STUDY

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Monetary Dialogue Papers, June 2023

European Parliament

The effects of high inflation and monetary tightening on the real economy

Compilation of papers

Supporting monetary policy scrutiny

Economic Governance and EMU Scrutiny Unit (EGOV)
Directorate-General for Internal Policies
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The effects of high inflation and monetary tightening on the real economy

Compilation of papers
Monetary Dialogue June 2023

Abstract

High inflation negatively affects firms and households in a variety of ways, including by eroding real incomes and by widening inequality. Central banks responded by tightening monetary policy stances significantly. This has naturally constrained demand through rising borrowing costs and smaller credit flows to the real economy. The negative impact on economic activity and growth is a standard feature of tightening, yet it deserve to be closely monitored.

Four papers were prepared by the ECON Committee's Monetary Expert Panel, discussing how the real economy is impacted by high inflation and monetary tightening.

This document was provided by the Economic Governance and EMU Scrutiny Unit at the request of the Committee on Economic and Monetary Affairs (ECON) ahead of the Monetary Dialogue with the ECB President on 5 June 2023.

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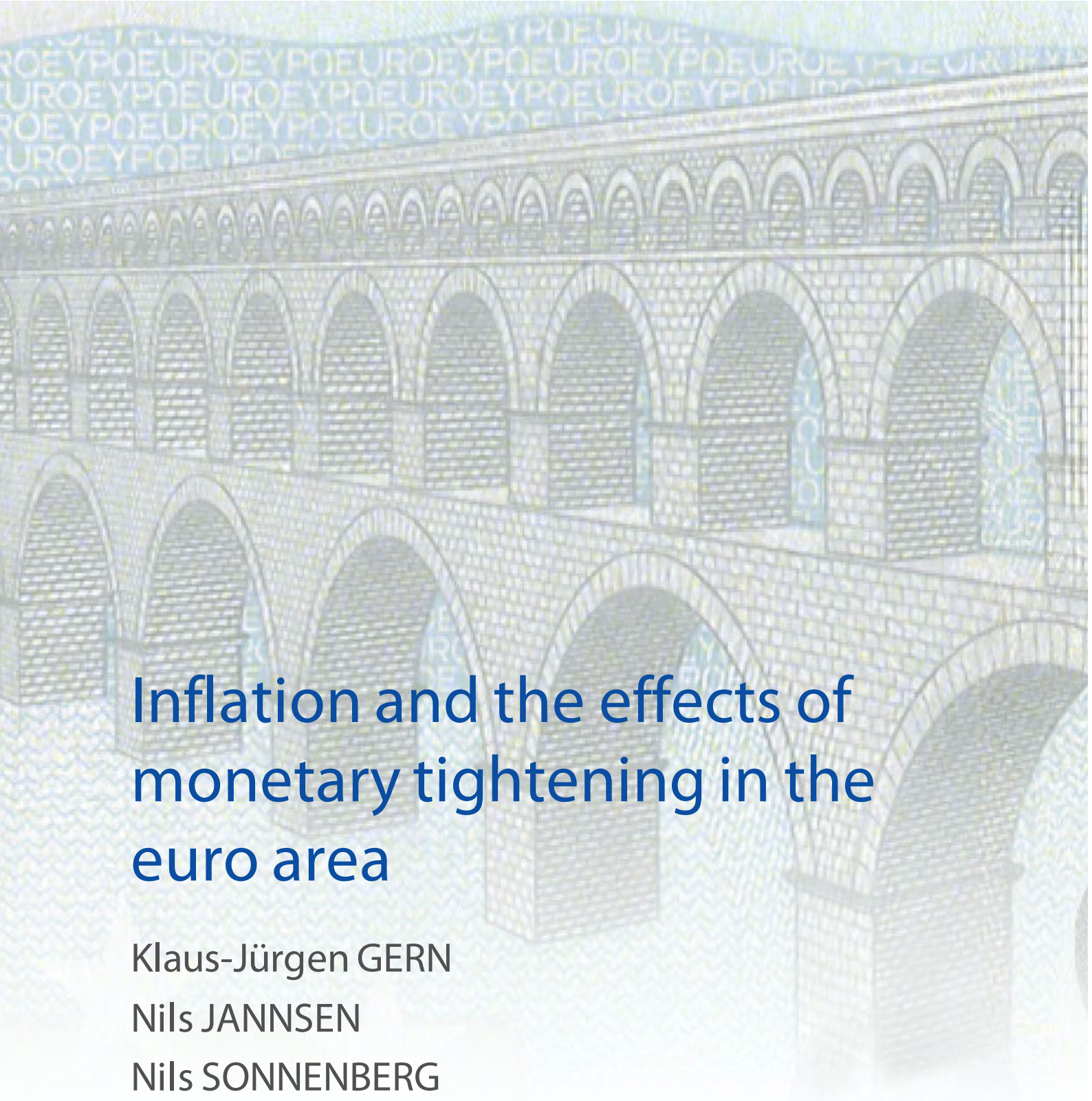

