

Inflation and inequality

Energy and food versus rents

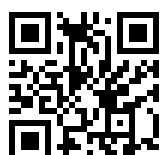


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Supporting monetary policy scrutiny



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Abstract

Inflation is often confused with changes in relative prices. The recent sharp increase in energy prices, which has also pushed up food prices, has hit poorer households especially hard, thus creating the impression that inflation increases inequality. However, it is the large changes in relative prices and not the average inflation rate (of now 7%) that is the real problem. We also show that rents – which are more important for low-income households – provide a significant offset for higher energy prices on average for the euro area, as they have lagged inflation, albeit with large differences across countries.

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LIST OF ABBREVIATIONS

ECB	European Central Bank
ECOICOP	European Classification of Individual Consumption by Purpose
EMU	Economic and monetary union
GDP	Gross domestic product
HICP	Harmonised Index of Consumer Prices
IMF	International Monetary Fund
OECD	Organisation for Economic Co-operation and Development
QE	Quantitative easing
QT	Quantitative tightening

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EXECUTIVE SUMMARY

- **Inflation should not be conflated with relative price changes.** Inflation is defined as an increase in all prices. One would not expect any impact on inequality from an equal increase in all prices, and empirical literature indeed does not find a consistent relationship between inflation and inequality.
- **Inflation inequality is more persistent and significant in countries where energy constitutes a relatively larger part of the household consumption basket and renting is rare.** In these countries the counteractive effect of slow-moving rents on poorer household purchasing power is either minor or absent.
- **One needs to distinguish between temporary shocks to inequality due to specific relative price shocks (e.g. an energy price increase) from structural changes (automation, trade, etc.).**
- **The higher food and energy prices of year 2022-2023 are widely expected to translate into higher inequality as food and energy account for a larger share of expenditure for lower-income households.**
- **However, there are offsetting effects from rents and luxury goods. Higher-income households spend more on transport and accommodation, the prices of which have gone up more than the average HICP.**
- **Rents have lagged inflation in year 2022-2023. This tends to improve the income distribution because low-income households are more likely to be renters and spend a larger share of their income on rent.** The importance of rents in the consumption basket varies considerably across income groups.
- **Using a weighted average for the euro area, we find little difference in the impact of inflation on high- and low-income households.**
- **Throughout the euro area, wages have increased, but less than consumer prices.** Real wages have thus fallen almost everywhere.
- **Across countries there is little tendency for wages to rise more where inflation is higher** and thus no evidence of a wage price spiral.
- **We find that in the large euro area countries wages have increased somewhat more in low-wage sectors, which should improve income distribution.**
- The impact of a tighter monetary policy on inequality is in general uncertain but could well have been positive in this particular episode.

1. INTRODUCTION

Inflation denotes a general increase in the price level. If all prices increase by the same percentage, i.e. if relative prices are constant, inflation has the same impact on all income classes and thus no impact on (income) inequality.

Yet, relative prices change constantly, giving the impression that inflation is responsible for the shifts in relative purchasing power that are caused by relative price changes, which in turn are the result of deeper underlying changes in the economy, as eloquently formulated by Ben Bernanke:

"The degree of inequality we see today is primarily the result of deep structural changes in our economy that have taken place over many years, including globalization, technological progress, demographic trends, and institutional change in the labor market and elsewhere. By comparison to the influence of these long-term factors, the effects of monetary policy on inequality are almost certainly modest and transient"

(Bernanke, 2015).

In general, there is no reason to believe that inflation has a significant causal effect on inequality. However, there could still be a significant temporal correlation between inflation and inequality. Some empirical research has found a U-shaped relationship between inflation and inequality, with inequality rising both at very low and very high rates of inflation. Inequality should fall as inflation rises from zero, reaching a minimum at an inflation rate of about 13% (Monnin, 2014), but then increasing rapidly as inflation escalates beyond this threshold. There is also a difference between developed and developing countries (Siami-Namini and Hudson, 2019).

In examining the particular situation of the euro area in year 2022-2023, one needs to distinguish between two effects: the rise in energy prices (a change in relative prices) and the overall increase in the price level, which was largely unanticipated.

The increase in energy prices matters for income redistribution, as energy (mostly heating in northern Europe) constitutes a larger part of the budget of lower-income households; it is natural to assume that higher energy prices exacerbate income inequality. This is also true, *a fortiori*, of food prices, whose increases have a greater impact on low- than high-income households (Battistini et al., 2023).

However, we find that, for most large euro area countries, the inflation rate adjusted for different consumption patterns in 2022 was very similar between the lowest and highest income quintiles. One reason for this surprising finding is that higher-income households spend more on restaurants and travel, which have seen higher price increases as well.

Moreover, rents have risen at a slower pace than the overall harmonised index of consumer prices (HICP) (and also than core inflation). This represents an advantage for lower-income households, which tend to have lower rates of owner-occupation.

In comparison, the costs of owner-occupied housing, which are not included in the official inflation measures¹ and have greater weights in higher-income household costs, have increased at a higher rate than core inflation.

Surprise inflation is also likely to diminish wealth inequality, because higher-income households hold larger assets fixed in nominal terms like bank accounts and bonds. In addition, poorer households are more likely to rent, and rents are usually not indexed to prices.

¹ For more details see Gros and Shamsfakhr (2021).

2. DIFFERENCES IN CONSUMPTION SHARES AND EFFECTIVE INFLATION RATES

Eurostat publishes the HICP only in a version for all consumers, which is based on the average spending pattern of households. To calculate the effective inflation rates for different households, one has to use the expenditure shares of various income groups (usually quintiles) to weight the contribution of assorted goods and services to the overall inflation rate as perceived by these income groups – in the sense that this effective inflation rate better reflects the loss of purchasing power of the groups' consumption expenditure.

2.1. The evolution of sectoral inflation rates

Figure 1 below illustrates the evolution of some of the main items of the HICP relative to the overall HICP average. The items above zero represent those whose prices have gone up by more than average, those below the line the opposite. This figure thus does not show overall inflation, but the changes in relative prices that have taken place since 2022.

The main items that have become relatively more expensive are the usual suspects: energy, food and transport.

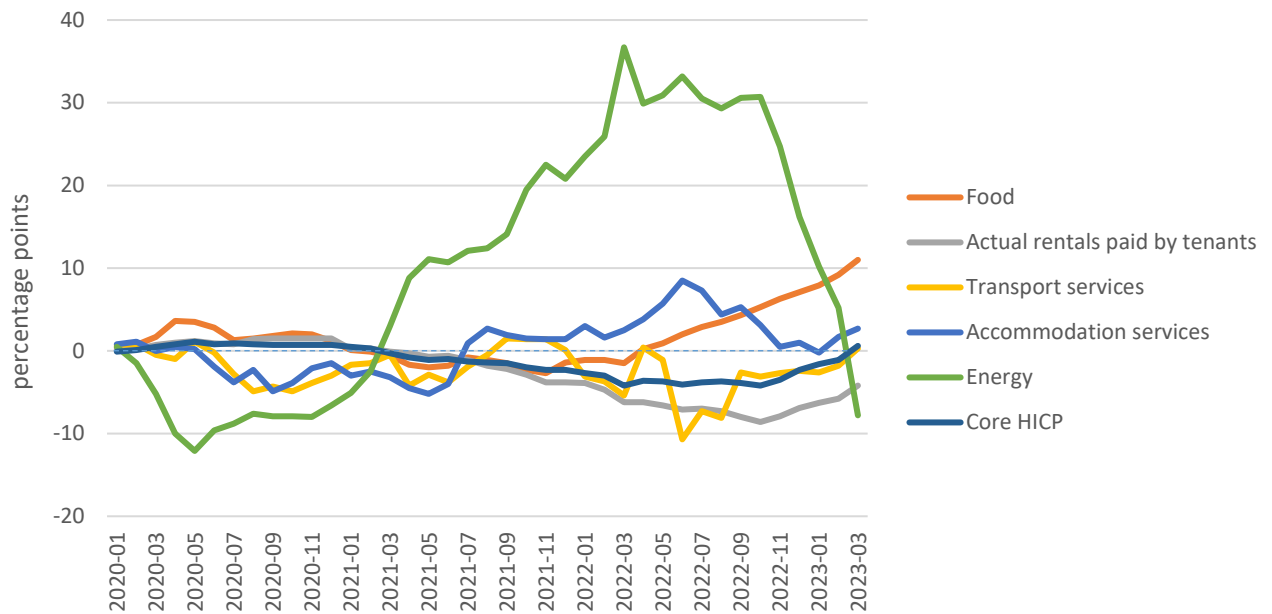
One major item, besides energy and food, that absorbs a large share of household expenditure is rent (as we will show below, it represents a large proportion of the living costs of lower-income households, with their low probability of owning a dwelling). The figure shows that, so far at least, rents have increased consistently less than the overall inflation rate. Bobasu et al. (2023) provide a similar picture.

