

3. PRICES, COSTS AND COMPETITIVENESS

Consumer price pressures eased somewhat during the quarter under review, but inflation remained high from a historical perspective. Also, producer prices point to moderating cost pressures, while ULCs increased in the last quarter of 2022.

Annual inflation, as measured by the HICP, stood at 7.3% in December, marginally below that of 7.4% recorded in September. Services price growth was the driver behind the decrease in inflation since September, as food and NEIG inflation increased. Energy prices remained unchanged. Annual inflation based on the RPI – which only considers expenditure by Maltese residents – edged down from 7.5% in September to 7.4% in December.

Producer price inflation declined to 4.3% in December, from 4.6% three months earlier. Malta's ULC index, measured on a four-quarter moving average basis, increased by 1.9% in the fourth quarter, as compensation grew more strongly than productivity.

Malta's HCIs point to a deterioration in international competitiveness between September and December 2022, reflecting an appreciation of the euro. However, ULCs remained below those at the beginning of the year, as Malta registered a lower inflation rate compared to that of its trading partners.

Inflation

HICP inflation eased slightly

Annual HICP inflation edged down to 7.3% in December 2022, from its historic peak of 7.4%, reached between September and October (see Table 3.1).¹ HICP inflation in Malta remained below that recorded in the euro area, where inflation ended the fourth quarter of 2022 at 9.2% (see Chart 3.1). This divergence mainly stems

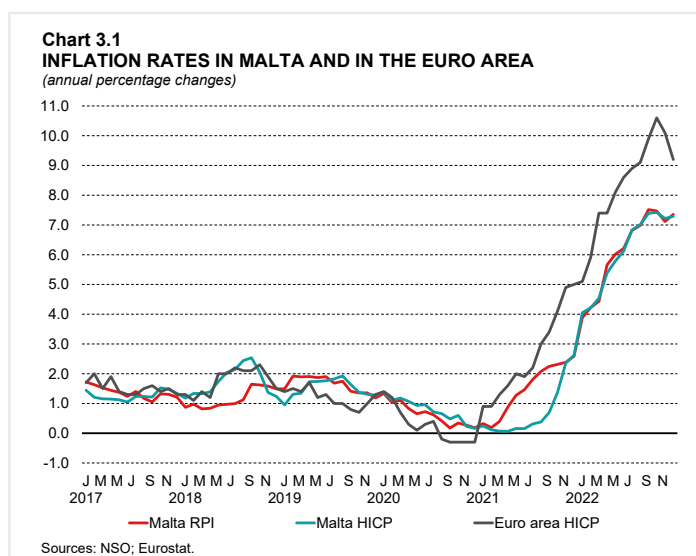


Table 3.1
HICP INFLATION
Annual percentage change

	2021					2022							
	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
Unprocessed food	11.3	12.7	15.1	13.8	12.2	14.9	11.8	13.0	9.6	8.7	14.4	10.0	10.3
Processed food including alcohol and tobacco	2.0	3.7	4.6	5.3	6.0	6.8	7.6	8.9	9.4	10.4	11.3	12.0	11.8
Energy	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NEIG	2.6	3.7	3.7	4.0	4.5	4.5	5.4	5.5	5.4	6.6	6.5	6.7	6.7
Services (overall index excluding goods)	2.3	4.1	3.8	4.2	5.6	5.8	6.1	6.9	7.5	7.4	6.7	6.5	6.7
All Items HICP	2.6	4.1	4.2	4.5	5.4	5.8	6.1	6.8	7.0	7.4	7.4	7.2	7.3

Source: Eurostat.

¹ The HICP weights are revised on an annual basis to reflect changes in overall consumption patterns. In 2022, the weight allocated to services stands at 43.3%, while that of NEIG is 28.3%. Food accounts for 21.8% of the index, while the share allocated to energy stands at 6.7%. These were revised from 42.6% for services, 28.6% for NEIG and 22.1% for food in 2021 while the weight for energy was broadly unchanged.

from energy prices, which were unchanged in Malta but rose by an annual rate of 25.5% in the euro area, and contributed 2.8 percentage points to euro area HICP inflation in December (see Chart 3.2). The contribution of food was also slightly lower in Malta compared to the euro area average. On the other hand, the contributions to inflation of services and NEIG inflation were higher in Malta than in the euro area.

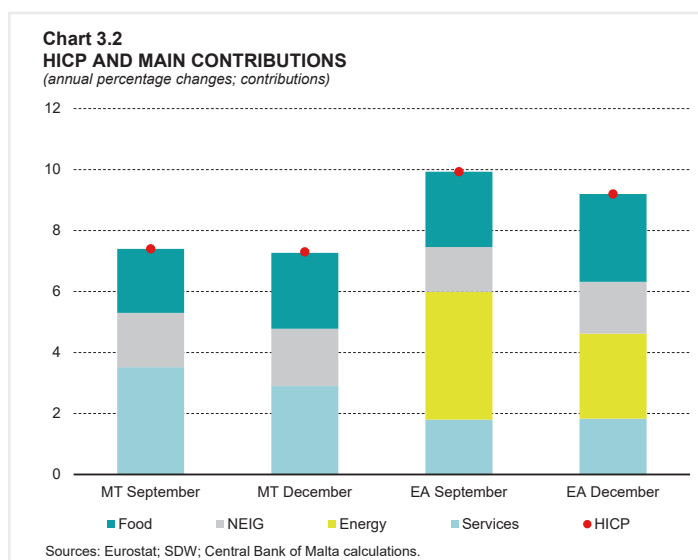
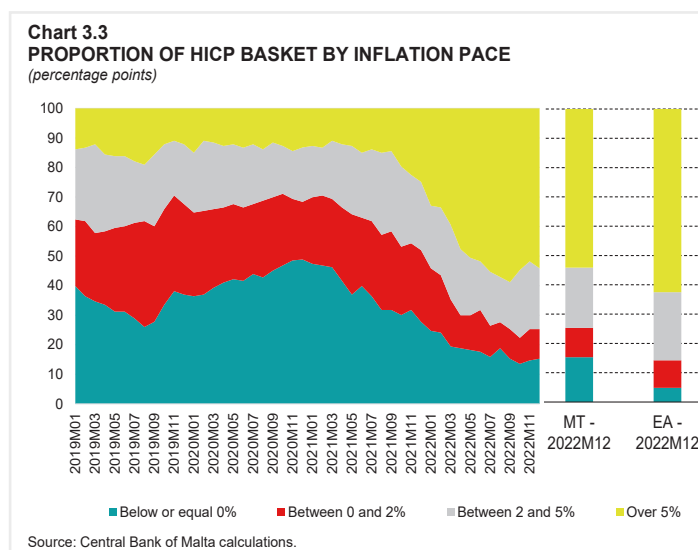


Chart 3.3 shows a distribution of price changes whereby sub-components of HICP are categorised into four classes of inflation rates: i) below or equal to 0%; ii) between 0% and 2%; iii) between 2% and 5% and iv) over 5%.² This indicates whether the surge in inflation during 2022 was broad-based across HICP items, or if it was driven only by selected components of the consumption basket.



