weight of these exports has been falling, standing at 13.6% in 2022. By geographic market, there were average gains in most of the EU's main trading partners, especially the French and Spanish markets (average contribution of 0.6 and 0.4 p.p. respectively).

In the case of trade in services, Portugal's exports to the EU grew by an average of 5.3 p.p. above EU imports between 2016 and the first half of 2023 (Table B4.2). As in the case of goods, this differential predominantly reflects the market share effect, which totalled 3.6 p.p. on average. The structure effect was also positive on average (1.6 p.p.), but with sharp changes over recent years. This development is a result of from Portugal's specialisation in tourism – with greater weight in overall exports of services to the EU than in EU imports (51% and 16% respectively, in 2019) – leading to an increased exposure to the very steep fall in this market in 2020 and the subsequent recovery.

The most significant contribution to the market share effect was associated with travel and tourism services (2.1 p.p.) (Chart B4.3).[10] Also noteworthy was the contribution of exports of telecommunications, computer and information services (0.9 p.p.), with significant gains in market share, especially since 2018. In terms of geographic markets, market share gains have been widespread, with the German and French markets standing out (contributions of 1.2 and 1.0 p.p. respectively).

10. Gains in EU tourism source markets were particularly significant in 2016-17 (contribution of 4.4 p.p. on average) and continued in the post-pandemic recovery. In the first half of 2023, the analysis points to a slight drop in tourism's share in the EU.

Chart B4.2 • Market share effect in exports of goods excluding energy to the EU – contribution by product | Percentage points, 2016 – 2023H1 average

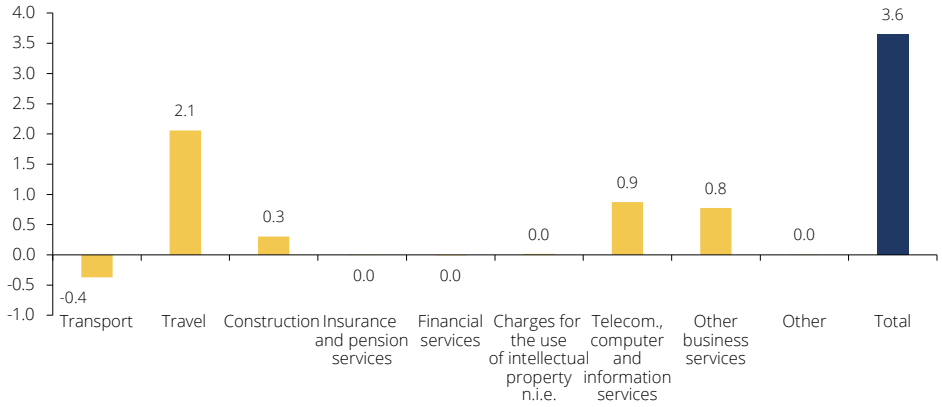
Sources: Eurostat and Statistics Portugal (Banco de Portugal calculations). | Note: The market share effect measures the impact of changes in share in each product/country market and is calculated by aggregating the difference between the growth rate of Portuguese exports and the growth rate of imports in each individual market, weighted by its share in total Portuguese exports to the EU.

Table B4.2 • Exports of services to the EU – constant market share analysis | Rate of change in percentage and contributions in percentage points

		2016	2017	2018	2019	2020	2021	2022	2023 H1	2016–23 H1 (average)
Portuguese exports intra-EU	%	9.8	14.4	10.9	6.2	-32.2	24.7	47.6	20.0	12.7
EU total imports	%	3.2	6.6	5.4	13.5	-12.0	10.1	23.2	9.3	7.4
Diferential (total effect)	p.p.	6.6	7.8	5.4	-7.3	-20.2	14.6	24.4	10.7	5.3
Contributions:										
Market share effect	p.p.	5.9	6.6	4.0	-1.3	-0.1	5.2	3.6	5.3	3.6
Combined strucuture effect	p.p.	0.6	1.2	1.5	-5.9	-20.1	9.5	20.8	5.4	1.6

Sources: Eurostat and Banco de Portugal (Banco de Portugal calculations). | Note: Imports from 26 EU partners were considered, broken down by service (9 types of services, according to the 6th edition of the IMF Balance of Payments Manual), resulting in 234 individual country/service markets. See note to the previous table regarding the constant market share methodology.

Chart B4.3 • Market share effect in exports of services to the EU – contribution by type of service | Percentage points, 2016 – 2023H1 average



Sources: Eurostat and Banco de Portugal (Banco de Portugal calculations). | Notes: The market share effect measures the impact of changes in share in each service/country market and is calculated by aggregating the difference between the growth rate of Portuguese exports and the growth rate of imports in each individual market, weighted by its share in total Portuguese exports to the EU. The aggregate "Other" includes Manufacturing services on physical inputs owned by others, Maintenance and repair services n.i.e., Personal, cultural, and recreational services other than audiovisual and related services and Government goods and services n.i.e.

II Special issue

The deleveraging of Portuguese firms in the European context

The deleveraging of Portuguese firms in the European context[1]

The leverage of Portuguese firms has been on a downward trend over the past 15 years. The 2008 global financial crisis marked a shift in a trend characterised until then by a gradual build-up in leverage. The leverage ratio, defined as debt as a percentage of assets, fell from 60% in June 2008 to 49% in June 2023. Restrictions on access to financing and the global downturn have helped to set Portugal, and most advanced economies, on the path to deleveraging. The sovereign debt crisis in the euro area in 2010-2012 helped to continue this adjustment in firms' capital structures. However, the period of economic upturn that followed was not accompanied by an increase in firms' leverage. On the contrary, the deleveraging trend in Portugal became more pronounced from 2013 onwards, despite historically low interest rates. In the euro area as a whole, this period of broad access to financing was also accompanied by a decrease in firms' leverage.

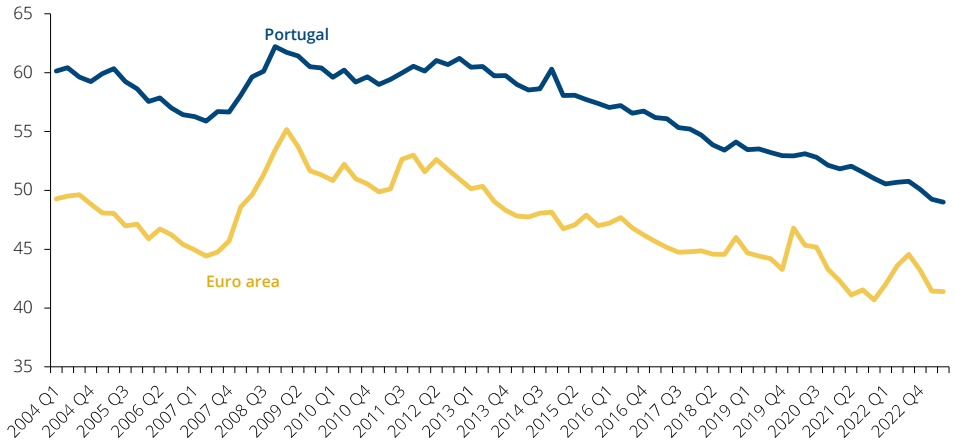
On aggregate, Portuguese firms have structurally higher leverage ratios than the European average. In June 2023 Portuguese firms' leverage ratio was 49%, compared to 41% in the euro area. However, this may reflect differences in firms' characteristics that make up the Portuguese business structure. For instance, sectoral representativeness may be different, as well as the size of the firms or their profitability. Therefore the aggregate analysis of the Portuguese firms' leverage ratio should be supplemented by an analysis at firm level, by comparing leverage levels for firms with similar features. This analysis suggests that, if the features of the firms and the economy are considered, Portuguese firms' leverage ratios are broadly in line with expectations, compared to what is registered in several euro area countries.