Energy prices clearly represent an outlier. During 2022, they increased an order of magnitude more than other categories, but they are now (based on April 2023 data) only slightly higher than 12 months ago, while other prices have continued to increase.

One has to keep in mind that the energy component of the HICP is only loosely connected to the market prices of gas and electricity, because the retail prices that enter the HICP are regulated at the national level (Gros and Shamsfakhr, 2022).

The line for rents is consistently below zero, indicating that rents have become cheaper over time, at least relative to most other goods. (Eurostat calls this “actual rental” to distinguish rent payments from the imputed rents for owner-occupied housing.) The acceleration in food prices is a relatively recent phenomenon.

The time path of energy price inflation (here not market prices, but those paid by households) since 2020 illustrates also the importance of what base period is used. HICP energy price inflation had reached 30% on an annual basis already before the invasion of Ukraine and the ensuing spike in natural gas prices in the summer of 2022.

Figure 1: Relative sectoral inflation in the euro area

Source: Authors' elaboration based on data from Eurostat.

Note: The relative changes are calculated as the difference between the item inflation and overall HICP inflation.

2.2. Consumption shares by income group

The key ingredient in calculating effective inflation rates by income group are the shares that different income groups spend on the separate, main expenditure items of the HICP. The one distinction most observers concentrate on is that low-income households spend more on energy (Charalampakis et al., 2022). However, as will become clearer later, there are other, sometimes more important differences.

A key source of such information is a dataset on the structure of consumption expenditure by income quintile and consumption purpose, which uses Eurostat's European Classification of Individual Consumption by Purpose (ECOICOP). In Table 1, three parts (a, b and c) draw from this source to illustrate the large differences across income groups and across countries. As illustrative examples, we consider Germany and Bulgaria representing the high and low income EU economies with very high and very low rate of home ownership, respectively.

Table 1: Percentage share of overall consumption on different items – rents, transport and food, 2010

Part a) Actual rental	Bottom income quintile	Top income quintile	Difference between the bottom and top
Euro area	17.0	2.8	14.2
Germany	27.7	2.8	24.9
Bulgaria	0.2	0.1	0.1
Difference BG-DE	27.5	2.7	–

Part b) Transport	Bottom income quintile	Top income quintile	Difference between the bottom and top
Euro area	8.8	15.3	-6.5
Germany	1.7	7.2	-5.5
Bulgaria	7.9	16.7	-8.8
Difference BG-DE	-6.2	-9.5	–

Part c) Food	Bottom income quintile	Top income quintile	Difference between the bottom and top
Euro area	16.2	11.7	4.5
Germany	14.9	9.6	5.3
Bulgaria	41.8	24.4	17.4
Difference BG-DE	-26.9	-14.8	–

Source: Authors' elaboration based on data from Eurostat.

Note: The latest data available are from 2010.

Table 1, part (a) illustrates a large difference across Member States and across income quintiles in the importance of rents. In a country like Bulgaria, where almost everyone lives in owner-occupied housing (because housing was given to those who lived there at the start of the transition) rents play almost no role, even for the lowest quintile. By contrast, in Germany, renting is much more prevalent, especially among the poorer parts of the population. This is the reason rents account for over 27 % of expenditure for the lowest quintile, and only one tenth of that for the highest quintile. For the lowest income quintile, the vertical cross-country difference is as great as the horizontal one (across income levels).

Part (b) shows that the share of income spent on transport by the highest income group is almost twice as high as that of the lowest quintile on average for the euro area, with an even larger proportional difference for Germany. In this case the horizontal differences are about the same size as the vertical, cross-country ones.

Part (c) of the table provides data for the expenditure shares on food. Here too the differences across countries are particularly sharp. In a relatively poorer country like Bulgaria, the lowest quintile spends about 42 % on food alone – a percentage that is three times higher than in Germany, where even the lowest income group spends only 14 % on this item. The differences are once again very large across countries.

These selected examples for three major expenditure categories illustrate why one should expect big differences in the effective inflation rates across countries. They also show how much the importance of rents varies across countries (as discussed in Gros and Shamsfakhr, 2021).

2.3. Effective inflation rates by income quintiles

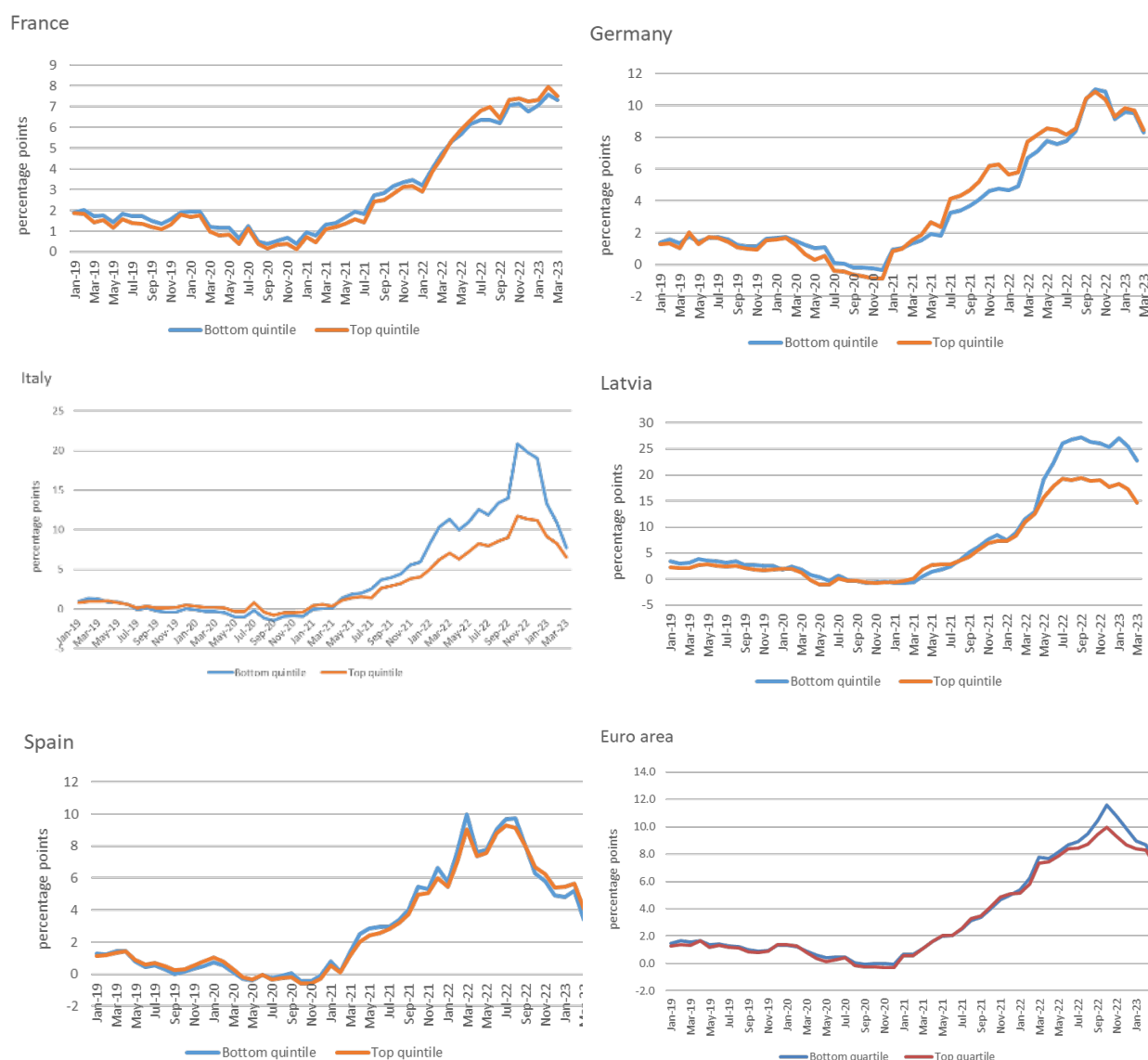
Claeys et al. (2022) calculate the impact of inflation on various income quintiles in the way described above using data from consumption shares by country, which they collect from national statistics and the corresponding HICP components. They find that for a number of Member States price developments had a much stronger impact on the purchasing power of households in the lowest quintile than for those in the top quintile. This was the case especially in 2022, when energy prices soared.

