



## 4. PRICES, COSTS AND COMPETITIVENESS

Annual inflation, based on the HICP, moderated to 5.6% in 2023, from 6.1% in 2022. Following the record highs reached during 2022, price pressures eased as supply conditions and certain import prices began to normalise. Indeed, HICP inflation eased from 6.8% in January 2023 to 3.7% by the end of the year. HICP inflation in Malta stood below that in the euro area in the initial months of 2023, but by the end of the year it was clearly above it. This mostly reflects a divergence in energy inflation. While energy prices in Malta remained unchanged, those in the euro area showed double-digit growth rates until February, before turning negative during most of the remaining months.

Similar to HICP inflation, the annual rate of inflation based on the Retail Price Index (RPI) also eased in 2023, reaching 5.1% from 6.2% a year earlier.

Furthermore, the annual average rate of change in the producer price index fell to 3.6% in 2023, from 5.5% in the previous year. Malta's real Harmonised Competitiveness Indicator (HCIs) points to a deterioration in international price competitiveness, on account of a stronger euro relative to the other currencies of trading partners. Meanwhile, Malta's ULC index (per person) rose by 2.4% in 2023 up from 1.0% in 2022.

### Inflation

#### Average rate of HICP inflation eases in 2023

The average rate of HICP inflation in Malta stood at 5.6% during 2023, down from 6.1% in 2022 (see Table 4.1).<sup>1</sup> Though still high by historical standards, HICP inflation was on a downward path since the second quarter of the year. Consequently, inflation eased from 6.8% in January to 3.7% by December (see Chart 4.1).

The decrease in inflation compared to 2022 was driven by slower growth in the prices of NEIG and services. By contrast, the contribution of food inflation to overall HICP rose slightly. Meanwhile, energy prices retained

**Table 4.1**  
**HICP INFLATION RATES**

*Average annual rate of change*

|  | 2018       | 2019       | 2020       | 2021       | 2022       | 2023       |
|--|------------|------------|------------|------------|------------|------------|
| Unprocessed food                             | 1.1        | 3.5        | 2.9        | 5.5        | 12.1       | 8.5        |
| Processed food including alcohol and tobacco | 2.2        | 2.3        | 1.8        | 0.8        | 8.2        | 9.6        |
| Energy                                       | 1.3        | 2.5        | -0.6       | -1.6       | 0.0        | 0.0        |
| NEIG   | 0.3        | 0.0        | -0.4       | 1.5        | 5.3        | 4.4        |
| Services (overall index excluding goods)     | 2.2        | 1.8        | 1.0        | 0.7        | 6.0        | 5.1        |
| <b>HICP (annual average inflation rate)</b>  | <b>1.7</b> | <b>1.5</b> | <b>0.8</b> | <b>0.7</b> | <b>6.1</b> | <b>5.6</b> |

Source: Eurostat.

<sup>1</sup> 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%.

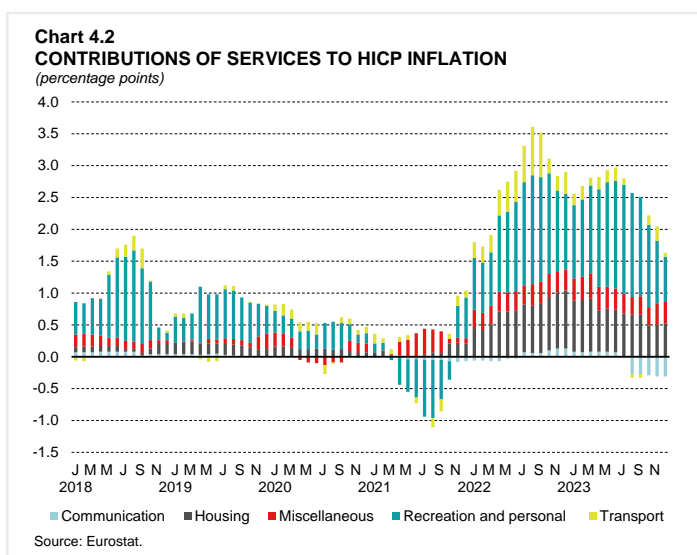
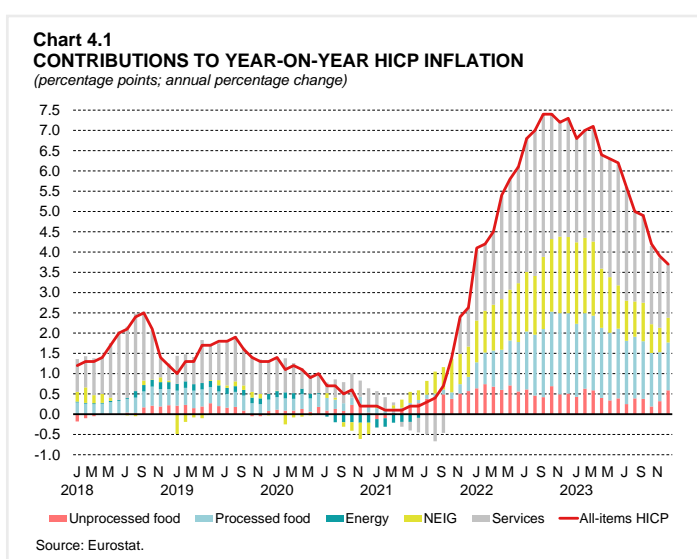
an unchanged contribution to overall inflation, reflecting Government measures aimed at containing the effects from international price pressures.

Services inflation was the main contributor to overall HICP during 2023, contributing an average of 2.4 percentage points to overall HICP inflation, down from 2.7 percentage points in 2022. Indeed, prices of services grew at an annual rate of 5.1% in 2023, from 6.0% in 2022. The decrease in services inflation during 2023 was mainly driven by transport services with the average contribution to overall HICP inflation reaching 0.1 percentage point, from 0.4 percentage point in 2022 (see Chart 4.2). This reflects the introduction of free public transport services in the last quarter of 2022. Moreover, charges for the repair of transport equipment increased at a slower rate during 2023.

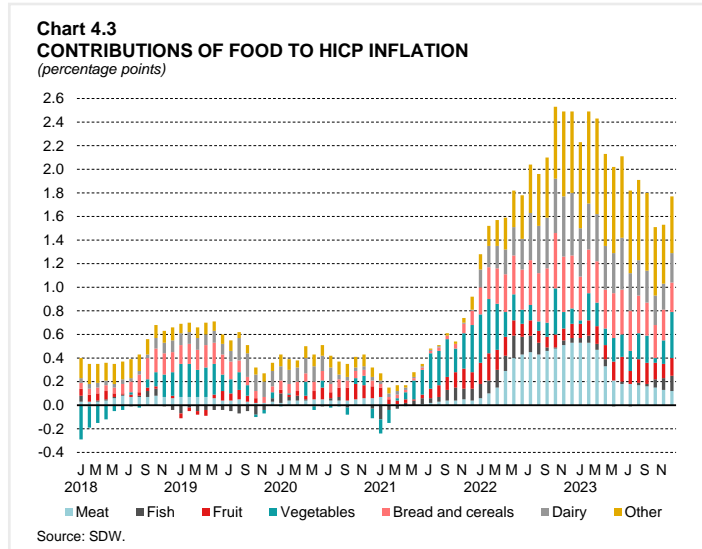
At the same time, lower prices of wireless telephone services swung the contribution of communications services to negative territory. While prices relating to housing services grew at a slightly slower rate compared to 2022, their contribution to HICP remained unchanged at 0.7 percentage point. On the other hand, recreational and personal care services inflation contributed an average of 1.4 percentage points to overall inflation, 0.1 percentage point more than in the previous year.

Meanwhile, NEIG inflation moderated to 4.4% in 2023, from 5.3% in 2022. It contributed 1.2 percentage points to overall HICP inflation, from 1.5 percentage points a year earlier. The fall in NEIG inflation reflects smaller increases in the prices of durable and semi-durable goods, including vehicles, household appliances and household textiles. On the other hand, the contribution of non-durable goods, particularly cleaning and maintenance products, increased marginally.