Since late 2021, the share of sub-components registering inflation rates in the lowest inflation band has declined in both Malta and the euro area. This was mirrored in a substantial rise in the share of sub-components with year-on-year price increases of more than 5%. Indeed, in December, the share of the latter stood at 54.1% and 62.5% in Malta and the euro area, respectively. This indicates that the relatively high inflation rates registered throughout 2022 were driven by a majority of items in the respective consumption basket.

Nevertheless, despite the still relatively large share of the Maltese basket falling in the upper band, this share has declined in December when compared to three months earlier. Looking at the interval holding items with inflation rates between 2% and 5%, we note that in December this share stood at 20.6% in Malta, and 23.3% in the euro area. On the contrary to the bracket holding items with inflation higher than 5%, this bracket expanded in Malta when compared to three months earlier. Furthermore, the shares of the two intervals with inflation of 2% or below,

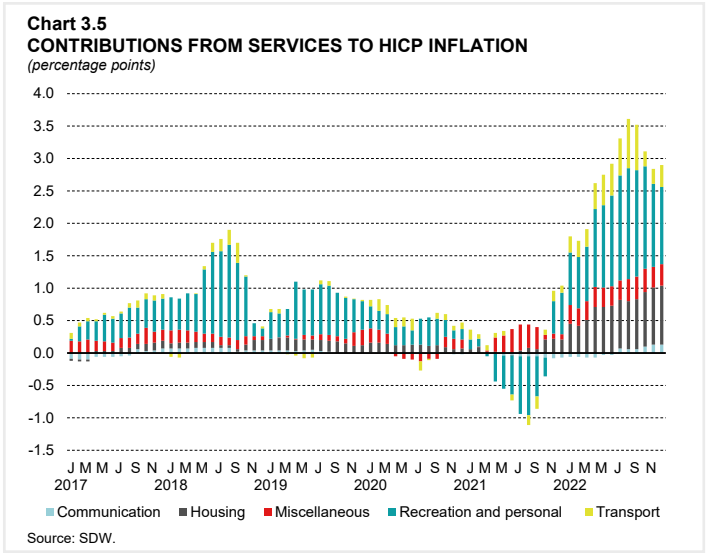
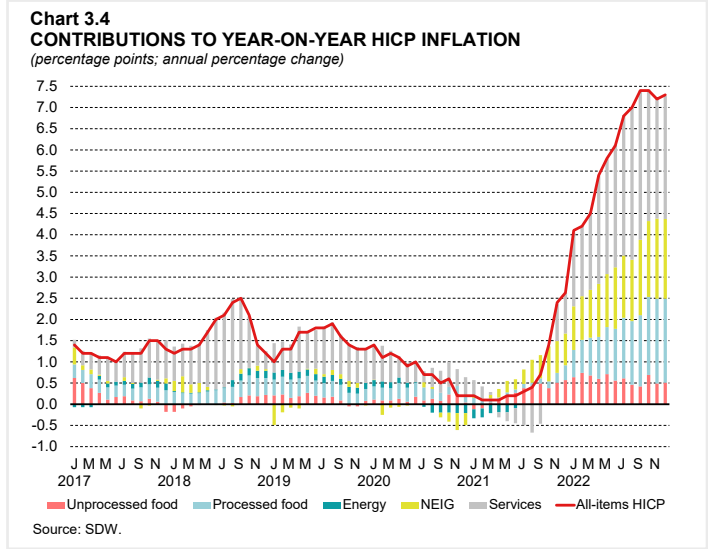
² The calculation of the shares in this chart do not take into account the weights of individual HICP sub-components. This analysis includes 170 sub-indices of the HICP for Malta and 288 sub-indices for the euro area. On average since 1997, 27.6% of items in Malta's basket fell in the 0% or negative inflation rates interval, while this figure stood at 20.5% for the euro area. Around 67% of the euro area basket fell in the 0-2% and 2-5% intervals – in almost equal parts. These shares stand at 26.2% and 27.5% respectively in Malta. While 18.7% of the Maltese basket fell in the over 5% interval, only 12.2% of the euro area basket falls in this interval.

was higher in Malta than in the euro area, though unchanged when compared to three months earlier. 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. Apart from energy, these include post-secondary and tertiary education, as well as passenger transport by bus.

Overall, the latest data indicates some modest easing in inflationary pressures during the quarter under review, with pressures remaining broad-based across consumer items.

The marginal fall in HICP inflation relative to September was entirely driven by slower growth in services prices (see Chart 3.4). By contrast, the contributions from food and NEIG prices increased since September, while energy prices remained unchanged in annual terms.

Services inflation decreased from 7.4% in September to 6.7% in December, contributing 2.9 percentage points to overall HICP inflation (see Chart 3.5). Despite easing, services inflation still stands relatively high from a historical perspective. All services components had a positive contribution to overall HICP inflation in December, but almost half of the services contribution to overall HICP inflation came from the recreation and personal care. Among other items, this component includes package holidays, where prices rose by an annual rate of 12.6%, down from 20.2% in September. Also, prices at restaurants, cafes and similar establishments rose by 9.9% in December, declining from 10.5% in September. The contribution from transport services also declined strongly when compared to September, reflecting the introduction of the free public transport services which began in October. On the other hand, the contribution from housing services increased when compared to September, largely reflecting faster growth in fees for the maintenance and repair of dwellings, as well as higher growth in housing rents.



On the contrary to services inflation, food inflation increased during the quarter under review, reaching 11.5% in December. This largely reflected faster growth in the prices of dairy products, as the contribution from this component rose to 0.5 percentage point in December (see Chart 3.6). This was followed closely by meat, and to a lesser extent by fruit, fish and vegetables. On the other hand, the contribution of bread and cereal products decreased.