Portuguese and European firms' deleveraging

Over the past two decades, Portuguese firms have significantly reduced their leverage, defined as debt as a percentage of assets (Chart 1). During this period, developments in Portuguese leverage followed the European trend. In June 2023 Portuguese firms' debt represented 49% of assets, compared to 41% for euro area firms.[2] In June 2008, these ratios were 60 and 50% respectively.

1. Prepared by Diana Bonfim, Pedro Moreira and Nuno Silva.
2. A country's corporate indebtedness can also be measured as debt as a percentage of GDP. If this measure is considered, Portuguese firms' leverage was lower than that of euro area firms in June 2023 (119% and 125% respectively). However, this method of measuring leverage compares a relatively structural dimension of firms (their debt) with the creation of value in the economy over the course of a year (GDP), meaning that the evolution of this indicator is sometimes more affected by the cyclical behaviour of the economy than by changes in firms' capital structure. This indicator also shows a deleveraging in Portuguese firms between 2012 and 2019. Since then, this ratio has remained broadly stable and lower than that seen in the euro area.

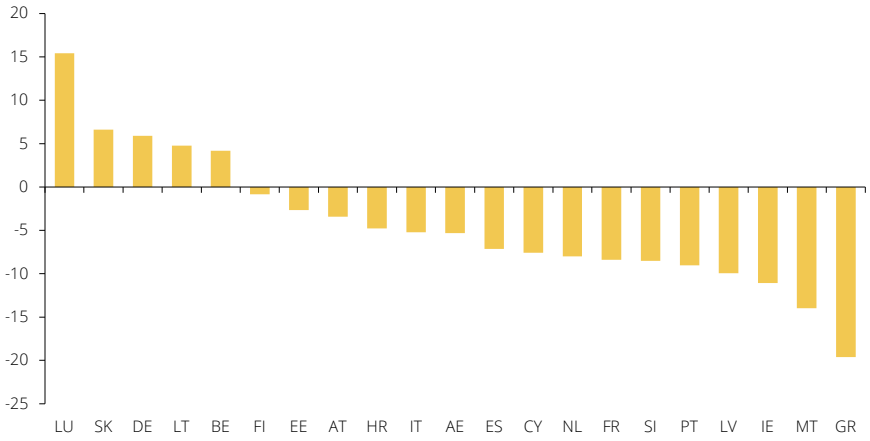
Chart 1 • Firms' leverage in Portugal and in the euro area | Percentage



Source: ECB. | Notes: leverage ratio defined as debt as a percentage of assets.

Structurally, Portuguese firms have a higher leverage ratio than those in the euro area. At the end of the second quarter of 2023, leverage ratios were higher than the Portuguese ratio in eight euro area countries: Slovakia (64%), Germany (60%), Croatia (58%), Luxembourg (56%), Malta (54%), Cyprus (50%), Austria (50%) and Lithuania (49%). This contrasts with the end of 2014, before the onset of the most pronounced deleveraging period, when Portuguese firms were amongst the three countries with the highest debt ratios (surpassed only by Croatia, which was not part of the euro area at the time, and Malta). This development represents one of the most marked deleveraging processes in Europe (Chart 2).

Chart 2 • Change in the leverage ratio between 2015 Q1 and 2023 Q2 | In percentage points



Source: ECB. | Notes: leverage ratio defined as debt as a percentage of assets.

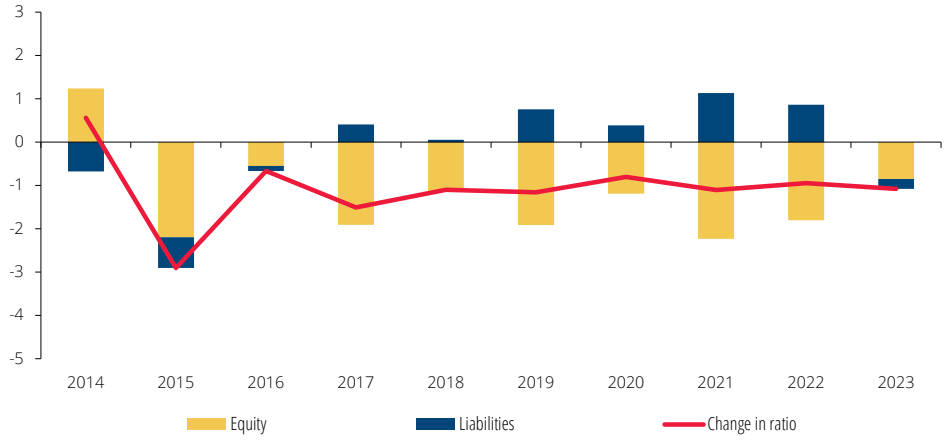
Firms may cut their leverage in two ways: by reducing debt or increasing equity. Each unit of a firm's assets may be financed by debt or equity. Less use of debt and greater recourse to equity, per unit of assets, means a reduction in firms' leverage. Equity developments reflect the evolution of firms' operating results, dividend payments or receipts and capital injections, as well

as revaluations made to firms' asset values. Debt developments reflect new debt issues with financial institutions, trading partners and shareholders (which is usually significant in Portugal), as well as the repayment of loans previously contracted.

Portuguese firms' deleveraging since 2015 has shown a steady increase in equity (Chart 3). Note that this analysis refers to all firms operating at all times. Therefore the adjustment also reflects the birth and death of firms. Every year since 2015, the increase in Portuguese firms' equity has contributed to their deleveraging. This increase was significant in 2015, 2017, 2019, 2021 and 2022. In these years, the increase in equity contributed around 2 percentage points to the decrease in the leverage ratio. The decrease in debt was only significant between 2014 and 2016 and, more recently, in 2023. Debt increased in the remaining years, partially helping to mitigate the impact of the increase in equity on reducing firms' leverage. Debt increased significantly in 2021 and 2022, partly reflecting the increased use of bank financing during the pandemic (in part through government-backed loans).

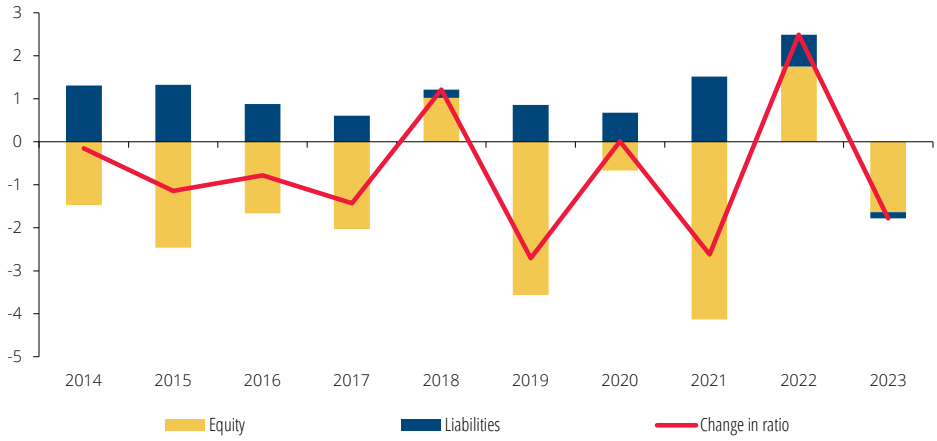
In the euro area, firms' deleveraging also reflected an increase in equity (Chart 4). Equity made a negative contribution only in 2018 and 2022, resulting in an increase in leverage in those years. Contributions to the change in leverage differ from those in Portugal to the extent that the increase in corporate debt in the euro area contributed positively to firms' leverage in every year, except for 2022. Thus, while Portuguese firms' deleveraging mainly reflected an increase in equity and was accompanied by debt containment, the impact of the increase in equity in the euro area as a whole was partially mitigated by an increased recourse to debt. The trend in Portugal was very similar to that in the countries most hit by the sovereign debt crisis (Greece, Italy, Ireland, Portugal and Spain).

