The Inflation Experience of Low Income Households

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Abstract

Consumer price inflation in Malta is officially measured through the Retail Price Index (RPI). The RPI calculates the price change of a basket of goods and services, which is derived from average expenditure shares obtained through the Household Budgetary Survey (HBS). In practice, the representation of an "average" household is skewed towards high income households, whose expenditure makes up a relatively larger share of total consumer spending. As a result, the RPI might not always accurately measure the inflation rate faced by low income households, whose consumption basket differs from the overall average for all households. This study uses HBS data to calculate an estimated inflation rate for households in the bottom income quartile. The results suggest that between 2010 and 2020 these households experienced some periods of higher inflation than suggested by the official rate. This was particularly so during periods of rising food and energy prices in the first half of the sample period. A similar result was found for retired households, who form a large subset of low income households. Despite this, an analysis of the minimum wage and the minimum pension suggests that benefits have maintained their purchasing power since 2010, even when accounting for higher inflation. In part, this was due to ad hoc government allowances on top of automatic annual increments.

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Table of Contents

Executive Summary 3

Which type of households’ consumption basket was most affected by inflation between 2010 and 2020? 5

To what extent did overall RPI inflation deviate from the cost of living increases faced by low income households between 2010 and 2020? 10

When accounting for higher inflation, have social benefits been sufficiently incremented since 2010 to maintain their real value? 15

References 20
Executive Summary

Consumer price inflation in Malta is officially measured through the Retail Price Index (RPI), which calculates price increases for a given basket of goods and services based on overall household expenditure, obtained through the Household Budgetary Survey (HBS). However, the use of average expenditure patterns across households can mask significant differences in the consumption of different household types. This may suggest that inflation measures inaccurately reflect the cost of living increases experienced by a subset of households. This note is the first study that attempts to estimate the inflation rate faced by households in the bottom income quartile, as well as by retired households, in Malta from 2010 to 2020.

- Which type of households’ consumption basket was most affected by inflation between 2010 and 2020?

Inflation in Malta has generally receded in recent years, particularly when compared to the 2000s. This was due to a combination of factors, including an easing of international price pressures for essential commodities, structural changes, and increased competition. Nonetheless, Malta did experience some periods of high inflation over the years, driven partly by higher prices for essential commodities such as food and energy. In turn, these commodities make up a larger share of the expenditure basket of low income households when compared with the average household. This suggests that overall inflation measures may not have portrayed an accurate picture of cost of living increases faced by low income households during these periods.

- To what extent did overall RPI inflation deviate from the cost of living increases faced by low income households between 2010 and 2020?

Given that the expenditure patterns of households tend to differ according to income level, price changes for certain commodities will have a greater impact on specific types of household when compared to others. In order to assess whether the inflation experience of certain household types really does differ from the overall inflation measure, this analysis uses disaggregated expenditure shares from the HBS to estimate the inflation rate faced by low income households. The results suggest that these households did face higher levels of inflation during the first half of the sample period (2010 – 2015) when compared with overall RPI inflation, though this differential dropped significantly between 2016 and 2019. A similar result was found for retired households, who form a large subset of households
in the bottom income quartile.

- **When accounting for higher inflation, have social benefits been sufficiently incremented since 2010 to maintain their real value?**

  One of the primary policy measures used in Malta to combat declines in purchasing power is the cost of living adjustment (COLA), which is linked to the official RPI. In turn, the COLA is used for the adjustment of salaries and social benefits. Given that households in the bottom income quartile faced some periods of higher inflation than measured by the RPI between 2010 and 2020, this analysis assesses how the real values of the minimum wage and of the minimum pension in 2020 compare with their level in 2010. The results suggest that the purchasing power of these benefits was maintained, in part due to ad hoc government allowances paid out over the years on top of automatic COLA increments.
Which type of households’ consumption basket was most affected by inflation between 2010 and 2020?

There are two official measures of consumer price inflation in Malta, the Retail Price Index (RPI) and the Harmonised Index of Consumer Prices (HICP). While the HICP is primarily aimed at producing a measure of inflation that is harmonised across the European Union, the RPI is based on a household consumption basket mainly derived from the spending patterns of resident households captured through the Household Budgetary Survey (HBS). This contrasts with the HICP, where inflation weights are based on total consumption expenditure by residents and non-residents alike. Because of its relevance to the consumption patterns of resident households, the RPI is used for the adjustment of wages and rents, as it acts as a barometer for the cost of living of domestic households [National Statistics Office, 2008].

