



## 4. PRICES, COSTS AND COMPETITIVENESS

Annual inflation, based on the HICP, rose strongly to 6.1% in 2022, from 0.7% in 2021. The rise in inflation comes at a time of high international price pressures, which were amplified by new supply and trade disruptions following the start of the Russia-Ukraine conflict. Indeed, HICP inflation rose from 4.1% in January 2022 to 7.3% by the end of the year. While at a record high since such data began being collected in 1996, HICP inflation remained below that in the euro area, mainly due to government measures which kept energy prices in Malta unchanged despite higher international prices for energy commodities.

Similarly, the annual rate of inflation based on the RPI, rose in 2022, reaching 6.2%, from 1.5% a year earlier.

Furthermore, the annual average rate of change in the producer price index rose to 5.6% in 2022, from 3.2% in the previous year. Malta's real Harmonised Competitiveness Indicators (HCIs) point to an improvement in international price competitiveness, on account of both favourable price and exchange rate movements vis-à-vis Malta's main trading partners. Malta's unit labour cost (ULC) index (per person) rose by 1.9% in 2022, following a decline of 3.7% in 2021.

### Inflation

#### Average rate of HICP inflation increases strongly in 2022

The average rate of consumer price inflation, as measured by the HICP, stood at 6.1% during 2022 (see Table 4.1).<sup>1</sup> This was well above the rate of 0.7% registered in the previous year, and the highest reading since HICP data for Malta started being compiled.

The rise in inflation occurred in an environment of elevated international price pressures, amid lingering supply bottlenecks and renewed trade disruptions following the outbreak of the war in Ukraine. Indeed, inflation has continued on its upward path evident since May 2021 (see Chart 4.1). HICP inflation rose from 4.1% in January, to a peak of 7.4% in September and October 2022, before falling marginally to 7.2% in November and 7.3% in December.

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

*Average annual rate of change*

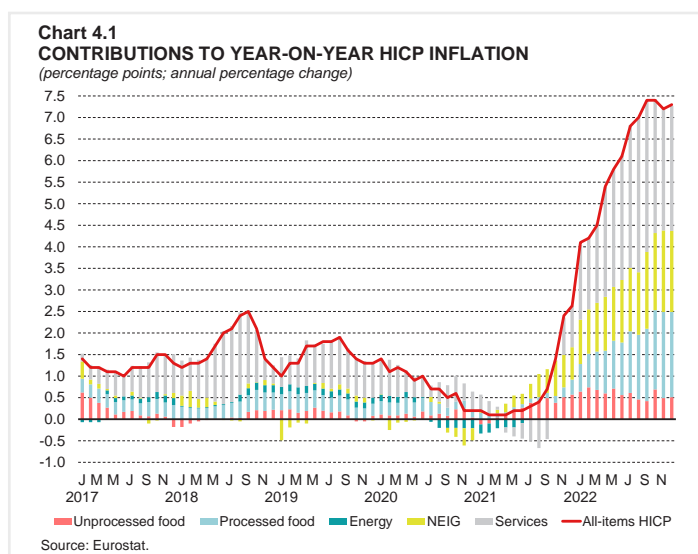
|  | 2017       | 2018       | 2019       | 2020       | 2021       | 2022       |
|--|------------|------------|------------|------------|------------|------------|
| Unprocessed food                             | 0.9        | 1.1        | 3.5        | 2.9        | 5.5        | 12.1       |
| Processed food including alcohol and tobacco | 2.2        | 2.2        | 2.3        | 1.8        | 0.8        | 8.2        |
| Energy                                       | 1.1        | 1.3        | 2.5        | -0.6       | -1.6       | 0.0        |
| NEIG   | 0.3        | 0.3        | 0.0        | -0.4       | 1.5        | 5.3        |
| Services (overall index excluding goods)     | 1.3        | 2.2        | 1.8        | 1.0        | 0.7        | 6.0        |
| <b>HICP (annual average inflation rate)</b>  | <b>1.3</b> | <b>1.7</b> | <b>1.5</b> | <b>0.8</b> | <b>0.7</b> | <b>6.1</b> |

Source: Eurostat.

<sup>1</sup> The HICP weights are revised on an annual basis to reflect changes in overall consumption patterns. In 2022, the weight allocated to services stood at 43.3%, while that of NEIG was 28.3%. Food accounted for 21.8% of the index, while the share allocated to energy stood at 6.7%.

The rise in inflation over the course of 2022 was broad based across non-energy components. By contrast, energy prices remained unchanged, as a result of Government measures aimed at containing the effects from international price pressures.

Both processed and unprocessed food inflation increased strongly in 2022. Indeed, processed food inflation reached 8.2%, from 0.8% in 2021, while unprocessed food prices grew at an average annual rate of 12.1% in 2022, from 5.5% in the previous year. Similarly, prices of services grew at an annual rate of 6.0% in 2022, up from 0.7% in 2021, while NEIG inflation reached 5.3%. Following these developments, HICP excluding food and energy stood at 5.8%, up from 0.7% in 2021.

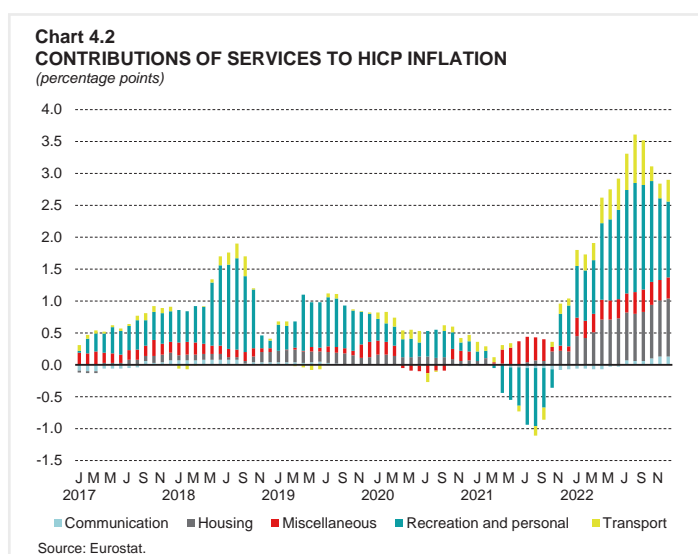


Services inflation was the main contributor to overall HICP during 2022, contributing an average of 2.7 percentage points to overall HICP inflation, up from 0.0 percentage point in 2021. The increase in services inflation during 2022 was mainly driven by recreation and personal care services, where the average contribution to overall HICP inflation reached 1.28 percentage points, from -0.24 percentage point in 2021 (see Chart 4.2).

Movements in the prices of other services categories generally also contributed to the rise in services inflation, although to a lesser extent than recreation and personal care services. In particular, prices related to housing and transport services grew at a significantly faster rate, and contributed an average of 0.7 and 0.4 percentage point respectively to HICP inflation. Similarly, charges for the repair of transport equipment – included in miscellaneous services – as well as communication services increased at a faster rate during 2022.