Food prices continued to show significant increases, though marginally lower than in the previous year. Indeed, food inflation declined to 11.0%, from 11.6% in the previous year. However, overall food inflation, which includes alcohol and tobacco, reached 9.3% from 9.1% in 2022, and added 2.0 percentage points to overall HICP inflation in 2023. Food inflation has been affected by persistently high imported inflation as the prices of fertiliser, animal feed and plastic materials used in agriculture remained high, possibly due to lagged effects of the previous year increases.



Processed food inflation reached 9.6%, from 8.2% in 2022, while its contribution to overall inflation rose to 1.6 percentage points. Strong dynamics were observed in all subcomponents. The increase in processed food inflation compared with 2022 mainly reflects a faster rate of increase in the prices of sugar and confectionery items, where inflation reached 16.0% from 8.7% in the previous year, as well as in the prices of beverages, reflecting the introduction of the beverage container refund scheme in the last quarter of 2022. On the other hand, the contribution from bread and cereals decreased marginally in 2023, following a strong increase in the previous year (see Chart 4.3).



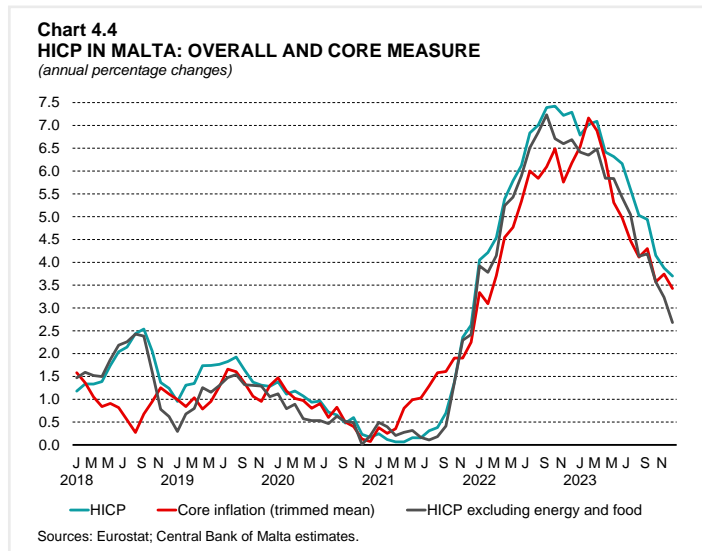
Unprocessed food inflation fell to 8.5%, from 12.1%, with its contribution to overall inflation broadly halving to 0.4 percentage point. This reflected a slower rate of increase in the prices of meat, fish and vegetables (see Chart 4.3).

The contribution of energy inflation remained unchanged at 0.0% in 2023, as electricity, gas and transport fuel prices were kept unchanged from their level a year earlier, through government support measures shielding the economy from rising international energy prices.

### Core HICP inflation moderates in the second half of the year

The core measure of HICP inflation, which is based on the Bank's 'trimmed mean' approach, averaged 5.1% in 2023. This was unchanged from the previous year.<sup>2</sup> By December, however, it had decreased to 3.4% (see Chart 4.4). This reflects the fact that the moderation in price pressures was broad-based across several components.

An alternative measure of underlying inflationary pressures – HICP excluding food and energy – eased during the year, reaching 4.9% from 5.8% in 2022. This measure stood at 2.7% in December.



<sup>2</sup> The Central Bank of Malta uses a 'trimmed mean' approach to measure core inflation, whereby the more volatile components 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), p. 39-45, Central Bank of Malta.

Chart 4.5 shows a distribution of price changes whereby sub-components of HICP are categorised into four classes of inflation rates: i) annual rates below or equal to 0%; ii) between 0 and 2%; iii) between 2% and 5% and iv) over 5%.<sup>3</sup> This disaggregation indicates whether the relatively high inflation experienced in the recent past remains broad-based across HICP items or if it is driven only by selected components of the consumption basket.

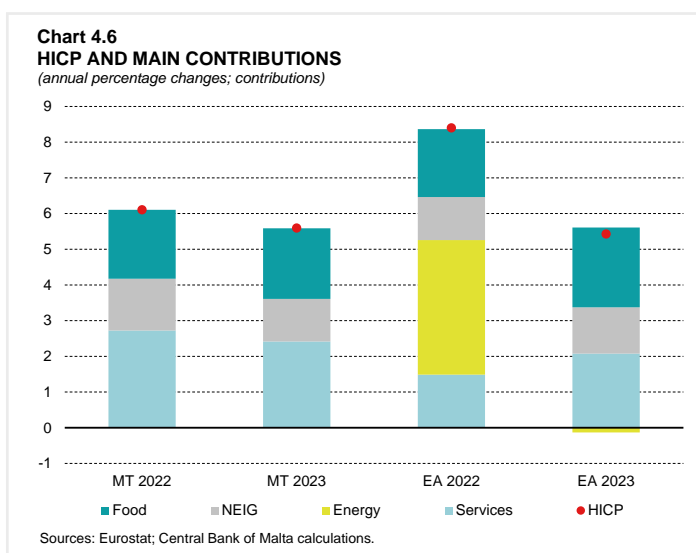
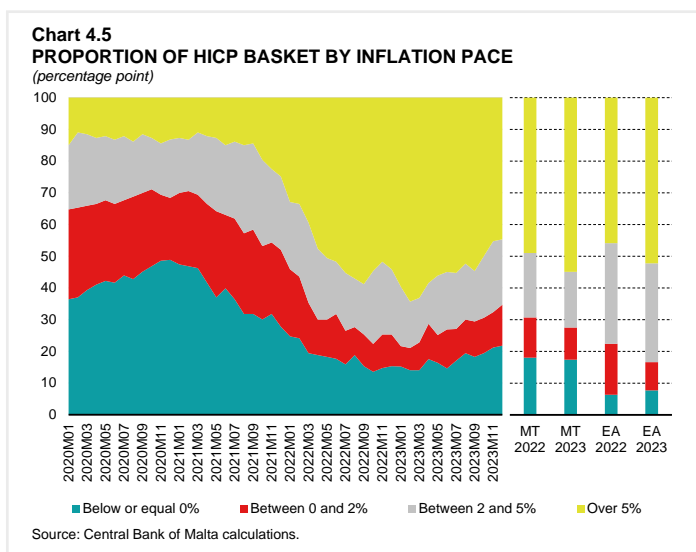
During the year under review, the share of sub-components registering inflation rates of less than 5% has declined further in both Malta and in the euro area. In Malta, the largest drops were recorded in the share of sub-components with inflation rates in the bands of between 0% and 2%, and between 2% and 5%, in almost equal shares. The share of sub-components in each band stood at 10.1% and 17.6%, respectively. In case of the euro area, the largest drop was recorded in the share of sub-components falling in the 0% to 2% band, standing at 8.9%.

By contrast, there has been a substantial rise in the share of sub-components with year-on-year price increases of more than 5%. Indeed in 2023, the latter category stood at 54.9% and 52.2% in Malta and the euro area respectively, from 49.0% and 45.9% in 2022.

Looking beyond annual averages, Chart 4.5 shows that the share of sub-components with price increases higher than 5% started to decline from around the second quarter of 2023, falling to around 45% by December from almost 60% in January.

### Comparison with the euro area

While Malta's inflation rate was below that of the euro area for the first months of the 2023, euro area inflation turned out lower during the last months of the year. Euro area inflation averaged 5.4% during 2023, 0.2 percentage points less than in Malta. This difference reflects developments in energy and services prices (see Chart 4.6). While energy inflation lowered euro area inflation by 0.1 percentage point in 2023, energy prices in Malta were kept unchanged from their level a year earlier, through government support measures.