Chart 1 shows the development of RPI inflation between 2006 and 2020, along with its main drivers. Apart from some brief intervals, trend inflation in Malta has clearly receded over time. RPI inflation averaged 2.3% between 2006 and 2013, before falling to 1.0% between 2014 and 2020. This decline in inflation is attributable to a number of factors, including the economic, structural, and international developments that have taken place over the years.

Food inflation has been the main contributor to overall inflation. It is also the largest subcomponent in the index, with a weight of over 20% of the total basket. This reflects its importance in total consumption, as well as Malta’s reliance on a combination of volatile supply of domestic produce and a large import content to meet domestic demand.
Food inflation peaked particularly in the late 2000s, reflecting a wider international trend of rising food prices, which translated into higher costs for food producers and importers. A significant easing in international price pressures in subsequent years, as well as increased competition among retailers and wholesalers, led to a moderation in food inflation when compared with the late 2000s. In turn, this was one of the main factors contributing to the downward shift in RPI inflation over the past few years.

Energy inflation was another driver of the high inflation rates observed in the late 2000s, mainly reflecting a strong increase in the international price of oil and government policy at the time. In more recent years, the impact of energy on overall inflation has diminished, reflecting a lower international oil price, increased supply efficiencies in the domestic energy sector, and government policy. Indeed, changes in government policy have been reflected in a reduced frequency of changes in electricity prices, which were lowered for consumers in 2014 and remained unchanged as at 2020.

Along with food, the "transport & communication" subcomponent is among the largest in the RPI index. This comprises a wide array of items, ranging from internet and mobile services to public transport, motor vehicle purchases, and transport fuel. Because of the latter, inflation within this subcomponent has been highly influenced by movements in oil and energy prices and
by government policy. In more recent years, inflation within this subcomponent has been more muted, mainly reflecting government policy on lowering the frequency of changes in fuel prices, downward price pressures in categories such as air transport and communication services, and subsidised transport services for a number of age groups.

The moderation of overall inflation in recent years is not solely a phenomenon observed in Malta, but also in many other advanced economies. Ciccarelli and Osbat [2017] found that, for the euro area, missing inflation was primarily due to cyclical factors, both domestic and international. This succession of negative shocks to economic activity in the euro area constrained headline inflation for a prolonged period, leading to a fall in trend inflation and an increase in the persistence of inflation. These in turn influenced longer-term inflation expectations. Other factors, such as globalisation, increased competition, and e-commerce, have also played a significant role in reducing headline inflation.

By construct, official inflation measures represent an overall average for all households. In reality, the products and quantities consumed can vary considerably across different kinds of household and over time within the same household. Chart 2 provides an example from the most recent HBS [2015], showing how household budget shares vary across the income distribution [CBM, 2018a]. Most evident is the larger share of expenditure of low income households on basic necessities, particularly food, housing/energy, and health. On the other hand, high income households tend to spend a larger percentage of their incomes on luxury items, including restaurants & hotels, recreation & culture, and transport.
Chart 3 gives a more detailed picture of price increases for a number of selected items, with a comparison between the periods 2006 - 2013 and 2014 - 2020. The biggest changes prior to 2014 occurred in the energy and food subcomponents which, as explained above, took place during a period of increasingly volatile international commodity prices.
In more recent years energy inflation has fallen significantly. Nevertheless, food inflation remained strong, despite growing at a slower pace when compared with 2006 - 2013. Indeed, this subcomponent still registered the highest growth rate amongst all the RPI subcomponents between the years 2014 - 2020. This would have had a disproportionate effect on low income households, with food inflation making up a much more significant percentage of their expenditure compared with other households.
To what extent did overall RPI inflation deviate from the cost of living increases faced by low income households between 2010 and 2020?

Official inflation measures are calculated by measuring the overall price change of a specific basket of goods and services. Since this basket averages out differences in the consumption patterns of households across the income spectrum, overall measures of inflation may deviate from changes in the cost of living of certain household types [Adams and Levell, 2014]. For example, the HBS [2015] for Malta shows that low income households spend a much larger share of their household budget on basic necessities such as food, energy, and health when compared with the overall average expenditure pattern. Hence, it follows that higher inflation in energy or food prices will place a heavier burden on low income households than that reflected in the official inflation measure.