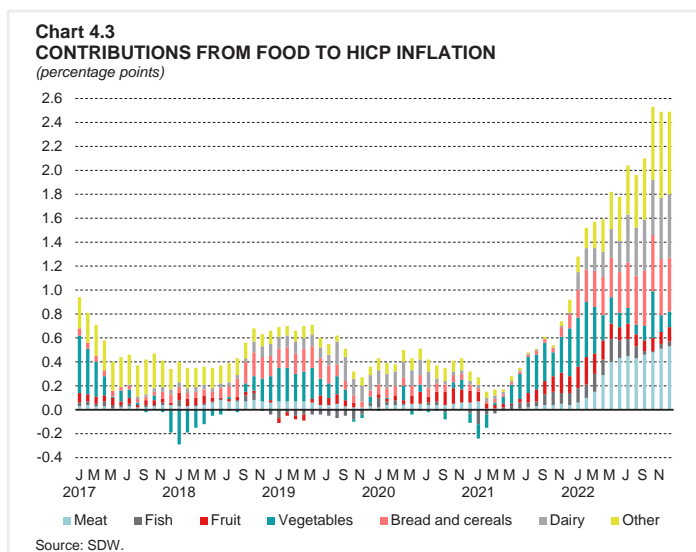
Food inflation contributed 1.9 percentage points to overall HICP inflation in 2022, up from 0.4 percentage point a year earlier. Indeed, food inflation reached 9.1% from 1.9% in 2021, reflecting increases in both processed and unprocessed food inflation.

Unprocessed food inflation reached 12.1%, contributing 0.6 percentage point to overall HICP inflation. This mainly reflected a significantly faster rate of increase in meat prices (see Chart 4.3). These rose by 12.1% on average during 2022, contributing 0.4 percentage point to overall HICP inflation, up from 0.0 percentage point in the previous



year. The contribution from fish, fruit and vegetables also increased.

Processed food inflation also increased strongly on average, reaching 8.2% in 2022. Stronger dynamics were observed in all sub-components. However, the most significant change was recorded in the oils and fats subcomponent, where inflation reached 16.4% during 2022, up from -2.0% in the previous year. Furthermore, whereas prices of processed meat, bread and dairy had grown by less than 1.5% on average in 2021, during 2022, the prices of these components recorded double digit growth.



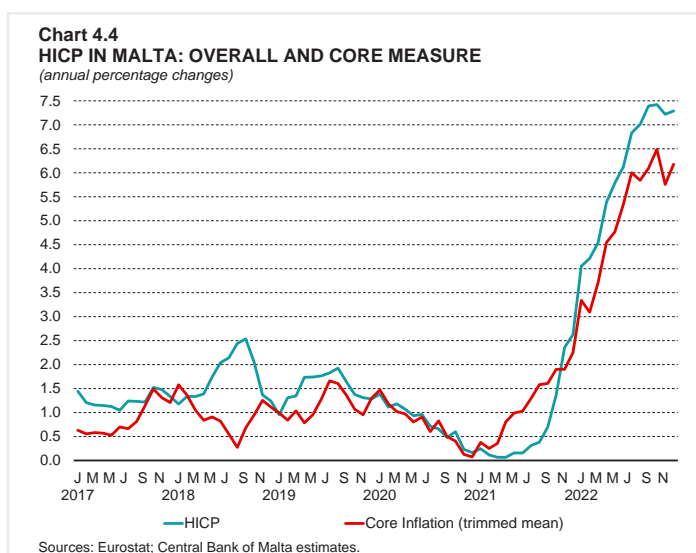
Food inflation was affected by higher imported inflation as the prices of fertiliser, animal feed and plastic materials used in agriculture increased strongly during the year. Also, the conflict between Russia and Ukraine created new supply bottlenecks especially with regards to wheat and sunflower oil. The effects of the war on food prices eased somewhat from July 2022 onwards, when an agreement brokered by Turkey and the United Nations was reached for the safe transportation of grains and other foodstuffs through Ukrainian ports.

NEIG inflation also rose strongly in 2022, when compared to a year earlier. It contributed 1.5 percentage points to overall HICP inflation, from 0.4 percentage point a year earlier. NEIG inflation in 2022 reflected growth in all subcomponents, with the highest price increases registered in non-durable goods, where inflation reached 6.2%. The latter in turn reflects developments in most subcomponents, although the largest increases in prices were registered in those of materials for the maintenance and repair of dwellings, as well as pet products. Furthermore, stronger inflation in NEIG reflected higher import prices, largely driven by cost pressures.

Energy inflation was 0.0% in 2022, 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 accelerates

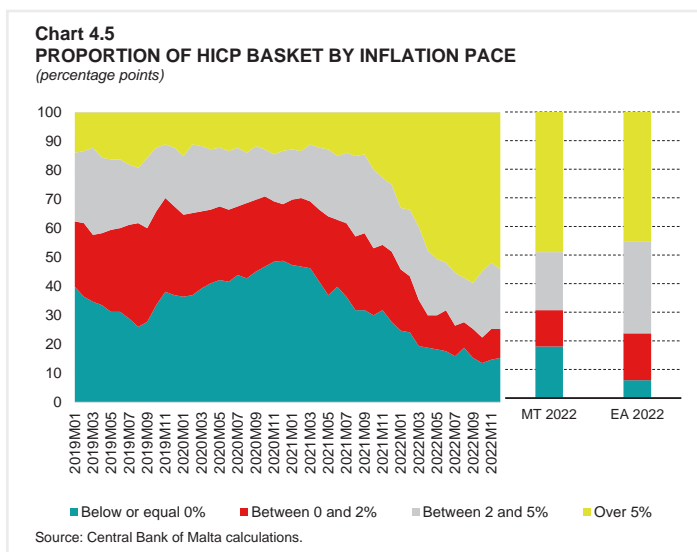
The core measure of HICP inflation, which is based on the Bank's 'trimmed mean' approach, accelerated to 5.1% during 2022, from 1.2% in 2021 (see Chart 4.4).<sup>2</sup> By December, core inflation reached 6.2%. Nevertheless, core inflation stood below overall inflation throughout



<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), pp. 39-45, Central Bank of Malta.

the year under review. The sharp rise in core inflation indicates that upward price pressures have been broad-based and not limited to items with annual rates of change in the tails of the distribution.

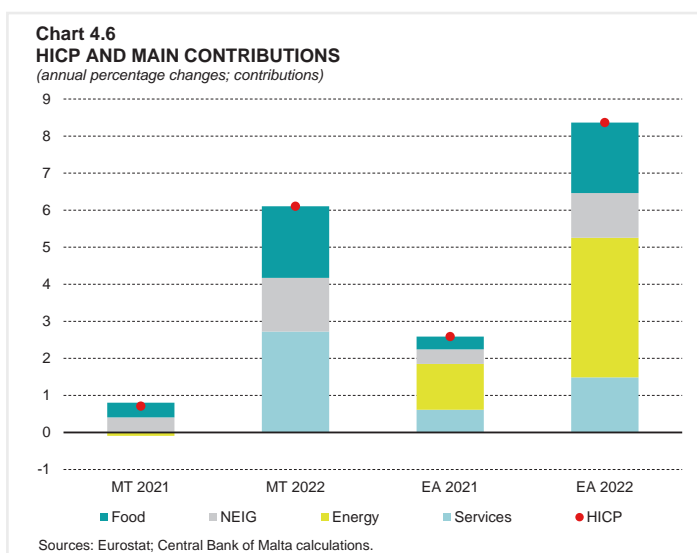
Chart 4.5 shows a distribution of price changes whereby subcomponents of HICP are categorised into four classes of inflation rates: i) annual rates below or equal to 0%; ii) between 0 and 2%; iii) between 2% and 5% and iv) over 5%.<sup>3</sup> This disaggregation indicates whether the recent surge in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



In recent months, the share of subcomponents registering inflation rates in the lowest two inflation bands has declined in both Malta and the euro area. As a result, there has been a substantial rise in the share of subcomponents with year-on-year price increases of more than 5%. Indeed in 2022, the share of items with inflation rates of more than 5% stood at 49.0% and 45.4% in Malta and the euro area respectively, up from 15.6% and 8.5% in 2021. Similarly, the share of items with inflation rates between 2% and 5% in the euro area has increased from 26.3% to 32.0%. On the other hand, the share of this interval for Malta decreased from 22.7% to 20.3% in 2022.

