3. PRICES, COSTS AND COMPETITIVENESS

Consumer price pressures eased further during the quarter under review, but inflation remained high from a historical perspective and above the ECB's 2% inflation target.

Annual inflation, as measured by the HICP, stood at 3.7% in December, down from 4.9% in September. This was driven by slower growth in the prices of services, processed food, and NEIG. Annual inflation based on the RPI – which only considers expenditure by Maltese residents – fell to 3.6% in December, from 4.1% in September.

When measured over four quarters, ULCs increased at a slower pace in the last quarter of 2023, with its growth rate reaching 2.4%, from 3.0% in the previous quarter. Similarly, other input cost indicators regularly monitored by the Bank continued to moderate.

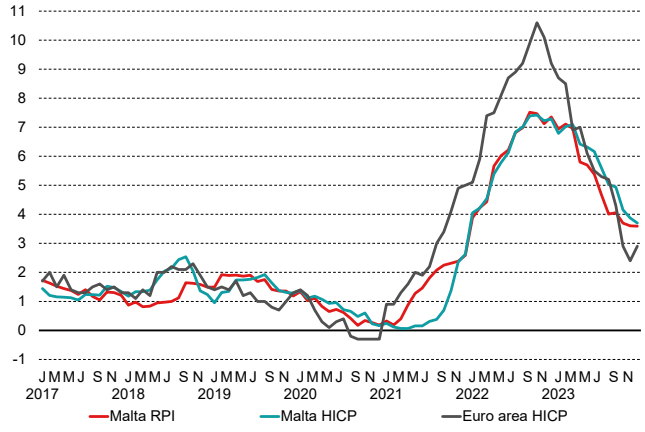
Inflation

HICP inflation eases

Annual HICP inflation eased to 3.7% in December 2023, from 4.9% in September 2023 (see Table 3.1).[1] Chart 3.1 shows that HICP inflation in Malta exceeded that recorded in the euro area, which ended the quarter at 2.9%. Malta's higher inflation rate in December reflects a higher contribution from food inflation (see Chart 3.2). Furthermore, energy inflation in Malta retained an unchanged contribution while it was negative in the euro area.

On the other hand, the contribution of both NEIG and services to HICP inflation in December was lower in Malta than in the euro area.

Chart 3.1
INFLATION RATES IN MALTA AND IN THE EURO AREA
(annual percentage changes)



Sources: NSO; Eurostat.

Table 3.1
HICP INFLATION
Annual percentage change

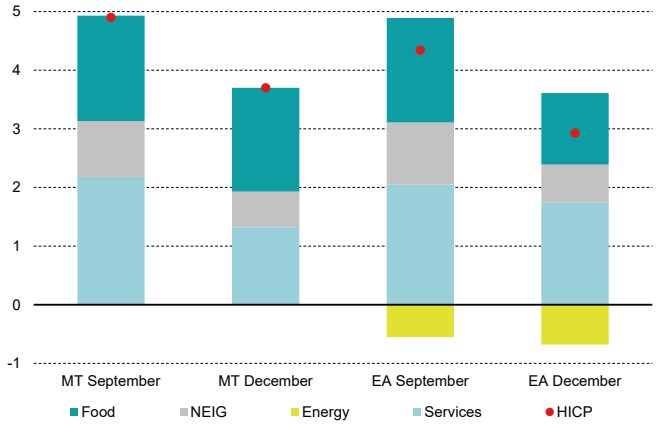
	2023											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
Unprocessed food	8.5	13.0	12.3	8.3	7.0	8.4	5.4	8.5	8.2	4.0	6.7	12.2
Processed food including alcohol and tobacco	10.6	11.0	11.0	10.6	10.4	10.9	9.9	9.7	9.0	8.2	7.3	7.1
Energy	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NEIG	7.3	6.7	6.6	5.4	5.1	4.0	3.8	3.4	3.6	2.6	2.2	2.2
Services (overall index excluding goods)	5.8	6.1	6.4	6.0	6.1	6.1	5.6	4.3	4.3	4.0	3.9	3.0
All Items HICP	**6.8**	**7.0**	**7.1**	6.4	6.3	6.2	5.6	5.0	4.9	4.2	3.9	3.7

Source: Eurostat.

[1] The HICP weights are revised on an annual basis to reflect changes in overall consumption patterns. In 2023, the weight allocated to services stood at 44.3%, while that of NEIG was 27.9%. Food accounted for 21.4% of the index, while the share allocated to energy stood at 6.5%. These were revised from 43.3% for services, 28.3% for NEIG, 21.8% for food and 6.7% for energy in 2022.

Chart 3.3 shows a distribution of price changes whereby sub-components of the HICP are categorised into four classes of inflation rates: i) below or equal to 0%; ii) between 0% and 2%; iii) between 2% and 5%; and iv) over 5%.[2] This analysis indicates whether the surge in inflation is broad-based across HICP items, or if it is being driven only by selected components of the consumption basket.

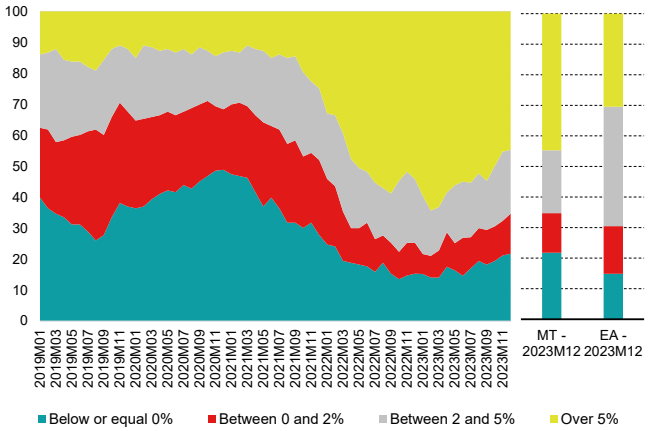
Chart 3.2
HICP AND MAIN CONTRIBUTIONS
(annual percentage changes; contributions)



Sources: Eurostat; SDW; Central Bank of Malta calculations.

The share of subcomponents registering inflation rates of more than 5% continued to decline during the quarter under review as global supply conditions ameliorated and imported inflation continued to dissipate. Nevertheless, at 44.7%, it remained high, in December, and exceeded the euro area figure of 30.4%.

Chart 3.3
PROPORTION OF HICP BASKET BY INFLATION PACE
(percentage point)



Source: Central Bank of Malta calculations.

When compared to three months earlier, the share of the Maltese basket falling in this band has declined considerably by 10 percentage points. The two intervals holding items with inflation rates of between 0% and 5% have increased since September. The bracket holding items with inflation between 0% and 2% increased by 1.8 percentage points, to stand at 12.9% in December. At the same time, the bracket holding items with inflation between 2% and 5% increased by 4.7 percentage points, to 20.6% over this period.

The bracket holding items with negative growth rates grew by 3.5 percentage points in Malta, standing at 21.8%. The increase in this bracket stemmed mainly from a decline in prices of items classified as NEIG. These include household items and vehicles.

The share of items with price increases exceeding 5% also decreased in the euro area. In fact, the decrease in this bracket since September was more significant than that in Malta, with less than a third of the euro area HICP basket now holding such items, However, while items with price

[2] The calculation of the shares in this chart do not take into account the weights of individual HICP sub-components. This analysis includes 170 sub-indices of the HICP for Malta and 289 sub-indices for the euro area. On average since 2001, 30.6% of items in Malta's basket fell in the 0% or negative inflation rates interval, while this figure stood at 17.4% for the euro area. Around 47% of the Maltese basket fell in the 0-2% and 2-5% intervals – in almost equal parts. These shares stand at 40.0% and 32.4% respectively in the euro area. While 22.2% of the Maltese basket fell in the over 5% interval, only 10.1% of the euro area basket falls in this interval.