Indeed, Table 1 shows that current RPI weights are generally quite different from the expenditure shares defined in the latest HBS for low income households. This is also the case for the average retired household.² Since pensions are typically lower than the national median income, retired households tend to form a large subgroup of households in the bottom income quartile [CBM, 2018b], which explains the similarity in expenditure shares between the two household types.

| COMPARISON BETWEEN HBS¹ AND OFFICIAL RPI WEIGHTS |
|-----------------|-----------------|-----------------|
| share of total  | Bottom Income   | Retired Household | RPI (as at 2020) |
| quartile        | Household       |                  |                 |
| Food            | 31.2            | 33.2             | 21.5            |
| Beverages & Tobacco | 5.1           | 4.4              | 5.6             |
| Clothing & Footwear | 5.8           | 5.8              | 6.6             |
| Housing         | 9.4             | 5.9              | 7.9             |
| Energy          | 5.4             | 5.0              | 3.3             |
| Household Equipment & Maintenance | 5.5          | 4.5              | 7.0             |
| Personal Care & Health | 11.1          | 14.2             | 8.8             |
| Transport & Communication | 14.3         | 13.5             | 22.1            |
| Recreation & Culture | 4.9           | 4.1              | 9.9             |
| Miscellaneous   | 7.3             | 5.4              | 7.3             |

Source: HBS (2015); NSO; authors' calculations.
²HBS subcomponents have been re-arranged to match RPI classification

²For the purposes of this study, a low income household is defined as a household within the bottom income quartile, earning less than EUR12,491 per annum in 2015. A retired household is defined as a two-adult household with no dependent children, and with at least one household member above 65 years.
This discrepancy between official RPI weights and expenditure shares for low income households mainly occurs because the composition of the basket of goods and services used to determine overall inflation depends on total consumer spending on each good and service divided by total economy-wide spending. Hence, the latter measure tends to be skewed to reflect the spending patterns of higher income households, as these households account for a disproportionately larger share of total spending.

In order to study how low income households have faced inflation rates that were different from overall inflation in the past, this study calculates inflation rates based on the consumption baskets for households in the bottom income quartile, as well as for retired households, shown in Table 1. This is done using disaggregated expenditure data provided by the National Statistics Office (NSO) for the HBS waves of 2008 and 2015. This facilitates an analysis from 2010 onward, since RPI weights in prior years were based on earlier editions of the HBS.

The derived baskets are then used to calculate an estimated inflation rate for these specific household types, using official RPI inflation rates for the various subcategories of expenditure. In line with the official calculation of RPI weights, the consumption shares from the 2008 HBS edition were used to calculate the estimated inflation rates for 2010 - 2016, while rates for 2017 onward are weighted by shares from the 2015 HBS edition.

Chart 4 shows the estimated inflation rate calculated for low income households, referred to as the LIH rate, compared with the official RPI inflation rate.
Both the estimated rate and the official rate generally followed the same trajectory since 2010. However, due to the difference in consumption baskets, there have been periods where the LIH rate has diverged from the official RPI. In particular, the LIH rate was significantly higher during periods when food inflation was high, such as in the first half of 2010 and in 2013. Indeed, the differential between the two rates was higher than one percentage point during these periods. After 2013, the gap generally reduced following the sharp drop and subsequent stabilisation in energy prices. Between 2016 and 2019, inflation for low income households averaged just 0.1% above the official RPI. However, the gap rewidened considerably during 2020, to over 0.7 percentage points in some instances; this was mainly due to the sharp reduction in private education tuition fees during the COVID-19 pandemic, which carries a much higher weight in the official RPI than in the LIH rate. This is primarily because low income households tend to make use of state-funded education, which in turn leads to a much lower expenditure share for education in their consumption basket.

Chart 5 shows the estimated inflation rate calculated for the average retired household. Similar to that for low income households, estimated inflation in the first half of the sample period (2010 - 2015) was higher than the official RPI, by an average of 0.4%. This mainly reflects increases in prices of essential commodities during the period, such as food, fuel, and energy. In the second half of the sample period, the gap between the two rates diminished significantly, to 0.2%, albeit
with a similar resurgence in 2020 as observed in Chart 4.