More recently, one finds more and more Member States with the opposite pattern. One reason for this is that energy prices are no longer rising more than the average as illustrated above, but rents continue their trend of below-average growth. Another reason is that higher-income households spend relatively more on restaurants and travel, items that also have experienced noticeable price increases.

For the larger Member States and the (weighted) average of the euro area, Figure 2 below shows the evolution of the inflation rate as perceived by the lowest and highest quintiles over a longer period using the data from Claeys et al. (2022).

It is apparent that for France and Germany, the inflation rate as perceived by the two income groups was essentially the same, but for different reasons, at least over the last few years. In Germany, the high proportion of renters provides an offset against higher energy prices, whereas in France household energy prices remained low because of government regulation and subsidies. A similar strong alignment between the two income quintiles can be observed in Spain. In Italy, a wide gap had opened up in late 2022 because of a one-month jump in energy prices, but this gap has since narrowed. The same pattern is observed for the euro area average, where country size, based on GDP, is incorporated.

Figure 2 also shows that the income inflation gap has been closed for the euro area average and for all the large countries. However, for some smaller countries a gap persists. Inflation inequality nonetheless appears to be more persistent and significant in countries where energy constitutes a relatively larger part of the household consumption basket in general. Latvia stands out with inflation inequality of more than 8 percentage points. (Figure 2). For more countries, see the Annex.

Figure 2: Inflation inequality in the euro area


Source: Authors' elaboration based on data from Bruegel.

Note: GDP weights are used for calculating the euro area average.

The results of Menyhért (2022) are similar, but not identical due to the use of somewhat different data for expenditure shares. He documents that despite the discrepancies in the shares of food and energy in the consumption expenditures of different income groups, recent price surges for these goods (particularly during 2022) do not appear to have resulted in a major change to the existing gaps in living costs between the lowest- and highest-income households in most euro area economies. But this trend does not hold for three Member States: Estonia, Italy and Latvia. In these countries, the gap is estimated to have increased by 3-5 percentage points, based on data for August 2021-2022 (Menyhért, 2022). The same analysis shows a large increase in the cost of living, driven by energy and food price hikes, for higher-income groups in the high-income Member States, including Germany and the Netherlands.

Gürer and Weichenrieder (2020) look at a longer period (since the start of economic and monetary union (EMU)) and find a “[p]ro-rich inflation in Europe”. Their result is due to a combination of two factors: first, energy prices were on an upwards trend over this period, as the start of EMU had coincided with a trough in crude oil and gas prices; second, rents increased slightly more than most other prices over this longer period.

2.4. Problems with calculating effective inflation rates

There are several reasons why one should consider the effective inflation rates by income as an approximation.

The data on expenditure shares by income quintiles become available with a lag of several years. The latest run of the ECOICOP with (almost) complete data is from 2010. These shares are of course likely to have changed since then.

The sources for the expenditure shares are national and the definitions of some items might vary from country to country.

The classification used for expenditure shares is not exactly the same as that used for the HICP as shown above. One important problem here concerns housing. As mentioned above, Eurostat, uses the ECOICOP classification to categorise household expenditures. Under ECOICOP, the expenditure group related to housing, water, electricity and gas is referred to as HCEGF (housing, water, electricity, gas and other fuels). It includes not only rentals, but also imputed rentals of owner-occupied housing. This component represents the estimated rental value of owner-occupied housing, which is imputed as a consumption item for households that own their homes. But as this consumption item does not involve out-of-pocket expenditure for the household it is not used in the HICP.

If one multiplies the expenditure shares with the HICP indices for the corresponding classes of goods or services, one must assume that low- and high-income households consume the same goods. This is highly unlikely to be the case. High-income households are likely to consume higher quality goods and have higher quality housing. This would not matter much if over short periods, e.g. the year-to-year data used to calculate inflation rates, the prices of low- and high-quality goods (within the same category) evolve following the same pattern. This is highly unlikely to have been the case in the recent past. For example, the prices of more processed food would be less affected by higher prices for energy than unprocessed food because they contain more costs of processing, marketing and distribution. This would imply that the prices of the food consumed by low-income households, especially staples, might have increased more than the “deli” food bought by high-income households. For renters the opposite might be the case, as demand for high-quality housing by homeworking professionals has increased.

As an aside, we note that the costs of owner-occupied housing, which are not included in the official inflation measures² and have greater weights in higher-income household costs, have increased at a higher rate than core inflation. This implies a loss of purchasing power that does not enter the calculations for the effective inflation rates because owner-occupied housing is not in the HICP.

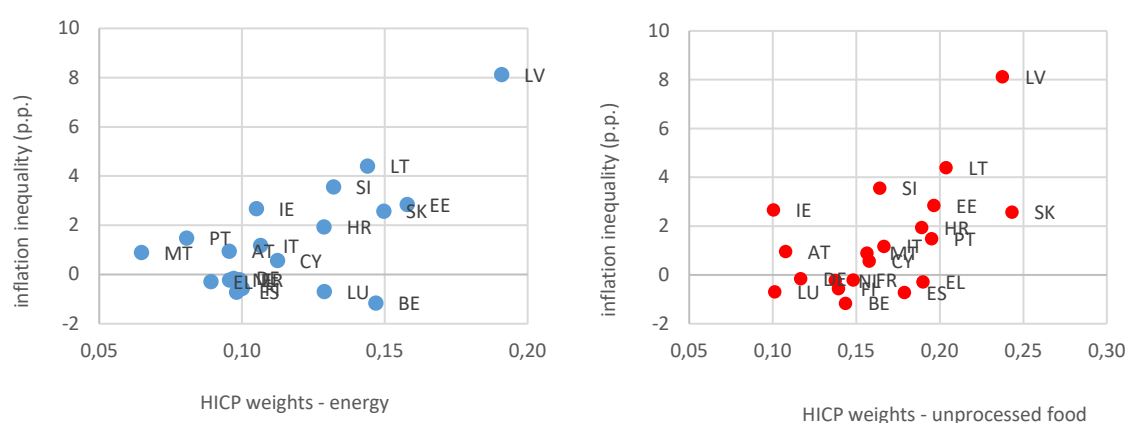
² For more details, see Gros and Shamsfakhr (2021).

3. EXPLAINING THE DIFFERENCES IN EFFECTIVE INFLATION RATES

The factors that could explain the differences in inflation rates facing households at the bottom and at the top income quintiles have already been hinted at above.

As energy and food are the most commonly cited culprits, we first show the bilateral correlation between the expenditure shares and the difference in the inflation rates by income and the expenditure shares on these two items. The scatterplots in Figure 3 below show that there is indeed a positive correlation, with higher expenditure shares on food and energy being associated with greater inflation inequality, i.e. the difference between the inflation rates as perceived by the lowest and highest quintiles.

Figure 3: Inflation inequality based on energy and food importance in the euro area consumer basket – a cross-country comparison



Source: Authors' elaboration based on data from Bruegel (March 2023) and Eurostat.

However, as discussed above, energy and food are not the only factors behind the discrepancies observed in inflation inequality across the euro area, as the home-ownership ratio differs considerably across Member States.

Taking this into account enables one to explain the starker inflation inequality in eastern European countries, which generally have a very high rate of home ownership and thus a very low share of rent in their HICP basket. The counteractive effect of rents on inflation is thus absent.

We therefore ran a simple cross-sectional regression with the measure of inflation inequality as the dependent variable and two explanatory variables, namely the share of rent in expenditure and the sum of the shares of food and energy (Table 2).