The overall contribution of food to HICP inflation stood at 2.5 percentage points in December, up from 2.1 percentage points in September. This increase was driven by both processed and unprocessed food inflation. Indeed, while processed food inflation reached 11.8% from 10.4% in September, unprocessed food inflation rose to 10.3% from 8.7% previously.

NEIG inflation edged up by 0.1 percentage point to 6.7% in December. Inflation increased in durables and non-durables, while semi-durable prices increased at a slower pace when compared with September. Prices of durable NEIG rose by an annual rate of 6.4%, from 6.2% three months earlier, while prices of non-durables rose at 8.5%, up from 7.7% in September. The latter's price dynamics largely reflect developments in the prices of cleaning and maintenance products, as well as personal hygiene and beauty products. Furthermore, the pick-up in NEIG inflation may reflect the lagged pass-through of recent increases in input costs to consumer prices.

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

Core HICP inflation edges up

The Bank's measure of core inflation rose to 6.2% in December 2022, from 6.1% three

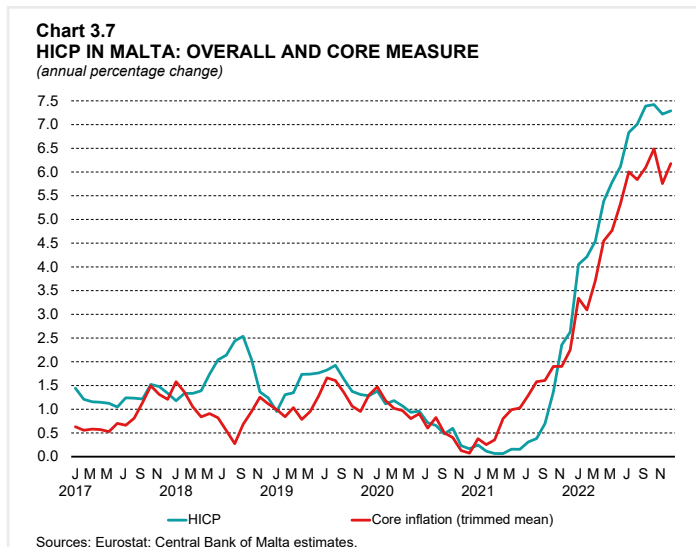
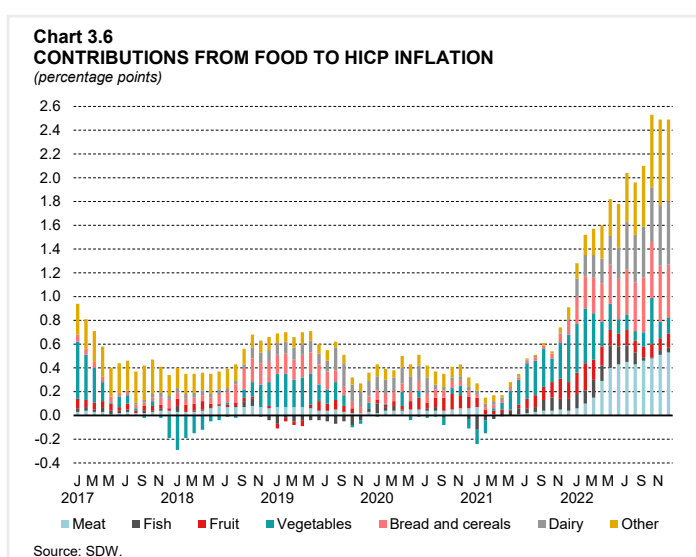


Table 3.2
CONTRIBUTIONS TO YEAR-ON-YEAR RPI INFLATION

Percentage points

	2021					2022							
	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
Food	1.1	1.5	1.7	1.7	2.0	2.1	2.1	2.5	2.4	2.5	2.9	2.7	2.7
Beverages and tobacco	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.4	0.3
Clothing and footwear	0.0	0.1	0.1	0.0	0.1	0.0	0.0	0.0	-0.1	0.2	0.2	0.1	0.0
Housing	0.3	0.6	0.7	0.8	1.2	1.2	1.2	1.2	1.2	1.3	1.5	1.5	1.5
Water, electricity, gas and fuels	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Household equipment and house maintenance costs	0.2	0.3	0.3	0.4	0.3	0.3	0.4	0.4	0.5	0.6	0.5	0.6	0.6
Transport and communications	0.3	0.5	0.5	0.4	0.6	0.8	0.9	1.1	1.4	1.2	0.6	0.5	0.6
Personal care and health	0.1	0.1	0.2	0.2	0.3	0.3	0.3	0.4	0.4	0.4	0.5	0.5	0.5
Recreation and culture	0.3	0.3	0.2	0.3	0.6	0.6	0.5	0.5	0.3	0.4	0.3	0.2	0.3
Other goods and services	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.5
RPI (annual percentage change)	2.6	3.9	4.2	4.4	5.7	6.0	6.2	6.8	7.0	7.5	7.5	7.1	7.4

Source: NSO.

months earlier (see Chart 3.7).³ Hence, it was 1.1 percentage points lower than overall HICP inflation. The divergence between the two measures of inflation largely reflects the exclusion of volatile items from the core measure.

RPI inflation edges down marginally

Annual inflation based on the RPI index – which is based on a different basket of goods and services from the HICP index, as well as a different frequency of weight updates – fell to 7.4% in December, from 7.5% in September (see Table 3.2).⁴ The decline was largely driven by lower contribution from the transport and communications services following the introduction of the free public transport initiative in October. Indeed, the contribution of this sector to overall RPI inflation halved to 0.6 percentage point, from 1.2 percentage points three months earlier. The contributions of prices for recreation and culture, as well as clothing and footwear, also contributed to the decline in inflation, though marginally. On the other hand, the contribution from food, housing, as well as personal care and health edged up compared to September, jointly lifting RPI inflation by half a percentage point. Meanwhile, energy tariffs continued to have a neutral impact on overall RPI inflation in the period under review.