These results suggest that during the period between 2010 and 2020, households in the bottom income quartile, as well as retired households, did experience some periods of higher inflation compared with the official rate, particularly during periods when prices for food and energy were rising at fast rates. The fact that overall inflation measures may deviate from the cost of living increases faced by certain types of household is also observed in other countries. For instance, Crawford and Smith [2002] found that, in the UK, only a third of households experienced a cost of living increase within 1% of the headline inflation rate between 1976 and 2000. There was also a high degree of variation in inflation rates amongst different households at the same point in time.

It is necessary to highlight some caveats with the above analysis. The calculation of consumption baskets based on the RPI classification requires the re-classification of the individual expenditure items found in the HBS, which can depend heavily on the author’s assumptions and calculations. Furthermore, the sample population surveyed by the HBS is taken from the latest Census, which was held in 2011. During the intervening period, the population of Malta has grown rapidly due to migrant inflows, which may have significantly altered the household distribution away from that used in the HBS.
Moreover, this study does not take into account the impact of social benefits in kind. These are goods and services produced or purchased by government and supplied to households, such as public health and education. Since these benefits tend to be provided at zero cost or below market price, this will impact comparison of expenditure data by household type. A case in point is the low share of education in the expenditure of low income households, which led to the LIH rate being higher than the official RPI in 2020 due to the sharp drop in private education tuition fees.

An important point that needs to be made here is that this study only looks at differences between the consumption baskets of the average household within a specific category and the overall average. A more in-depth analysis of cost of living effects and spending patterns would require micro-level data at a higher frequency than that currently provided by the HBS. The HBS is published very infrequently, and hence its ability to capture changes in consumption patterns over time is very limited. A case in point is the change in consumption patterns during 2020 caused by the COVID-19 pandemic and subsequent containment measures, which are not captured in the official RPI weighting scheme.

This study takes price changes as given by the official RPI index. As an official inflation index that is published on a scheduled monthly basis, for practical purposes prices are measured using representative products; for example, changes in clothing prices would only reflect changes in prices of apparel actually sampled in the data collection process. In reality, when the price of one item increases, consumers normally have the option of substituting with other products. Moreover, the sampled product may tend to be purchased by a certain type of household more than by another type of household; hence price increases for such a product may not have an actual impact on the cost of living faced by the latter type. This also calls for a more in-depth, micro-level study that delves into the behaviour of individual households and their specific product choices. Indeed, this study should be considered as only a first step into such analysis, with further research required on the cost of living increases faced by low income households.
When accounting for higher inflation, have social benefits been sufficiently incremented since 2010 to maintain their real value?

The above analysis suggests that the relative income of low income households will be harder hit when prices for basic necessities increase at a faster rate than other prices, as a larger proportion of their household budget is spent on these items. The aim of this section is to analyse whether social transfers paid to low income households over the past years have managed to retain their real value since 2010, even when accounting for a higher inflation rate than that measured by the overall RPI.

One of the primary policy measures used in Malta to combat declines in purchasing power brought about by increasing prices is the cost of living adjustment (COLA).\(^3\) The COLA is a partial indexation mechanism whereby incomes and social benefits are adjusted for consumer price increases in the previous twelve month period. It is calculated on the basis of the percentage increase in the RPI applied to the social wage \(S\), as expressed below.

\[
S_t = S_{t-1} \times [1 + \frac{RPI_{t-1}}{100}] \quad (1)
\]

\[
COLA_t = S_t - S_{t-1} \quad (2)
\]

The COLA is backward-looking, since the COLA in year \(t\) is linked to the twelve-month moving average RPI inflation rate as at September in year \(t-1\). For example, the COLA given in 2011 would have been calculated on the inflation rate between October 2009 and September 2010. Hence, households are compensated for past increases in prices with a lag - this is necessary if the COLA is to be based on actual, rather than forecasted, inflation.

In Malta, the COLA mechanism is not an end in itself, but a tool used to adjust wages and social benefits in order to compensate for cost of living increases. In addition, government may

\(^3\)See “Wage Increase National Standard Order”, Subsidiary Legislation 452.65 of the Laws of Malta.
also augment social benefits with *ad hoc* measures and bonuses.

The aim of this section is to identify whether these COLA and non-COLA increments were enough to enable social benefits such as the minimum wage and the minimum pension to maintain their real values since 2010. This is assessed using both the official RPI inflation rate and the LIH rate estimated above for low income households.