Table 2: Relationship between HICP items and inflation inequality in the euro area

	Estimated coefficients	Standard error	T-statistic	P-value
Intercept	-0.99	1.66	-0.60	0.56
Food + energy	0.01	0.00	2.38	0.03
Rent	-0.03	0.01	-3.17	0.00

Source: Authors' calculations based on Eurostat and Bruegel data.

Notes: The dependent variable is the inflation gap (between the bottom and top income quantiles). Two dummies are included in the regression for Italy and Ireland.

Our statistical analysis of the relationship between inflation inequality and the HICP weights for energy and rent also confirms this effect, finding that a unit increase in the weights for energy and food is associated with an increase of about 0.01 percentage points in the measured inflation inequality, on average. On the other hand, a unit rise in the HICP weight for rent is correlated with a decrease of around 0.03 percentage points in inflation inequality across the euro area³. The differences across countries in the impact of inflation on income inequality in year 2022-2023 can thus be explained by the cross-country differences in the composition of consumption baskets.

Another important factor explaining cross-country differences in energy price inflation is that the price paid by households is only partially based on the energy content (be it natural gas or KWh delivered) with network costs and various taxes and levies being much more important. Some governments have drastically lowered these burdens on consumers to mitigate the impact of the energy price shock.⁴

³ More details on the regression results are available upon request.

⁴ See https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Electricity_price_statistics#Electricity_prices_for_household_consumers

4. WAGE DEVELOPMENTS

Differences in effective inflation rates by income class can indicate an effect on inequality at given incomes. But incomes have not been constant over the last year. One factor that should be looked at in particular is wages. Detailed recent information on wages by income group and by occupational level is not available; however, the data on wages by sector can to some extent be indicative of potential changes in the earnings of low- and high-income households.

Figure 4 panel a) below shows the wage increases by sector against the initial wage in that sector (with wages measured relative to the national average) for both the euro area and the entire EU average. For example, the purple dot on the upper right-hand corner indicates that a sector (professional services) whose average wage was about 30 % above the national average received a wage increase of 8% in the past 12 months.

The alignment of the dots on a negatively sloped curve suggests that high-income sectors have experienced relatively lower wage increases, which improves income inequality.

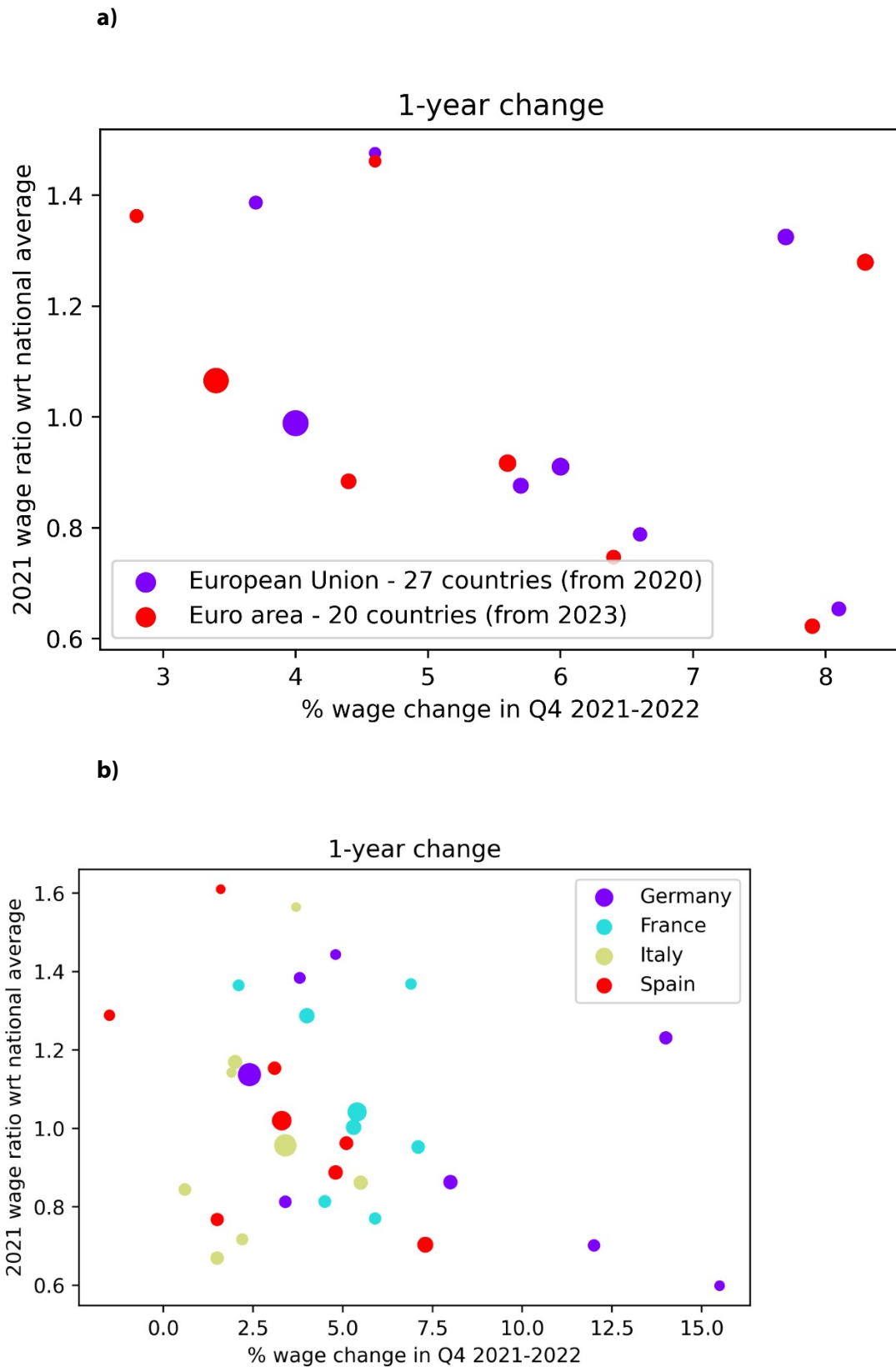
Given the large differences within the EU and the euro area, panel b) and c) show the data for the change in wages in different sectors of the four largest euro area countries. The interpretation of the dots remains the same. For example, the small red dot on the lower left-hand corner of panel b) indicates that sector in Spain with only 60% of the national average has gained a nominal increase of 15% in the past 12 months. The small red dot at the top left-hand corner indicates that a Spanish sector with salaries 60% above the national average has received also an increase of only 2%. The diameter of the dot is proportional to the importance of the sector in terms of the share of total national employment. In this case there is less of a relationship between initial wages and wage increases. Overall, panel b) suggests that the negative relationship between initial wages and wage increases in 2022 seems to be strong for Germany, but less so for Italy.

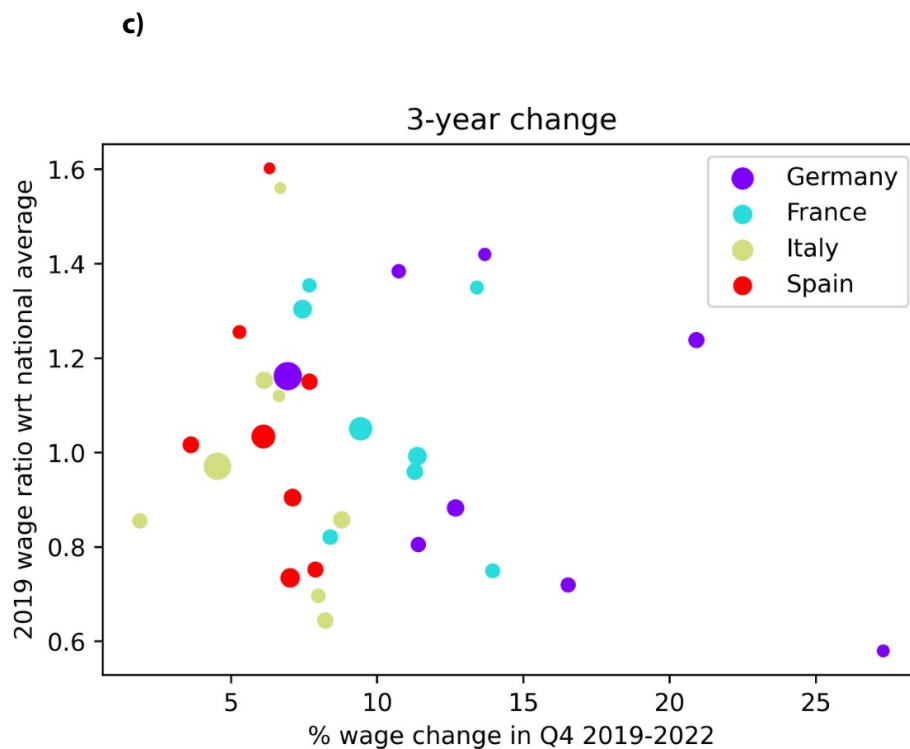
National statistics confirm this observation. In Germany, wages at the lower end of the pay scale increased much more with hourly agreed wages for unskilled workers rising by about 8% in Q4 2022 compared with the same period the previous year, but only by about 2% for senior professionals and even less for executives (Destatis, 2023). The recent agreement for the German public sector for 2023 also confirms this trend, as it includes a large one-off payment of the same amount for all, which naturally provides a bigger boost for those at the lower end of the pay scale.