<sup>3</sup> 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 288 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 EA. 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.

At the same time, the contribution of services inflation in the euro area was lower than that of Malta. The contribution from services inflation stood at 2.1 percentage points in the euro area as opposed to 2.4 percentage points in Malta. The difference stemmed mainly from housing services inflation.

Conversely, prices of food and, to a lesser extent NEIG inflation, had a higher impact on the inflation rate in the euro area than in Malta. While food inflation contributed 2.2 percentage points to HICP inflation in the euro area, it contributed 2.0 percentage points to Maltese inflation. Meanwhile, NEIG inflation in the euro area accounted for 1.3 percentage points of overall inflation, while in Malta it contributed 1.2 percentage points.

### *RPI inflation decreases*

Similar to HICP inflation, annual inflation based on the RPI eased during 2023. The latter averaged 5.1%, down from 6.2% a year earlier. Most subcomponents contributed to the decline except for personal care and health and beverages and tobacco, where the contributions rose when compared to 2022.

Food inflation remained the main contributor to overall RPI inflation in 2023, adding 2.1 percentage points. This was marginally lower than 2022 (see Table 4.2). Indeed, food prices increased at a rate of 9.5% on average during 2023.

Housing services contributed 0.8 percentage point to overall RPI inflation during 2023, as prices rose by 9.6% during the year under review. The contribution of personal care and health, and household equipment and maintenance stood at 0.5 percentage point and 0.4 percentage point, respectively. On the other hand, the contributions from clothing and footwear, and transport and communication inflation were among the lowest recorded as prices of these subcomponents grew at a subdued rate.

The difference between HICP and RPI inflation in part reflects the different structure of weights applied to the two indices. RPI weights are derived from domestic consumption, whilst HICP weights also account for tourism related consumption. Moreover, the 2023 set of weights applied to the HICP index have been revised compared with the 2022 weights. The weights of the RPI are not updated annually and hence are not affected by such changes.

**Table 4.2**  
**CONTRIBUTIONS TO RPI INFLATION<sup>(1)</sup>**  
*Percentage points (annual averages)*

|  | 2018       | 2019       | 2020       | 2021       | 2022       | 2023       |
|--|------------|------------|------------|------------|------------|------------|
| Food                                       | 0.6        | 0.8        | 0.4        | 0.5        | 2.2        | 2.1        |
| Beverages and tobacco                      | 0.1        | 0.1        | 0.1        | 0.0        | 0.2        | 0.3        |
| Clothing and footwear                      | -0.2       | 0.0        | 0.0        | 0.1        | 0.1        | 0.1        |
| Housing                                    | 0.1        | 0.2        | 0.2        | 0.1        | 1.2        | 0.8        |
| Water, electricity, gas and fuels          | 0.0        | 0.0        | 0.0        | 0.0        | 0.0        | 0.0        |
| Household equipment and maintenance        | 0.1        | 0.0        | -0.1       | 0.1        | 0.4        | 0.4        |
| Transport and communications               | 0.2        | 0.3        | -0.1       | 0.0        | 0.7        | 0.1        |
| Personal care and health                   | 0.1        | 0.1        | 0.2        | 0.1        | 0.3        | 0.5        |
| Recreation and culture                     | 0.0        | 0.2        | -0.1       | 0.3        | 0.4        | 0.2        |
| Other goods and services                   | 0.0        | 0.1        | 0.1        | 0.1        | 0.4        | 0.5        |
| <b>RPI (annual average inflation rate)</b> | <b>1.2</b> | <b>1.6</b> | <b>0.6</b> | <b>1.5</b> | <b>6.2</b> | <b>5.1</b> |

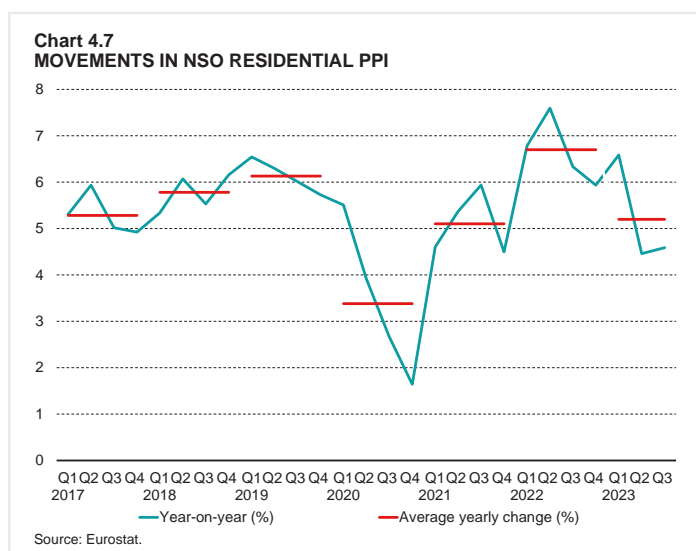
Source: NSO.

<sup>(1)</sup> Totals may not add up due to rounding.

## Residential property prices

### *Residential property prices grow at a slower pace*

Residential property prices continued to increase during the first three quarters of 2023. The NSO's Property Price Index (PPI) – which is based on actual transactions involving apartments, maisonettes and terraced houses – increased at an average annual rate of 5.2% during the first three quarters of the year, following a 6.7% increase recorded in 2022 as a whole (see Chart 4.7).<sup>4</sup> This contrasts with developments in the euro area, where house prices decreased by an annual rate of 1.1% in the first nine months of 2023.

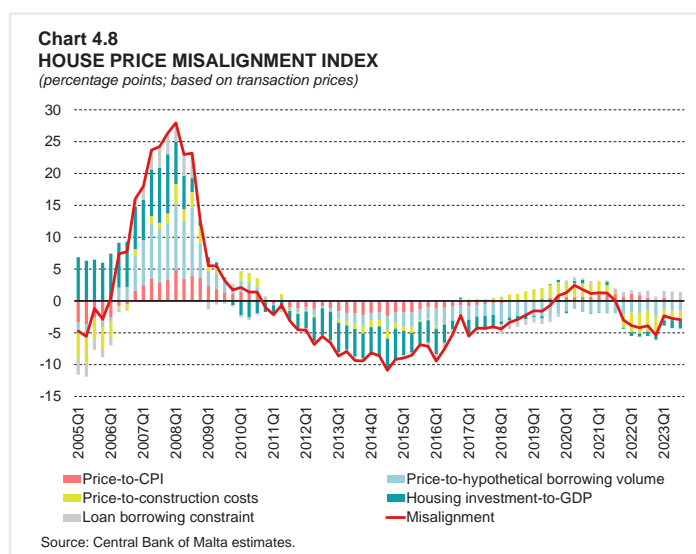


Residential property prices in Malta continued to be supported by several factors, including the limited pass through of ECB rate hikes to retail lending rates in 2023, as well as various government schemes supporting the property market.

### *Misalignment index suggests house prices were below fundamentals in 2023*

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.<sup>5,6</sup> This indicator consists of five sub-indices that represent household, investor, and system-wide factors, with the weights being derived using principal component analysis.

House prices, as measured by the NSO's PPI, were below the level consistent with fundamentals in the first three quarters of 2023 (see Chart 4.8).<sup>7</sup> The undervaluation



<sup>4</sup> '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. This category includes penthouses. '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. Further information is available in NSO News Release 115/2023.

<sup>5</sup> 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.

<sup>6</sup> The actual numerical results presented in this section should not be overstated given the limitations in the construction of this index. 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 index.

<sup>7</sup> A separate assessment based on advertised house prices can be found in Gatt, W., Micallef, B. and Rapa, N. (2018), "A macro-economic model of the housing market in Malta", *Annual Research Bulletin*, Central Bank of Malta, pp. 11-18.

during this period was driven mainly by the house price-to-construction ratio, and the price-to-hypothetical borrowing ratio. The latter is an indicator of affordability. The housing investment-to-GDP ratio also contributed to the undervaluation. Conversely, the loan borrowing constraint contributed positively to the misalignment index, as it stood above its long-term average. The house price-to-inflation also contributed positively to the misalignment index, but its contribution was marginal.