Chart 3 • Contributions to the change in the leverage ratio in Portugal | In percentage points



Source: ECB. | Notes: leverage ratio defined as debt as a percentage of assets.

Chart 4 • Contributions to the change in the leverage ratio in the euro area | In percentage points



Source: ECB. | Notes: leverage ratio defined as debt as a percentage of assets.

Leverage in Portuguese and European firms and its features

Firms' leverage ratios differ across countries for various reasons. The business structure may have specific characteristics, resulting in different financing needs. For instance, there may be a different sectoral composition to the economy or firms may have characteristics that make them different, which may be relevant to their decisions on capital structure.

To gauge how far (Portuguese) firms are from expected leverage ratios, the methodology underlying the literature on target leverage ratios was followed.[3] First, the expected leverage ratio for each firm is estimated, based on a regression where the dependent variable is the leverage ratio of each firm, and the independent variables are observed and unobserved characteristics of firms and their countries. It is assumed that these characteristics have an equal impact on firms' leverage ratios across countries. The model is estimated based on five euro area countries which data is available for (Belgium, Slovakia, Spain, France and Italy). The estimated values for the dependent variable represent the ratio that could be expected, on the grounds of firms' characteristics. Second, the estimated value for the leverage of Portuguese firms obtained with this regression is compared with values actually recorded. This helps to understand whether the firm's leverage is lower or higher than suggested by its characteristics. More formally, the methodology consists of estimating the following regression:

$$\frac{D}{A}_{isjt} = \alpha_1 X_{it-1} + \alpha_2 Z_{jt} + \alpha_s + \alpha_t + \varepsilon_{isjt} \qquad (1)$$

where the dependent variable, $\frac{D}{A}_{isjt}$, is the ratio between the firm's i debt and assets, active in sector s, in country j, in year t. X_{it-1} is a vector of firms' characteristics and Z_{jt} a vector of countries'

3. See, for instance, Leary and Roberts (2005), Flannery and Rangan (2006), Strebulaev (2007), Lemmon et al. (2008), Huang and Ritter (2009). The methodology adopted is explained in more detail in Antão and Bonfim (2012).

characteristics. Firms' characteristics are considered with a one-year lag. α_s are sector of activity fixed effects and α_t are time fixed effects. These fixed effects make it possible to respectively control by unobserved characteristics of the sectors of activity and by time effects common to all firms. The characteristics of the firms considered in regressions are profitability (EBITDA over assets), sales growth, tangible assets over total assets, size (logarithm of total assets) and current assets over current liabilities. All these variables are considered to be potentially relevant in explaining firms' leverage (Graham and Leary, 2011). Moreover, the spread between the rate of return on Treasury bonds at 10 years of each country and Germany and real GDP growth in each country are considered as country characteristics.

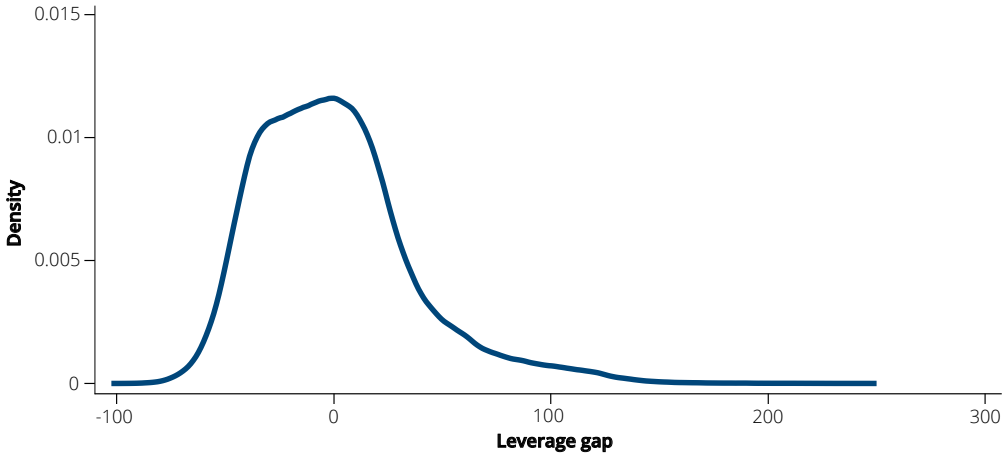
The estimation made use of data from firms in several euro area countries, available on the iBACH platform. iBACH (micro Bank of Account of Companies Harmonised) of the ECCBSO (European Committee of Central Balance Sheet Data Offices) is a database that contains harmonised statistics on annual accounts of European non-financial firms. This database is the result of the cooperation of several central banks in the euro area, allowing for a comparison of non-financial firms in various countries. The database contains data from firms in Belgium, Slovakia, Spain, France, Italy and Portugal. Data were collected between 2000 and 2022. However, the representativeness of the sample varies across years and countries. For instance, the database only includes all the countries mentioned from 2011 onwards and only Belgium has data for 2022. The representativeness of the sample is especially high for Portugal and Italy. Data are available on almost all firms in these two countries. The database is made up of 92% micro and small-sized enterprises, a value slightly lower than that registered for Portugal (97%). Several filters were applied to the data: observations on firms with no employees, zero or negative assets, negative debts, inactive firms, financial and insurance corporations, general government institutions, firms without the information required to calculate the size of the firm and observations with inconsistencies in the calculation of the leverage value were excluded. All in all, the database has almost 23 million observations (Table A1 in Annex). The sectoral composition of the economy exhibits some differences across countries (Table A2 in Annex). The macroeconomic and financial variables were obtained from Eurostat.

For the purpose of estimating the target debt ratio, based on equation (1), data from all countries except Portugal are used. The estimation of the regression for these countries provides a benchmark for obtaining the coefficients for corporate and economic variables, as well as fixed effects for sector of activity and year. The results of this estimation are shown in Table A3 in the Annex. Subsequently, the coefficients obtained through this estimation apply to Portuguese firms, making it possible to obtain an estimate of what the expected ratio would be for each of these firms in each year, given their characteristics. The difference between the actual leverage ratio and the value estimated using this methodology is the leverage gap. A positive gap suggests that the firm's debt is higher than expected, given its characteristics. This analysis provides a more informed comparison than simply comparing leverage ratios. For instance, Portuguese firms may have higher ratios than the other countries under review as their characteristics are different from firms in most of these countries.

Chart 5 presents the distribution of the leverage gap for Portuguese firms between 2015 and 2021, showing that Portuguese firms' leverage is, on average, not out of line with their characteristics. The average (unweighted) value of the gap is 0.1 percentage points, meaning that, on average, the leverage ratio of Portuguese firms is very close to what is expected given their characteristics. However, the median firm has a leverage ratio around 3.9 percentage points lower than expected (the median leverage ratio in this sample is 60%). This means that the median firm's leverage is lower than expected given its characteristics. Overall, there are more firms with lower than expected leverage ratios than with higher ones.