Chart 6 depicts the evolution of the actual minimum wage in Malta since 2010. It is plotted against the minimum wage as at 2010, incremented annually by both the RPI inflation rate and the estimated LIH rate. This shows by how much the minimum wage would have increased had annual increments been based on pure inflation indexation; i.e. just enough to maintain its 2010 purchasing power.

The results suggest that the actual minimum wage as of 2020 stood above the minimum wage indexed only by RPI inflation, meaning that it exceeded its 2010 real value. There are two reasons for this. Firstly, the percentage increase in the minimum wage as a result of COLA increments is higher than the official inflation rate, since the COLA level is calculated on the basis of the social wage, which is higher than the minimum wage. Secondly, the minimum wage is also supplemented by *ad hoc* Government allowances unrelated to the COLA. For example, in 2017 the Government and social partners signed the National Agreement on the Minimum Wage (see MCESD [2017]). As part of this agreement, the weekly COLA for 2018 and 2019 was to be supplemented by an additional EUR1 per week for persons earning the minimum wage.

At the same time, Chart 6 also suggests the actual minimum wage as of 2020 stood at roughly the same level as the wage indexed by the estimated LIH inflation rate. Hence, even when accounting for the estimated inflation faced by the average low income household, the minimum wage still maintained its 2010 real value in 2020. Given the closeness of the two series, particularly since 2014, this highlights the importance of the additional weekly supplement granted by Government during this period. In the absence of this supplement, the actual minimum wage in 2020 would have dropped below the LIH-indexed wage.
Apart from the minimum wage, a source of income received by a large number of households within the bottom income bracket is the national minimum pension. This is plotted in Chart 7, along with a similar analysis of its real value as that done in Chart 6.\(^4\) Unlike the minimum wage, the minimum pension is only incremented by two-thirds of the COLA. However, the minimum pension has been subject to non-COLA increments to a much larger extent than the minimum wage in recent years. Examples of these increments include the Cost of Living Bonus (CLBO), which was introduced in 2008 and is equivalent to one-third of the COLA, and a number of increments introduced from 2016 onward.\(^5\)

When accounting for all increments, the national minimum pension has since 2013 significantly exceeded the inflation-indexed pension. This is the case when accounting for official RPI inflation as well as for the estimated LIH rate. This suggests that the purchasing power of the national minimum pension as of 2020 was higher than in 2010.

\(^4\)Minimum pension calculations are based on a person retiring in 2010.  
\(^5\)Budget measures affecting the national minimum pension can be found at [https://finance.gov.mt/en/The-Budget/Pages/default.aspx](https://finance.gov.mt/en/The-Budget/Pages/default.aspx)
This analysis suggests that as of 2020, the minimum wage and the minimum pension both recorded increases in their real value compared with 2010, when accounting for official RPI inflation. When accounting for the estimated LIH inflation rate, the minimum wage just maintained its real value while the minimum pension increased its purchasing power. This is mainly due to additional Government allowances beyond the COLA.

In this regard, suggestions for future work would include the conduct of a more detailed, micro-level study on the specific products purchased by low income households, as well as changes in the prices of these products. This research could be used to calculate an inflation index for low income households, separate from the official RPI. Such an index could serve as a guide in measuring by how much social benefits should be increased over and above the COLA to ensure that the purchasing power of low income households is maintained. This would make the granting of supplementary allowances more transparent and effective, as current benefit adjustments tend to depend on the cyclical fiscal position at the time.\(^6\)

One important caveat is that this analysis simply compares the real value of social benefits in 2020 to their 2010 level. However, it is not intended to suggest that the value of these benefits in

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\(^6\) A similar suggestion was made by Caritas, with the proposal of a Minimum Essential Budget for a Decent Living in Malta for a number of different household types [Caritas, 2020].
2010 was adequate for a decent standard of living. This would require more detailed consumption and income data to assess and is scope for further research.

In conclusion, one must mention that the Maltese Government does provide a number of benefits in-kind and grants aimed at ensuring that low income and older households maintain a basic standard of living. Examples include energy credits for water and electricity bills, free public transport for persons within specific age groups, meals on wheels at a subsidised price for older and/or vulnerable persons, free child-care, the in-work benefit for parents in employment, a state funded food distribution scheme, grants for elderly people who live in their home, and a supplementary allowance for low income earners. All these represent consumption by households, particularly relatively lower income ones, which is not accounted for in the expenditure shares obtained from the HBS. As a result, the estimated inflation faced by low income households calculated in this study might be over-estimated.
References