The housing market

Residential property prices grow at a slower pace

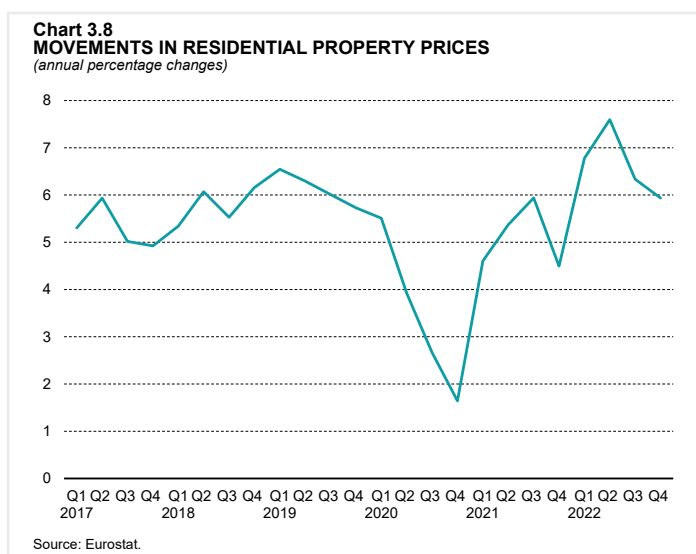
The NSO's Property Price Index (PPI) – which is based on actual transactions involving apartments, maisonettes, and terraced houses – continued to increase in annual terms, albeit at a slower pace. The annual rate of change stood at 5.9% in the last quarter of 2022, from 6.3% in the third quarter of 2022 (see Chart 3.8).⁵ House price inflation in Malta has surpassed that in the euro area, where prices increased at an annual rate of 3.0%.

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

⁴ The RPI index differs from the HICP index in that RPI weights are based on expenditure by Maltese households, while HICP weights also reflect expenditure patterns by tourists in Malta, such as accommodation services. See Darmanin, J. (2018), "Household Expenditure in Malta and the RPI Inflation Basket", *Quarterly Review 2018(3)*, pp. 33-40, Central Bank of Malta. Due to the strong impact of the pandemic on tourist expenditure, the two measures are expected to diverge significantly as weights in the HICP have changed significantly while those of the RPI have not been adjusted.

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

Residential property prices continue to be supported by numerous factors, including Government schemes supporting demand for property, such as the first-time and second-time buyers' schemes, the purchase of properties located in Urban Conservation Areas (UCA) and in Gozo, as well as refund schemes for restoration expenses. The ongoing recovery of tourism and the normalisation of migrant workers flows from pandemic lows may have also shored up demand for property and contributed to the increase in property prices.

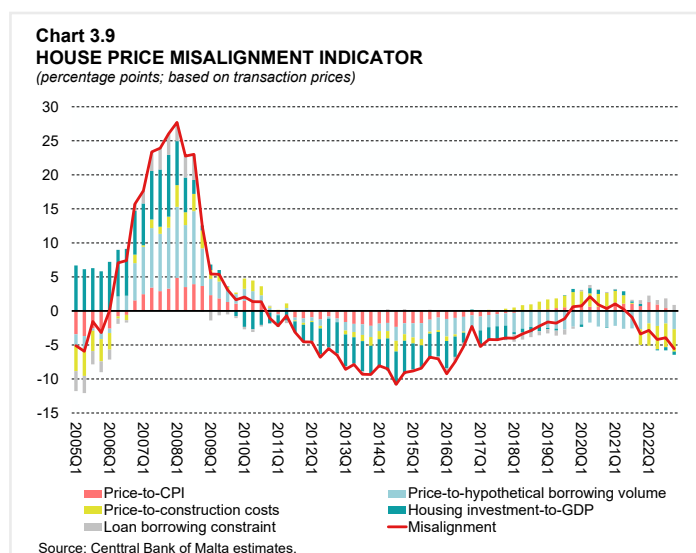


Misalignment indicator affected by exceptional inflationary environment

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

According to the misalignment indicator, house prices, as measured by the NSO's PPI, were below the level consistent with fundamentals in the final quarter of 2022, with the gap from such level slightly more negative than that estimated for the third quarter (see Chart 3.9).⁸

The undervaluation estimated for the fourth quarter was driven mainly by the price-to-construction cost ratio, and the price-to-hypothetical borrowing volume – that is the affordability indicator. The former had one of the most negative contributions on record. Although house prices have increased



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

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

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

**Table 3.3
TRANSACTIONS**

Levels

	2021		2022		
	Q4	Q1	Q2	Q3	Q4
Residential transactions					
Promise of sale	4,614	2,741	3,231	2,846	3,355
Final deeds of sale	3,896	3,407	3,567	3,593	3,764

Source: National Statistics Office.

markedly, construction costs have risen at a faster rate pushing down this ratio. The housing investment-to-GDP ratio, which is an indicator of overheating, also contributed, although marginally. By contrast, the loan borrowing constraint, which is an indicator of the loan-bearing capacity of households, continued to contribute positively to the misalignment indicator.

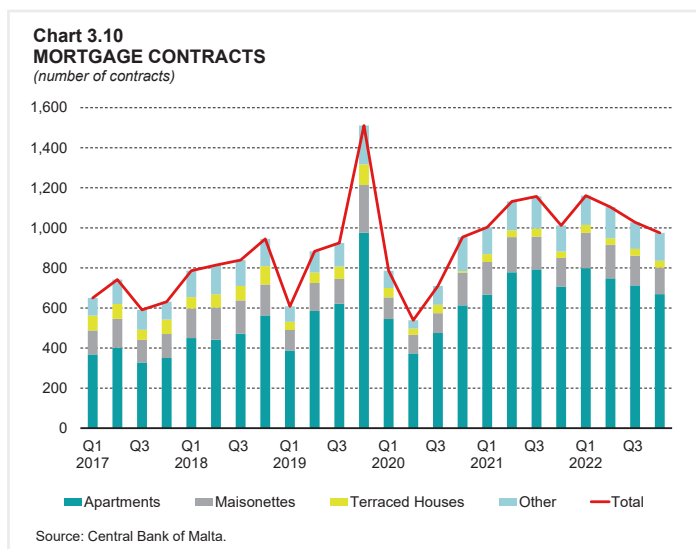
Property transactions increase in quarterly terms but fall in annual terms

NSO data on residential property transactions show that 3,764 final deeds of sale were registered in the quarter under review, an increase of 4.8% compared to the number of sales concluded in the third quarter of 2022, but 3.4% lower than the same level registered in the final quarter of 2021 (see Table 3.3). Over 90% of these transactions involved purchases by individuals.

The number of promise-of-sale agreements also increased on a quarter-on-quarter basis. At 3,355, the number of promise-of-sale agreements was 17.9% higher than those notified in the third quarter, but 27.3% lower than those registered in the same quarter of 2021. Most of the decrease in year-on-year terms occurred in December 2022, and reflects the fact that a year earlier there was a substantial increase in promise of sale agreements ahead of the expected expiration of a tax incentive related to the acquisition of property.