However, the range of situations varies significantly. For 25% of the firms the difference between their leverage and their targets is less than -26 percentage points, making a bigger difference. For another 25% of firms, the differential is above 18 percentage points. For 10% of the firms, the differential is more than 45 percentage points, suggesting significantly higher levels of leverage than expected given their characteristics. This skew on the right-hand tail of the distribution means that the mean is higher than the median.

Chart 5 • Leverage gap distribution for Portuguse firms between 2015 and 2021 | Percentage

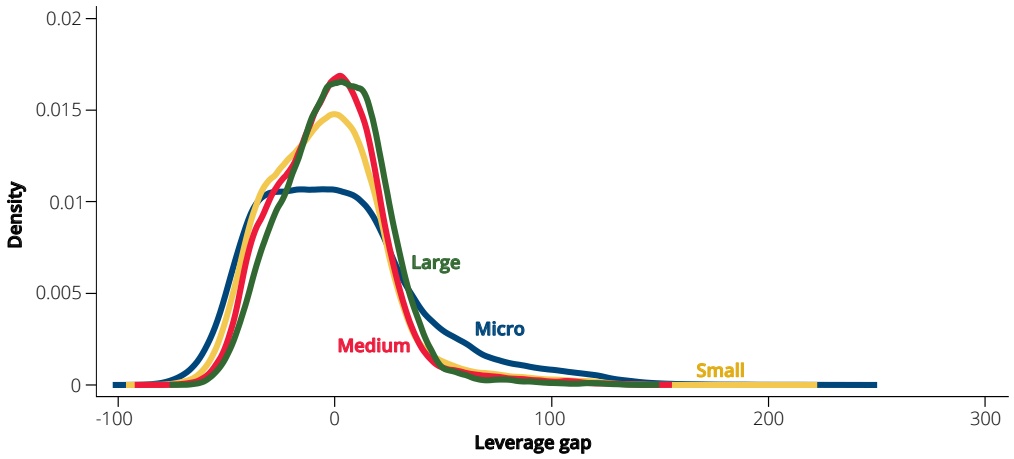


Source: iBACH (micro Bank of Account of Companies Harmonised), ECCBSO (European Committee of Central Balance Sheet Data Offices), Eurostat and Banco de Portugal calculations | Notes: leverage gap is defined as the difference between the firms' leverage and the expected ratio. This ratio is calculated using the estimation of equation (1) for the set of companies with information available in iBACH, excluding Portuguese firms. A positive gap means that the firm has a higher leverage than its characteristics suggest.

The size of the firms may play an important role in explaining the heterogeneity of the leverage gap. Chart 6 shows the empirical distribution of the gap by firm size.[4] Dispersion is greater for smaller firms. Micro firms show greater variation in their leverage gap. On average, the gap is 1.2 percentage points, i.e. these firms have, on average, higher leverage ratios than those suggested by estimates based on data from other European countries. The positive average gap value for micro firms is justified by the existence of some firms with very high gaps. In fact, the median gap is -3.5 percentage points, close to the -3.9 percentage points registered for firms as a whole. Small firms are those with the most negative gaps (the average gap is -4.3 percentage points and the median -5.5 percentage points). Given their characteristics, it would be expected that their leverage would be higher. Medium-sized enterprises are more in line with expectations (the average gap is -2.7 percentage points and the median -2.8 percentage points). Large firms are most in line with expectations. The average gap is 0.2 percentage points and the median is 0.3 percentage points.

4. The classification of enterprises follows the European Commission Recommendation of 6 May 2003 concerning the definition of micro, small and medium-sized enterprises (2003/361/EC).

Chart 6 • Leverage gap distribution for Portuguse firms between 2015 and 2021, by firm size | Percentage

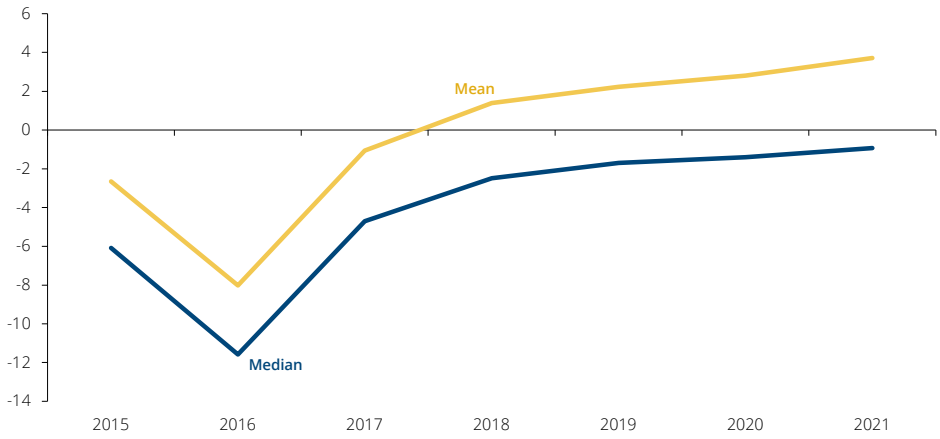


Source: iBACH (micro Bank of Account of Companies Harmonised), ECCBSO (European Committee of Central Balance Sheet Data Offices), Eurostat and Banco de Portugal calculations | Notes: leverage gap is defined as the difference between the firms' leverage and the expected ratio. This ratio is calculated using the estimation of equation (1) for the set of companies with information available in iBACH, excluding Portuguese firms. A positive gap means that the firm has a higher leverage than its characteristics suggest.

The mean and median leverage gap have been close to zero in recent years (Chart 7). In 2016 the gap decreased temporarily. Since then, its mean and median values have been close to zero, suggesting greater alignment between leverage ratios registered and those estimated on the basis of firms' characteristics and macroeconomic and financial conditions. Therefore, despite Portuguese firms' significant deleveraging, it seems to correspond to a convergence towards values closer to those expected, given their characteristics. The gap's most negative values at the beginning of the period under analysis may reflect greater restrictions on access to finance in a period of recovery immediately following the sovereign debt crisis.

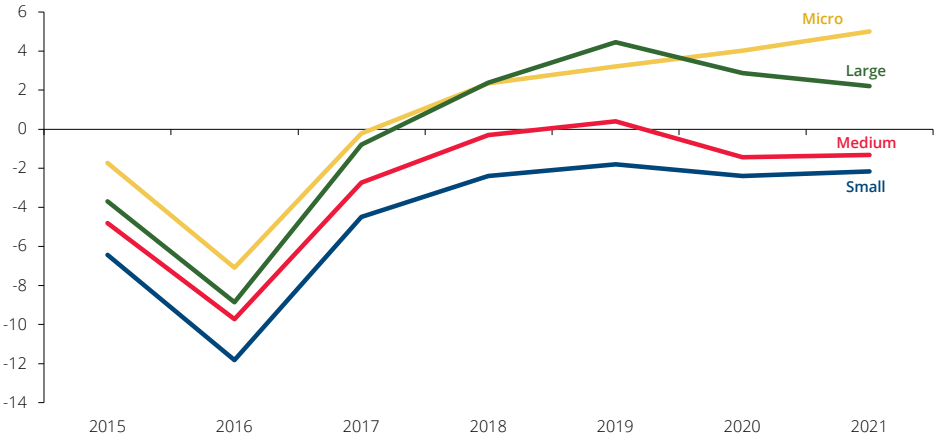
The leverage gaps of firms in different size classes showed a different trend in recent years (Chart 8). Micro firms stand out from the rest, having increased their leverage gap since 2016. For the other groups of firms, the gap narrowed in 2020 and 2021. In 2021, the last year for which it is possible to calculate the gap, micro firms had an average gap of 5 percentage points. However, given the high dispersion in this group of firms, the median gap was -0.3 percentage points. These results suggest that there are some micro firms with much higher leverage ratios than expected, despite not reflecting the situation of most micro firms. In 2021, small and medium-sized enterprises had lower leverage ratios than expected (-2.2 and -1.3 percentage points respectively). Large-sized enterprises, on the other hand, had leverage ratios slightly higher than expected (2.2 percentage points). Overall, this analysis suggests that there are no significant misalignments compared to what might be expected based on firms' characteristics.