Inflation and the effects of monetary tightening in the euro area

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Abstract

After inflation in the euro area started to rise to unprecedented levels, the ECB has tightened monetary policy rapidly. We analyse the implications of high inflation and the effects of monetary policy tightening on the euro area economy. While financial conditions have already tightened significantly, the size and timing of the impact on the real economy is more difficult to assess. Distributional effects can be expected to be modest and should not be a major concern for monetary policy.

This document was provided by the Economic Governance and EMU Scrutiny Unit at the request of the Committee on Economic and Monetary Affairs (ECON) ahead of the Monetary Dialogue with the ECB President on 5 June 2023.

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LIST OF ABBREVIATIONS

ECB	European Central Bank
EU	European Union
GDP	Gross domestic product
NEIG	Non-energy industrial goods
TLTRO	Targeted longer-term refinancing operations
TPI	Transmission protection instrument
OIS	Overnight index swap

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EXECUTIVE SUMMARY

- **The increase in inflation in the euro area since 2021 has been driven by higher import prices for energy goods and food, as well as by domestic factors.** While the contribution from energy has diminished, inflation is now mainly driven by domestic factors, which are reflected in high capacity utilisation. Capacity utilisation is high because both temporary and permanent factors have dampened production capacity and the post-pandemic recovery has boosted demand. Limited supply and robust demand have led to an increase in firms' gross operating surpluses, while wages will only increase with some delay. Given the low level of real unit labour costs, higher wages will not necessarily lead to strong second-round effects on inflation from a cost perspective, but will stimulate demand and thus delay the deceleration of inflation.
- **Individual inflation rates have been heterogeneous across households, but only provide an incomplete measure of hardship caused by high inflation.** In most European countries, group-specific inflation rates have risen more for poor households because energy and food have higher weights in their consumptions baskets. From a general perspective, hardship due to rising prices tends to be higher for poor households anyway, because they can rely less on savings and have less scope to adjust their consumption basket. For a more comprehensive picture of hardship due to higher prices, the drivers of inflation need to be taken into account, because a domestically-driven inflation may have different effects than an imported inflation.
- **The normalisation of monetary policy of the ECB has led to a significant tightening of financial conditions.** Government bond yields and lending rates for private households and firms have risen sharply. Credit standards of banks have also been tightened. As a result, the issuance of new housing loans has fallen sharply. The speed with which the tighter monetary policy is fully reflected in higher interest rate expenditures by governments and the private sector depends on the maturity and the proportion of outstanding debt with flexible interest rates.
- **It is uncertain how large the impact of tighter monetary policy on the real economy will be and when it will reach its full effect.** The steep decline in housing loans suggests that tighter monetary policy is already having a significant impact on construction investment. However, it is difficult to quantify the impact of monetary policy on the real economy and inflation due to varying time lags in the transmission channels and the relevance of the general economic environment for the effectiveness of monetary policy. In general, it seems easier for monetary policy to dampen economic activity than to stimulate it. However, specific economic conditions, such as labour supply shortages or the economic legacy of the pandemic, which is reflected in high extra savings of private households and high order backlogs at firms, may dampen the impact of tighter monetary policy. Fiscal policy could contribute to disinflation by pursuing an overall restrictive stance. The distributional effects of monetary policy can be expected to be modest and should not be a major concern in the assessment of the appropriate policy stance.