Mortgage transactions declined but remain above the average between 2017 and 2019⁹

The number of mortgage contracts continued to decline in the fourth quarter of 2022, standing at 975. When compared with the last quarter of 2021, they stood lower by 3.7% (see Chart 3.10). This decrease was mostly on account of fewer apartments

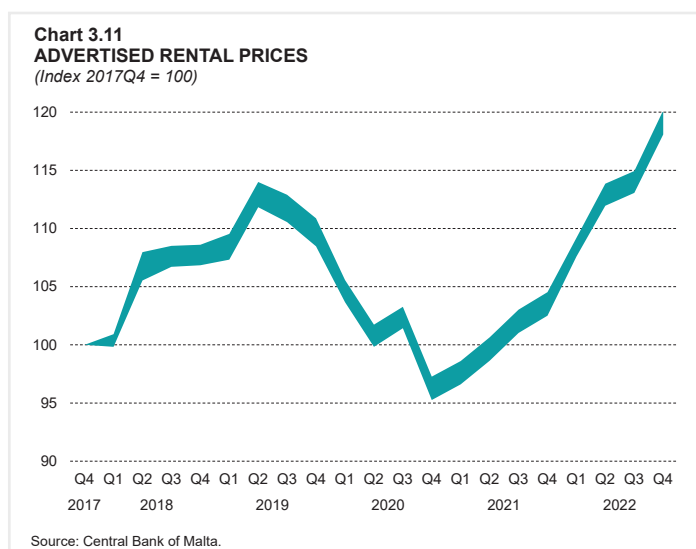


⁹ The data used in the section are collected by the Central Bank of Malta from four commercial banks and relate only to properties which have been purchased with a mortgage. The dataset excludes properties that have either been transacted using other means of financing, as well as mortgages that have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

and maisonettes, as mortgages for terraced houses and other property categories registered a slight increase. Although lower in annual terms, the number of mortgage contracts in the fourth quarter exceeded the average of 827 transactions per quarter recorded between 2017 and 2019.

Advertised rent prices increase at a faster pace

The annual rate of change of advertised rents collected from internet sources increased in the final quarter of 2022 compared with the previous quarter.¹⁰ The range of estimates from various methods indicate that rents have increased at annual rates of between 14.2% and 16.2% in the quarter under review (see Chart 3.11). Furthermore, the level of advertised rents remained around 9% above the pre-pandemic level estimated in the final quarter of 2019.



Costs and competitiveness

Producer price inflation moderates

Annual inflation, based on the industrial producer price index, which is a measure of the change in the prices of goods sold by producers in the industrial sector, eased to 4.3% in December, from 4.6% in September.¹¹ This reflected slower growth in the prices of capital and consumer goods. Prices of capital goods rose by 2.3% in December, down from 4.2% in September, while consumer goods inflation edged down to 8.4%, from 9.0%. On the other hand, producer prices for intermediate goods rose at a faster rate of 3.5% in December, after increasing by 3.2% in September. Energy producer price inflation remained zero in the period under review.

Recent improvement in competitiveness begins to unwind¹²

In December 2022, the nominal HCI was up by 0.8% on its level a year earlier, reflecting the euro's appreciation against currencies of trading partners (see Chart 3.12). By contrast, the real HCI fell by 0.9%. 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

¹⁰ 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.

¹¹ The industrial producer price index measures the prices of goods at the factory gate and is commonly used to monitor inflationary pressures at the production stage.

¹² 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.

its level in January 2022, as domestic inflation remained below that in trading partners.

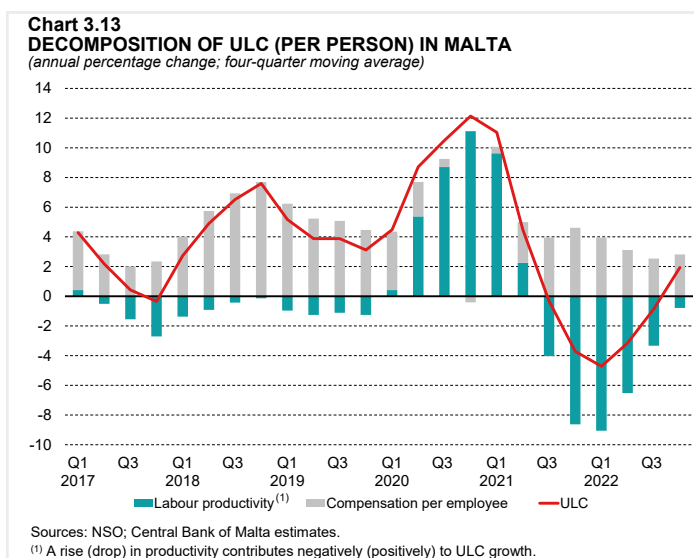
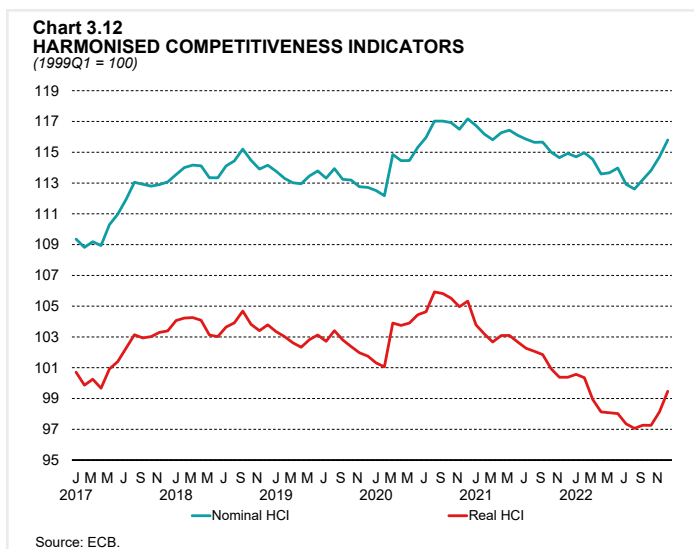
When compared with September, both the nominal and the real HCI increased by 2.3%, suggesting that the exchange rate was behind the deterioration in price competitiveness on a quarter-on-quarter basis.