Chart 7 • Portuguese firms' leverage gap by year | In percentage points



Source: iBACH (micro Bank of Account of Companies Harmonised), ECCBSO (European Committee of Central Balance Sheet Data Offices), Eurostat and Banco de Portugal calculations | Notes: leverage gap is defined as the difference between the firms' leverage and the expected ratio. This ratio is calculated using the estimation of equation (1) for the set of companies with information available in iBACH, excluding Portuguese firms. A positive gap means that the firm has a higher leverage than its characteristics suggest.

Chart 8 • Portuguese firms' mean leverage gap by size and year | In percentage points



Source: iBACH (micro Bank of Account of Companies Harmonised), ECCBSO (European Committee of Central Balance Sheet Data Offices), Eurostat and Banco de Portugal calculations. | Notes: leverage gap is defined as the difference between the firms' leverage and the expected ratio. This ratio is calculated using the estimation of equation (1) for the set of companies with information available in iBACH, excluding Portuguese firms. A positive gap means that the firm has a higher leverage than its characteristics suggest.

The leverage gap varies significantly across sectors of activity (Table 1). The highest positive gaps are found in firms in real estate, education, arts, and healthcare sectors. In these sectors there seems to be excessive corporate indebtedness, given their characteristics. On the other hand, the gap is especially negative in firms in electricity, information and communication activities, transport and construction firms. Cross-referencing data by sector and size, the most negative values are in large firms in the education sector, micro and small-sized electricity firms, medium-sized water supply firms, small construction firms and small and medium-sized accommodation and food service firms. The highest leverage against expectations is registered for large-sized electricity firms (in contrast to micro and small-sized enterprises in this sector), real estate firms (in almost all size classes) and large-sized firms in the healthcare industry.

Table 1 • Portuguese firms' mean leverage gap (2015-2021), by sector and size | In percentage points

	Micro	Small	Medium	Large	Total
Agriculture	4.88	-2.71	-0.67	7.90	3.81
Mining and quarrying	6.01	-3.28	4.10	4.83	2.43
Manufacturing	0.91	-2.65	-4.12	-5.72	-0.78
Electricity, gas and water	-7.68	-7.12	0.88	12.78	-4.84
Water supply	-0.57	-4.40	-8.69	-6.31	-3.15
Construction	-2.24	-7.51	-4.83	1.81	-3.39
Wholesale and retail trade	1.49	-6.39	-4.06	0.31	0.20
Transporting and storage	-3.64	-4.66	-0.24	2.11	-3.65
Accommodation and food service activities	3.23	-7.94	-8.53	-5.79	0.56
Information and communication	-5.13	-2.09	1.89	4.61	-4.27
Real estate activities	8.61	1.74	7.60	27.69	8.19
Professional, scientific and technical activities	-1.45	-1.24	3.51	9.85	-1.35
Administrative activities	-1.41	-1.27	2.98	4.57	-1.03
Education	7.34	6.01	2.94	-15.01	6.73
Human health activities	5.41	0.41	4.69	16.96	4.93
Arts, entertainment and recreation	6.72	0.77	2.25	-0.05	6.00
Other service activities	2.47	-3.67	-4.50	4.80	1.88
Total	1.18	-4.31	-2.66	0.16	0.11

Source: iBACH (micro Bank of Account of Companies Harmonised), ECCBSO (European Committee of Central Balance Sheet Data Offices), Eurostat and Banco de Portugal calculations. | Notes: leverage gap is defined as the difference between the firms' leverage and the expected ratio. This ratio is calculated using the estimation of equation (1) for the set of companies with information available in iBACH, excluding Portuguese firms. A positive gap means that the firm has a higher leverage than its characteristics suggest.

Demand and supply factors in Portuguese firms' deleveraging

Developments in corporate financing are the result of the balance between credit supply and demand, as well as corporate decisions regarding equity and profit accumulation/ distribution. Despite the exceptionally accommodative monetary policy, there may have been restrictions on credit supply following the financial crisis and the sovereign debt crisis in the euro area. In the aftermath of losses accumulated during the crises that characterised the onset of the previous decade, banks may have become more conservative in their lending policies. Financial regulation and supervision, thoroughly revised in the wake of these crises, may have contributed likewise. Furthermore, in a context of strong valuations in Portuguese real estate markets and other European countries, there has been a rearrangement in loan portfolios in favour of households. In turn, there are factors that may be affecting the demand for credit. During the financial crisis, the most indebted Portuguese firms found themselves in a more vulnerable position, having been pushed into abrupt and costly adjustments. Excessive debt contributed to a number of firms going bankrupt. It is therefore expected that there may have been a decrease in the appetite for debt. Moreover, the economy has changed, and the weight of services has increased. The financing needs of a manufacturing firm are different from those of a services firm. On this specific point, there are demand and supply factors that interact, to the extent that firms with fewer tangible assets have less collateral available to guarantee financing. Finally, tax regulations in Portugal may also have reduced the appetite for debt, in favour of increasing corporate equity.

The precise identification of the contributions of each of these factors goes beyond what would be feasible in this text, but it lays the foundations for a relevant research agenda for understanding the financing of economic activity in Portugal.

Main findings

Portuguese firms have reduced their leverage over the past decade. Although this trend has been common to most European firms, the effort to reduce debt in Portugal has been more significant, helping Portuguese firms to move away from the group of the most indebted firms in the euro area. The deleveraging effort was mainly the result of an increase in equity. Nevertheless, Portuguese firms' leverage ratio, when weighted by assets, is still 7.6 percentage points higher than the 41% recorded in the euro area.

The evidence provided in this Special issue suggests that leverage is higher in Portugal due to differences in firms' characteristics. Based on a methodology for estimating expected leverage ratios, it is concluded that Portuguese firms have leverage ratios in line with what would be expected given their characteristics. On average, firms are in line with expectations. At the median, Portuguese firms even have lower leverage ratios than expected. However, the analysis shows significant heterogeneity across sectors of activity and smaller firms.

References

Antão, P. and Bonfim, D. (2012). The Dynamics of Capital Structure Decisions, Banco de Portugal *Working Paper* 2016-06.

Flannery, M., and Rangan, K. (2006). Partial Adjustment Toward Target Capital Structures, *Journal of Financial Economics*, 79, 469-506.

Graham, J., and Leary, M. A. (2011). Review of Empirical Capital Structure Research and Directions for the Future, *Annual Review of Financial Economics*, vol. 3:309-345.

Huang, R. and Ritter, J. (2009). Testing Theories of Capital Structure and Estimating the Speed of Adjustment, *Journal of Financial and Quantitative Analysis*, 44, 237-271.

Flannery, M. and Roberts, M. (2005). Do Firms Rebalance Their Capital Structures?, *Journal of Finance*, 60, 2137-2170.

Lemmon, M., Roberts, M. and Zender, J. (2008). Back to the Beginning: Persistence and the Cross-Section of Corporate Capital Structure, *Journal of Finance*, 63, 1575-1608.