#### *Final deeds for residential property decline, while promise of sale agreements increase<sup>8</sup>*

NSO data on residential property transactions show that 12,179 final deeds of sale were concluded in 2023, around 15% less than a year earlier. This follows a marginal decline of 0.3% in 2022 (see Table 4.3). The number of final deeds of sale in 2023 was around a tenth below that of 2019. Over 90% of final deeds signed in 2023 involved purchases by individuals.

**Table 4.3**

#### **NSO RESIDENTIAL PROPERTY TRANSACTIONS**

|                                     | 2020    | 2021    | 2022    | 2023    | Annual change |       |
|-------------------------------------|---------|---------|---------|---------|---------------|-------|
|                                     |         |         |         |         | Absolute      | %     |
| <b>Residential transactions</b>     |         |         |         |         |               |       |
| Promise of sale                     | 11,259  | 15,639  | 12,164  | 13,214  | 1,050         | 8.6   |
| Final deeds of sale                 | 11,057  | 14,368  | 14,331  | 12,179  | -2,152        | -15.0 |
| <b>Transaction value (millions)</b> | 2,126.6 | 3,162.0 | 3,299.6 | 3,229.0 | -70.6         | -2.1  |

Source: National Statistics Office.

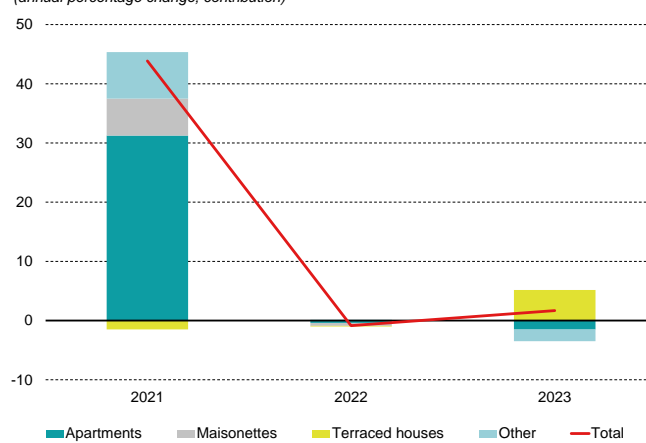
Conversely, at 13,214, the number of promise-of-sale agreements was 8.6% higher than the amount registered in 2022. This followed a decline of 22.2% in 2022.

The value of final deeds reached €3,229.0 million, a decrease of €70.6 million, or 2.1%, compared to the previous year.

#### *Mortgage transactions recover<sup>9</sup>*

The number of mortgage contracts recovered from the previous year's decline. They rose by 1.7% in 2023, after decreasing by 0.9% in 2022 (see Chart 4.9). The increase was driven by terraced houses. By contrast, the number of mortgages financing houses of character and apartments decreased, while those for maisonettes were broadly stable.

**Chart 4.9**  
**MORTGAGE CONTRACTS**  
(annual percentage change; contribution)

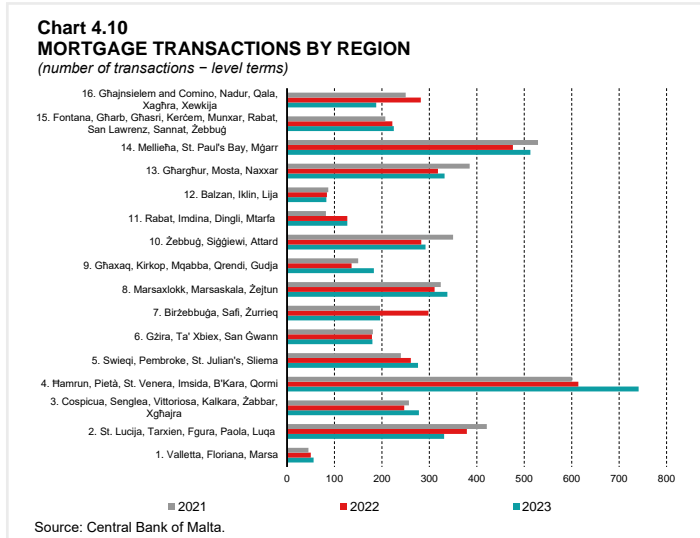


Source: Central Bank of Malta.

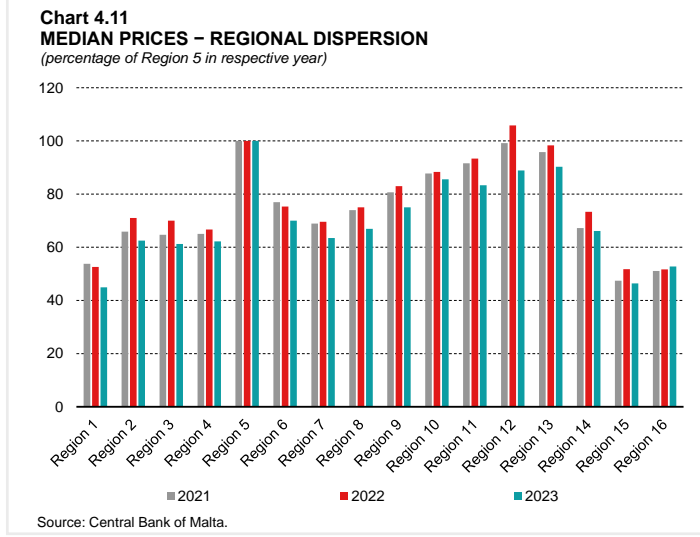
<sup>8</sup> This section is based on NSO News Release 024/2024. The data presented cover the following property types: airspace, boathouse, bungalow, farmhouse, flat/apartment, garage, garden, house, maisonette, penthouse, plot of land, semi-detached villa, terraced house, 'terran', urban tenement and villa.

<sup>9</sup> 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. These data exclude 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, house of character, farmhouses, bungalow, and villa. Other property types included in the previous section, such as garage, plot of land, etc. are excluded.

In 2023, the highest number of mortgage transactions related to properties located in region 4, followed by region 14. On the other hand, the lowest number of mortgage transactions involved properties located in region 1. In 2023 mortgage transactions increased in most locations, but selected locations showed significant declines (see Chart 4.10). The largest decrease in absolute terms occurred in regions 7 and region 16, followed by region 2. Region 4 showed the most growth, followed by regions 9 and 3.

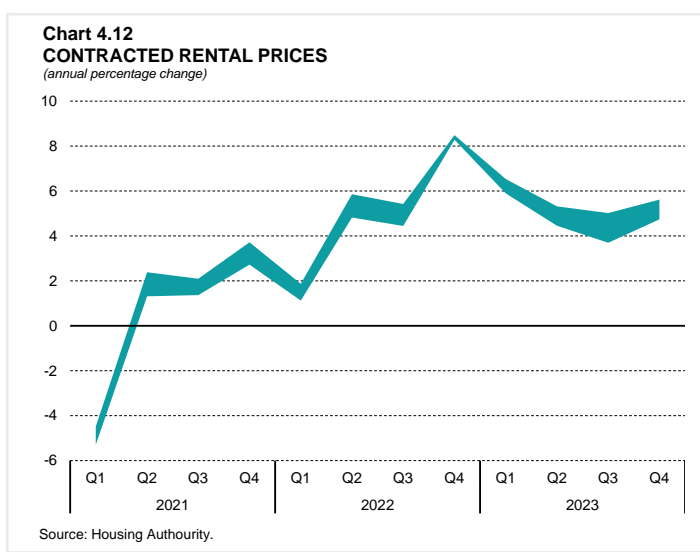


Region 5 has regained its position as the most expensive in terms of median prices in 2023 (see Chart 4.11). In 2023, the range between the maximum and minimum median price increased, signalling higher price dispersion across Malta.