ULCs increase at a faster rate in the fourth quarter

Malta's ULC index – measured as the ratio of compensation per employee to labour productivity – increased during the fourth quarter of 2022, both in quarter-on-quarter terms, as well as in annual terms.¹³ When measured on a four-quarter moving average basis in headcount terms, ULCs in Malta rose at an annual rate of 1.9%. This followed a decline of 0.9% in the previous quarter (see Chart 3.13). The recent rise in ULCs occurred as compensation per employee rose at a faster rate than productivity.

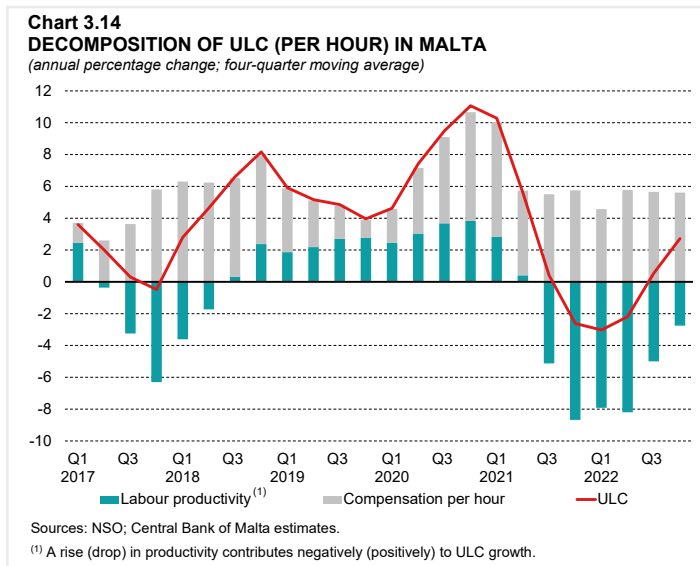
The acceleration in the last quarter of the year, when compared to the previous quarter, (as measured on a four-quarter moving average basis), reflects both slower growth in labour productivity, and faster growth in compensation per employee. Indeed, while labour productivity growth decelerated from 3.3% to 0.8%, growth in compensation per employee accelerated by 0.3 percentage point to 2.8%.

Similar to ULC per person, ULC per hour increased on a



¹³ Annual growth in ULC, compensation per employee and labour productivity is measured on a four-quarter moving average basis. A degree of caution is required in the interpretation of ULC in view of contemporaneous structural shifts in the composition and factor-intensity of production, notably the shift to labour-intensive services. See Micallef, B. (2015), "Unit labour costs, wages and productivity in Malta: a sectoral and cross-country analysis", *Policy Note* August 2015, Central Bank of Malta, and Rapa, N. (2016), "Measuring international competitiveness", *Quarterly Review* 2016(1), pp. 53-63, Central Bank of Malta.

four-quarter moving average basis, rising by 2.7% in the fourth quarter of 2022, following a 0.5% increase in the previous quarter (see Chart 3.14). Compensation per hour rose by 5.6% in the quarter under review, which is above the 2.8% increase in productivity per hour. Furthermore, the acceleration in ULC per hour mostly reflects slower growth in productivity, as growth in compensation per hour was only marginally lower than that estimated for the third quarter of 2022.



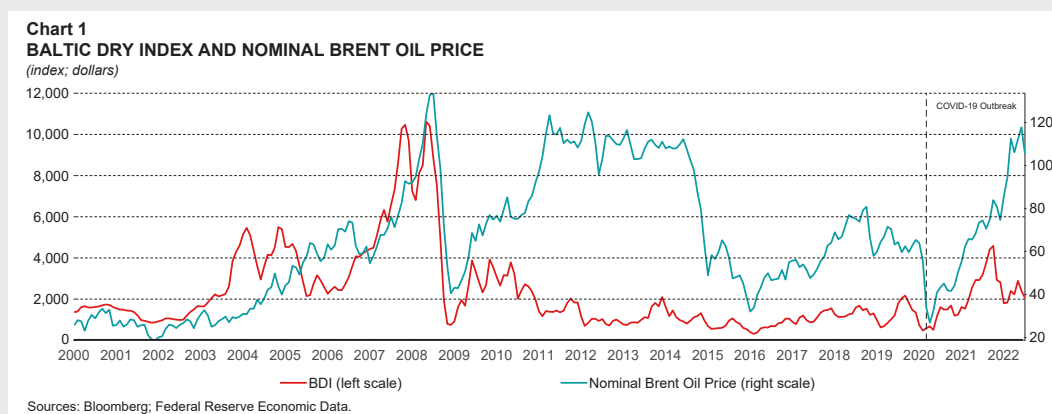
BOX 3: GLOBAL OIL PRICE SWINGS AND SHIPPING DISRUPTIONS: DO THEY MATTER FOR MALTA?¹

Price developments on the oil and shipping markets

Recent years have been characterised by the COVID-19 outbreak, leading to a sharp contraction in global economic activity in 2020, and a remarkable rebound in 2021, together with logistical and supply-chain disruptions. As a result, oil prices and shipping costs experienced large swings, which in turn led to upward pressure on retail prices.

Both shipping and energy have a direct impact on the Maltese economy, as Malta is a small island with a highly open economy, and heavily reliant on shipping transportation for merchandise goods and commodities. In addition to goods, Malta is reliant on the importation of a variety of fossil fuels. Between the mid-1990s and 2016, most of the electricity production in Malta was produced from heavy fuel oil, while liquified natural gas (LNG) was used from 2017 onwards.² Importantly, energy prices in Malta are fully administered and, to date, have been kept unchanged since July 2020, despite the surge in international energy prices.

Chart 1 shows the evolution of the nominal Brent oil price and the Baltic Dry Index (BDI) over the period between January 2000 and March 2022. The Brent oil price is used as a benchmark for pricing crude oil in most of the Atlantic basin and internationally. The BDI is a composite index of shipping costs and is regarded as a measure of demand for shipping capacity versus the supply of cargos. The two are meant to capture developments in global oil and shipping markets, respectively. Chart 1 shows how both indices tend to gradually increase during periods of economic expansions, and to decline abruptly in conjunction with global economic crises. This characteristic was particularly evident during the Great Recession of 2008/09, and at the onset of the COVID-19 pandemic. During these periods,



¹ Prepared by Germano Ruisi, a Principal Research Economist of the Economic Research Department at the Bank. The analysis presented in this box is based on the author's study: Ruisi (2022), "Global oil price swings and shipping disruptions: do they matter for Malta?", Central Bank of Malta *Policy Note* Series, December 2022. Helpful comments by Brian Micallef, William Gatt, Massimo Giovannini, Ian Borg, Noel Rapa, Abigail Marie Rapa, and participants of the 2022 EUROMED Workshop are gratefully acknowledged. The views expressed are the author's own and do not necessarily reflect the views of the Central Bank of Malta.