Strebulaev, I. (2007). Do Tests of Capital Structure Theory Mean What They Say?, *Journal of Finance*, 62, 1747-1787.

Annex | Tables

Table A1 • Number of observations by country and year

Year	Belgium	Spain	France	Italy	Portugal	Slovakia	Total
2000	57,919	–	–	–	–	–	57,919
2001	60,955	–	–	–	–	–	60,955
2002	63,308	–	–	–	–	–	63,308
2003	70,051	–	60,691	–	5,554	–	246,296
2004	74,777	–	66,363	–	6,193	–	257,333
2005	80,114	–	70,829	–	4,153	–	265,096
2006	84,486	–	78,324	226,817	239,645	–	729,272
2007	88,759	–	190,898	253,286	257,369	–	790,312
2008	90,936	331,413	196,243	275,019	257,124	–	1,150,735
2009	95,444	416,597	194,253	292,492	252,886	–	1,251,672
2010	96,880	421,936	200,577	311,810	265,632	–	1,296,835
2011	104,594	424,299	210,792	333,731	263,136	–	1,336,552
2012	106,917	421,822	212,780	351,198	253,738	–	1,346,455
2013	110,407	429,353	206,939	371,154	251,058	–	1,368,911
2014	113,268	452,654	210,146	383,796	249,122	–	1,408,986
2015	114,874	456,263	213,712	395,997	254,930	–	1,435,776
2016	118,428	466,484	219,377	417,555	260,886	–	1,482,730
2017	117,403	456,481	224,472	475,164	271,730	–	1,545,250
2018	112,882	472,046	227,506	505,788	282,033	36,697	1,636,952
2019	110,723	472,913	231,991	528,284	313,676	37,036	1,694,623
2020	108,566	450,650	262,426	543,728	318,844	36,903	1,721,117
2021	82,256	437,223	270,847	555,378	325,045	37,649	1,708,398
2022	31,386	–	–	–	–	–	31,386
Total	2,095,333	6,110,134	3,949,166	6,221,197	4,362,754	148,285	22,886,869

Sources: iBACH (micro Bank of Account of Companies Harmonised), ECCBSO (European Committee of Central Balance Sheet Data Offices).

Table A2 • Firms' sector composition by country, between 2015 and 2021, as a share of total assets | Percentage

	Belgium	Spain	France	Italy	Portugal	Slovakia
Agriculture	0%	1%	1%	1%	2%	4%
Mining and quarrying	1%	0%	0%	4%	0%	1%
Manufacturing	32%	16%	13%	35%	17%	26%
Electricity, gas and water	8%	10%	1%	7%	10%	4%
Water supply	3%	2%	1%	2%	2%	5%
Construction	4%	6%	5%	6%	7%	5%
Wholesale and retail trade	19%	13%	19%	17%	17%	18%
Transporting and storage	4%	8%	3%	12%	6%	8%
Accommodation and food service activities	1%	2%	2%	2%	4%	2%
Information and communication	4%	4%	5%	7%	4%	3%
Real estate activities	4%	7%	8%	0%	6%	9%
Professional, scientific and technical activities	16%	26%	35%	3%	17%	7%
Administrative activities	3%	2%	4%	3%	3%	4%
Education	0%	0%	0%	0%	0%	0%
Human health activities	1%	1%	1%	0%	2%	2%
Arts, entertainment and recreation	0%	1%	1%	1%	1%	1%
Other service activities	0%	0%	0%	0%	0%	0%
Total	100%	100%	100%	100%	100%	100%

Source: iBACH (micro Bank of Account of Companies Harmonised), ECCBSO (European Committee of Central Balance Sheet Data Offices).

Table A3 • Equation 1 estimation results

EBITDA	**0,01*** **
	(0,00)
Sales growth	**0,02*** **
	(0,00)
Tangible assets	**-0,03*** **
	(0,00)
Log assets	**-0,01*** **
	(0,00)
Current ratio	**-0,02*** **
	(0,00)
Government yield spreads	**0,04*** **
	(0,00)
Real GDP growth	**-0,003*** **
	(0,00)
Observations	11,400,432
Adjusted R2	0.19

Source: iBACH (micro Bank of Account of Companies Harmonised), ECCBSO (European Committee of Central Balance Sheet Data Offices), Eurostat and Banco de Portugal calculations | Notes: The table presents the estimation results of equation 1 for all firms. Portuguese firms are excluded. The dependent variable is the leverage ratio. Standard errors (in parentheses) clustered at firm level. All firms' characteristics are lagged by one year. EBITDA refers to earnings before interest, taxes and depreciation, as a percentage of assets. Tangible assets are considered as a percentage of assets. The current ratio is defined as current assets over current liabilities. The government yield spreads is the difference between the yield on each country's 10-year Treasury bonds and that of Germany. Fixed effects by sector of activity and year are included.

III Policy insights

Characterisation and redistributive effects of personal income tax in Portugal

Characterisation and redistributive effects of personal income tax in Portugal[1]

Personal income tax is a key element of modern tax systems. Besides being an important source of fiscal revenue, it is also a preferred instrument to reduce inequality in income distribution. Understanding how it works and analysing its repercussions is therefore crucial to formulating informed policies that, while respecting budgetary constraints, contribute to both economic growth and social welfare.

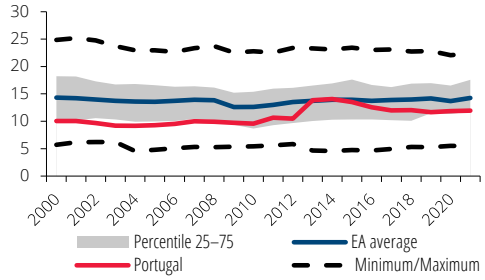
This Policy Insights looks at personal income tax in Portugal, focusing on how it works, its evolution and major legislative changes. In addition, a microsimulation model will be used to assess the tax's progressivity and its incidence on households with different incomes.

The average effective rate of personal income tax in Portugal is low, despite the maximum rate being one of the highest in the euro area.

The incidence of personal income tax in the various countries should be compared on the basis of average effective tax rates. Maximum rates, which are generally more easily accessible, have little informative value and marginal rates do not reflect income distribution. The calculation of the average effective personal income tax rate based on macroeconomic data shows that, after a significant increase in 2013, this rate has progressively declined since 2015 (Chart 1). Since 2000, Portugal has been almost always below the euro area average, ranking among the 25% of countries with the lowest average rates of personal income tax in 2021. The maximum rate in Portugal is one of the highest in the euro area (Chart 2) but applies to a very small fraction of households. When calculating average rates from macroeconomic data, it is important to note that the figures are very sensitive to the disposable income components included in the denominator. It is not possible, from aggregated data, to find a tax base reflecting the diversity across countries and the specificities of their calculation.

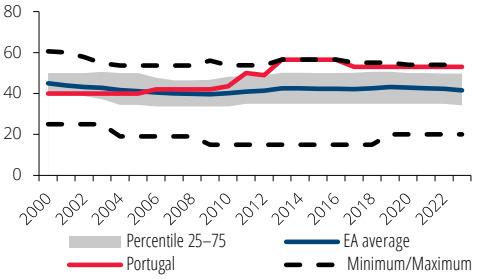
1. Prepared by Cláudia Braz, Sara Riscado, Sharmin Sazedj and Lara Wemans.

Chart 1 • Average PIT rate in Portugal and the Euro area | As a percentage of wages and social benefits (macroeconomic data)



Source: Eurostat. | Notes: The Euro area average is a simple average of countries. Data for Malta is not available. The average PIT tax rate based on macroeconomic data is calculated using wages and salaries (D.11) and social benefits other than social transfers in kind received by households (D.62) as denominator.