The one-year change cannot be considered to indicate a trend because large changes in any particular sector might just represent a catch-up from previous years of low increases. Panel (c) in the figure thus reports the change over the three years to the end of 2022, spanning the entire post-COVID-19 period. The relationship between the starting level and the subsequent change now appears much weaker.

Overall, these observations show that the wage developments have, at least so far, contributed to lowering inequality. However, there are stark differences across countries. In some of the newer Member States there is no indication that incomes have increased more in low-wage sectors than others.⁵

⁵ Additional data available upon request.

Figure 4: Changes in relative wages



Source: Authors' elaboration based on Eurostat data.

Note: The size of the bubbles indicates the share of the sector in total employment.

Higher wages lead to higher labor income only if employment is at least stable. Overall employment has actually increased through this tightening cycle, at least so far. But this could mask different sectoral evolutions. Bobasu et al. (2023) provide evidence on unemployment rates by income groups and show that they have declined more for the lowest income group.

4.1. Wages and inflation

For the European Central Bank (ECB), a key concern is that wages might increase in response to inflation, starting a wage-price spiral (Schnabel, 2022).

A recent International Monetary Fund (IMF) study that looked at the evidence for advanced countries since the 1960s concluded that "acceleration of nominal wages should not necessarily be seen as a sign that a wage-price spiral is taking hold" (Alvarez, et al., 2022).

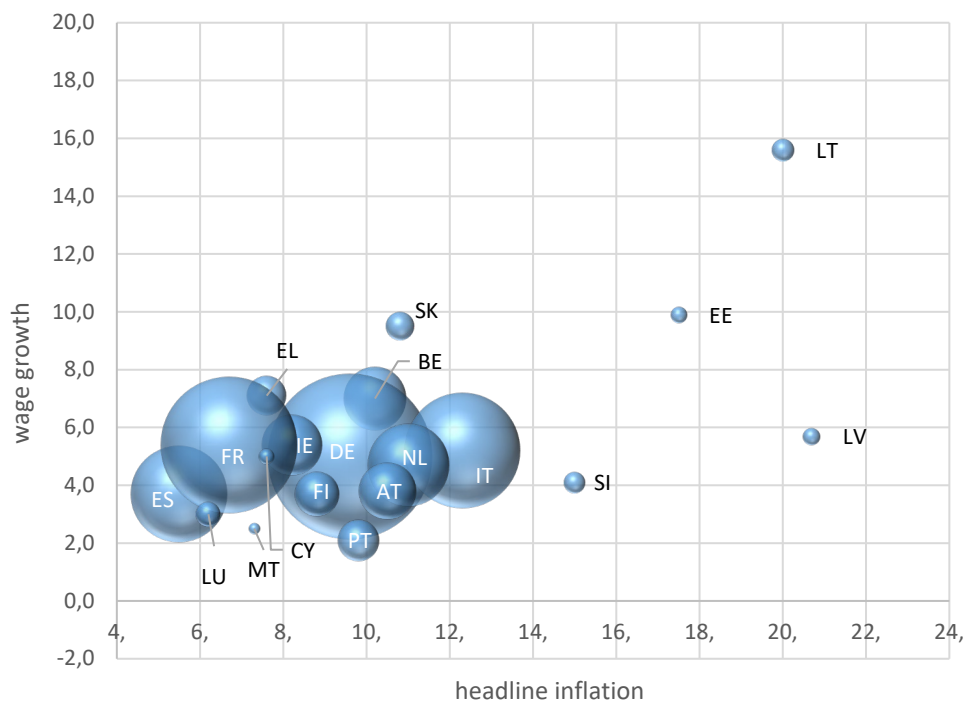
It is of course too early to conclude that this is the case today as well. We provide one piece of evidence that would support the hypothesis that a wage-price spiral has not yet taken hold in the euro area by looking at the cross-country evidence.

In Figure 5 below we compare the recent changes (in the 12 months to end 2022) in nominal wages and salaries with headline HICP inflation rates across the euro area countries.

We see a relatively low correlation between wage growth and headline inflation. Interestingly, the three countries with the greatest degree of registered inflation inequality – namely Latvia, Lithuania and Estonia (particularly Latvia with the widest inflation gap (8 percentage points) between the bottom and top income quantiles) – have also experienced relatively high wage increases, which create a statistically significant correlation between inflation and wage increases. Excluding these three countries from the calculations, the correlation coefficient between wage and price increases

drops to around 13% and is no longer statistically significant. This simple cross-country observation therefore does not support the hypothesis that a wage-price spiral has taken hold in the euro area.

Figure 5: Relationship between headline inflation and wage growth, Q4 2022
(annual rate of change)



Source: Authors' elaboration based on Eurostat data.

Note: The size of the bubbles indicates the size of the economy based on nominal GDP.

5. MEDIUM-TERM DEVELOPMENTS IN INFLATION AND INEQUALITY IN THE EURO AREA

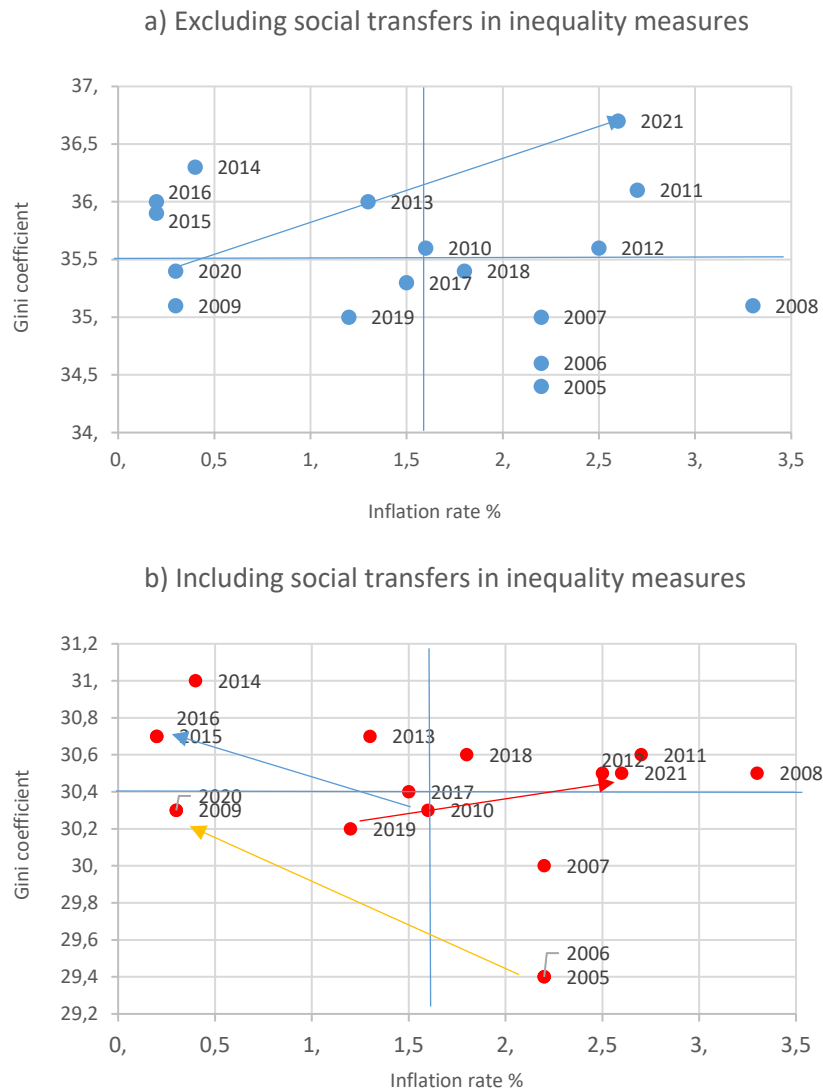
Overall, the relationship between inflation and inequality is complex and multifaceted. There is no theory that explains the channels through which inflation and income distribution interact. Yet, some empirical research based on a sample of Organisation for Economic Co-operation and Development (OECD) economies has found a U-shaped relationship between inflation and inequality, with inequality increasing at both very low and very high rates of inflation. Inequality should fall with inflation, reaching a minimum at an inflation rate of about 13 % (Galli and van der Hoeven, 2001; Monnin, 2014; Siami-Namini and Hudson, 2019).