1. INTRODUCTION

After inflation in the euro area started to rise to unprecedented levels, the ECB has tightened monetary policy rapidly. Inflation started to rise in 2021 and has been additionally fuelled by surging energy prices after the start of the war in Ukraine in 2022. Although inflation has fallen somewhat from its record levels in recent months as the contribution of energy prices has diminished, it is still well above the inflation target of the ECB and is now mainly driven by domestic factors. The ECB started to increase interest rates in mid-2022 and has in the meanwhile raised its key interest rates more and faster than in previous hiking cycles. However, it is difficult to assess whether the current monetary policy stance is sufficiently restrictive to bring inflation back to target and when monetary tightening will take full effect.

It is important to identify the drivers of price increases in order to assess the economic implications of high inflation and the impact of monetary policy. High inflation is a symptom of the general economic environment and can be caused by several factors, such as rising demand, limited supply, or higher import prices. All of these factors can have different implications for real economic activity at the aggregate level, but also for the impact of high inflation on private households at the individual level. Identifying the drivers of inflation is also important for central banks when conducting their monetary policy. Central banks tend to be less concerned about inflation driven by temporary factors, which disappear relatively quickly, than they are about more long-lasting factors, which may cause inflation to deviate persistently from the inflation target and thereby risk destabilising inflation expectations. The drivers of inflation can also affect the impact of monetary policy on the real economy and inflation, which depends on the general economic environment and has varying time lags.

In this paper, we analyse the implications of high inflation and the effects of monetary policy tightening in the euro area. We start by analysing the drivers of the recent increase in inflation in the euro area (Chapter 2). In Chapter 3, we assess the heterogeneous impact of inflation on individual households. In Chapter 4, we analyse the impact of the ECB's monetary policy tightening on financial conditions and economic activity and potential distributional consequences. Finally, we draw conclusions with a particular focus on the role of fiscal policy for central banks seeking to return inflation back to target (Chapter 5).

2. THE NATURE OF INFLATION IN THE EURO AREA SINCE THE BEGINNING OF THE PANDEMIC

The surge of inflation since 2021 was only initially driven by energy prices, but then quickly became broad-based across consumer goods. Euro area inflation started to increase in 2021 well above the inflation target of the ECB and reached unprecedented levels of more than 10% in 2022 (Figure 1: Contribution to headline inflation). The increase coincided with the sustained economic recovery from the COVID-19 pandemic.[1] Initially the increase of inflation was mainly driven by energy prices, in particular when considering that higher energy prices also indirectly increase consumer prices via higher input costs for food, non-energy industrial goods (NEIG), and services. In 2022, the Russian war against Ukraine put additional upward pressure on energy prices, in particular on gas and electricity.

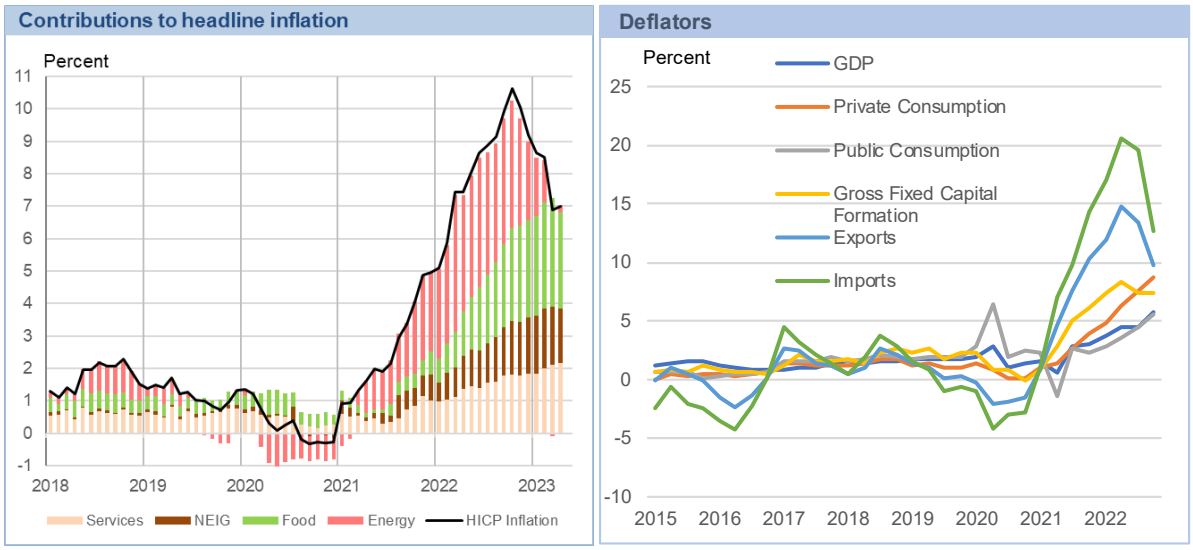
Recently inflation has declined somewhat, but is still far above the inflation target of the ECB. While the positive contribution of energy prices has faded out, inflation now is mainly driven by food prices and by core consumer prices (consumer price inflation excluding food and energy), which are still upward trending. It seems unlikely that indirect effects of energy prices are still an important factor behind high inflation as higher energy or producer prices are usually passed-through to other goods within a few quarters (Koester et al., 2021). Also, rising firm profits suggest that firms were able to increase prices beyond their higher input costs in an economic environment of robust aggregate demand (Arce et al., 2023). Granular consumer prices indicate that high inflation is broad-based across consumer goods.[2] Taken together, this indicates that inflation in the euro area is predominantly driven by domestic factors.