Furthermore, Malta's inflation rate was below that of the euro area, in part due to certain subcomponents that are of an administrative nature, i.e., where prices are determined or partially determined by government. This is reflected in the share of items with stable or falling prices, shown by the teal shaded area of Chart 4.5. The share of such items in Malta exceeds that of the euro area. Indeed, this stood at 18.0% for Malta, while it was 6.3% in the euro area. Apart from energy, the items falling in this interval include post-secondary and tertiary education as well as passenger transport by bus.

**Comparison with the euro area**  
HICP in Malta stood below the 8.4% rate registered in the euro area, though nevertheless still significantly higher than the ECB's price stability objective of 2% (see Chart 4.6). The divergence



<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 1997, 27.6% of items in Malta's basket fell in the 0% or negative inflation rates interval, while this figure stood at 20.4% for the euro area. Around 67.2% of the euro area basket fell in the 0-2% and 2-5% intervals – in almost equal parts. These shares stand at 26.1% and 27.5%, respectively in Malta. While 18.8% of the Maltese basket fell in the over 5% interval, only 12.4% of the euro area basket falls in this interval.

between HICP inflation in Malta and the euro area mainly stems from the energy sub-component. Indeed, while energy prices did not contribute directly to the Maltese overall HICP inflation, it contributed an average of 3.8 percentage points to overall HICP inflation in the euro area. This reflected the fact that electricity, gas and transport fuel prices in Malta were kept unchanged from their level a year earlier, through government support measures.

On the other hand, prices of services and, to a lesser extent NEIG inflation, had a higher impact on the inflation rate in Malta than on that in the euro area. While services inflation contributed 2.7 percentage points to HICP inflation in Malta, it contributed 1.5 percentage points to euro area inflation. NEIG inflation in Malta accounted for 1.5 percentage points of overall inflation, while in the euro area it contributed 1.2 percentage points. The contribution from food inflation stood at 1.9 percentage points in both Malta and the euro area.

### *RPI inflation increases*

Similar to HICP inflation, annual inflation based on the RPI increased strongly during 2022. The latter averaged 6.2%, up from 1.5% a year earlier. All subcomponents contributed to the increase in RPI inflation, except for clothing and footwear as well as energy, where the contributions were broadly unchanged when compared to 2021.

Food inflation remained the main contributor to overall RPI inflation in 2022, with the contribution standing at 2.2 percentage points, up from 0.5 percentage point in 2021 (see Table 4.2). Indeed, food prices increased at a high rate of 10.5% on average during 2022.

This is followed by housing services, which contributed 1.2 percentage points to overall RPI inflation during 2022, as prices rose by 14.7% during the year under review. The contribution of transport and communication also increased strongly during 2022, reaching 0.7 percentage point, up from 0.0 percentage point in 2021.

Developments in the overall HICP and RPI inflation rates could differ due to differences in the composition of the consumption basket, and the frequency of basket weight updates.<sup>4</sup> Nevertheless, the gap between these two inflation measures which was registered in 2021 due to the COVID-related adjustment in HICP weights that year narrowed in 2022. Although HICP weights were still diverged from pre-pandemic levels, the

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

|  | 2017       | 2018       | 2019       | 2020       | 2021       | 2022       |
|--|------------|------------|------------|------------|------------|------------|
| Food                                       | 0.7        | 0.6        | 0.8        | 0.4        | 0.5        | 2.2        |
| Beverages and tobacco                      | 0.2        | 0.1        | 0.1        | 0.1        | 0.0        | 0.2        |
| Clothing and footwear                      | -0.2       | -0.2       | 0.0        | 0.0        | 0.1        | 0.1        |
| Housing                                    | 0.0        | 0.1        | 0.2        | 0.2        | 0.1        | 1.2        |
| Water, electricity, gas and fuels          | 0.0        | 0.0        | 0.0        | 0.0        | 0.0        | 0.0        |
| Household equipment and maintenance        | 0.2        | 0.1        | 0.0        | -0.1       | 0.1        | 0.4        |
| Transport and communications               | 0.1        | 0.2        | 0.3        | -0.1       | 0.0        | 0.7        |
| Personal care and health                   | 0.1        | 0.1        | 0.1        | 0.2        | 0.1        | 0.3        |
| Recreation and culture                     | 0.2        | 0.0        | 0.2        | -0.1       | 0.3        | 0.4        |
| Other goods and services                   | 0.0        | 0.0        | 0.1        | 0.1        | 0.1        | 0.4        |
| <b>RPI (annual average inflation rate)</b> | <b>1.4</b> | <b>1.2</b> | <b>1.6</b> | <b>0.6</b> | <b>1.5</b> | <b>6.2</b> |

Source: NSO.

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

<sup>4</sup> 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.

acceleration in prices was significant and broad-based affecting both indices in a similar way. As a result, in 2022, both the RPI and the HICP showed a similar trajectory, as well as a similar inflation rate.

## Residential property prices

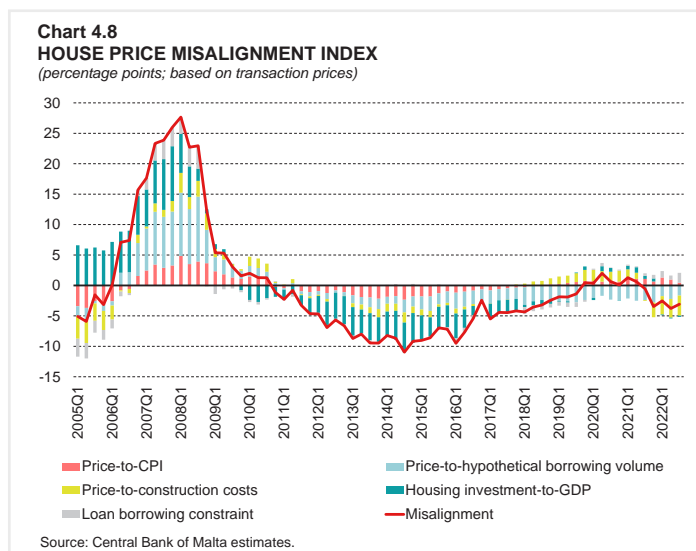
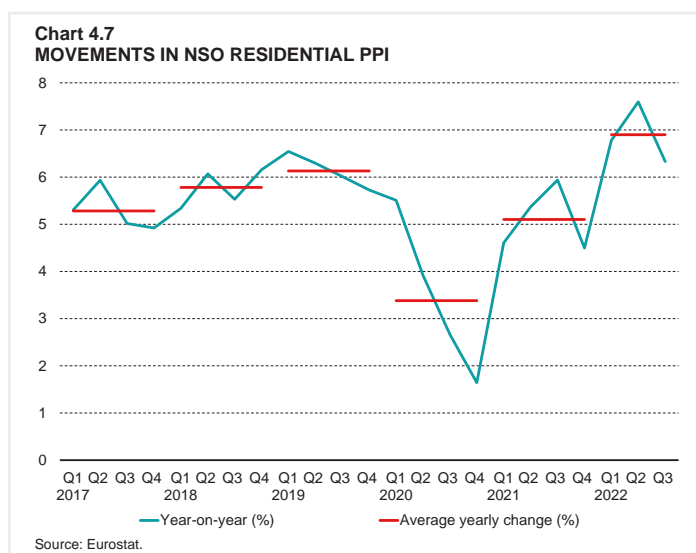
### Residential property prices grow at a faster pace