Figure 6 maps the inflation rate against a common measure of income inequality in the euro area over the period 2005-2021. Broadly speaking, two episodes can be distinguished here. First, the years before and during the 2009 financial crisis mostly featured an above-average inflation rate and a relatively lower level of income inequality. The second episode relates to the aftermath of the euro area sovereign debt crisis, where a very low inflation rate is accompanied by relatively higher levels of income inequality.

The 2009 financial crisis had a significant impact on inequality and inflation in the euro area. The crisis led to a sharp economic contraction followed by a period of low inflation. However, the impact of the financial crisis on inequality in the euro area was more complex and varied across different countries. In general, the crisis had a negative impact on income equality in many European countries, as it led to a significant increase in unemployment rates, particularly among more vulnerable groups. In addition, the crisis had a large impact on housing and asset prices, which affected wealth inequality. The decline in housing prices and stock markets disproportionately affected those who held significant wealth in these assets, while those with lower levels of wealth were less affected.

The euro area debt crisis (2010-2012) also tended to affect both inequality and inflation but asymmetrically, mainly in the countries that were most severely affected by the crisis. Countries such as Greece, Portugal and Spain experienced high levels of unemployment and declining living standards. Furthermore, the austerity measures implemented in response to the crisis often targeted social welfare programmes and public services, which disproportionately affected lower-income groups. This coupled with reduced access to credit, increased uncertainty and lower economic growth further contributed to an increase in inequality. As for inflation, the years associated with the crisis experienced a rise in inflation more as a rebound from the effect of the preceding downturn; however, the sequence of adverse shocks constrained inflation afterwards, which persisted for several years.

Both the 2009 financial crisis and the euro area debt crisis pushed inequality and inflation rates in opposite directions – leading to higher inequality and lower inflation, albeit to different degrees. The 2020 COVID-19 crisis was not of the same nature. Between 2020 and 2021, both inflation and income inequality moved upwards, seeing the largest increase over the sample period.

Figure 6: Inflation and income inequality in the euro area, 2005-2021

Source: Authors' elaboration based on Eurostat data.

Notes: Panel (a) includes the Gini coefficient of equivalised disposable income before social transfers (pensions excluded from social transfers). The Gini coefficient scales are from 0 to 100.

By definition, disposable income includes all income from work (employee wages and self-employment earnings), as well as private income from investment and property.

The ultimate outcome in terms of income inequality in particular is determined by fiscal measures, as illustrated in Figure 6, panel (b), where social transfers are incorporated into inequality measures, pushing down the average inequality index by around 5 units. One of the elements that distinguishes the 2020 recession, induced by COVID-19, from the previous crises was the unprecedented support policies adopted by governments. It is evident that these measures considerably cushioned the adverse impact of the pandemic on income disparity, by more than 6 units. Despite this, inequality still stayed above the pre-pandemic level.

Remarkably, during this period, collapsing oil prices, mainly throughout 2020, dampened energy inflation and put downward pressure on headline inflation in the euro area (Nickel et al., 2022). Nonetheless, the gradual reopening of the economy with tight constraints still in place for some

sectors – mostly manufacturing, due to labour supply shortages and supply chain bottlenecks – resulted in a radical departure from a low-inflation environment.

A couple of implications emerge from this analysis. First, it highlights the influence of different factors contributing to a potential relationship between inflation and inequality, yet it indicates the source of inflation as the key aspect to be considered. The response of monetary and fiscal policy are other elements that need to be taken into account. The three crises, despite different origins, share one feature, which is the dominant role of income effects in driving inequality, compared with those of consumption and wealth effects. Part of this effect was buffered by income-support measures during the COVID-19 pandemic.

6. MONETARY TIGHTENING: IMPLICATIONS FOR INEQUALITY

There exists a large empirical literature on the impact of monetary policy on inequality, see for example Kappes (2022) who concludes that:

“The majority of surveyed papers find that a contractionary monetary policy worsen the income distribution, and that an expansionist policy tends to improve it.”

However, this conclusion is not universally shared, it represents only the findings of a majority of the papers surveyed. Moreover, it is possible that the impact of monetary policy on inequality is asymmetric with contractionary policy having less of a clear-cut impact than expansionary. This uncertainty is not surprising considering the many different channels through which monetary policy impacts the economy with changes in asset prices and incomes often going into different directions. Moreover, the indirect impact of monetary tightening on employment might go into a different direction.

An evaluation of the impact of the current policy stance of the ECB on inequality is further complicated by the fact that the ECB is not only increasing rates, but also engaged in (very gradual) quantitative tightening (QT) (see Gros and Shamsfakhr, 2023). Quantitative easing (QE) has generally been found to have increased inequality because of its strong impact on asset prices, see Bernoth et al (2015) for an early evaluation, but also Guerello (2018) and Montecino and Epstein (2015). The ECB has presented different results (see Lenza and Slacalek, 2019). Subject to the possible asymmetry above, one would thus expect that quantitative tightening improves income distribution.

Theoretical models suggest that the most important direct effect of monetary tightening (increases in interest rates) is intertemporal substitution (real interest rate channel) where rises in real interest rates push households to higher saving and less borrowing which in turn dampen their consumption. This channel might be more important for households at the top of the income and wealth distribution that are more likely to hold assets that are sensitive to changes in interest rates, such as stocks and bonds, and therefore more responsive to changes in the value of those assets (equity price channel). Higher interest rates can lead to decline in both stock and bond prices (Kaplan et al. 2018; Borio, 2021).

An indirect effect of monetary policy on income distribution could arise via the dampening effect of higher rates on demand, employment and thus labour income (labour income channel).

All these channels are difficult to evaluate at present. The substitution channel is unlikely to drive a large part of the transmission from interest rates to consumption as, despite the large rise in nominal interest rates, real rates are still low in the current inflationary environment. In addition to substitution effect, there is supposed to be also a negative consumption response to an increase in monthly interest payments following higher interest rate for debtor households, the classic (direct) income effect of the interest rate change (Auclert, 2019). However, poor households have, on average, little debt in Europe.