The surge in energy prices has led to a pronounced deterioration of the terms of trade weighing on real economic activity. Increasing energy prices led to stronger increases in import prices than in export prices because the euro area is a net importer of energy, energy imports are only partly used for producing export goods, and the pass-through of energy prices to export prices can take some time or be incomplete if firms follow pricing-to-market strategies. The deterioration in the terms of trade due to the surge of energy prices peaked at more than 2% of GDP in the third quarter 2022 (Schnabel, 2023a). The energy price-induced worsening terms of trade was fuelled further by supply constraints due to the war in Ukraine and weighed on real economic activity. Higher energy prices dampened the purchasing power of disposable incomes of private households and thereby private consumption and production in consumer-related industries. Moreover, production in energy-intensive industries (such as the chemical industry, paper and paper products or basic metals) declined due to the huge increase in their production costs. Meanwhile, terms of trade have started to recover as oil prices have moderated and gas prices have declined from their peaks. Going forward, it is likely that the terms of trade—in line with their historical pattern after energy price shocks—will approach their former level so that burdens for the economy will further ease.

[1] Sonnenberg (2023) points to the fiscal-monetary mix to stabilise aggregate incomes during the pandemic as a source of the robust demand and broadening of inflationary pressures.

2 See Figure 5 in Chapter 3.

Figure 1: Headline inflation and components (left) and deflator of GDP and expenditure components (right) in the euro area



Source: Eurostat, own calculations.

Notes: Year-over-year inflations rates and contributions.

Strong price increases have not only been observed for consumer goods but in the whole economy, indicating that they have been driven by domestic factors. While the surge in consumer price inflation was at the beginning mainly driven by energy prices, domestic prices also started to pick up at about the same time. The GDP deflator, which abstracts from import prices and therefore measures domestic price pressure, started to increase in mid-2021, roughly at the same time when consumer price inflation started to increase. In 2022, the GDP deflator recorded with 4.6% its largest increase since the beginning of the euro area; in the fourth quarter 2022 it increased by 5.8% year over year (Figure 1: Deflators). The price increases were broad-based across expenditure components, such as private and public consumption or exports. The deflator of construction investment, which increased particularly strongly by about 10% in 2022 was already accelerating in the years before the pandemic to relatively high rates, stimulated by favourable financing conditions. The broad-based price increases indicate that already since 2021 domestic factors have contributed to the strong upward price pressures.