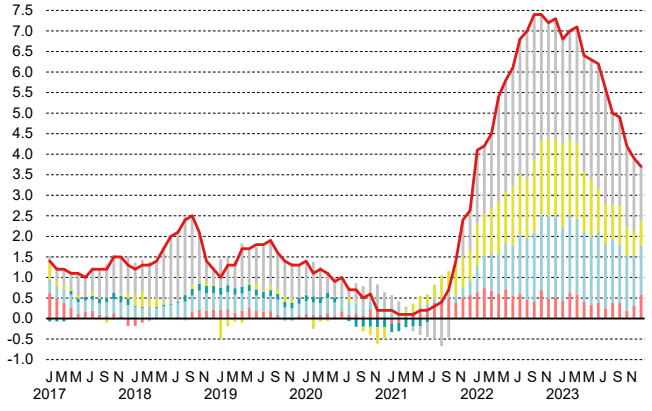
increases of between 2 and 5% accounted for almost 40% of the euro area basket in December, in Malta this share was significantly lower, at around 21%. The share of items with inflation rates of between 0 and 2% in Malta was also below that in the euro area, though the difference is small. On the other hand, Malta had a higher share of items with negative inflation rates.

Main components of Inflation

The drop in Malta's HICP inflation relative to September was driven by slower growth in the prices of services, processed food, and NEIG inflation (see Chart 3.4). By contrast, the contribution from unprocessed food increased marginally by 0.2 percentage point, while that of energy remained unchanged.

Food inflation remained unchanged at 10.2% in December. Meanwhile overall food inflation, which includes alcohol and tobacco, decreased only marginally during the quarter under review, and it remained high by historical standards. It stood at 8.3% in December, down from 8.8% in September. Consequently, the overall contribution of food to HICP inflation has remained at 1.8 percentage points in December. This was mainly driven by unprocessed food inflation, which reached 12.2% from 8.2% in September. On the other hand, processed food inflation has continued to ease, falling from 9.0% in September to 7.1% in December.

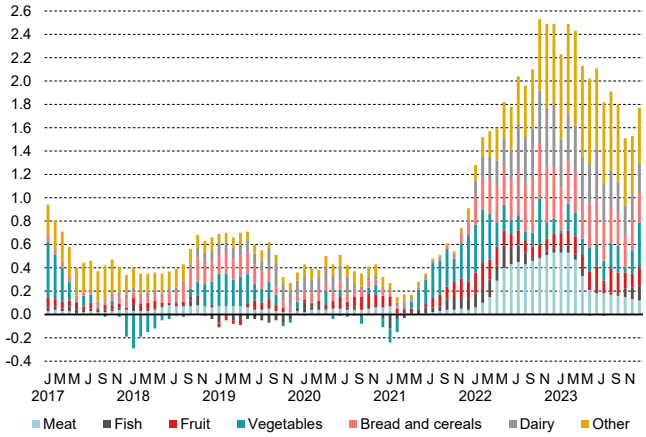
Chart 3.4
CONTRIBUTIONS TO YEAR-ON-YEAR HICP INFLATION
(percentage points; annual percentage change)



Source: SDW.

The main contributor to the moderation in food inflation was 'other' food prices which includes non-alcoholic and alcoholic beverages. A portion of this decline can be attributed to the base effect from the BCRS scheme which was introduced in November 2022. Bread and cereals, fruit and dairy products also contributed to the moderation in food inflation (see Chart 3.5). On the other hand, the contribution from fish and vegetables increased considerably.

Chart 3.5
CONTRIBUTIONS FROM FOOD TO HICP INFLATION
(percentage points)



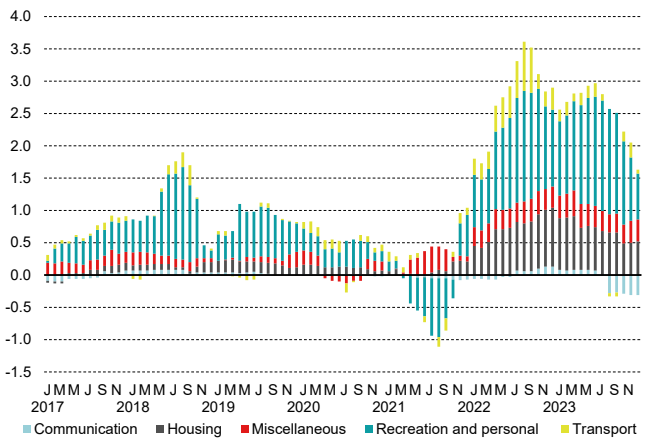
Source: SDW.

NEIG inflation declined from 3.6% in September to 2.2% in December. Looking at the subcomponents, prices of durables rose at a slower pace of 0.5%, from 1.9% three months earlier. Similarly, prices of semi-durables rose at a much slower

pace of 1.8%, from 3.6% in September, while prices of non-durables rose by an annual 4.7%, down from 5.6% in September.

Services inflation decreased from 4.3% in September to 3.0% in December, contributing 1.3 percentage points to overall HICP inflation (see Chart 3.6). This mostly reflected a smaller contribution from the recreation and personal care component, which however retained the highest contribution among the various components of services inflation. Among other items, this component includes the prices charged by hotels, restaurants, cafes, and similar establishments, and was affected by slower growth in the prices charged by restaurants and hotels. The contribution of the recreation and personal care component declined by 0.9 percentage point, compared with September, to 0.7%.

Chart 3.6
CONTRIBUTIONS FROM SERVICES TO HICP INFLATION
(percentage points)



Source: SDW.

Similarly, the contributions of the housing component stood at 0.5%, down from 0.7% in September, largely reflecting movements in the costs of maintenance and repair of dwellings.

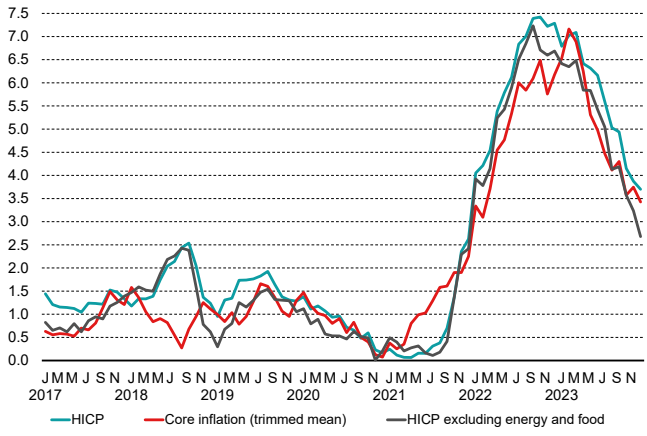
On the other hand, the contribution from transport services has increased marginally to 0.1%, while that of communications remained negative and broadly unchanged from September at -0.3%.

Energy inflation was unchanged at 0.0% in December, as electricity, gas, and transport fuel prices were kept unchanged from their level a year earlier, through government support measures shielding the economy from changes in international energy prices.

Core HICP inflation declines

The Bank's measure of core inflation, which excludes the more volatile items in each month, fell to 3.4% in December 2023, from 4.3% three months earlier (see Chart 3.7).[3] Hence, it was 0.3 percentage point lower than overall HICP inflation. An alternative measure of

Chart 3.7
HICP IN MALTA: OVERALL AND CORE MEASURE
(annual percentage change)



Sources: Eurostat; Central Bank of Malta estimates.

[3] The Bank uses a 'trimmed mean' approach to measure core inflation, whereby the more volatile subcomponents of the index are removed from the basket of consumer goods so as to exclude extreme movements from the headline inflation rate. See Gatt, W. (2014), "An Evaluation of Core Inflation Measures for Malta", *Quarterly Review* 2014(3), pp. 39-45, Central Bank of Malta.

Table 3.2
CONTRIBUTIONS TO YEAR-ON-YEAR RPI INFLATION
Percentage points

	2023											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
Food	2.3	2.6	2.5	2.2	2.2	2.2	1.9	2.0	1.9	1.5	1.6	1.9
Beverages and tobacco	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.2	0.2
Clothing and footwear	0.5	0.4	0.3	-0.1	-0.1	-0.1	-0.1	-0.1	0.1	-0.1	-0.1	-0.1
Housing	1.3	1.1	1.2	0.8	0.8	0.7	0.7	0.7	0.6	0.5	0.4	0.4
Water, electricity, gas and fuels	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Household equipment and house maintenance costs	0.5	0.4	0.4	0.5	0.5	0.4	0.4	0.2	0.3	0.3	0.2	0.3
Transport and communications	0.4	0.4	0.4	0.6	0.6	0.4	0.0	-0.6	-0.5	0.0	-0.1	-0.3
Personal care and health	0.5	0.6	0.6	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Recreation and culture	0.3	0.3	0.4	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.0
Other goods and services	0.6	0.7	0.6	0.5	0.5	0.6	0.5	0.5	0.5	0.5	0.5	0.5
RPI (annual percentage change)	**6.9**	**7.1**	**7.0**	**5.8**	**5.7**	**5.4**	**4.7**	**4.0**	**4.1**	**3.7**	**3.6**	**3.6**

Source: NSO.

underlying inflationary pressures – HICP excluding energy and food – also eased in December, reaching 2.7% from 4.2% in September.