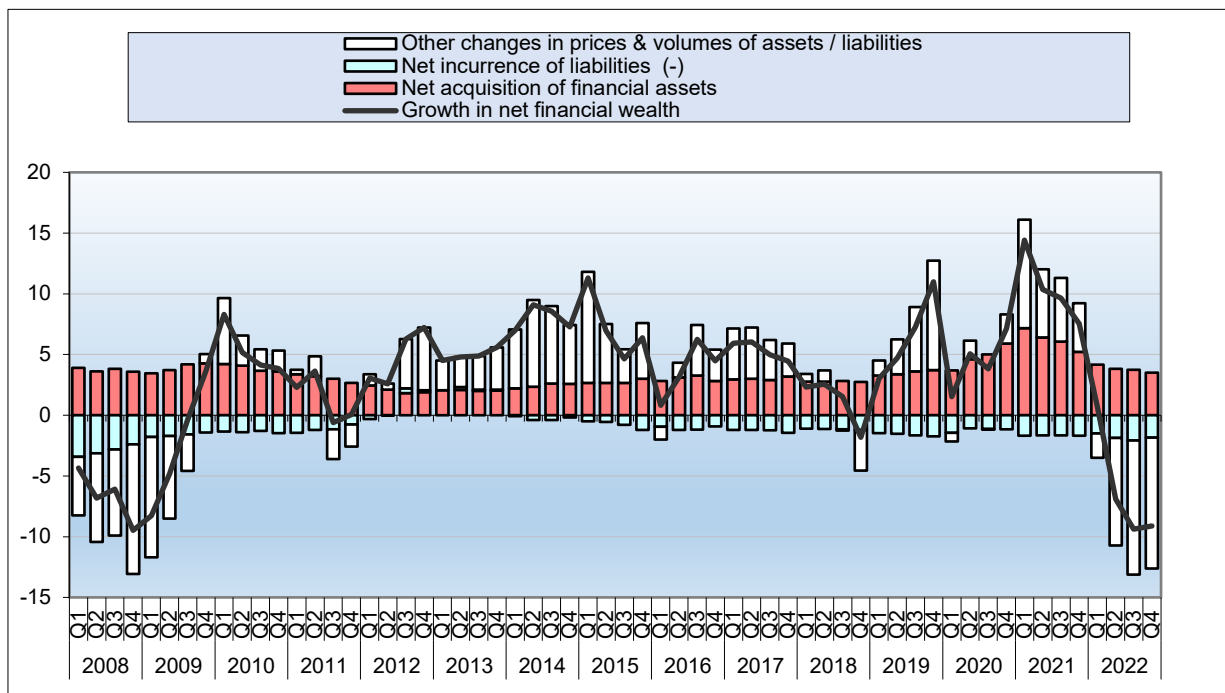
Furthermore, compensation of employees contributed to a notable growth of nominal household disposable income in the euro area over the course of 2022⁶. The labour market in the euro area is projected to remain resilient. This, coupled with the strong wage growth, is likely to prevent a substantial fall in labour demand and income towards workers in lower-income quintiles.

Hence, most of the effect of monetary tightening seems to be occurring through changes in the equity price channel. Official statistics on households' net financial assets have recorded a significant fall during 2022, comparable with that during the global financial crisis, mainly driven by a drop in the price

⁶ <https://ec.europa.eu/eurostat/web/sector-accounts/detailed-charts/households-npish>

of the assets held (Figure 6). These assets mostly consist of share and equities, Insurance technical reserves, financial derivatives etc held by higher income groups.

Figure 7: Changes in household financial assets, liabilities and net financial wealth in the euro area



Source: ECB.

Altogether, rising interest rate to tame inflation coupled with QT seem to have hurt more high-income households.

7. CONCLUSION

The ECB is responsible for keeping the overall price level stable, not specific prices that are particularly politically sensitive. The relative prices of individual goods and services can, and should, change all the time. The increase in household energy prices over the last year was a direct consequence of the scarcity of natural gas.

Given that energy is more important for low-income households, it is natural to fear that this inflation would lead to a worsening of the income distribution. However, that fear has largely not materialised because rents – which are also more important for low-income households – have risen less than the overall price level. Rents are usually fixed in nominal amounts and hence follow inflation with a lag, even where they are indexed.

It goes without saying that inflation reduces the purchasing power of all incomes, whether high or low. The argument made in this paper is that the reduction has not been greater for low-income households – at least on average for the euro area. However, in most of the “new” Member States, the impact of energy prices has been higher and the counter-vailing influence of rents lower because of very high rates of home ownership. In these countries, the cumulative effect of higher energy prices remains important even if (household) energy prices do not increase any further.

Finally, we also find that wage incomes have risen more (or fallen less in real terms) for low-income occupations. Here again we find a difference between the larger “old” euro area Member States and some of the others.

The overall conclusion from the observations on inflation and wages is that the surge in energy prices, which has a wider inflationary effect, has made most people worse off, but, on average, there is little difference in the loss of purchasing power between the poor and the rich.

We discuss only briefly the impact of monetary policy on inequality noting that the majority of the literature had concluded that an expansionary policy stance, and in particular QE might increase inequality via differences in asset holdings. The current stance (which includes QT) could thus, a priori, be expected to improve inequality. However, given the special situation that the ECB is facing at present this is by no means certain.

It is ultimately up to fiscal policy in its widest sense, not only taxes, but also the entire social security system, to deal with inequality. An analysis how different countries have fared in this sense is outside the scope of the present contribution.

The year 2023 could be partially be the opposite of 2022 with energy prices falling (compared to the 2022 level) instead of increasing. With rents continuing to increase less than other prices, the inflation rate perceived by lower income households could fall drastically.

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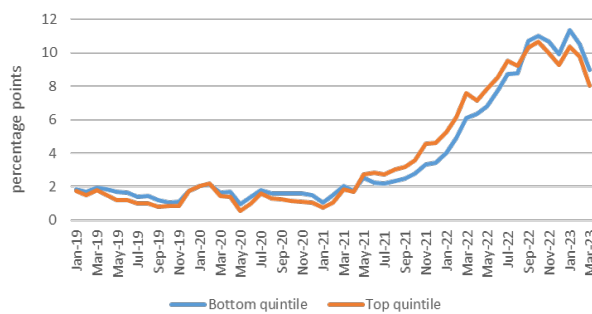
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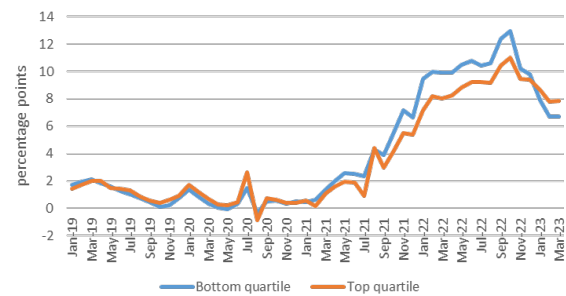
ANNEX

Figure A.1: Inflation inequality – euro area countries

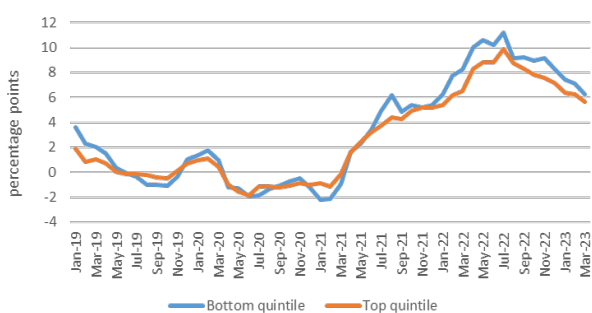
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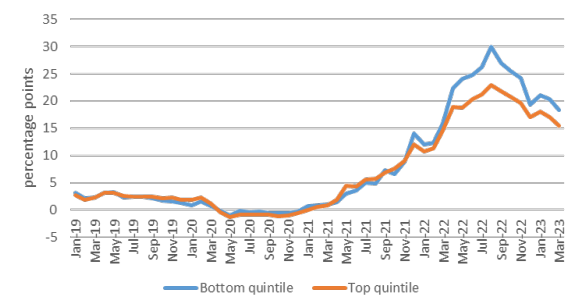
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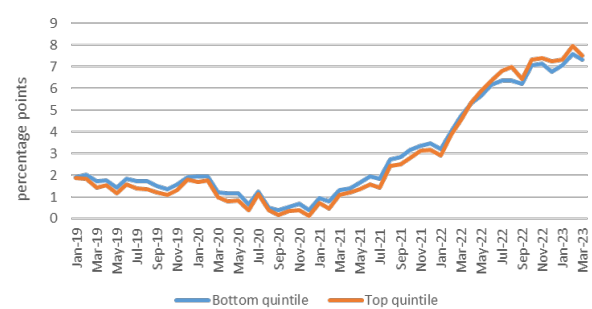
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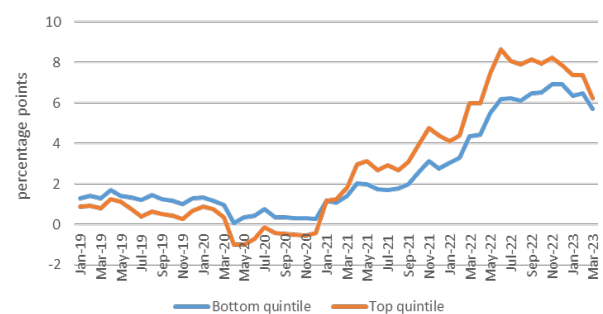
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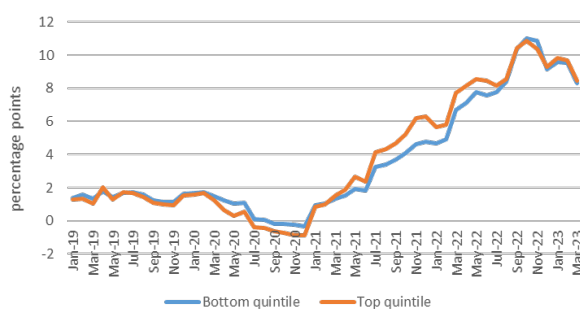
France