*Contracted rental data grew marginally*

Data on rents based on contracts registered with the Housing Authority show a marginal pick up in the annual rate of change of rents in 2023 (see Chart 4.12).<sup>10</sup> 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 year under review. This compared with a range of 4.7% - 5.4% in 2022. Such data include both new contracts as well as renewals of previous contracts. Thus, it is more extensive in its coverage than advertised rents collected by the Central Bank of Malta from internet sources, which exclude renewals.



The average range of estimates from various methods indicate that advertised rents collected by the

<sup>10</sup> 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, available at: <https://housingauthority.gov.mt/>.



Bank have increased at annual rates of between 13.2% and 15.0% in the year under review (see Chart 4.13).<sup>11</sup>

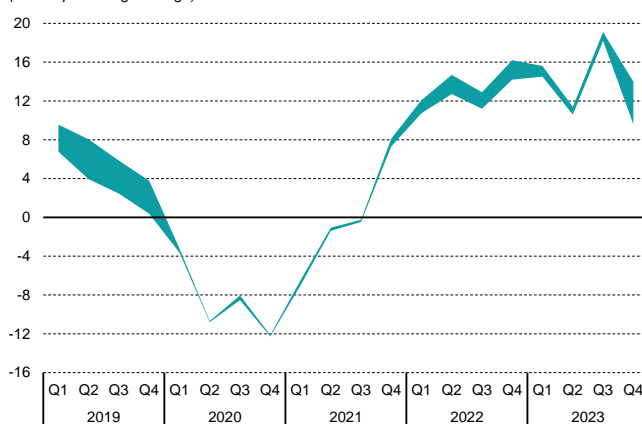
## Costs and competitiveness

### Producer price pressures ease

Growth in producers' output prices, as measured by the producer price index, decreased to 3.6% during 2023, from 5.5% a year earlier (see Chart 4.14).<sup>12</sup> While energy producer price inflation remained at zero, other producer prices continued to increase and thus had a positive contribution to overall producer price inflation. Producer prices for consumer goods showed the strongest increase of 8.5%, mostly reflecting developments in non-durable goods prices, while producer prices of capital goods rose by 5.7%. Both components recorded stronger increases compared to 2022. By contrast the annual rate of change of prices of intermediate goods eased markedly, from 6.9% in 2022 to 0.6% in 2023.

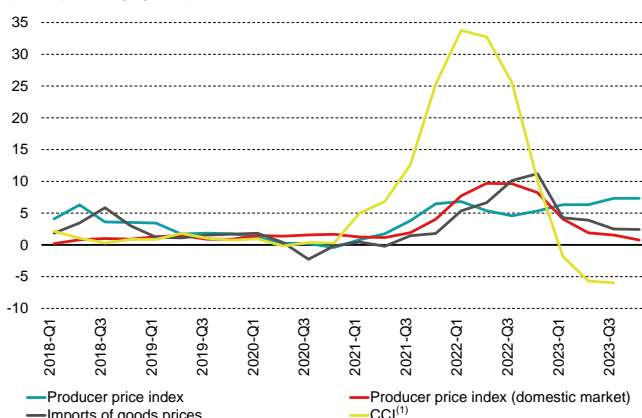
Other indicators affecting the domestic market also show easing cost pressures. The domestic producer price index was down to 2.0% when compared to its average reading of 8.8% in 2022. This moderation was broad-based across its components.<sup>13</sup> The imports of goods deflator also showed slower growth, as it rose by 3.1% down from 8.5% in 2022.<sup>14</sup> The construction cost index (CCI) for new residential buildings published by Eurostat declined by 4.5% in the first three quarters of 2023, after increasing by 25.5% in the previous year. Notwithstanding the recent decline, its level remains above that observed before 2020.

**Chart 4.13**  
**ADVERTISED RENTAL PRICES**  
(annual percentage change)



Source: Central Bank of Malta.

**Chart 4.14**  
**COST INDICATORS**  
(annual percentage growth)



Sources: Central Bank of Malta estimates; Eurostat; NSO.  
<sup>(1)</sup> CCI shows data up to Q3 2023.

<sup>11</sup> 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.

<sup>12</sup> The producer price index measures the prices of goods at the factory gate and is commonly used to monitor inflationary pressures at the production stage.

<sup>13</sup> 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.

<sup>14</sup> This index is derived from national accounts data published by the NSO.

### Real HCI points to a deterioration in external competitiveness

In 2023, the nominal HCI, which is conditioned by developments in trade-weighted nominal exchange rates, was up by 3.3%, compared with its average reading for 2022 (see Chart 4.15).<sup>15</sup>

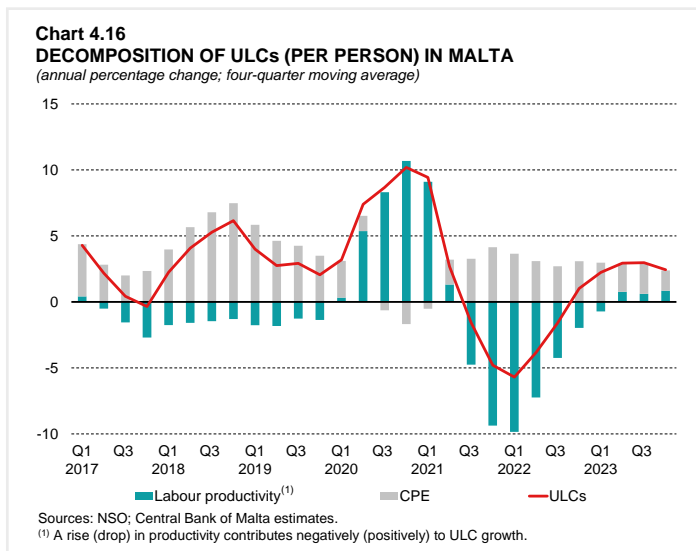
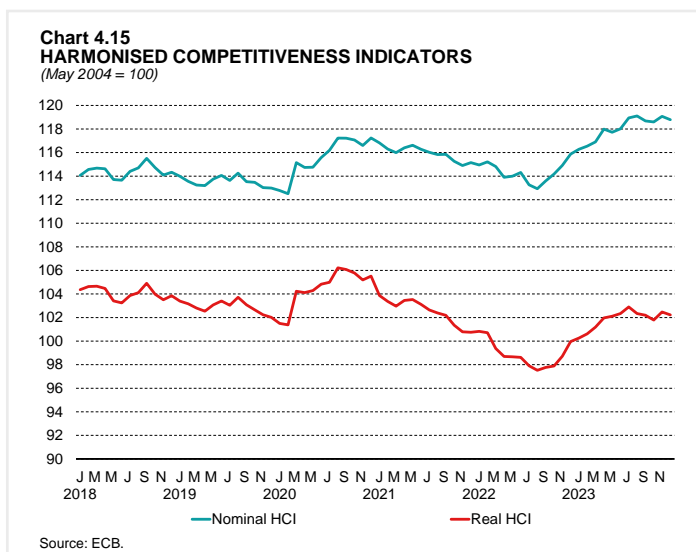
The real HCI, which also takes into account changes in price inflation relative to trading partners, was up by 3.0% over its 2022 average level. The smaller increase in the real HCI compared to the nominal measure reflects the fact that Malta's inflation rate was lower than of its trading partners during most of the year.

### ULCs increased at a stronger pace

Malta's ULC index, measured as the ratio of compensation per employee (CPE) to labour productivity, increased at a stronger pace in 2023, compared to 2022. When measured in headcount terms, ULCs in Malta rose by 2.4% in 2023, following an increase of 1.0% in the previous year (see Chart 4.16).