Chart 2 • Top statutory PIT rate in Portugal and the Euro area | In percentage

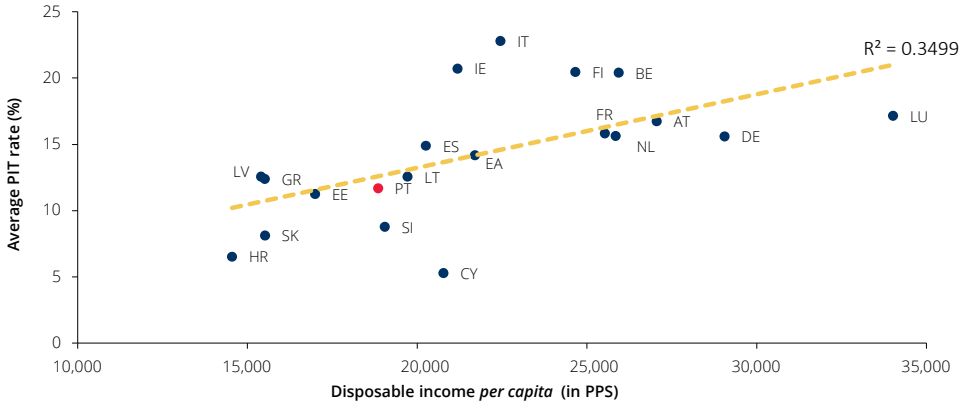


Source: European Commission. | Notes: The Euro area average is a simple average of the countries. The values for Portugal include the surcharge and additional solidarity rates.

In the euro area, lower disposable income *per capita* is associated with a lower average tax rate.

There are several reasons for a positive relationship between the average personal income tax rate and a country's disposable income per capita. In countries with lower average incomes, the tax base, predominantly composed of lower-income individuals, contributes to a lower average tax rate given that these are subject to lower marginal rates, or even exempted from paying taxes, due to social welfare considerations. This positive relationship between the average tax rate and disposable income per capita is observed in the euro area (Chart 3), and Portugal is close to the average ratio.

Chart 3 • Relationship between the average personal income tax rate and income *per capita* in Portugal and the Euro area (2019)



Sources: Eurostat and Banco de Portugal calculations. | Notes: The Euro area average is a simple average of countries. Data for Malta is not available. The average PIT tax rate based on macroeconomic data is calculated using wages and salaries (D.11) and social benefits other than social transfers in kind received by households (D.62) as denominator.

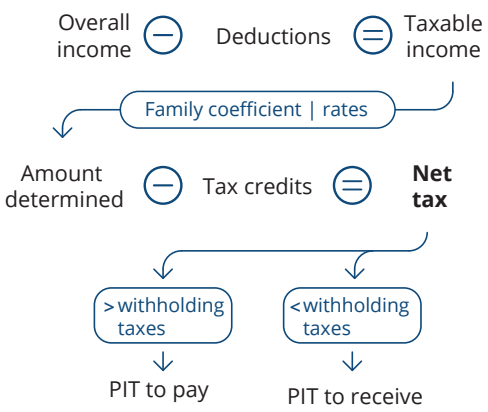
Compared with 2000, the share of personal income tax in GDP and in total public revenue has increased.

In simplified terms, personal income tax in Portugal is calculated on taxable income, corresponding to income minus deductions (Figure 1). A family coefficient is applied to this taxable income, and the tax value is calculated using the rates in force for each income share, from which tax credits are subsequently deducted. Not all income is subject to this taxation scheme. For example, for capital income, taxpayers may opt for final withholding tax rates.

Between 2000 and 2022, personal income tax revenue as a ratio of GDP increased by 1.7 p.p. in Portugal (Chart 4). The growth of personal income tax revenue outpaced that of wages and social benefits income, resulting in an increase in its average rate. This can be attributed to legislative changes, with an estimated impact of 1.3 p.p., and to other factors, including the combined effect of progressivity and changes in the wage structure of the economy, as well as administrative improvements in the effectiveness of revenue collection. In this period, the share of personal income tax in total government revenue also increased, ranking as the second most relevant tax, very close to VAT.

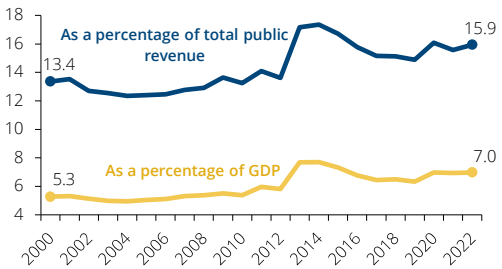
This tax has been subject to numerous legislative changes since 2000. The Economic and Financial Assistance Programme saw an increase in personal income tax: its maximum rate increased to 46.5% in 2011, compared to 40% until 2005 and 42% between 2006 and 2010, having increased to 48% in 2013. A 3.5% surcharge was in force in 2011 and from 2013 to 2016. An additional solidarity rate has applied to the highest incomes since 2012, with a 2.5% rate that year, while a new bracket of 5% was added in 2013. There were also several changes in the number of brackets, which fell from 8 to 5 in 2013, increasing to 7 in 2018 and 9 in 2022. In addition, there was a convergence of taxes on pensions to labour income and limitations were introduced on tax benefits and deductions, in particular for higher-income taxpayers.

Figure 1 • The Personal Income Tax in Portugal



Source: Systematization by Banco de Portugal.

Chart 4 • Personal income tax revenue



Sources: Statistics Portugal and Banco de Portugal calculations.

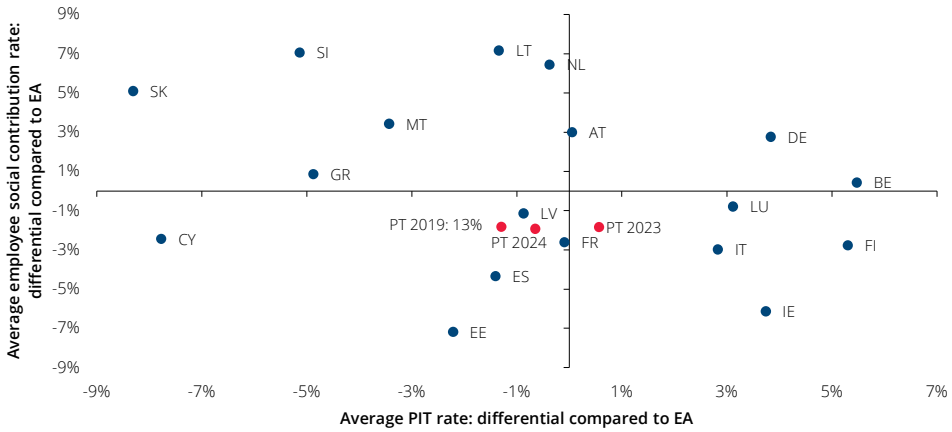
The average personal income tax rate is close to the euro area value, despite displaying greater income variability.

The following analysis uses the EUROMOD model, which simulates direct taxes, social contributions and benefits using microeconomic data, in accordance with the tax and benefit rules in force in each Member State. Microeconomic data comes from the European Union Statistics on Income and Living Conditions (EU-SILC) survey provided by Eurostat.

In 2019, the average personal income tax rate in Portugal, based on tax and gross income simulated by EUROMOD, stood at 13%, close to but below the euro area average (Chart 5). The component of social contributions payable by workers is commonly included in a measure of effective labour income taxation. This option does not change Portugal's relative position. It should be noted, however, that social contributions differ from the personal income tax as they are associated with future benefits.