RPI inflation edges down marginally

Annual inflation based on the RPI index – which is based on a different basket of goods and services from the HICP index, as well as a different frequency of weight updates – fell to 3.6% in December, from 4.1% in September, mainly due to lower prices for housing, and beverages and tobacco (see Table 3.2).[4] Prices of clothing and footwear, and personal care and health also contributed to reduce inflation, though to a lesser extent. On the other hand, prices of transport and communications services contributed positively during the quarter under review. Meanwhile, energy tariffs continued to have a neutral impact on overall RPI inflation in the period under review.

The housing market

Residential property prices record a stronger increase

The NSO's Property Price Index (PPI) – which is based on actual transactions involving apartments, maisonettes, and terraced houses – continued to increase in annual terms. The annual rate of change stood at 5.4% in the last quarter of 2023, up from 4.6% in the previous quarter (see Chart 3.8).[5] This contrasts with developments in the euro area, where prices on average decreased at an annual rate of 1.1%.

Chart 3.8
MOVEMENTS IN RESIDENTIAL PROPERTY PRICES
(annual percentage changes)

Source: Eurostat.

[4] The RPI index differs from the HICP index in that RPI weights are based on expenditure by Maltese households, while HICP weights also reflect expenditure patterns by tourists in Malta, such as accommodation services. See Darmanin, J. (2018), "Household Expenditure in Malta and the RPI Inflation Basket", *Quarterly Review* 2018(3), pp. 33-40, Central Bank of Malta.

[5] 'Apartments' are defined as dwellings with self-contained rooms or a suite of rooms that have a separate entrance accessible from a common passageway, landing or stairway. 'Maisonettes' have a separate entrance that is accessible from the street and are either at ground-floor level with overlying habitation, or at first-floor level with underlying habitation. 'Terraced houses' are dwellings with at least two floors, own access at street level and airspace, and with no underlying structures that are not part of the house itself. They are attached to other structures on both sides.

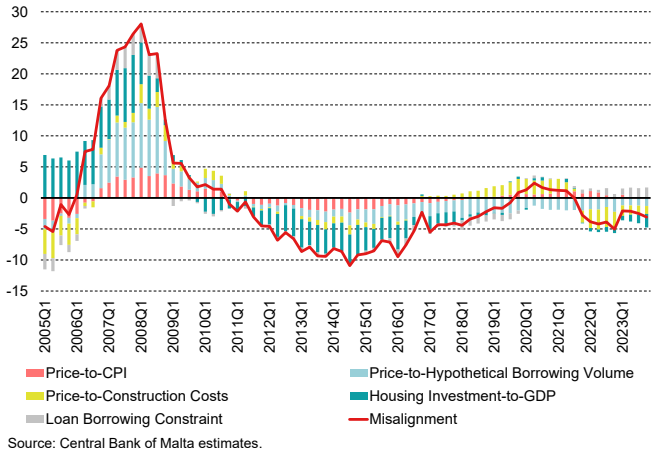
Residential property prices in Malta continue to be supported by a number of Government schemes supporting demand for property, including the first-time and second-time buyers' schemes, the purchase of properties located in Urban Conservation Areas (UCA) and in Gozo, as well as refund schemes for restoration expenses. Moreover, a dynamic tourism sector, and significant migrant worker flows continue to support demand for accommodation and hence, property prices.

Misalignment indicator suggest prices are below fundamentals

As part of its ongoing macroeconomic analysis, the Bank calculates a house price misalignment index to provide an indication of the evolution of house prices against fundamentals.[6,7] This indicator consists of five sub-indices that capture household, investor, and system-wide factors, with the weights being derived using principal component analysis.

According to this indicator, house prices, as measured by the NSO's PPI, were below the level consistent with fundamentals in the last quarter of 2023. Moreover, the gap widened compared with the third quarter of the year (see Chart 3.9).[8] The undervaluation was driven mainly by the ratio of housing investment to GDP, the price-to-construction costs ratio, and the price to hypothetical borrowing. By contrast, the loan borrowing constraint contributed positively to the misalignment index.

Chart 3.9
HOUSE PRICE MISALIGNMENT INDICATOR
(percentage points; based on transaction prices)



Source: Central Bank of Malta estimates.

The housing investment-to-GDP ratio was the main contributor behind the widening of the negative misalignment gap, compared with the third quarter of the year. This was due to a year-on-year decline in housing investment.

Number of final deeds increased in quarterly terms but declined in annual terms

NSO data on residential property transactions show that 3,202 final deeds of sale were registered in the quarter under review, an increase of 11.6% compared to the number of sales concluded in the previous quarter, but 15% lower than the same level registered in the same quarter a year earlier (see Table 3.3). Over 90% of transactions concluded in the fourth quarter of 2023 involved purchases by individuals.

In the last quarter of 2023, the largest year-on-year decreases in absolute terms were recorded in the Northern Harbour region and in Gozo and Comino, followed by the South Eastern region. In value terms, there was a year-on-year decline of 3.5%.

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[6] See Micallef, B. (2018), "Constructing an index to examine house price misalignment with fundamentals in Malta", *International Journal of Housing Markets and Analysis*, 11(2), pp. 315-334.

[7] The actual numerical results presented in this section should not be overstated given the limitations in the construction of this indicator. For example, relevant variables such as foreign capital inflows are not included, and the unavailability of an official rental index precludes the use of the price-to-rent ratio in the indicator.

[8] A separate assessment based on advertised house prices can be found in Gatt, W., Micallef, B. and Rapa, N. (2018), "A macro-econometric model of the housing market in Malta", *Annual Research Bulletin*, Central Bank of Malta, pp. 11-18.

Table 3.3
RESIDENTIAL PROPERTY TRANSACTIONS
Levels

	2022		2023			
	Q3	Q4	Q1	Q2	Q3	Q4
Residential transactions						
Promise of sale	2,847	3,353	3,121	3,499	3,080	3,503
Final deeds of sale	3,593	3,764	3,101	3,007	2,870	3,202

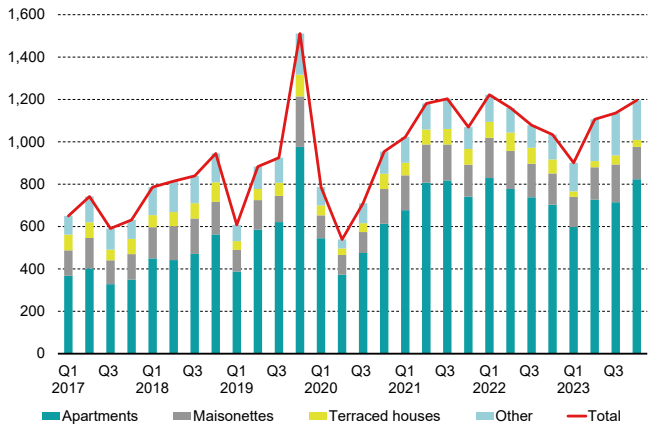
Source: National Statistics Office.

At 3,503, the number of promise-of-sale agreements was 13.7% higher than the number registered in the previous quarter, and 4.5% higher than those registered in the same quarter of 2022. Year-on-year increases were recorded in all regions, except in the Northern Harbour region.

Mortgage transactions increased and remained above pre-pandemic average[9]

In the final quarter of 2023, the number of new mortgage contracts stood at 1,196. When compared with the final quarter of 2022, they increased by around 15.7% (see Chart 3.10). This increase was observed for all categories, except for terraced houses, as the number of mortgage contracts for terraced houses halved.

Chart 3.10
MORTGAGE CONTRACTS
(number of contracts)



Source: Central Bank of Malta.

The total number of mortgage contracts in the fourth quarter of 2023 stood below the recent peak of 1,511 transactions recorded in the last quarter of 2019 but exceeded the average of 827 transactions per quarter recorded between 2017 and 2019.