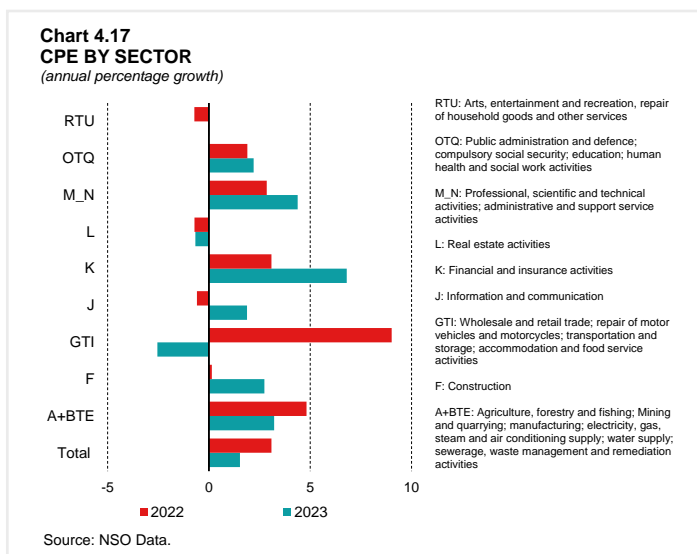
The acceleration in ULC was driven by unfavourable dynamics in productivity growth, which offset a moderation in average wage growth. Annual growth in CPE eased to 1.5%, from 3.1% in 2022, as the number of employees increased at a faster pace while total compensation grew at a slower pace when compared to 2022.

Meanwhile, labour productivity declined by 0.8% in 2023, following a 2.0% rise in the previous year. Productivity growth turned negative as employment rose at a faster pace compared to 2022, while GDP growth slowed down.



<sup>15</sup> HCIs act as an effective exchange rate measure for countries operating within the euro area monetary union. The nominal HCI tracks movements in the euro exchange rate against the currencies of Malta's main trading partners, weighted according to the direction of trade in manufactured goods. The real HCI also takes into account the relative inflation rate of Malta vis-à-vis its main trading partners. A higher (or lower) score in the HCI indicates a deterioration (or improvement) in Malta's international price competitiveness.

On average, during the year, growth in CPE was fastest in the financial and insurance activities sector, which had an average year-on-year growth rate of 6.8% (see Chart 4.17). Significant growth – at 4.4% – also occurred in the professional, scientific and administrative support sector. Most of the other sectors also show an increase in CPE. However, in the arts and entertainment sector CPE was broadly unchanged from 2022, while the real estate sector and the wholesale and retail sector show declines. Growth has picked up in most of the sectors when compared to the previous year.



### BOX 3: SECTORAL CONTRIBUTIONS TO AGGREGATE LABOUR PRODUCTIVITY AND ULC GROWTH<sup>1</sup>

This box looks at sectoral contributions to total labour productivity and real ULC growth during 2023, using national accounts data. To ensure the additivity of sectoral contributions, the analysis utilises the generalised exactly additive decomposition (GEAD) of productivity growth, first developed by Tang and Wang (2004).<sup>2</sup> This method was also applied in a separate analysis of labour productivity growth in Malta over the past two decades.<sup>3</sup>

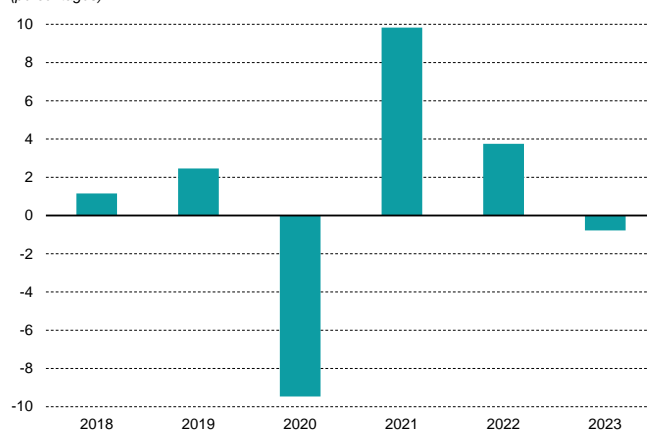
In the GEAD approach, aggregate labour productivity can be decomposed into three effects. The first is the *pure productivity effect*, which is the sector's contribution to aggregate productivity growth that is solely due to changes in its labour productivity, weighted by its share in nominal aggregate output.

There is also a *reallocation effect*, which measures a sector's contribution to aggregate productivity growth due to changes in its relative size. This reallocation effect is split into a static (level) effect and a dynamic (growth) effect. The *static reallocation level effect* measures the impact of absolute changes in labour shares and relative prices, scaled by the ratio of the respective sector's labour productivity level to the economy-wide productivity level. The *dynamic reallocation growth effect* takes into account whether these changes are occurring within a growing or a declining productivity industry.

#### Sectoral contributions to aggregate labour productivity growth

Both economic activity and employment levels continued to grow robustly in 2023, though at a slower rate than in 2022. Nevertheless, labour productivity declined as employment outpaced output. Indeed, employment rose by 6.5% in 2023, while chain-linked GVA rose by 5.7%, according to national accounts data. As a result, labour productivity – measured as chain-linked GVA per person employed – fell by 0.8% during the year under review, following an increase of 3.7% in 2022 (see Chart 1).<sup>4,5</sup>

**Chart 1**  
**PRODUCTIVITY GROWTH**  
(percentages)



Source: NSO.

<sup>1</sup> Prepared by Martina Cassar, Economist within the Economic Projections and Conjunctural Analysis Office. The views expressed are those of the author and do not necessarily reflect the views of the Central Bank of Malta. Any errors are the author's own.

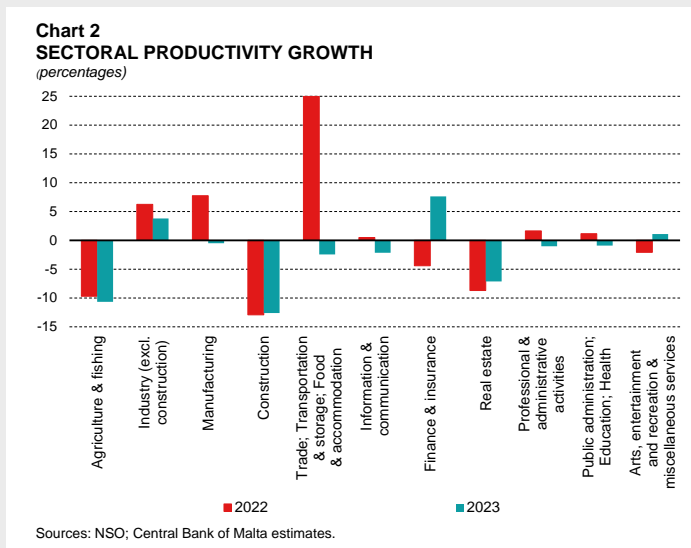
<sup>2</sup> Tang, J., & Wang, W. (2004). Sources of aggregate labour productivity growth in Canada and the United States, *Canadian Journal of Economics*, 37(2), pp. 421-444.

<sup>3</sup> Montebello R., & Darmanin J., (2021). Labour Productivity Growth in Malta: A sectoral decomposition analysis, *Working Paper 04/2021*, Central Bank of Malta.

<sup>4</sup> This analysis is based on GVA per person employed rather than GDP per person employed, as sectoral data are only available for GVA. Aggregate productivity and ULCs may thus deviate from those reported in the section of this Report on costs and competitiveness where aggregate productivity and ULCs are derived using GDP. Another difference stems from the treatment of CPE, which is in nominal terms in that section, but is deflated in this box. Employment figures are based on data from the NSO *News Release 039/2024* and therefore do not take into account revisions to LFS employment data made in light of the 2021 Census and published in NSO *News Release 044/2024*.

<sup>5</sup> Productivity developments would have been better measured using output per hour rather than output per person, particularly during periods in which average hours worked change significantly. However, this analysis could not be made due to the unavailability of sectoral hours worked in the national accounts for Malta. Furthermore, both measures may be affected by limitations in the measurement of output of new sectors.