² Malta further diversified its energy mix by connecting its power grid with the European one in 2015 through the Malta-Sicily interconnector.

the demand for cargo capacity and for energy was adversely affected due to the negative outlook of the global economy.

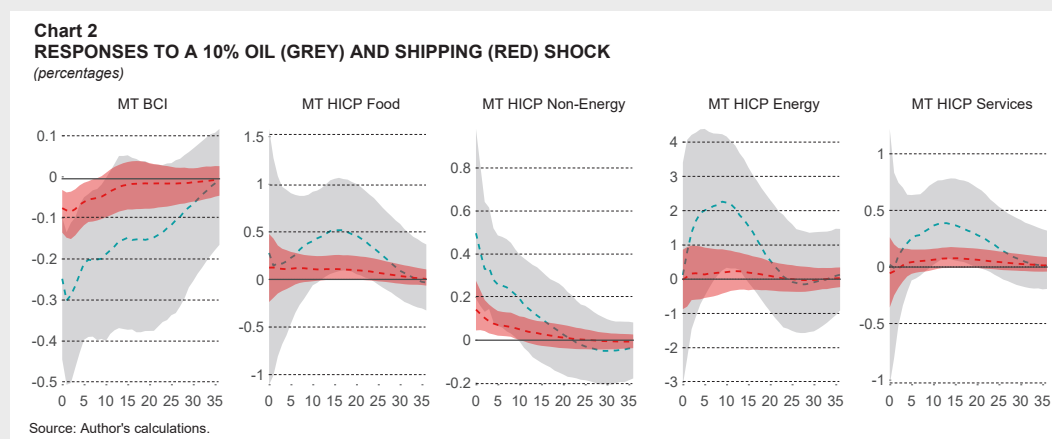
The effect of oil and shipping disruption shocks on the Maltese economy

The insularity of the Maltese economy, together with its high degree of openness and heavy reliance on shipping services and on petroleum products, raises the need to quantify the macroeconomic effect of changes in oil prices, and disruptions in the shipping industry.

The empirical analysis is based on a structural vector autoregressive model featuring two blocks: a Maltese block and a world block representing the dynamics taking place at the global level. The world block includes the growth rates of industrial production and consumer price inflation of the 38 OECD countries that serves as a proxy to global economic activity and prices, respectively. It also features the growth rates of the real price of Brent oil and the BDI, as well as the ratio between these two indicators, to help in the identification strategy aiming at separating the two disturbances. The Maltese block is highly stylised and contains the BCI developed in Ellul (2016) as a measure of economic activity, and the four main HICP components – food, NEIG, energy, and services.³ The data are collected at monthly frequency and cover the period between January 2000 and March 2022. The identification strategy, which helps disentangling the two shocks, is based on sign restrictions.⁴

The responses to the two identified disturbances are shown in Chart 2. The grey and the red shaded areas, represent the dynamic responses to an oil and to a shipping disruption shock, respectively. The responses are normalised to increase oil or BDI by 10%, in order to better link them with the effect that the recent swings on the global market are bringing about. The model captures the median responses over the entire sample, which runs from 2000 until March 2022, and not just that relating to a specific point in time.

Following an oil disturbance, the full effect on Maltese energy prices is experienced after about ten months, with a peak response of slightly more than 2%. This refers to the case



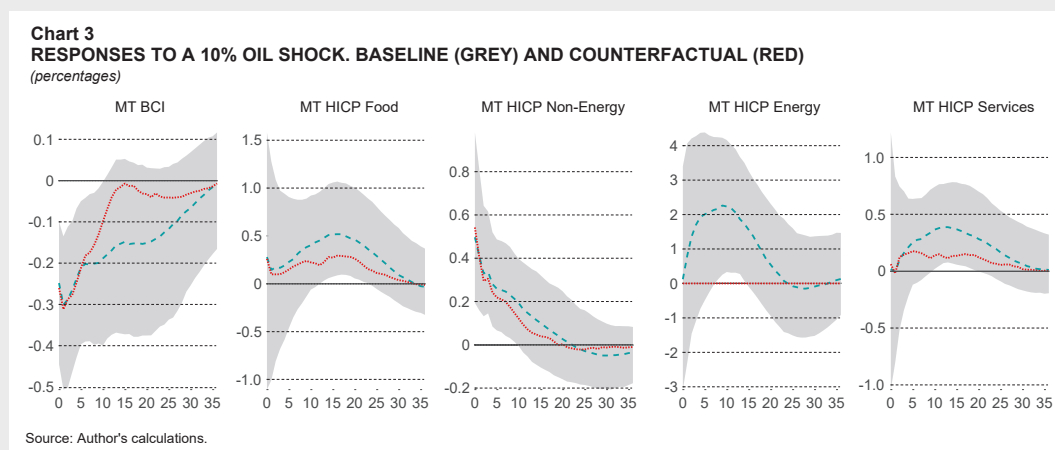
³ For more details on the BCI please refer to Ellul, R. (2016) "[A real-time measure of business conditions in Malta](#)", Central Bank of Malta Working Paper WP/04/2016.

⁴ More details on the identification strategy are presented in the [Policy Note](#).

when energy prices in Malta are allowed to fluctuate due to market forces. Interestingly, in the case of disruptions in the shipping industry, energy prices do not significantly respond at any horizon.

In the case of the oil shock, the median response for all the other price series appears to be positively affected. Food and services sub-indices gradually increase and reach peak responses of 0.5% and 0.45% after about 12 to 16 months, respectively. The increase in prices experienced by NEIG is more abrupt and is felt on impact. The different responsiveness of the sub-indices, with the NEIG on the one hand, and food and services on the other, might be explained by the observation that a non-negligible portion of food items and services that are locally produced requires the utilisation of energy provided domestically. As such, the slower increase in food and services inflation might be due to the time necessary for the transmission of shocks in the global energy markets to domestic energy prices. NEIG are mostly imported and, therefore, tend to be more responsive to developments in the world economy. Finally, the responses of food, NEIG and services for a shipping disruption shock are qualitatively similar to the oil price shock although, quantitatively, the magnitude is remarkably smaller. This highlights the higher responsiveness of the Maltese economy to developments on the global energy markets than those in the shipping industry.