Contracted rental prices continue to increase

Data on rents based on contracts registered with the Housing Authority show that rents in the last quarter of 2023 continued to grow in annual terms (see Chart 3.11).[10] The average range of estimates from various methods indicate that rents have increased at annual rates of between 4.7% and 5.6% in the quarter under review. This compared with a range of 8.3% and 8.5% in the

[9] The data used in the section are collected by the Central Bank of Malta from four commercial banks and relate only to properties which have been purchased with a mortgage. The dataset excludes properties that have either been transacted using other means of financing, as well as mortgages that have been refinanced. The property types included are flats, penthouses, maisonettes, terraced houses, town houses, houses of character, farmhouses, bungalows, and villas. Other property types included in the previous section such as airspace, boathouses, garages, and plots of land are excluded.

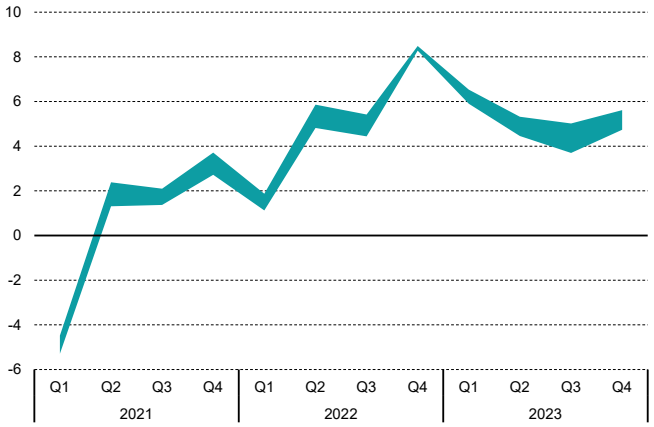
[10] This information is based on provisional data for 2023 provided by the Housing Authority. Further information is available in the Authority's periodic publications on registered rents.

last quarter of 2022. Such data include both new contracts as well as renewals of previous contracts. Thus, this source is more extensive in its coverage than advertised rents collected by the Central Bank of Malta from internet sources, which exclude renewals.

Advertised rent prices continue to increase

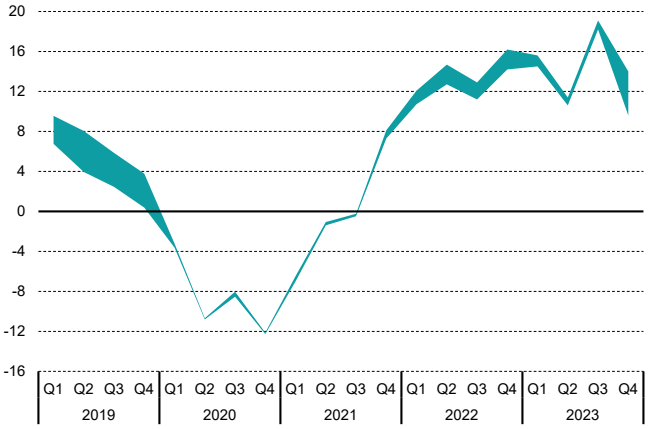
The annual rate of change of advertised rents collected from internet sources edged up in the final quarter of 2023.[11] The range of estimates from various methods indicate that rents have increased at annual rates of between 9.6% and 13.9% in the quarter under review (see Chart 3.12). Compared with the previous quarter, the rate of increase included in the range of estimates has widened. Furthermore, the level of advertised rents stood around 22% above the average in recent years.[12]

Chart 3.11
CONTRACTED RENTAL PRICES
(annual percentage change)



Source: Housing Authourity.

Chart 3.12
ADVERTISED RENTAL PRICES
(annual percentage change)



Source: Central Bank of Malta.

Cost indices

Producer costs grow at a much slower pace

Annual inflation, based on the industrial producer price index, which is a measure of the change in the prices of goods sold by producers in the industrial sector, reached 1.4% in this quarter, down from 3.5% in the previous quarter (see Chart 3.13).[13] This moderation was largely driven by developments in producer prices for intermediate goods, which contracted by 2.1% in this quarter, after increasing by 2.5% in the third quarter. At the same time, producer prices for consumer goods rose at a slower annual rate of 5.5% in this quarter, down from 7.5% previously. Similarly, producer price inflation for capital goods declined from 3.9% to 3.3%. Meanwhile, energy producer price inflation remained unchanged in the period under review.

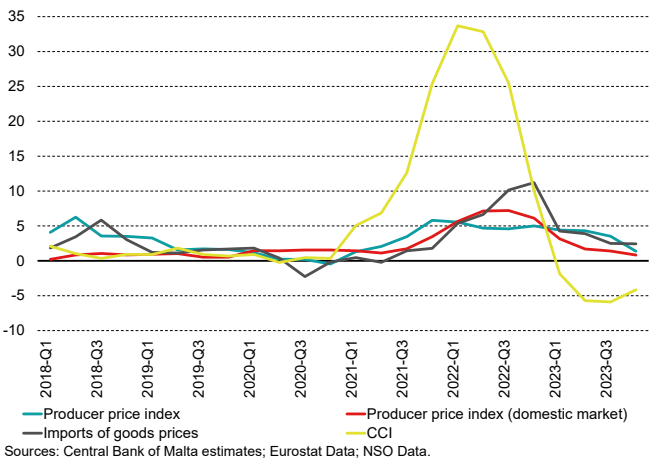
[11] The empirical analysis is based on hedonic regression models as described in Debono et al., (2020) and different indices are constructed using alternative methodologies, namely the time dummy method, the rolling time dummy method with a window length of two periods (Q=2) and the average characteristics method chained using the Laspeyres, Paasche and Fisher methods. The properties considered in this analysis include apartments, maisonettes, and penthouses.

[12] This index is available from 2017Q4.

[13] The industrial producer price index measures the prices of goods at the factory gate and is commonly used to monitor inflationary pressures at the production stage. The index used here refers to the B-E36 aggregate of the EU's statistical classification of economic activities.

Other indicators affecting the domestic market also show easing cost pressures. The domestic producer price index rose at a slower annual rate of 0.8%, from 1.4% in the third quarter, mainly driven by prices of consumer goods.[14] The imports of goods deflator also shows slightly weaker growth of 2.4% during the quarter under review, from 2.5% in the third quarter of 2023.[15] The CCI for new residential buildings published by Eurostat continued to moderate in the fourth quarter, falling by an annual 4.2%, after it had declined by 5.9% in the previous quarter. Notwithstanding the recent decline, its level remains above that observed before 2020.

Chart 3.13
COST INDICATORS
(annual percentage growth)



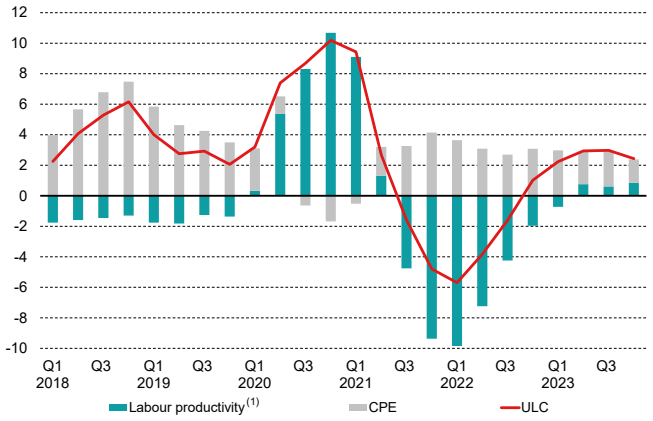
Sources: Central Bank of Malta estimates; Eurostat Data; NSO Data.

ULCs increase at a slower rate

Malta's ULC index – measured as the ratio of compensation per employee (CPE) to labour productivity – increased in annual terms, as well as in quarter-on-quarter terms in the last quarter of 2023.[16]

When measured on a four-quarter moving average basis in headcount terms, ULCs in Malta rose at an annual rate of 2.4%. This followed an increase of 3.0% in the previous quarter (see Chart 3.14). The slower growth in ULCs reflects a significant deceleration in CPE. This rose by 1.5% in annual terms, from 2.3% in the third quarter. On the other hand, productivity per person declined at a faster pace of 0.8%, from 0.6% in the previous quarter.

Chart 3.14
DECOMPOSITION OF ULC (PER PERSON) IN MALTA
(annual percentage change; four-quarter moving average)



Sources: NSO; Central Bank of Malta estimates.

(1) A rise (drop) in productivity contributes negatively (positively) to ULC growth.