Residential property prices continued to increase during the first three quarters of 2022. 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 6.9% during the first three quarters of the year, following a 5.1% increase recorded in 2021 as a whole (see Chart 4.7).<sup>5</sup> House price inflation in Malta was lower than that in the euro area, where it averaged 8.6% in the first nine months of 2022. Residential property prices continued to be supported by several factors, including the low interest rate environment and limited pass through of recent ECB rate hikes to retail lending rates, as well as various government schemes supporting the property market.

### Misalignment index suggests house prices were below the fundamentals in 2022

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>6,7</sup> This indicator consists of five sub-indices that capture 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 2022 (see Chart 4.8).<sup>8</sup> The undervaluation throughout 2022 was driven mainly



<sup>5</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 117/2022*.

<sup>6</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>7</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>8</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.



by the house price-to-construction ratio. Although house prices have increased markedly, construction costs have risen at a faster rate, pushing down this ratio. This was followed by the house price-to-hypothetical borrowing ratio, which is an indicator of affordability. Both indicators stood below their long-term averages. The housing investment-to-GDP ratio also contributed to the undervaluation, but marginally. Conversely, the loan borrowing constraint and the house price-to-inflation partly contributed positively to the misalignment index, as these indicators stood above their long-term average.

### Final deeds for residential property decline marginally<sup>9</sup>

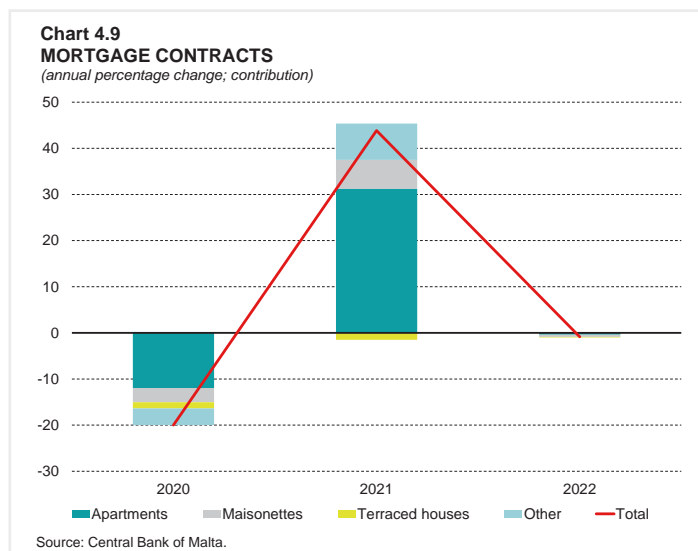
NSO data on residential property transactions show that 14,331 final deeds of sale were concluded in 2022, around 0.3% less than a year earlier. This follows a rise of 27.6% in 2021 (see Table 4.3). Despite the marginal decline in the volume of residential property transactions, the number of final deeds of sale in 2022 stood significantly above that recorded in 2019. Over 90% of these transactions involved purchases by individuals.

Moreover, at 12,177, the number of promise-of-sale agreements was 22.1% less than the amount registered in 2021. This followed a rise of 41.4% in 2021. This may reflect the extension of the time window during which promise of sale agreements had to be deposited with the Commissioner for Inland Revenue to be eligible for a reduction on stamp duty on the first €400,000 of a property transaction. Initially, a deadline of 30 April 2021 was announced, but in the course of 2021 this deadline was extended to 31 December 2021. This development was an important factor behind the drop in promise of sale agreements in 2022.

The value of final deeds reached €3,261.90 million, an increase of €100.0 million, or 3.2%, compared to the previous year.

### Mortgage transactions declined slightly<sup>10</sup>

The number of mortgage contracts declined by 0.9% in 2022 (see Chart 4.9). This follows a significant increase in the number of mortgage contracts in 2021. Most



**Table 4.3**

### NSO RESIDENTIAL PROPERTY TRANSACTIONS

|                                     | 2019    | 2020    | 2021    | 2022    | Annual change |       |
|-------------------------------------|---------|---------|---------|---------|---------------|-------|
|                                     |         |         |         |         | Abs.          | %     |
| <b>Residential transactions</b>     |         |         |         |         |               |       |
| Promise of sale                     | 11,614  | 11,057  | 15,639  | 12,177  | -3,462.0      | -22.1 |
| Final deeds of sale                 | 14,019  | 11,259  | 14,368  | 14,331  | -37.0         | -0.3  |
| <b>Transaction value (millions)</b> | 2,705.4 | 2,126.6 | 3,161.9 | 3,261.9 | 100.0         | 3.2   |

Source: National Statistics Office.

<sup>9</sup> This section is based on NSO News Release 006/2023. 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>10</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.

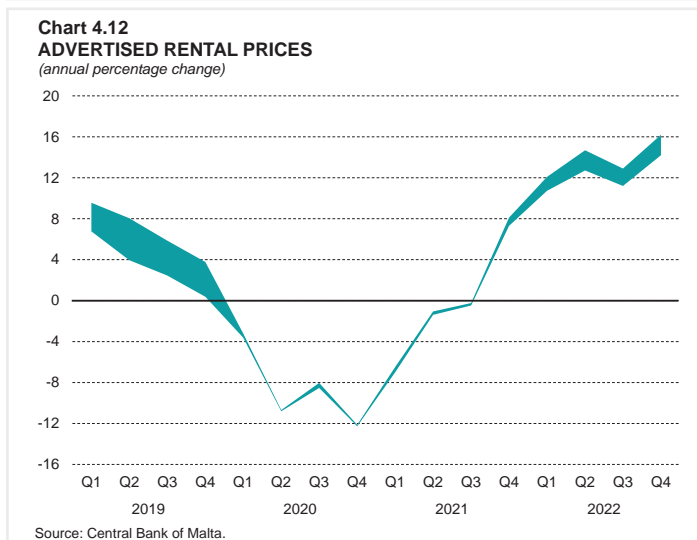
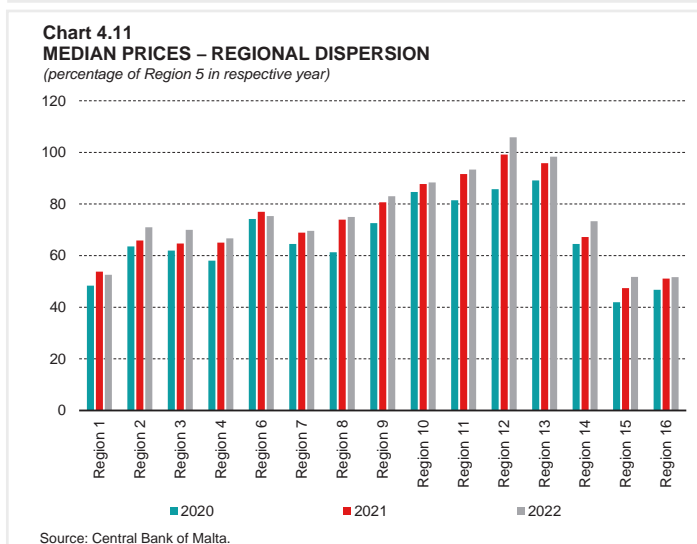
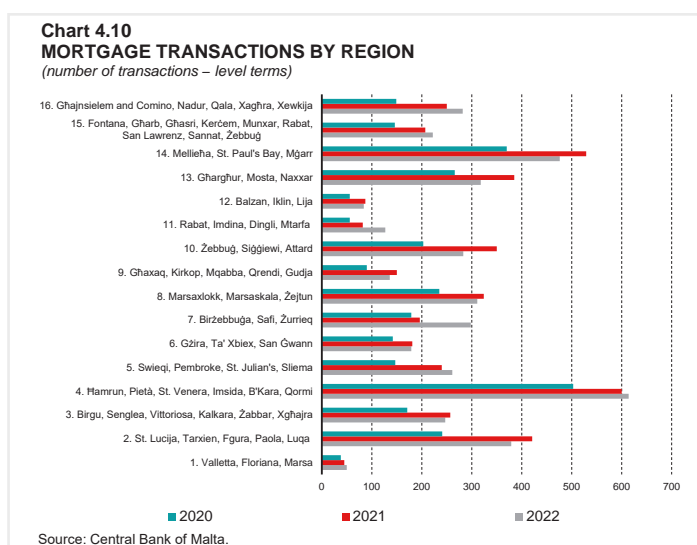
dwelling types contributed to this decrease, being partly offset by a higher number of mortgage contracts in the 'other' category.