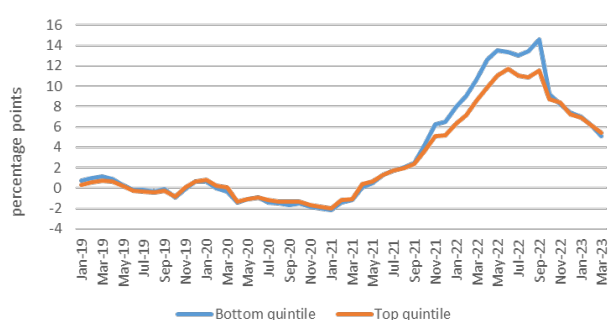
Finland



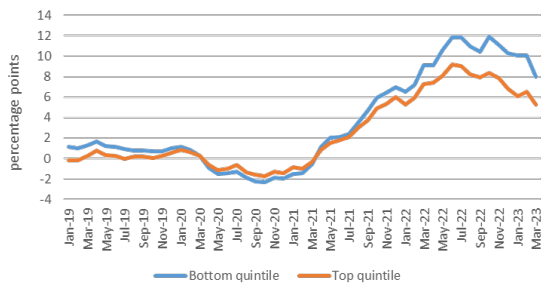
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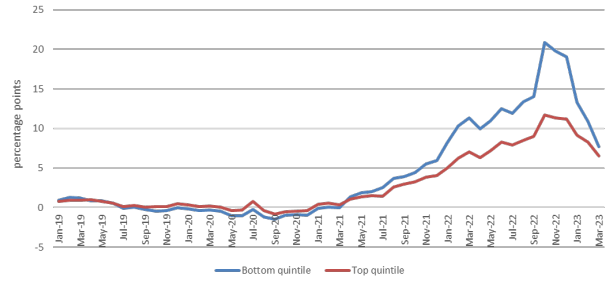
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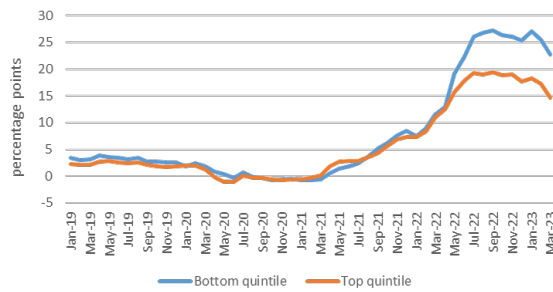
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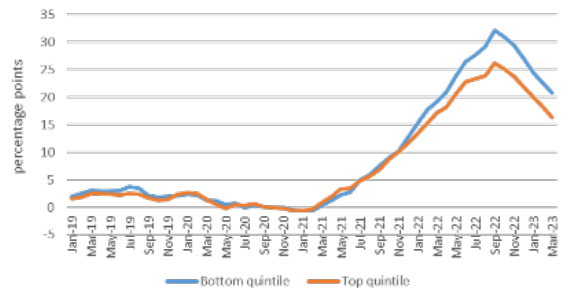
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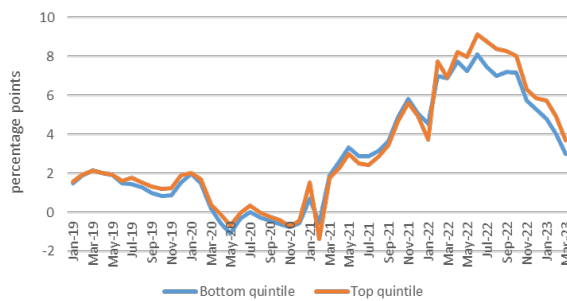
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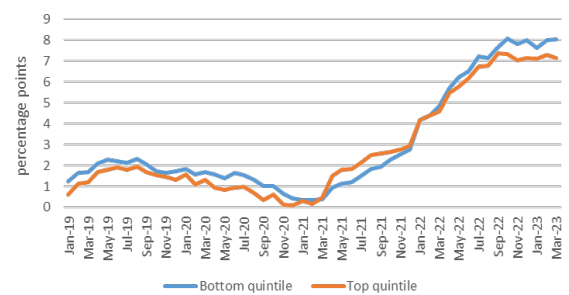
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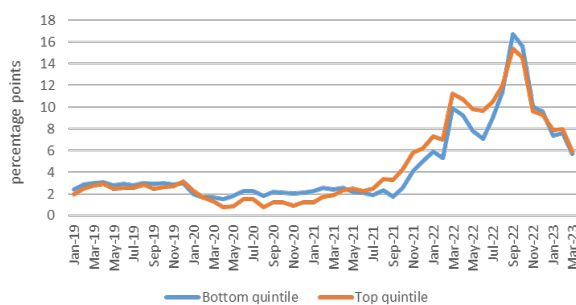
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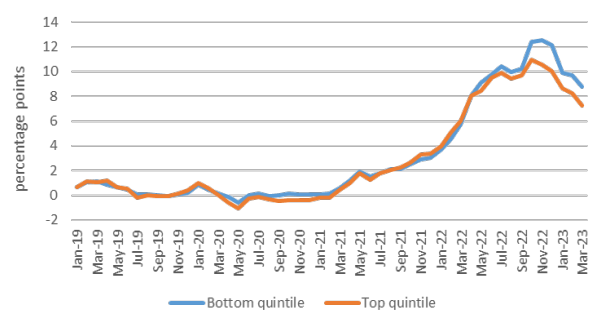
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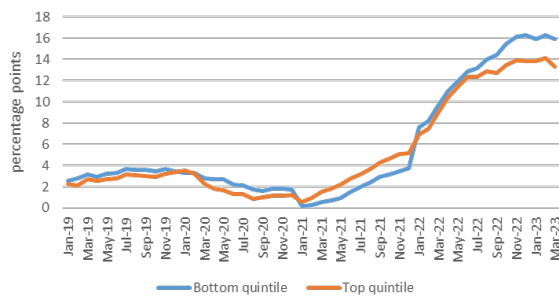
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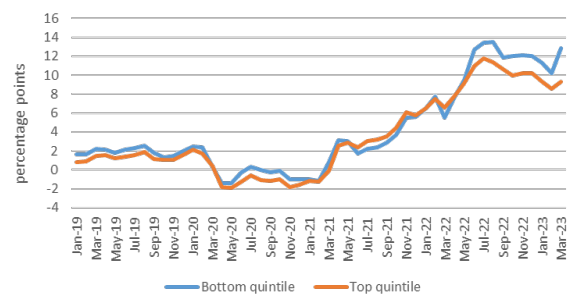
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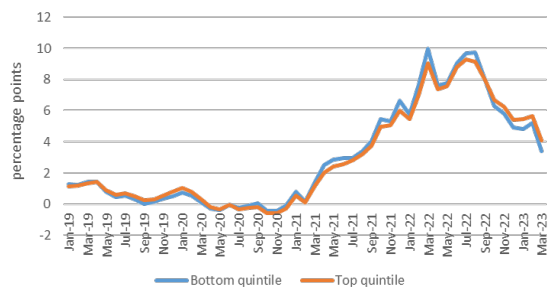
Slovakia



Slovenia



Spain



Source: Authors' elaboration based on data from Bruegel.

Inflation is often confused with changes in relative prices. The recent sharp increase in energy prices, which has also pushed up food prices, has hit poorer households especially hard, thus creating the impression that inflation increases inequality. However, it is the large changes in relative prices and not the average inflation rate (of now 7%) that is the real problem. We also show that rents – which are more important for low-income households – provide a significant offset for higher energy prices on average for the euro area, as they have lagged inflation, albeit with large differences across countries.

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