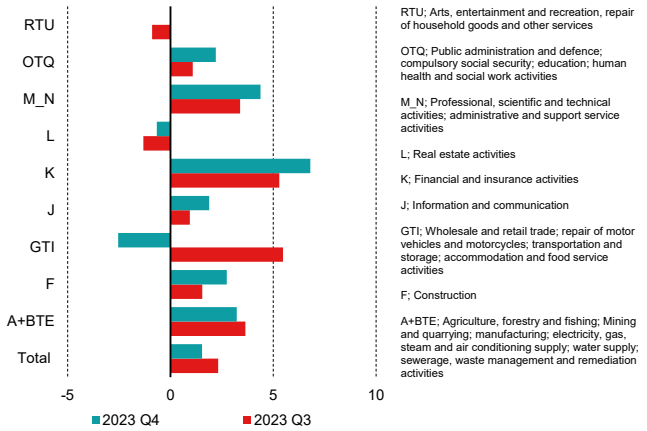
[14] The domestic producer price index refers to the producer prices relating to the domestic market only, whilst the producer price index relates to the total market, i.e., including both the domestic and non-domestic markets.

[15] This index is derived from national accounts data published by the NSO.

[16] Annual growth in ULC, CPE and labour productivity is measured on a four-quarter moving average basis. A degree of caution is required in the interpretation of ULC in view of contemporaneous structural shifts in the composition and factor-intensity of production, notably the shift to labour-intensive services. See Micallef, B. (2015), "Unit labour costs, wages and productivity in Malta: a sectoral and cross-country analysis", *Policy Note* August 2015, Central Bank of Malta, and Rapa, N. (2016), "Measuring international competitiveness", *Quarterly Review* 2016(1), pp. 53-63, Central Bank of Malta.

When measured on a four-quarter moving average basis, growth in CPE was fastest in the financial and insurance activities sector, which had a year-on-year growth rate of 6.8%. Wage growth was also significant in the professional, scientific, and technical activities sector, where compensation per person grew by 4.4%. The slower rate of growth in CPE compared with the third quarter reflected a more moderate increase in the manufacturing sector, and a decrease in the average wage paid in the wholesale and retail trade sector. Developments in these two sectors offset faster growth or, in some cases stabilisation, in most of the remaining sectors (see Chart 3.15).

Chart 3.15
CPE BY SECTOR
(annual percentage growth; four-quarter moving average)



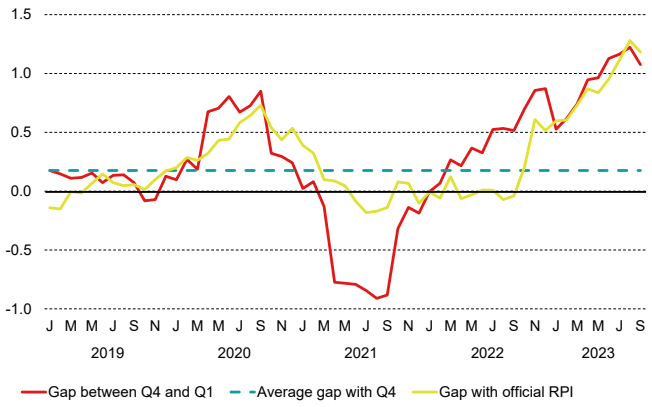
Source: NSO Data.

BOX 3: THE IMPACT OF THE RECENT RISE IN INFLATION ON THE PURCHASING POWER OF LOWER INCOME HOUSEHOLDS IN MALTA[1]

Inflation typically has a stronger impact on lower income households. This was demonstrated for Malta by Darmanin (2021),[2] who utilized disaggregated expenditure shares from the Household Budgetary Survey to estimate inflation faced by different household groups for the period 2010 to 2020. The author had shown that low-income and retired households had experienced generally higher inflation than the overall population during this period, as the price of necessities such as food, energy and health had grown at a sharper rate than prices of other goods and services. This box extends this work to cover the period to 2024, in particular assessing whether the minimum wage and pensions have managed to retain their purchasing power over this high-inflation period.

The gap between inflation experienced by the top 25% and the lowest 25% earners has increased sharply since the beginning of 2022 and has exceeded the historical gap of around 0.2 percentage point (see Chart 1). Moreover, the gap with the official RPI has also risen sharply, which implies that lower-income households have experienced higher inflation also when compared to the average household. Despite some easing in overall inflation during the first nine months of 2023, the gap between the lowest and highest income groups continued to gather pace, and peaked in August 2023 at 1.2 percentage points. Similarly, when compared with the official RPI, the gap stood at 1.3 percentage points in August 2023. These gaps are the second highest gaps experienced since 2013. The very high inflation gap implies that the recent surge in inflation impacts mostly low-income households, which have experienced a peak inflation rate of 7.9% in December 2022.

Chart 1
INFLATION DIFFERENCE BETWEEN THE LOWEST AND HIGHEST INCOME QUINTILE AND THE OFFICIAL RPI
(percentages)



Source: Own workings based on Darmanin (2021).

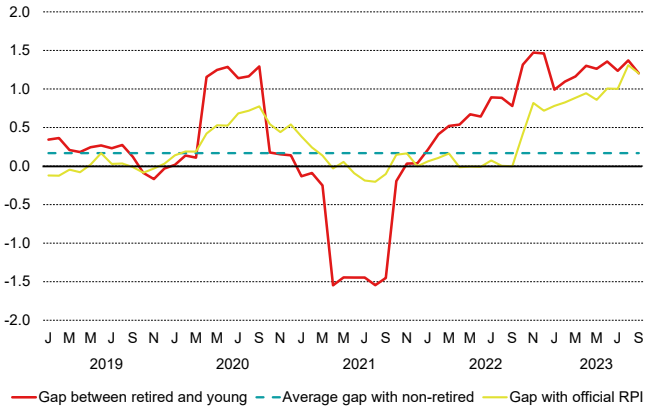
The rise in the gap between the lowest and highest income group since 2022 has been primarily driven by food

[1] Prepared by Dr Valentina Antonaroli, Ian Borg and Dr Aaron G. Grech, respectively principal economist, Manager of the Economic Projections and Conjunctural Analysis Office and Chief Officer of the Economics Division at the Central Bank of Malta. This box summarises Grech, A.G., Borg, I. and Antanaroli, V., (2024), "The cost of inflation: How has the recent surge in inflation impacted lower-income households in Malta", Central Bank of Malta *Policy Note*. The authors would like to thank Mr Mark Musu, Permanent Secretary of the Ministry for Social Policy and Children's Rights for providing the authors with data assistance and Mr Alexander F. Demarco for his comments and suggestions. The views expressed are those of the authors and do not necessarily reflect the views of the Central Bank of Malta or any other institutions. Any remaining errors are the sole responsibility of the authors.

[2] Darmanin, J. (2021), "The inflation experience of low-income households", Central Bank of Malta *Policy Note*.

inflation. Given that the latter has a higher share in the lowest income group consumption basket, it has been more burdensome for the lower income households. Moreover, rent inflation has been very dynamic throughout 2022 and 2023, which has also contributed positively to the gap between the two groups. Indeed, since July 2023, this has overtaken food inflation as the main driver that explains the gap between lowest and highest income group inflation rate. Meanwhile, relatively strong inflation in transport and communication has somewhat muted the positive gap.

Chart 2
INFLATION DIFFERENCE BETWEEN THE RETIRED AND NON-RETIRED HOUSEHOLDS AND THE OFFICIAL RPI
(percentages)



Source: Own workings based on Darmanin (2021).

Developments for retired households are very similar, with a sharp increase in the gap in the inflation of retired when compared to non-retired households (see Chart 2). The positive inflation difference peaked at 1.5 percentage points in November and December 2022, which was the highest recorded gap since 2010. Meanwhile, the retired household inflation rate peaked at 8.1% in December 2022. Moreover, the gap between the retired household inflation rate and the official inflation rate has also tuned positive since October 2022. The gap has been rising sharply and has peaked in August 2023 at 1.3 percentage points.