For 2023, the average personal income tax rate is estimated to increase compared with 2019, given strong nominal income growth in an environment of high inflation. Indeed, the impact of tax progressivity on revenue more than offsets the impact of the legislative changes introduced during this period, including the reform of the minimum untaxed income, the splitting and updating tax brackets and the reduction of marginal rates. As for 2024, the changes to personal income tax included in the State Budget for 2024 should result in a reduction of around 1 p.p. in the average rate.

Chart 5 • Average personal income tax and social security contribution rates paid by workers: differences compared to the Euro Area (2019) | As a percentage of gross income (microdata)



Source: Banco de Portugal calculations based on EUROMOD simulations with EU-SILC data. | Notes: The Euro area average is a simple average of the countries. The average personal income tax (social contributions) rate is calculated as the ratio between the simulated tax (simulated social contributions) and the simulated disposable income before income tax and social contributions.

A simulation of the tax rate in 2019 for a single person with no children earning only income from labour illustrates the variability of income-based taxation. A worker earning half the average wage does not pay personal income tax in Portugal, compared to a 4% rate in the euro area (Table 1). Similarly, a worker receiving the average wage in Portugal pays a personal income tax rate of 10%, compared to 14% in the euro area. Rates are similar for individuals receiving two and a half times the average wage (25%) and are higher in Portugal above this threshold. The rates applied to an individual receiving five times the average wage are 33% in Portugal and 31% in the euro area.

Table 1 • Personal income tax rates for a single individual without dependents, by wage level (2019)

Multiples of the average wage	Portugal	Euro area
0.5	0%	4%
1	10%	14%
2.5	25%	25%
5	33%	31%
15	41%	38%

Source: Banco de Portugal calculations based on EUROMOD simulations with EU-SILC data. | Notes: The Euro area average is a simple average of the countries. These simulations were conducted using the Hypothetical Household Tool (HHoT) in EUROMOD, as described in Hufkens et al. (2019), "The Hypothetical Household Tool (HHoT) in EUROMOD: a new instrument for comparative research on tax-benefit policies in Europe." In Portugal, the average salary in 2019 was 1270 euros per month.

In Portugal, the 20% highest-income households accumulate almost half of the income before personal income tax and support 70% of this tax.

Tax exemption for low incomes and progressive tax rates combined with income inequality leads to the personal income tax revenue being highly concentrated in households with greater resources.

In Portugal, the average personal income tax rate is below 6% in the first three disposable income quintiles per equivalent adult (up to €12,656 per year) and is only above 20% in the last quintile (more than €17,253 per year), illustrating the progressivity of the tax (Chart 6). This is also the only quintile with an average rate higher than the euro area (22% and 20% respectively). These households have a share of 45% of the income before tax in Portugal, higher than the 41% observed in the euro area, and support 70% of the personal income tax.

Chart 6 • Personal income tax distribution by income quintile

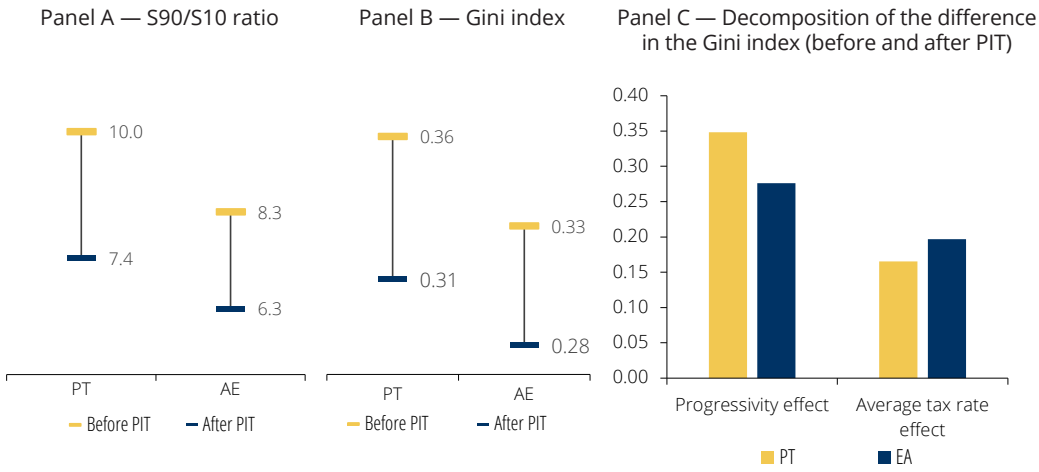
Source: Banco de Portugal calculations based on EUROMOD simulations with EU-SILC data. | Notes: The Euro area average is a simple average of the countries. The average personal income tax rate is calculated as the ratio between the tax and the disposable income before personal income tax and social contributions. Households are distributed across quintiles based on their disposable income per equivalent adult. The calculation of disposable income per equivalent adult uses the OECD modified scale, where the first adult has a weight of 1, additional household members aged 14 or older have a weight of 0.5, and children up to 14 years old have a weight of 0.3.

While personal income tax is more progressive in Portugal, this is not sufficient to eliminate higher income inequality.

There are several indicators to measure inequality in income distribution, with the Gini index and the S90/S10 ratio being two of the most common. In Portugal, income inequality is higher than the euro area average according to both indicators, both before and after taxes (Charts 7A and 7B). Before taxes, the 10% of households with the highest resources have an income ten times higher than the 10% with the lowest income, and applying the personal income tax lowers this ratio to 7.4 times.

The difference in the Gini index before and after taxes – a broader measure of redistributive capacity – is similar in Portugal and the euro area, resulting from the higher progressivity of this tax being offset by a lower average rate in Portugal (Chart 7C).

Chart 7 • The redistributive effect of the personal income tax



Source: Banco de Portugal calculations based on EUROMOD simulations with EU-SILC data. | Notes: The Euro area average is a simple average of the countries. These indicators may differ from those estimated directly with EU-SILC data, as they are calculated based on simulated taxes and social benefits through EUROMOD and not on values reported by households. The Gini index measures the deviation between the income distribution of a population from a perfectly equal distribution, ranging from 0 (a situation where everyone has the same income) to 1 (a situation where one individual accumulates all the income of the population). The progressivity effect is obtained through the Kakwani index, resulting from the difference between the concentration degree of the tax and the pre-tax Gini index, while the average rate effect is obtained from the ratio between the tax and the income after tax. The difference between the Gini before and after tax is the product of the tax progressivity and the net average tax rate (excluding individual reordering effects, which are usually negligible).

Policies aimed at reducing personal income tax require reconciling the government budget constraint with the goals of economic growth and social welfare.

Portugal has one of the lowest average effective rates in the euro area, notably due to no or very low taxes on low incomes. This tax has a similar impact on reducing inequality in Portugal and the euro area and is highly concentrated in the last income quintile. Despite its redistributive capacity being close, in Portugal, the tax is more progressive, compensating for the fact that the average rate is slightly lower.

The Economic and Financial Assistance Programme period saw an increase in personal income tax rates, followed by several years of reduction (including eliminating the surcharge, splitting brackets, increasing minimum untaxed income and changing tax credits for children). Continuing such measures requires a prudent approach. Due to its structure and operation, personal income tax is complex. In addition, it is just one of several instruments used in redistributive policies. The role of social benefits is also very important from this perspective, justifying a comprehensive approach. Moreover, as personal income tax is one of the main sources of general government revenue, any changes should be reconciled with the existing fiscal space, taking into account the cyclical component of the balance and a medium-term structural perspective.