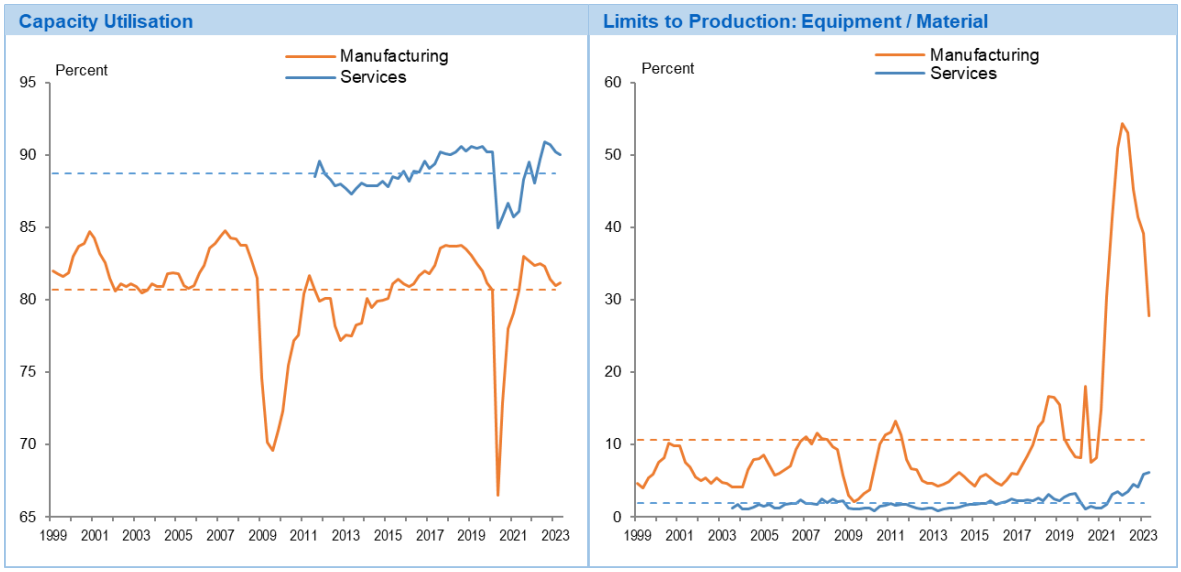
Capacity utilisation in the euro area has been high despite the relatively low level of GDP and has fuelled price increases. Firm survey data show that capacity utilisation in manufacturing and services industry has been above long-term averages since mid-2021 and approached levels in 2022 that have been observed before only in boom periods (Figure 2: Capacity utilisation). Potential output estimates, by contrast, suggest that the output gap (the difference between actual GDP and potential output) in 2022 was close to zero (European Commission and IMF) or even negative (OECD).[3] One reason behind the differences between survey data and output gap estimates could be that output gap estimates are uncertain in real-time and can be strongly revised with incoming data, in particular around business cycle turning points or economic crisis (Ademmer et al., 2019; Mc Morrow et al., 2015). At the current juncture, it is uncertain to what extent the pandemic and the increase in energy prices have dampened potential output. Moreover, some factors are likely to have dampened production capacities temporarily so that capacity utilisation as measured by firm survey data has been increasing but potential output, which measures available production capacities in the long-run, has not been

[3] Output gap estimates of the European Commission, the IMF, and the OECD retrieved 15 May 2023 via Refinitiv.

negatively affected. One of these temporary factors has been supply bottlenecks that increased according to survey data to record-high levels in 2022 before they started to ease (Figure 2: Shortages in Equipment and Material). Another factor that points to high capacity utilisation is a shortage of labour supply that according to surveys is at record-high levels (Figure 3).[4]

Robust demand has contributed to high capacity utilisation. Nominal disposable income of private households remained stable in 2020—when the pandemic led to strong decline of real GDP—due to large fiscal transfers and increased strongly afterwards during the recovery from the pandemic. Moreover, private households have built up large extra-savings that amounted to EUR 900 billion or more than 10% of disposable income at the end of 2022 because consumption was restrained by public or private containment measures during the first waves of the pandemic (Figure 4: Savings). When the pandemic-related restrictions started to being eased high disposable income and the normalisation in the savings rate underpinned the strong recovery in the demand for consumer goods. High extra-savings presumably contributed to a relatively high willingness to pay of private households. The huge increase in delivery times, while industrial production remained stable or increased, suggests that also in the manufacturing industry demand has been relatively high.[5] All of these factors—including factors that have dampened production capacities—did not only increase capacity utilisation and put upward pressure on prices in the euro area, but at the same time in the world economy at large.

Figure 2: Capacity utilisation and material shortages in the euro area



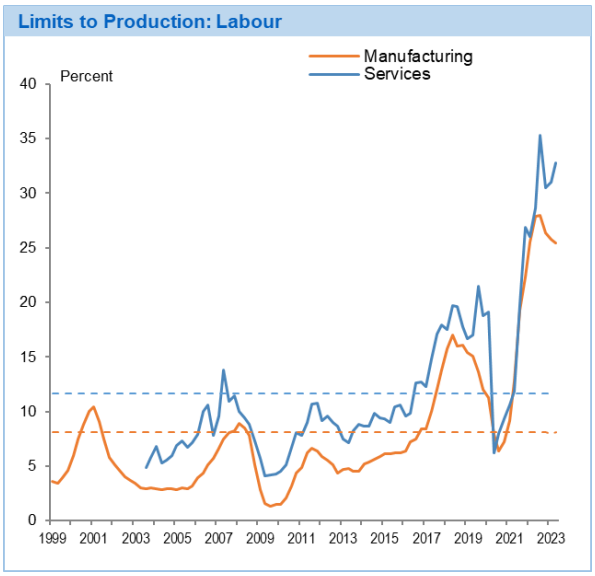
Source: European Commission, own calculations.