The impact of inflation on selected retirement pensions

The Maltese state pension is indexed to prices through the COLA. All pensions in Malta are incremented by two-thirds of the COLA and a further one-third is given as a cost-of-living bonus (CLBO).[3] In addition, Maltese pensioners receive other statutory bonuses in the form of a 6-Monthly Bonus (6MBO), and a Special Weekly Bonus (SPBO). Those on minimum pensions also benefit from a Supplementary Allowance (SPA). In addition, a Deficiency Contributions Benefit (DCB) is awarded to non-pensioners who have reached state pension age but have less than ten years of social security contributions. A Senior Citizen's Grant (SCG) is given to persons above the age of 75.

Table 1 documents the growth in the various combinations of weekly pension rates over the period 2013 to 2023. It shows that nominal pensions have increased markedly over these past 11 years. However, the growth experienced by those on the minimum pension has generally been larger than that for those on the maximum pension. Pension increases have been set equally in nominal terms for all, meaning higher percentage rises for those

[3] COLA is a partial indexation mechanism whereby incomes and pensions are adjusted for inflation that occurred over the previous 12-month period. COLA is thus backward-looking. COLA is calculated on the basis of a social wage, a wage typically higher than the minimum wage but lower than the average wage. An absolute amount is then given to all pensioners and wage earners irrespective of their income levels. See Darmanin (2021) for further details.

Table 1
EVOLUTION OF NOMINAL PENSIONS BETWEEN 2013 AND 2023[1]
Percentage changes

	Weekly rate inclusive of bonuses	Inclusive of DCB	Inclusive of SPA and DCB	Inclusive of SPA, DCB, and SCG
Single minimum pension	42.2	NA	45.9	45.4
Married minimum pension	38.4	45.6	51.6	50.3
Maximum married pension	18.6	22.9	NA	27.6

Sources: Social Security Department; own workings.
[1] These results refer to an individual born in 1946 and retired in 2007.

on lower pensions. Moreover the benefits awarded to those on low pensions have tended to be increased more frequently than those awarded to all pensioners.

To assess the evolution of these pensions in real terms, Table 2 deflates nominal pensions with the retired household inflation rate. During the period prior to the surge in inflation in 2022 pensions generally kept up with inflation. On the other hand, weekly rates lost some value in 2022, as COLA is a backward-looking mechanism which compensates for inflation in the previous 12-month period and therefore in periods of rising inflation it lags.

Nevertheless, when considering all benefits, minimum pensions experienced an increase in their real value in 2022 despite the historically high inflation. This stems from increases given in the SPA and the DCB. With regards to maximum pensions, their real value deteriorated slightly in 2022 despite the additional top-ups over and above COLA.

It should be noted that in the Budget for 2023, Government introduced an additional COLA mechanism, which was intended to pay an additional benefit to those on low incomes, depending on family size. However the way the mechanism was initially determined excluded most pensioners, as the mechanism did not pay any additional benefit to those in receipt of COLA increases.

Looking forward, thanks to the latest increments announced in Budget 2024 for pensions, which includes the extension and amendment of the additional COLA mechanism, and also because inflation is projected to decline significantly over 2024, any losses in purchasing

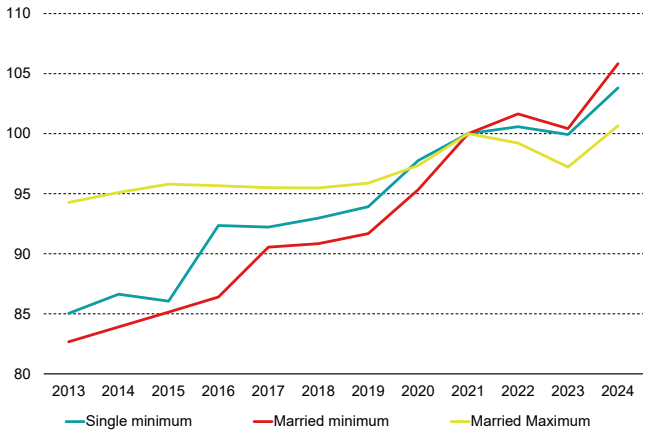
Table 2
EVOLUTION OF THE REAL VALUE OF PENSIONS[1]
Percentage changes

	Growth between 2013 and 2021				Growth between 2021 and 2022			
	Weekly rate inclusive of bonuses	Inclusive of DCB	Inclusive of SPA and DCB	Inclusive of SPA, DCB, and SCG	Weekly rate inclusive of bonuses	Inclusive of DCB	Inclusive of SPA and DCB	Inclusive of SPA, DCB, and SCG
Single minimum pension	17.4	NA	18.1	17.6	-3.2	NA	1.2	1.5
Married minimum pension	15.2	19.4	22.0	21.0	-3.4	-2.1	0.4	0.8
Maximum married pension	1.4	3.9	NA	6.1	-4.2	-3.3	NA	-1.4

Sources: Social Security Department; own workings.
[1] Real value is obtained by deflating nominal pensions with the retired household inflation rate.

power will be recouped. Chart 3 shows how after the negative impact of the 2022 and 2023 high inflation rates, the real value of minimum pensions is projected to improve in 2024. Thanks to the changes effected in the Budget for 2024, when the additional COLA benefit started to be based as a top-up to the COLA for all those earning less than the median equivalised household income, the mechanism will now support greatly the real value of minimum pensions, boosting real purchasing power by close to 5% for pensioners on the married rate. Even for those on the maximum pension, the real value of their benefits should exceed 2021 levels slightly in 2024.

Chart 3
PROJECTED REAL VALUE OF PENSIONS
(index of pensions inclusive of bonuses, SPA, DCB, SCG, deflated with retired inflation rate)



Source: Own workings.

The impact of inflation on minimum wages

Like pensions, minimum wages are indexed to prices through COLA. Similar to pensions, minimum wage earners also receive statutory bonuses such as the SPBO and 6MBO. Additionally, parents receive child benefits in the form of children's allowance and the children's allowance supplement (CAS) for each child. Since 2015, an in-work benefit (IWB) is awarded to working parents. Given their level of income, these individuals also benefit from the additional COLA mechanism.

Table 3 documents the growth in nominal minimum wages over the decade to 2023. Those in receipt only of the national minimum wage and other statutory bonuses experienced a growth of around 15.4% over the whole period. This growth generally reflects the increments

Table 3
EVOLUTION OF NOMINAL WAGES BETWEEN 2014 AND 2023
Percentage changes

	Weekly rate exclusive of bonuses	Weekly rate inclusive of bonuses	Weekly rate inclusive of child benefits[1]	Weekly rate inclusive of benefits & ADCL[2]
Single minimum wage	9.3	15.4	43.3	46.1
Married minimum wage	9.3	15.4	30.8	NA

Sources: Social Security Department; own workings.

[1] These child benefits are assumed to accrue to a single or married household with two children.

[2] The additional COLA mechanism only affects single minimum wage earners.

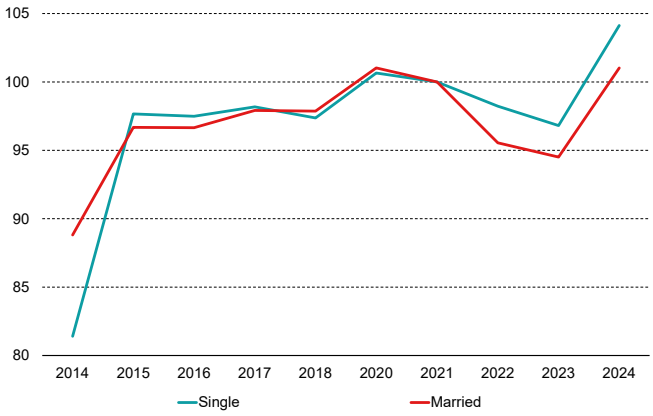
given due to COLA. However, minimum wages were also increased above COLA in 2018 and 2019, following the signing of the National Agreement on the Minimum Wage in 2019. However, other statutory bonuses in terms of the SPBO and 6MBO were left unchanged.

Those in receipt of child benefits experienced a much larger increase in their income over the period under consideration, with growth of between 30% to 50%. This reflects an increase in the children's allowance in 2019, the introduction of the CAS in 2021 (the latter was increased again in 2023), and the introduction of IWB in 2015.

To assess the evolution of minimum wages in real terms, Table 4 deflates nominal minimum wages with the low-income household inflation rate. Minimum wages kept up with inflation during the period prior to the surge in inflation in 2022, even when accounting for the higher inflation experienced by lower-income households. Moreover, parents in receipt of child benefits have experienced a sharp increase in their income, mainly because of the introduction of the IWB. On the other hand, those on the minimum wage experienced a loss in their purchasing power in 2022, even though they benefitted from the additional COLA.