Sectoral productivity mostly declined in 2023 (see Chart 2). The largest drop in productivity occurred in the construction sector. This decrease amounted to 12.6%. Although this sector registered a drop in its output of 8.2%, employment grew by 5.1%. The agricultural sector also suffered a decline in output with higher employment levels compared to 2022. Meanwhile, productivity growth in the real estate sector declined significantly, but unlike the above-mentioned sectors, GVA growth in 2023 was positive (3.4%). However, this was less than the growth in employment (11.4%). Similar developments occurred in the trade, transportation, the accommodation and food services sector, the information sector, the manufacturing sector, the professional sector, and the sector comprising public sector administration and related activities.



By contrast, sectors comprising industry (excluding construction), finance and insurance, as well as the arts and recreation sector registered higher productivity. The strongest gain is estimated for the sector comprising finance and insurance and amounted to 7.6%. This reflects very strong growth in GVA (11.8%), which offset a 3.9% increase in employment. Productivity developments in the financial and insurance sector must, however, be interpreted with caution, as movements in output might be affected markedly by financial market developments due to the strong shift in monetary policy. Any reversal of the recent tightening in monetary policy could have a negative impact on the value added, and thus productivity of this sector.

Table 1 shows the sectoral contributions to aggregate labour productivity growth derived using the GEAD decomposition. Most sectors have contributed to the decline in productivity growth in 2023. The largest negative contribution (-0.7 percentage point) was brought about by the sector comprising public administration. This reflects the fact that it has a large labour share, and hence, a small drop in its productivity would have a significant impact on total productivity growth.

The sector comprising the trade, transportation, accommodation and food services – which has the highest labour market share, contributed significantly to the drop in overall productivity growth, as did the information and communication sector. Similarly, despite the fact that the construction sector is relatively small, it has contributed significantly to the drop in overall productivity growth on account of its sharp drop in sectoral productivity. Moreover, despite registering some positive growth in productivity, the arts and entertainment contributed negatively to productivity growth, due to a small decline in its labour share and its relative prices in relation to the whole economy deflator.

In line with its rise in productivity, the sector comprising of the finance and insurance services had the largest positive contribution to aggregate productivity growth in 2023, contributing 1.1 percentage points. In addition, the sectors comprising real estate activities and professional services, also contributed positively to overall growth, despite their decline in productivity. This reflects an increase

**Table 1**  
**SECTORAL CONTRIBUTIONS TO AGGREGATE LABOUR PRODUCTIVITY GROWTH**

*Percentage points; Chainlinked*

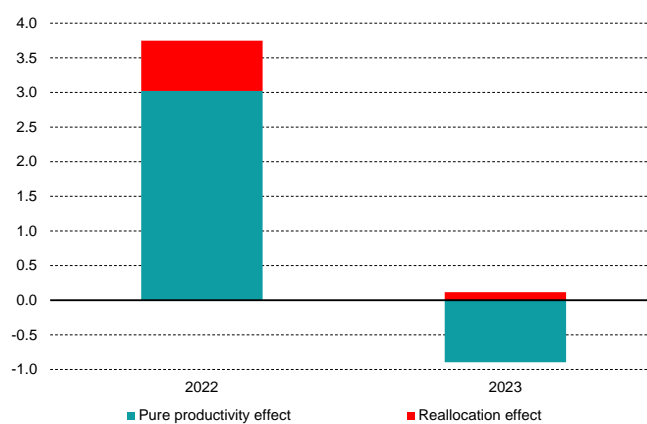
|   | 2016        | 2017       | 2018       | 2019       | 2020        | 2021       | 2022       | 2023        |
|---|-------------|------------|------------|------------|-------------|------------|------------|-------------|
| Agriculture, forestry & fishing   | 0.0         | -0.3       | 0.0        | -0.2       | 0.2         | 0.2        | -0.1       | -0.1        |
| Industry (excl. construction)   | 0.0         | -0.7       | 0.1        | -0.1       | -0.4        | 0.3        | 0.3        | 0.0         |
| of which: Manufacturing   | -0.4        | -0.2       | 0.0        | 0.0        | -0.2        | 0.1        | 0.4        | -0.3        |
| Construction  | -0.1        | 0.3        | 0.3        | 0.9        | -0.1        | 0.0        | -0.2       | -0.4        |
| Wholesale and retail trade; repair of motor vehicles and motorcycles; transportation and storage; accommodation and food service activities | -1.6        | 1.1        | -0.4       | -0.4       | -7.5        | 3.6        | 4.4        | -0.6        |
| Information & communication   | 0.9         | 0.3        | 0.4        | 0.7        | -0.5        | 1.3        | 0.5        | -0.5        |
| Finance & insurance activities  | 0.4         | 0.2        | 0.2        | 0.1        | 0.5         | -0.3       | -0.4       | 1.1         |
| Real estate activities  | 0.4         | 0.2        | -0.1       | 0.1        | -0.3        | 0.1        | -0.2       | 0.3         |
| Professional, scientific and technical activities; administrative and support service activities  | 1.7         | 1.8        | 0.0        | 1.2        | -1.9        | 1.8        | 0.5        | 0.5         |
| Public administration and defence; education, health and social work activities   | 0.2         | -0.6       | 0.3        | 0.5        | -0.1        | 1.2        | -0.8       | -0.7        |
| Arts, entertainment and recreation, repair of household goods and other services  | -3.0        | 0.4        | 0.4        | -0.4       | 0.6         | 1.4        | -0.3       | -0.4        |
| <b>Aggregate labour productivity growth (%; GVA-based)</b>  | <b>-1.2</b> | <b>2.7</b> | <b>1.2</b> | <b>2.5</b> | <b>-9.5</b> | <b>9.8</b> | <b>3.7</b> | <b>-0.8</b> |

Sources: NSO; Central Bank of Malta estimates.

in the labour share of these sectors, and in the case of real estate activities, also an increase in its relative price.

Using the GEAD approach, Chart 3 decomposes overall productivity growth into the pure productivity effect and the reallocation effect. The pure productivity effect – which captures the change in productivity within sectors – was the dominant contributor to the decline in overall productivity in 2023. The contribution of the reallocation effect – which represents the reallocation of resources among sectors – was marginally positive, and its impact was smaller than that in 2022.

**Chart 3**  
**DECOMPOSITION OF PRODUCTIVITY GROWTH**  
*(percentage contributions)*



Source: Central Bank of Malta estimates.

Table 2 elaborates further, by decomposing the contribution of each sector into the pure productivity effect, the reallocation level effect, as well as the reallocation growth effect. The drop in the pure productivity effect was mainly driven by construction, the sector comprising trade, transportation, accommodation and food services, and the real estate sector. Conversely, the sector comprising finance and insurance activities registered the largest positive contribution to the pure productivity effect.

**Table 2**  
**SECTORAL CONTRIBUTIONS TO PRODUCTIVITY GROWTH DECOMPOSED**

Percentage points; Chainlinked

|   | 2023               |                          |                           |                           |                            |
|---|--------------------|--------------------------|---------------------------|---------------------------|----------------------------|
|   | Total contribution | Pure productivity effect | Total reallocation effect | Reallocation effect       |                            |
|   |                    |                          |                           | Reallocation level effect | Reallocation growth effect |
| Agriculture, forestry & fishing   | -0.1               | -0.1                     | 0.0                       | 0.0                       | 0.0                        |
| Industry (excl. construction)   | 0.0                | 0.3                      | -0.4                      | -0.3                      | 0.0                        |
| of which: Manufacturing   | -0.3               | 0.0                      | -0.2                      | -0.2                      | 0.0                        |
| Construction  | -0.4               | -0.5                     | 0.2                       | 0.2                       | 0.0                        |
| Wholesale and retail trade; repair of motor vehicles and motorcycles; transportation and storage; accommodation and food service activities | -0.6               | -0.5                     | -0.1                      | -0.1                      | 0.0                        |
| Information & communication   | -0.5               | -0.2                     | -0.3                      | -0.3                      | 0.0                        |
| Finance & insurance activities  | 1.1                | 0.6                      | 0.5                       | 0.5                       | 0.0                        |
| Real estate activities  | 0.3                | -0.4                     | 0.7                       | 0.7                       | -0.1                       |
| Professional, scientific and technical activities; administrative and support service activities  | 0.5                | -0.2                     | 0.6                       | 0.6                       | 0.0                        |
| Public administration and defence; education, health and social work activities   | -0.7               | -0.1                     | -0.6                      | -0.6                      | 0.0                        |
| Arts, entertainment and recreation, repair of household goods and other services  | -0.4               | 0.1                      | -0.5                      | -0.5                      | 0.0                        |
| <b>Total economy</b>  | <b>-0.8</b>        | <b>-0.9</b>              | <b>0.1</b>                | <b>0.2</b>                | <b>0.0</b>                 |

Sources: NSO; Central Bank of Malta estimates.