In 2022, the highest number of mortgage transactions related to properties were located in region 4, followed by region 14. On the other hand, the lowest number of mortgage transactions involved properties located in region 1. While in 2021 mortgage transactions increased across all regions, developments were more mixed in 2022, with decreases recorded in slightly more than half of the regions (see Chart 4.10). The largest decrease in absolute terms occurred in regions 10 and 13. On the hand, in absolute terms, the largest increase in contracts was observed in region 7.

Region 5 has been the most expensive in terms of median prices in recent years. However, during the year under review, the median prices for region 12 were higher than region 5 (see Chart 4.11). In 2022, almost all regions have approached the median prices transacted in region 5, which indicates that the price dispersion across Malta has declined.

### Advertised rents exceed pre-pandemic levels

The annual rate of change in advertised rents collected from internet sources continued to increase in 2022, despite a temporary slowdown in the third quarter of the year, and exceeded pre-pandemic rate of growth.<sup>11</sup> The average range of estimates from various methods indicate that rents have increased at annual rates of between 12.2% and 14.0% in the year under review (see Chart 4.12).



<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.



By the end of 2022, the level of rents was approximately 9% higher than its level at the end of 2019, before the pandemic.

## Costs and competitiveness

### Producer price inflation picks up further

Growth in producers' output prices, as measured by the producer price index, increased to 5.6% during 2022, from 3.2% a year earlier.<sup>12</sup> All components had a positive contribution, except energy, where inflation remained at zero. Indeed, intermediate and consumer goods had the highest contribution to producer price index growth, standing at 2.5 and 2.3 percentage points, respectively. Furthermore, the rise in producer price inflation mostly reflects a higher contribution from consumer goods, where the contribution reached 2.3 percentage points, from 0.9 percentage point in 2021. The contribution from both intermediate and capital goods inflation also increased in 2022, although to a lesser extent.

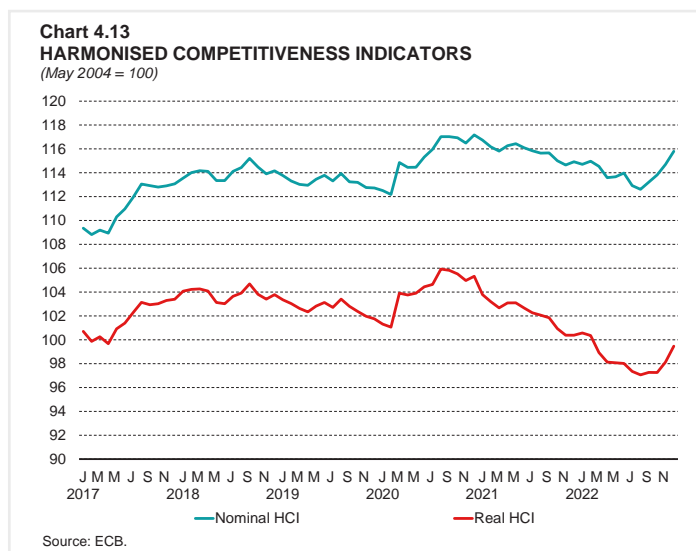
### Real HCI points to an improvement in external competitiveness

In 2022, the nominal HCI, which is conditioned by developments in trade-weighted nominal exchange rates, was down by 1.5%, compared with its average reading for 2021 (see Chart 4.13).<sup>13</sup> The nominal HCI was on a downward path during most of the year, as the euro weakened against currencies of Malta's main trading partners. However, the nominal HCI began to increase in the fourth quarter, as the euro appreciated in effective terms.

The real HCI, which also takes into account changes in price inflation relative to trading partners, was down by 3.7% over its 2021 average level, pointing to an improvement in Malta's international competitiveness. This partly reflects the fact that unlike in other trading partners, energy prices in Malta were cushioned from the recent increase in international oil and gas prices. Although the index was affected by the appreciation of the euro in the last months of the year, it remained below its level in January 2022, as domestic inflation remained below that in trading partners.

### ULCs increased, exceeding further 2019 levels<sup>14</sup>

Malta's ULC index, measured as the ratio of compensation per employee (CPE) to labour productivity, increased in 2022, compared to 2021.<sup>15</sup> When



<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> HCIs act as an effective exchange rate (EER) 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.

<sup>14</sup> This section shows productivity and compensation averaged over the number of persons in employment and on the basis of hours worked. Conceptually measures based on hours worked provide a more reliable assessment of developments in productivity, compensation and ULCs. They also better reflect the impact of the pandemic in view of the sharp correction in hours worked.

<sup>15</sup> Annual growth in ULCs, CPE, and labour productivity is measured on a four-quarter moving average basis. A degree of caution is required in the interpretation of ULCs 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, available at <https://www.centralbankmalta.org/en/policy-notes-2015>, and Rapa, N. (2016), "Measuring international competitiveness", *Quarterly Review* 2016(1), pp. 53-63, Central Bank of Malta.

measured in headcount terms, ULCs in Malta rose by 1.9% in 2022, following a decline of 3.7% in the previous year (see Chart 4.14).

The rise in ULCs during 2022 occurred as CPE increased at a stronger rate than productivity. Furthermore, when compared to 2021, the moderation in labour productivity was stronger than that in CPE.