Chart 3 illustrates a scenario that helps to identify the effect of the energy subsidies by the Maltese government. The scenario focuses on what would happen if energy prices were kept unchanged in response to a global oil shock. By doing so, this simulation proxies the fact that energy prices in Malta are fully administered and, as such, the HICP energy sub-index did not respond to the oil shock. This scenario is investigated by imposing that the HICP energy response is bound to be equal to zero throughout the whole response horizon, despite the disturbance to global oil prices.⁵ Chart 3 compares the baseline responses (grey shaded areas) with the counterfactual ones (red dotted lines).



⁵ The counterfactual responses are computed by means of the technique outlined in Kilian and Lewis (2011) "Does the Fed respond to oil price shocks?" *The Economic Journal*, 121(555), pp. 1047–1072. The credible bands are not reported due to their erratic behaviour. Therefore, the economic intuition is drawn only from the median responses.

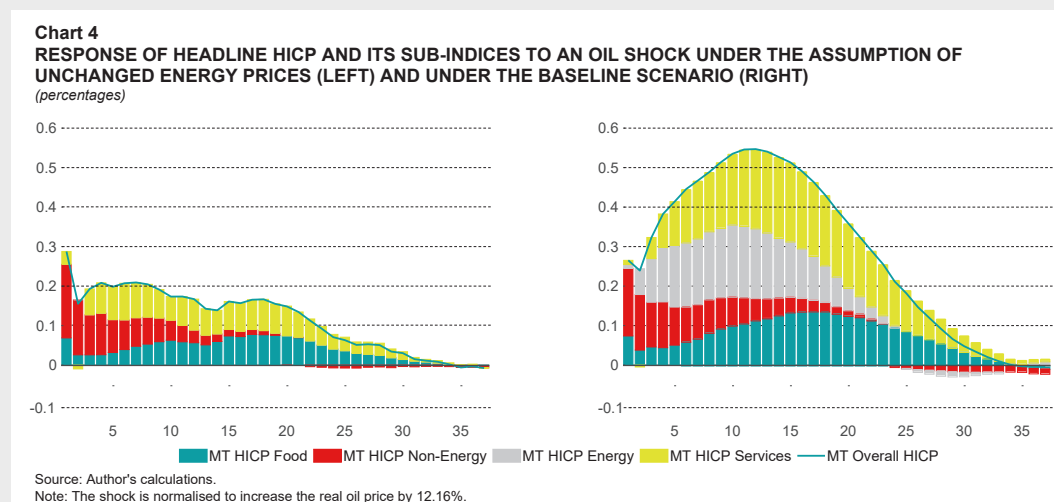
The figure clarifies how sheltering the Maltese energy prices from price fluctuations on the global oil market has beneficial effects on both domestic economic activity and prices. The BCI experiences a much less persistent negative effect. Turning to the inflation sub-indices, the responses of the food and services HICPs are at least halved compared to the baseline case. More precisely, food and services would respectively rise by 0.25% and 0.2% after, respectively, 18 and 12 months, as opposed to 0.5% and 0.45% in the case of no government intervention. No remarkable difference is found in relation to NEIG prices. A possible explanation could be related to the fact that, as already mentioned, most of the NEIG are imported, so domestic energy prices would not play any role, at least, upon impact.

Effects on headline inflation

Chart 4 shows the response of headline inflation following an oil shock that raises oil prices by 12.16% in the scenario of government intervention to shelter the Maltese economy from increases in energy prices (left), and in the baseline case (right). The choice of this normalisation is based on the observation that 12.16% is the average monthly oil price increase during the last three months available in the sample, i.e., January to March 2022. By doing so, it is easier to compare the estimated responses with the experience obtained during the very recent past.

Chart 4 illustrates how sheltering energy prices from the fluctuations in the global oil market helped to lower the upward pressure on HICP inflation. More precisely, the peak response reaches about 0.2%, instead of more than 0.5%. In addition, by looking at the various components, this lower pressure is not only driven by the absence of energy price increases but also by lower growth in the other inflation sub-indices. This is especially evident for food and services.

Chart 5 depicts the effect of a shock in the shipping industry normalised to raise the BDI by 27.44%.⁶ The full effect is reached after roughly 12 to 16 months. Initially, the impact



⁶ In a similar way to the case of oil, the chosen percentage increase reflects the average monthly growth rate experienced by the BDI over the last three months of available observations.

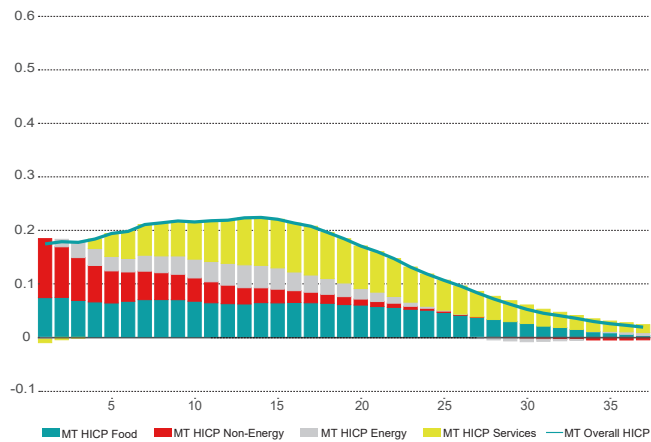
is due to a prompt reaction of NEIG and food prices, while the impact on services is felt with a lag.

Conclusions

This study finds that both global oil price swings and disruptions in the shipping industry appear to exert recessionary effects on the Maltese economy, while putting upward pressure on headline inflation and its sub-indices. That said,

the study demonstrates that the responsiveness of the Maltese economy to developments on the global energy markets is relatively much stronger than to developments in the shipping industry. The evidence provided in this study also shows that the energy subsidies provided by the Maltese government helped to reduce the negative consequences on economic activity, and to dampen the inflationary pressures, both directly via the energy sub-component and, indirectly, due to the absence of spillover effects from domestic energy prices onto other categories of the consumption basket, especially food and services.

Chart 5
RESPONSE OF HEADLINE HICP AND ITS SUB-INDICES TO A SHIPPING SHOCK
(percentages)



Source: Author's calculations.
Note: The shock is normalised to increase the BDI by 27.44%.