Meanwhile, the improvement in the reallocation effect, which reflects changes in labour shares and relative prices, was primarily driven by the real estate sector, the professional and administrative sector, as well as the financial and insurance sector. These outweighed drops registered in other sectors, particularly in the public and administration sector, as well as the arts and entertainment sector.

### Sectoral contributions to growth in real CPE and real ULCs<sup>6</sup>

Real CPE fell by 3.9% in 2023, following a decline of 2.2% in 2022 (see Table 3).<sup>7</sup> Almost all sectors contributed to the decline in real CPE, except the finance and insurance sector.

The largest contributor to the decrease was the sector comprising trade, transportation, accommodation and food services. This was followed by the sector comprising public administration and related activities. Both sectors recorded minimal growth in nominal average wages (less than 1%). As inflation was significantly higher, this resulted in negative contributions to real compensation per person.

Conversely, real wages in the finance and insurance sector rose.

Real ULCs declined by 3.2% in 2023, following a decline of 5.7% in the previous year (see Table 4). The drop in overall real ULCs was due to the decrease in real wages, which surpassed the fall in productivity.

The main driver behind the drop in ULCs was the sector comprising trade, transportation, accommodation and food services activities. This sector experienced a larger drop in real wages than the decline in productivity. Meanwhile, the finance and insurance activities, and the professional and administrative sectors also contributed negatively, as they experienced a drop in real wages and an improvement in productivity.

<sup>6</sup> Using the GEAD decomposition of productivity, it is possible to calculate approximate sectoral contributions to real ULC growth as the log difference of sectoral contributions to CPE growth and aggregate productivity growth.

<sup>7</sup> In this box, real CPE is calculated as total CPE divided by the private consumption deflator.

**Table 3**  
**SECTORAL CONTRIBUTIONS TO GROWTH IN REAL CPE<sup>(1)</sup>**

*Percentage points*

|   | 2016       | 2017       | 2018       | 2019       | 2020        | 2021       | 2022        | 2023        |
|---|------------|------------|------------|------------|-------------|------------|-------------|-------------|
| Agriculture, forestry & fishing   | 0.0        | 0.0        | 0.0        | 0.0        | 0.0         | 0.0        | 0.0         | 0.0         |
| Industry (excl. construction)   | 0.1        | 0.2        | 0.8        | 0.1        | -0.3        | 0.3        | -0.1        | -0.3        |
| of which: Manufacturing   | 0.1        | 0.2        | 0.8        | 0.1        | -0.3        | 0.3        | 0.0         | -0.3        |
| Construction  | 0.2        | -0.1       | 0.3        | -0.3       | -0.3        | 0.0        | -0.4        | -0.2        |
| Wholesale and retail trade; repair of motor vehicles and motorcycles; transportation and storage; accommodation and food service activities | 1.1        | -0.9       | 0.4        | -0.4       | -1.8        | 0.5        | 0.2         | -2.1        |
| Information & communication   | 0.2        | 0.4        | 0.8        | 0.3        | -0.2        | 0.0        | -0.2        | -0.1        |
| Finance & insurance activities  | 0.5        | -0.1       | 0.6        | 0.6        | 0.2         | 0.0        | 0.0         | 0.2         |
| Real estate activities  | 0.0        | 0.0        | 0.0        | -0.1       | 0.0         | 0.0        | -0.1        | -0.1        |
| Professional, scientific and technical activities; administrative and support service activities  | 0.6        | -0.5       | 1.5        | -0.2       | -0.7        | 0.3        | -0.5        | -0.4        |
| Public administration and defence; education, health and social work activities   | 1.3        | 0.6        | 1.7        | 1.5        | 0.4         | 1.9        | -0.9        | -0.8        |
| Arts, entertainment and recreation, repair of household goods and other services  | 0.3        | 1.7        | 0.8        | 0.2        | -0.2        | 0.1        | -0.3        | -0.4        |
| <b>Aggregate CPE growth (%)</b>   | <b>4.2</b> | <b>1.3</b> | <b>6.5</b> | <b>1.6</b> | <b>-2.9</b> | <b>2.9</b> | <b>-2.2</b> | <b>-3.9</b> |

Sources: NSO; Central Bank of Malta estimates.

<sup>(1)</sup> Sum of sectoral contributions may not exactly match aggregate CPE growth due to chainlinking.

**Table 4**  
**SECTORAL CONTRIBUTIONS TO GROWTH IN REAL ULCS<sup>(1)</sup>**

*Percentage points*

|   | 2016       | 2017        | 2018       | 2019        | 2020       | 2021        | 2022        | 2023        |
|---|------------|-------------|------------|-------------|------------|-------------|-------------|-------------|
| Agriculture, forestry & fishing   | 0.0        | 0.3         | 0.0        | 0.2         | -0.3       | -0.3        | 0.0         | 0.1         |
| Industry (excl. construction)   | 0.1        | 0.9         | 0.7        | 0.2         | 0.1        | 0.0         | -0.4        | -0.3        |
| of which: Manufacturing   | 0.5        | 0.3         | 0.8        | 0.1         | -0.1       | 0.2         | -0.5        | 0.0         |
| Construction  | 0.3        | -0.4        | 0.0        | -1.2        | -0.1       | -0.1        | -0.1        | 0.1         |
| Wholesale and retail trade; repair of motor vehicles and motorcycles; transportation and storage; accommodation and food service activities | 2.7        | -1.9        | 0.8        | 0.0         | 5.6        | -3.1        | -4.2        | -1.5        |
| Information & communication   | -0.7       | 0.0         | 0.4        | -0.4        | 0.4        | -1.3        | -0.6        | 0.3         |
| Finance & insurance activities  | 0.1        | -0.3        | 0.4        | 0.5         | -0.3       | 0.3         | 0.4         | -0.9        |
| Real estate activities  | -0.4       | -0.2        | 0.2        | -0.2        | 0.3        | -0.2        | 0.1         | -0.3        |
| Professional, scientific and technical activities; administrative and support service activities  | -1.0       | -2.3        | 1.5        | -1.4        | 1.1        | -1.6        | -1.1        | -0.8        |
| Public administration and defence; education, health and social work activities   | 1.2        | 1.2         | 1.3        | 1.1         | 0.6        | 0.7         | -0.2        | -0.1        |
| Arts, entertainment and recreation, repair of household goods and other services  | 3.3        | 1.3         | 0.4        | 0.6         | -0.8       | -1.3        | -0.1        | 0.0         |
| <b>Annual ULC growth (%)</b>  | <b>5.4</b> | <b>-1.4</b> | <b>5.3</b> | <b>-0.8</b> | <b>7.3</b> | <b>-6.3</b> | <b>-5.7</b> | <b>-3.2</b> |

Sources: NSO; Central Bank of Malta estimates.

<sup>(1)</sup> Sum of sectoral contributions may not exactly match aggregate ULC growth due to chainlinking.