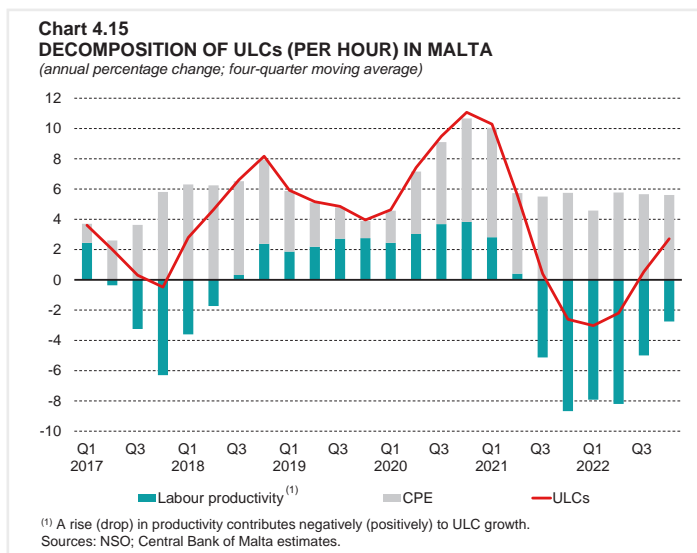
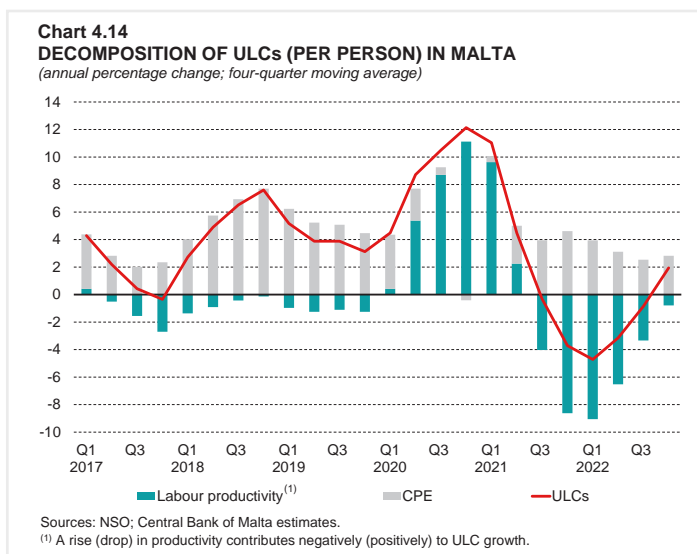
Annual growth in CPE eased to 2.8%, from 4.6% in 2021, as the number of employees increased at a faster pace compared to total compensation.

Meanwhile, labour productivity rose by 0.8% in 2022, following a rise of 8.6% in the previous year, when activity was starting to rebound from the pandemic shock. While both GDP and employment grew in level terms, the two show contrasting dynamics. GDP growth decelerated, while employment growth picked up during the year under review, resulting in weaker productivity growth.

Following developments in 2022, ULCs rose further above their level in 2019, standing around 10 per cent higher than the pre-pandemic level.

National accounts data show that total hours worked rose by 3.6% in 2022, up from 1.9% a year earlier.<sup>16</sup> The wage bill increased strongly by 9.4%, up from 7.8% in 2021. As the acceleration in hours worked was slightly stronger than that in the wage bill, compensation per hour increased by 5.6% in 2022, marginally down from the rate of 5.7% recorded in 2021. Meanwhile, productivity per hour increased by 2.8%, after rising by 8.7% in 2021. As a result, ULCs per hour increased by 2.7% in 2022, following a 2.6% decrease in the previous year (see Chart 4.15).

Similar to ULCs in headcount terms, ULCs per hour stood above their pre-pandemic level. In per hour terms, ULC exceeded their 2019 level by around 11%.



<sup>16</sup> Hours worked refer to employee hours.

## BOX 4: 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 2022, 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.

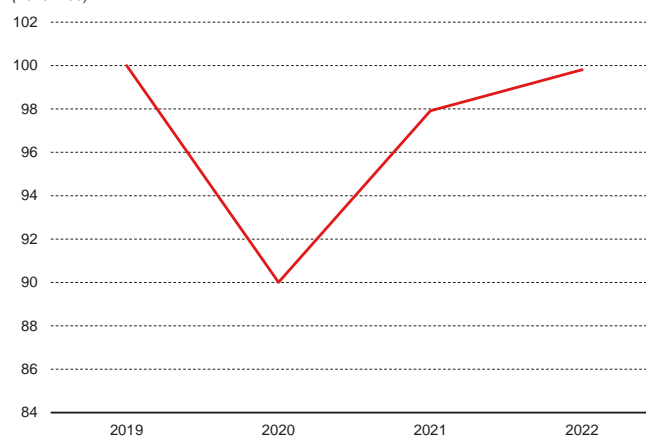
There is also a *reallocation effect*, which measures a sector's contribution to aggregate productivity growth due to changes in its relative size. This reallocation effect is split into a static (level) effect and a dynamic (growth) effect. The *static reallocation level effect* measures the impact of absolute changes in labour shares and/or 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

Economic activity continued to grow robustly in 2022, though at a much slower rate than in 2021. Growth in economic activity partly reflected the continued recovery from the contraction experienced in 2020, as all pandemic-related stringency measures were lifted in 2022. Labour productivity increased as output growth in some sectors was faster than that in employment. Indeed, chain-linked GVA rose by 8.1% in 2022, and according to national accounts data, employment rose by 6.0% in 2022. As a result, labour productivity – measured as chain-linked GVA per person employed – rose by 1.9% in 2022 following an increase of 8.8% in 2021.<sup>4</sup>

In 2022, labour productivity for the whole economy has broadly reached that in 2019 (see Chart 1). Both output and employment stood around 12% above the level prevailing in 2019.

Chart 1  
PRODUCTIVITY LEVELS  
(2019=100)



Source: NSO.

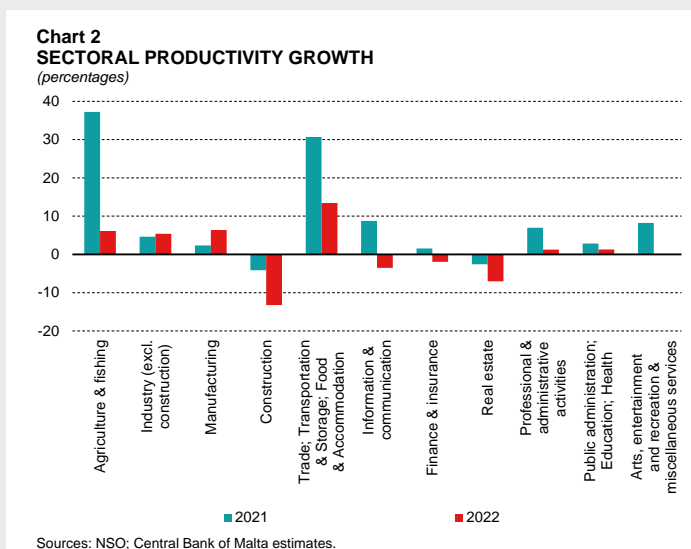
<sup>1</sup> Prepared by Martina Cassar, Economist within the Economic Projections and Conjunctural Analysis Office.

<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), 421-444.

<sup>3</sup> Montebello R., & Darmanin J. (2021), "Labour Productivity Growth in Malta: a sectoral decomposition analysis", WP/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 chapter of this Report on costs and competitiveness where aggregate productivity and ULCs are derived using GDP.