Following the conclusion of the work by the Low-Wage Commission, the national minimum wage rate will increase over the period 2024-2027, by a cumulative amount of €11 over and above the COLA. Budget 2024 also incremented the children's allowance by €250 in annual terms per child, and €50 per child as IWB. As can be seen from Chart 4, these changes will mean that minimum wage earners will see their benefits in real terms exceed 2021 levels by end-2024.

Chart 4
PROJECTED REAL VALUE OF MINIMUM WAGE INCOME INCLUSIVE OF BENEFITS
(index of minimum wages inclusive of bonuses, child benefits, and ADCL; 2021=100)



Source: Own workings.

Table 4
EVOLUTION OF THE REAL VALUE OF WAGES[1]
Percentage changes

	Growth between 2014 and 2021			Growth between 2021 and 2022			
	Weekly rate exclusive of bonuses	Weekly rate inclusive of bonuses	Weekly rate inclusive of child benefits[1]	Weekly rate exclusive of bonuses	Weekly rate inclusive of bonuses	Weekly rate inclusive of child benefits[1]	Weekly rate inclusive of benefits & ADCL[2]
Single minimum wage	0.0	-0.4	22.8	-5.0	-5.0	-3.8	-1.8
Married minimum wage	0.4	-0.4	12.6	-4.9	-5.0	-4.4	NA

Sources: Social Security Department; own workings.

[1] These child benefits are assumed to accrue to a single or married household with two children.

[2] The additional COLA mechanism only affects single minimum wage earners.

Conclusion

Minimum wages and pensions suffered some loss in their effective purchasing power between 2021 and 2023, with the exception of those on minimum pensions. The main reason is that COLA is one-year backward looking mechanism. Moreover, these households faced higher inflation than that indicated by the official RPI. Also, some benefits that typically accrue to lower-income households and pensioners are not adjusted automatically to inflation.

However, in 2024 both pensioners and those on minimum wages are expected to recoup their purchasing power. This partly reflects the fact that the COLA announced for 2024 was the highest in history and will be given during a year in which inflation should ease somewhat. Furthermore, several increments have been given in terms of a higher national minimum wage, an increase in children's allowance and IWB, an extra addition to the pension rate that exceeds COLA, as well as the modification of the additional COLA mechanism.

In particuar, the latter benefit is now computed as a top-up to the COLA for all those earning less than the median equivalised income, and is based on an estimate of the inflation rate computed on the basis of the consumption basket of retired or low income households. This should ensure that the effective purchasing power of retired and low-income households is better protected.

BOX 4: GLOBAL OIL PRICE SWINGS: HAS THEIR EFFECT ON MALTA CHANGED OVER TIME?[1]

This box aims at providing evidence of the time-varying nature of global oil shocks spillover into the Maltese economy during the period January 2008 to March 2022. The analysis is performed by means of a two-block structural vector autoregression featuring time-varying parameters and stochastic volatility. The results show that periods characterised by the Great Recession and the COVID-19 pandemic were associated with higher inflation and economic activity responsiveness to oil price shocks. Notwithstanding, the response of energy inflation gradually declined because of the energy subsidies implemented by the Maltese government.

Oil price developments and Maltese energy inflation

Over the last years, the global economy was hit by several macroeconomic shocks of unusually significant magnitude. Above all, the unexpected outbreak of the COVID-19 pandemic and subsequent economic recovery produced an initial deep contraction, and a subsequent robust rebound in world economic activity. Consequently, the falling and the then rising global economic activity produced large swings in oil prices worldwide, which influenced the speed of economic recovery especially in countries that rely heavily on energy imports.

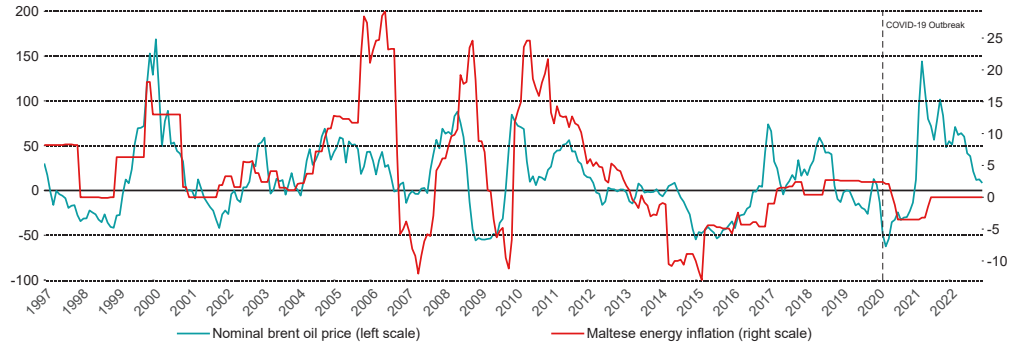
The developments on the global oil markets are of high importance to Malta mainly because of three peculiarities of its economy. First, Malta is a net-energy importer and has been historically heavily dependent on the import of a variety of fossil fuels, to the extent that almost the entirety of its electricity was produced by heavy fuel oil until 2017, and from liquefied natural gas afterwards. Second, the domestic demand of energy products has been surging because of very high economic growth during the last decade. Finally, retail energy prices in Malta (e.g., fuels, gas, electricity, etc.) are administered by the government which, over several years, has been implementing different pricing policies that led to a different transmission of global prices into domestic retail ones.

The teal line in Chart 1 represents the year-on-year growth rate of nominal Brent oil price expressed in US dollars, while the red shows the annual Maltese energy inflation. The chart illustrates how, given the historically high reliance on heavy fuels, Maltese energy inflation appears to have a high degree of co-movement with the growth rate of the Brent oil price. Furthermore, the chart suggests how such a co-movement has changed over time. Specifically, the period from 1997 to 2001 was characterised by more sporadic price changes than the period that stretches between 2002 and 2015. In particular, the figure shows how during the latter period the government was more reactive in adjusting domestic energy prices to changes in global ones. During the Great Recession, Maltese energy prices showed a tendency to move with oil prices with a lag of a few months. Conversely, the period that goes from 2015 onwards was characterised by more stable domestic energy prices.[2] More

[1] Prepared by Germano Ruisi, Principal Research Economist of the Economic Research Department at the Central Bank of Malta. The analysis presented in this box is based on the author's study: Ruisi (2023), "Global oil price: Has their effect on Malta changed over time?", Central Bank of Malta *Working Paper* 04/2023. Helpful comments by Brian Micallef, William Gatt, Massimo Giovannini, Ian Borg and Noel Rapa are gratefully acknowledged. The views expressed are the author's own and do not necessarily reflect the views of the Central Bank of Malta.

[2] The Malta-Sicily interconnector that became operational in March 2015 as well as the new LNG powerplants together with the fixed-price agreements that effectively hedged the prices of LNG fuel purchased locally have played a remarkable role in stabilising the cost of energy and to effectively reduce the co-movements between local energy prices and Brent oil prices.

Chart 1
NOMINAL BRENT OIL PRICE IN US DOLLARS AND MALTESE ENERGY INFLATION
(annual percentage changes; index)



Sources: Federal Reserve Economic Data; National Statistics Office (Malta).

strikingly, after the pandemic broke out in early 2020, the government introduced subsidies to the domestic energy producer and distributor of fuels, to shelter the domestic economy from large swings in the global markets. The Maltese government has been keeping retail energy prices fixed since July 2020 with the aim of sustaining the economy through the turbulent pandemic period, the subsequent economic recovery, as well as during the recent developments related to the supply of energy products from Russia.

The time-varying effect of global oil shocks on Maltese output and inflation

The implementation of different energy policies by the Maltese governments over the recent decades raises the need to quantify the changing effect that energy shocks have had on the local economy, both for output and for prices.