Developments in sectoral productivity were mixed in 2022. Sectors comprising construction, information and communication, finance and insurance, as well as real estate registered lower productivity (see Chart 2). With regards to the construction sector, the loss in productivity mainly reflected a drop in its GVA, even though employment levels also rose. On the other hand, the drop in productivity in the other three sectors mirrored higher growth in employment than in GVA.



The relatively low growth in output in these sectors, compared with employment, is indicative of a very tight labour market, partly due to the lack of high skilled workers. Meanwhile, the arts and entertainment sector registered no growth in productivity, as the growth in its output matched that in employment.

Conversely, productivity rose in the remaining sectors. The strongest gain is estimated for the sector comprising trade, transportation, accommodation and food services. Indeed, GVA in this sector continued to grow very strongly in 2022 (22.8%), partly due to the complete removal of pandemic-related restrictions. Meanwhile, employment growth was also very robust in this sector (8.3%), but was lower than that in output. Hence, productivity growth was robust, albeit markedly lower than that in 2021, when output in the preceding year was at very low levels due to the pandemic.

The next largest productivity growth rate in 2022 was recorded for industry (excluding construction). This reflects the fact that whilst growth in this sector's activity was dynamic, employment levels rose only marginally.

Productivity growth in the other remaining sectors slowed down when compared to 2021. This reflects relatively dynamic growth in both output and employment in these sectors, which also suggests a degree of labour market tightness.

Table 1 shows the sectoral contributions to aggregate labour productivity growth derived using the GEAD decomposition. With the exception of the manufacturing sector, all sectors have contributed to the marked moderation in productivity growth between 2021 and 2022.

In line with its rise in productivity, the sector comprising trade, transportation, accommodation and food services had the largest positive contribution to aggregate productivity growth in 2022, contributing 2.8 percentage points. This was, however, lower than the 3.8 percentage points contribution in 2021, due to base effects as a result of the effects of the pandemic. The professional and administrative sector had the second largest contribution to aggregate labour productivity growth in 2022. Industry and manufacturing also had a positive impact, though a more modest one.

On the other hand, public administration and defence had the most negative contribution to aggregate labour productivity growth. In addition, the sectors comprising construction, arts and entertainment,

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

*Percentage points; chainlinked*

|   | 2016        | 2017       | 2018        | 2019       | 2020         | 2021       | 2022       |
|---|-------------|------------|-------------|------------|--------------|------------|------------|
| Agriculture, forestry & fishing   | 0.0         | -0.3       | 0.0         | -0.2       | 0.2          | 0.2        | 0.1        |
| Industry (excl. construction)   | 0.0         | -0.7       | 0.0         | -0.1       | -0.5         | 0.3        | 0.2        |
| of which: Manufacturing   | -0.4        | -0.2       | -0.1        | -0.1       | -0.3         | 0.1        | 0.3        |
| Construction  | -0.1        | 0.3        | 0.2         | 0.8        | -0.2         | 0.0        | -0.3       |
| Wholesale and retail trade; repair of motor vehicles and motorcycles; transportation and storage; accommodation and food service activities | -1.6        | 1.1        | -0.8        | -0.4       | -7.3         | 3.8        | 2.8        |
| Information & communication   | 0.9         | 0.3        | 0.0         | 1.0        | -0.5         | 1.2        | 0.0        |
| Finance & insurance activities  | 0.4         | 0.2        | 0.2         | 0.2        | -0.2         | 0.1        | -0.1       |
| Real estate activities  | 0.4         | 0.2        | -0.1        | 0.1        | -0.3         | 0.1        | -0.1       |
| Professional, scientific and technical activities; administrative and support service activities  | 1.7         | 1.8        | -0.1        | 1.0        | -1.8         | 0.8        | 0.5        |
| Public administration and defence; education, health and social work activities   | 0.2         | -0.6       | 0.2         | 0.4        | -0.1         | 1.3        | -0.9       |
| Arts, entertainment and recreation, repair of household goods and other services  | -3.0        | 0.4        | 0.3         | -0.5       | 0.6          | 1.0        | -0.3       |
| <b>Aggregate labour productivity growth (%; GVA-based)</b>  | <b>-1.2</b> | <b>2.7</b> | <b>-0.3</b> | <b>2.3</b> | <b>-10.0</b> | <b>8.8</b> | <b>1.9</b> |

Sources: NSO; Central Bank of Malta estimates.

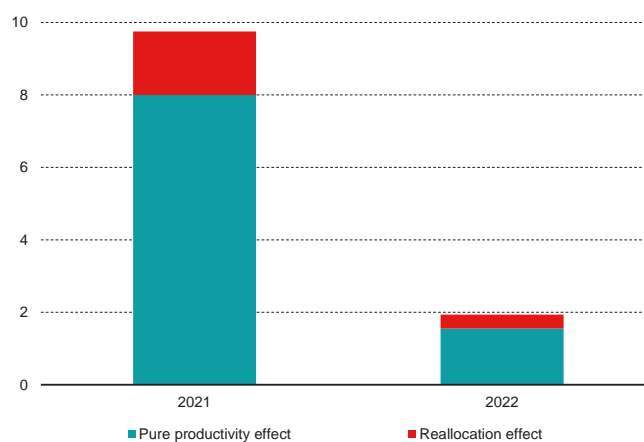
finance and insurance, as well as real estate, also contributed negatively to overall growth in productivity.

Using the GEAD approach, Chart 3 decomposes overall productivity growth into the pure productivity effect and the reallocation effect. As in 2021, the pure productivity effect – which captures the change in productivity within sectors – was the dominant contributor to the increase in overall productivity in 2022. Moreover, in 2022, the reallocation effect – which represents the reallocation of

resources among sectors – contributed only marginally towards the growth in productivity, with the relevance of this effect smaller than that in 2021.

The dominance of the pure effect suggests a continued increase in efficiency, albeit at a lower rate than registered last year. As the economy moved on from the post-pandemic rebound, productivity growth slowed down, with some sectors also experiencing decline. This caused pure productivity growth to decline. The reallocation effect remains low, signalling minimal reallocation of resources following the pandemic. This might reflect the effect of the wage supplement and other fiscal support measures which encouraged employee retention, and may have thus amplified inherent labour market tightness in certain sectors.

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



Source: Central Bank of Malta estimates.

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

Percentage points; chainlinked

|   | 2022               |                          |                           |                           |                            |  |
|---|--------------------|--------------------------|---------------------------|---------------------------|----------------------------|--|
|   | 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)   | 0.2                | 0.5                      | -0.3                      | -0.3                      | 0.0                        |  |
| of which: Manufacturing   | 0.3                | 0.5                      | -0.2                      | -0.1                      | 0.0                        |  |
| Construction  | -0.3               | -0.6                     | 0.3                       | 0.4                       | -0.1                       |  |
| Wholesale and retail trade; repair of motor vehicles and motorcycles; transportation and storage; accommodation and food service activities | 2.8                | 2.1                      | 0.7                       | 0.6                       | 0.1                        |  |
| Information & communication   | 0.0                | -0.3                     | 0.3                       | 0.3                       | 0.0                        |  |
| Finance & insurance activities  | -0.1               | -0.2                     | 0.1                       | 0.1                       | 0.0                        |  |
| Real estate activities  | -0.1               | -0.4                     | 0.3                       | 0.3                       | 0.0                        |  |
| Professional, scientific and technical activities; administrative and support service activities  | 0.5                | 0.2                      | 0.3                       | 0.3                       | 0.0                        |  |
| Public administration and defence; education, health and social work activities   | -0.9               | 0.2                      | -1.2                      | -1.1                      | 0.0                        |  |
| Arts, entertainment and recreation, repair of household goods and other services  | -0.3               | 0.0                      | -0.3                      | -0.3                      | 0.0                        |  |
| <b>Total economy</b>  | <b>1.9</b>         | <b>1.6</b>               | <b>0.4</b>                | <b>0.4</b>                | <b>0.0</b>                 |  |

Sources: NSO; 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 sector comprising trade, transportation, accommodation and food services was the main driver of the increase in overall productivity in 2022, similarly to 2021. Its contribution was dominated by a significant rise in the pure productivity effect, which reflects the continued recovery in its output level following the pandemic. Although in 2022 the contribution from this sector's reallocation effect was significant, as it reflected an increase in its share of employment, it was still smaller than the pure productivity effect.