The empirical analysis summarised in this box is based on a structural vector autoregressive (SVAR) model with time-varying parameters and stochastic volatility. The SVAR features a Maltese block and a world block. The world block is described by the growth rates of industrial production and overall CPI among all the 38 countries in the Organization for Economic Cooperation and Development, the growth rate of real Brent oil price expressed in US dollars and, finally, the Baltic dry index, the latter being a measure of global shipping costs.[3] The Maltese block features the Central Bank of Malta's BCI developed in Ellul (2016) as a measure of output, together with the year-on-year growth rates of the four main sub-indices of the harmonised CPI: food, non-energy industrial goods, energy, and services.[4]

The data are collected at monthly frequency, and the estimation sample runs from January 1997 to March 2022. The overall dataset is split into a training and an effective sample. The training one aims at setting the priors and stretches from January 1997 to December 2007.[5] The effective sample goes from January 2008 to March 2022, and represents the time span

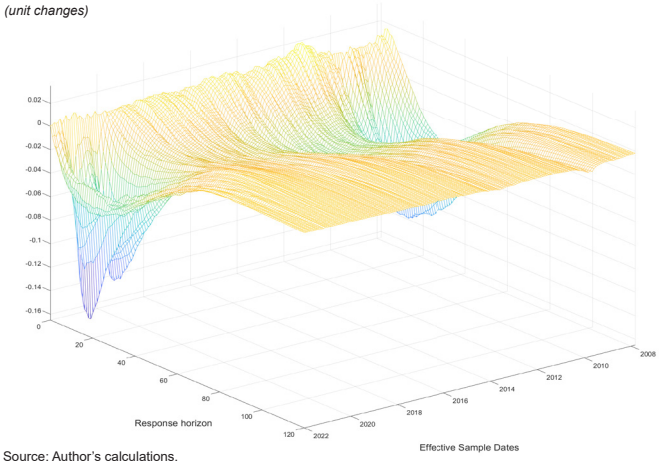
[3] The real price of oil has been calculated as the nominal Brent oil price in USD deflated by the all items CPI for all urban consumers in US cities.

[4] For more details on the BCI please refer to Ellul, R. (2016) "A real-time measure of business conditions in Malta", Central Bank of Malta *Working Paper* 04/2016.

[5] The monthly data for the Maltese BCI are available only from January 2000 onwards. For this reason, the data ranging from January 1997 to December 1999 are approximated as the standardised quarterly year-on-year growth rate of the real GDP.

in which time-variation in the spillover of the shock of interest is estimated.[6]

Chart 2
TIME-VARYING RESPONSE OF MALTESE BCI TO A ONE-STANDARD DEVIATION GLOBAL OIL SHOCK
(unit changes)



Source: Author's calculations.

Chart 2 depicts the impulse response functions (IRFs) of the Maltese BCI to a one standard deviation shock. Following a global oil price shock, Maltese output experiences downward pressure throughout the 2008-2022 period, but the negative reaction presents two periods of elevated responsiveness: the years following the Great Recession and those following the COVID-19 outbreak.[7] The experience of 2008-2010 is characterised by more persistent negative responses of Maltese output when compared with the 2020-2022 period. More precisely, after the Great Recession, the median response takes roughly twice as much the time as the pandemic and post-pandemic period to revert to zero. A possible explanation for this phenomenon is the relatively lower tendency for government in the 2008-2010 period to absorb changes in global prices, thus leading to more persistent domestic energy price responses to the identified oil shock during the Great Recession years. Conversely, more recently, the Maltese government has been subsidising the domestic energy producer to keep energy prices fixed as of July 2020, thus dampening the negative impact of surging global energy prices on output. The months between the two recessionary events are characterised by oil shocks depressing economic activity in a much more contained way.

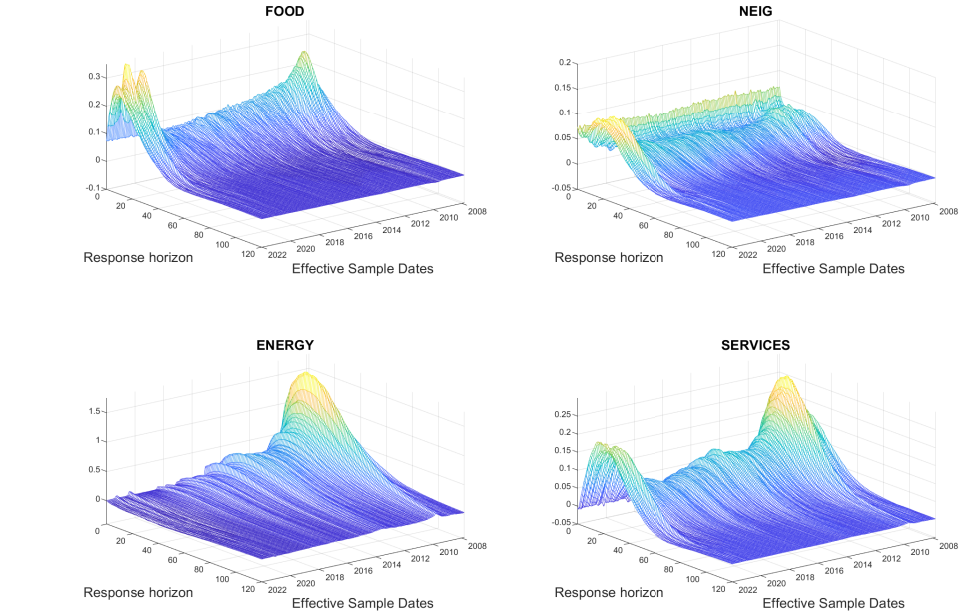
Chart 3 depicts the IRFs of the four HICP sub-indices. Apart from the energy sub-index, all impulse responses show higher responsiveness during and in the immediate aftermath of the Great Recession, as well as after the outbreak of the COVID-19 pandemic.

In the case of food, the model detects a more abrupt rise in the responsiveness experienced in recent years when compared with the beginning of the effective sample. A possible explanation could be found in the relatively high import content of food items in Malta, together with the spike in global food prices that coincided with the oil price shocks that have hit the global economy during the post-pandemic economic recovery.

[6] The effective sample is set to start on January 2008, as this date marks the entrance of Malta into the eurozone. More details on the model's setup as well as identification strategy are presented in Ruisi (2023), "Global oil price: Has their effect on Malta changed over time?", Central Bank of Malta *Working Paper* 04/2023.

[7] The two peaks in the IRF in the recent years refer to the effect of the pandemic outbreak as well as the subsequent reopening of the global economy.

Chart 3
TIME-VARYING RESPONSE OF MALTESE INFLATION SUB-INDICES TO A ONE-STANDARD DEVIATION GLOBAL OIL SHOCK
(unit changes)



Source: Author's calculations.

Non-energy industrial goods have been historically characterised by a similar response throughout the period of analysis. However, a more persistent and hump-shaped response is experienced after the pandemic broke out. This recent and more persistent response could be explained by the fact that most of non-energy industrial goods in Malta are produced outside the national borders and, as such, they are likely to incorporate the recent higher persistence in global energy prices.

Impulse responses for domestic energy inflation show a declining spillover of global oil price shocks. The chart suggests a hump-shaped response during the first part of the estimation sample, thus indicating that the transmission from international to domestic energy prices typically took place with a considerable time lag. Conversely, in more recent years, the response gets increasingly muter. This result reflects the greater role that the government has played in smoothing out global oil price disruptions in the last decade. When the responses are normalised to a 10% rise in real oil price growth, energy inflation receives an upward pressure of 0.5% to 1% over the medium-term until 2017, eventually reaching a zero response afterwards.[8]

Finally, results for services inflation exhibit heightened responsiveness to oil price shocks in the previously mentioned two periods. The peak response of this index of inflation appears less pronounced in 2021-2022, and probably this can be explained by the mute response of energy prices during such a period.

[8] For further details on normalised responses, please refer to Ruisi (2023), "Global oil price: Has their effect on Malta changed over time?", Central Bank of Malta *Working Paper* 04/2023. Moreover, cumulated responses are available upon request.

Conclusions

This study finds time-variation in the responses of the Maltese economy to global oil shocks. The shocks lead to negative responses of Maltese output with a recessionary effect having longer-lasting consequences during the 2008-2010 period compared with the 2020-2022 one. Because of the implementation of energy subsidies aiming at sheltering the domestic economy, Maltese energy inflation has become less and less responsive to international oil price shocks. Indeed, a 10% rise in real oil price growth translates into an increase in energy inflation of 0.5% to 1% over the medium-term until 2017. Subsequently, the response declines to virtually zero. Contrary to this, the responses of food, non-energy industrial goods and services inflation rates appear to be more pronounced in conjunction with two periods of higher volatility on global oil markets: the Great Recession as well as the COVID-19 pandemic and the subsequent months.