Reallocation level effects were also positive in the sectors comprising construction, information and communication, finance and insurance, real estate, as well as in the professional and administrative sector. The sectors mentioned above also experienced an increase in the share of total employment.

Conversely, the reallocation level effect was strongly negative in the sector comprising public administration. This reflects its falling share in total employment. The reallocation effect was also negative in the arts and entertainment, industry, and manufacturing sectors, though to a much lesser extent.

### Sectoral contributions to growth in real CPE and real ULCs<sup>5</sup>

Real CPE fell by 2.4% in 2022, following an increase of 3.3% in 2021 (see Table 3).<sup>6</sup> Almost all sectors contributed to the decline in real CPE, except the finance and insurance sector. The overall decrease in real wages was mainly brought on by the high inflation recorded in 2022, which brought wages down in real terms, despite nominal increases.

The largest contributor to the decrease was the sector comprising public administration and related activities. This was followed by the sector comprising the professional and administrative services, as well as construction. These sectors experienced relatively low growth in nominal average wages, resulting in negative contributions to real compensation per person. Conversely, the finance and insurance sector had the only positive contribution.

<sup>5</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>6</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 COMPENSATION PER EMPLOYEE<sup>(1)</sup>**

Percentage points

|   | 2016       | 2017       | 2018       | 2019       | 2020        | 2021       | 2022        |
|---|------------|------------|------------|------------|-------------|------------|-------------|
| Agriculture, forestry & fishing   | 0.0        | 0.0        | 0.0        | 0.0        | 0.0         | 0.0        | 0.0         |
| Industry (excl. construction)   | 0.1        | 0.2        | 0.8        | 0.2        | -0.2        | 0.4        | -0.1        |
| of which: Manufacturing   | 0.1        | 0.2        | 0.8        | 0.1        | -0.2        | 0.4        | -0.1        |
| Construction  | 0.2        | -0.1       | 0.3        | -0.3       | -0.3        | -0.1       | -0.4        |
| Wholesale and retail trade; repair of motor vehicles and motorcycles; transportation and storage; accommodation and food service activities | 1.1        | -0.9       | 0.6        | 0.1        | -1.6        | 0.7        | -0.2        |
| Information & communication   | 0.2        | 0.4        | 0.8        | 0.3        | 0.1         | 0.0        | -0.2        |
| Finance & insurance activities  | 0.5        | -0.1       | 0.6        | 0.8        | 0.2         | 0.2        | 0.2         |
| Real estate activities  | 0.0        | 0.0        | 0.0        | -0.1       | 0.0         | 0.0        | -0.1        |
| Professional, scientific and technical activities; administrative and support service activities  | 0.6        | -0.5       | 1.5        | -0.2       | -0.7        | 0.2        | -0.7        |
| Public administration and defence; education, health and social work activities   | 1.3        | 0.6        | 1.7        | 1.5        | 0.7         | 1.9        | -1.0        |
| Arts, entertainment and recreation, repair of household goods and other services  | 0.3        | 1.7        | 0.8        | 0.4        | 0.2         | 0.1        | -0.2        |
| <b>Aggregate CPE growth (%)</b>   | <b>4.2</b> | <b>1.3</b> | <b>6.9</b> | <b>2.6</b> | <b>-1.5</b> | <b>3.3</b> | <b>-2.4</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.

Similar to the decrease in real wages, real ULCs also declined during 2022, falling by 4.3%. This follows a decline of 5.0% in the previous year (see Table 4). The drop in overall real ULCs was due to the decrease in real wages in combination with the increase in productivity.

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

Percentage points

|   | 2016       | 2017        | 2018       | 2019       | 2020       | 2021        | 2022        |
|---|------------|-------------|------------|------------|------------|-------------|-------------|
| Agriculture, forestry & fishing   | 0.0        | 0.3         | 0.0        | 0.2        | -0.3       | -0.2        | -0.1        |
| Industry (excl. construction)   | 0.1        | 0.9         | 0.9        | 0.3        | 0.3        | 0.1         | -0.4        |
| of which: Manufacturing   | 0.5        | 0.3         | 0.9        | 0.2        | 0.1        | 0.3         | -0.4        |
| Construction  | 0.3        | -0.4        | 0.1        | -1.2       | -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        | 1.4        | 0.5        | 5.6        | -3.1        | -3.0        |
| Information & communication   | -0.7       | 0.0         | 0.9        | -0.7       | 0.6        | -1.2        | -0.2        |
| Finance & insurance activities  | 0.1        | -0.3        | 0.4        | 0.7        | 0.4        | 0.1         | 0.3         |
| Real estate activities  | -0.4       | -0.2        | 0.2        | -0.2       | 0.3        | -0.2        | 0.0         |
| Professional, scientific and technical activities; administrative and support service activities  | -1.0       | -2.3        | 1.7        | -1.1       | 1.2        | -0.6        | -1.2        |
| Public administration and defence; education, health and social work activities   | 1.2        | 1.2         | 1.5        | 1.1        | 0.8        | 0.7         | -0.1        |
| Arts, entertainment and recreation, repair of household goods and other services  | 3.3        | 1.3         | 0.5        | 0.8        | -0.3       | -0.8        | 0.2         |
| <b>Annual ULC growth (%)</b>  | <b>5.4</b> | <b>-1.4</b> | <b>7.1</b> | <b>0.3</b> | <b>9.4</b> | <b>-5.0</b> | <b>-4.3</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.

As was the case for the increase in productivity in 2022, the main driver behind the drop in ULCs was the sector comprising trade, transportation, accommodation and food services activities. This was followed by the professional and administration sector. These sectors experienced both a decline in real wages as well as an increase in productivity. All sectors, except for the finance and insurance sector, contributed negatively to overall ULC growth but to a lower extent, on account of these sectors' negative contribution to real wage growth. The finance and insurance sector's positive contribution to ULC growth in 2022 was mainly driven by its positive contribution to real CPE.

A number of observations can be drawn from the above developments. Firstly, productivity growth seems to have slowed down following the large increase recorded in 2021, as business activity normalised and productivity levels climbed back to pre-pandemic levels. Nevertheless, some sectors have experienced a decrease in their productivity levels, which might trigger the need for future reallocation of resources. This might be difficult in the short run, due to difficulties within some industries to source labour. Secondly, the effects of the recent increase in inflation can be seen in the decline of real CPE, as inflation outpaced the nominal increase in wages.