Notes: Survey data. Dotted lines: Mean values from 1999 to 2019. Equipment and Material shortages: Share of firms answering that shortages in equipment or material is limiting their production.

[4] Labour shortages due to demographic change dampen also potential output, but are probably not fully reflected in current estimates. Moreover, labour shortages could have increased temporarily due to increased sick leave. Numbers on sick leave from the Institute for Employment Research indicate that sick leaves approached very high levels in Germany in 2022 (Groll 2023).

[5] While data for stock of orders are not available for the euro area as a whole, data for Germany indicate that stock of orders in manufacturing increased by more than 30% compared to the pre-pandemic levels, which equals more than 10% of an annual production.

Figure 3: Labour shortages in the euro area



Source: European Commission, own calculations.

Notes: Survey data. Dotted lines: Mean values from 1999 to 2019. Share of firms answering that shortages in labour is limiting their production.

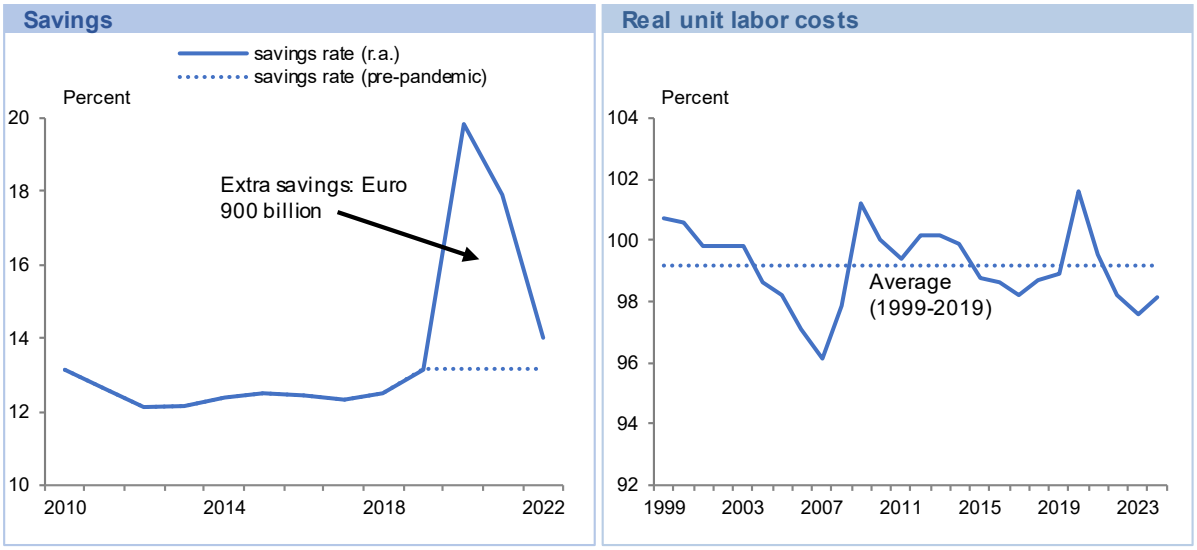
Robust demand and supply constraints have widened the scope for price increases and are reflected in increasing profits of firms. A decomposition of the GDP deflator into changes of components of the income side of GDP indicates that the strong price increase came along with a strong increase in gross operating surpluses of firms (Schnabel, 2023a).[6] These increases in gross operating surpluses were unevenly distributed across firms and industries. In 2022, for example, the manufacturing industry and contact-intensive service industries exhibited strong increases, while increases in other service industries were relatively low (Arce et al., 2023). From an economic perspective, the increases in gross operating surpluses are not the cause of raising prices, but rather a symptom of robust demand meeting limited supply. Against this backdrop, upward price pressure should ease when temporary supply constraints subside or demand declines, for example, due to restrictive monetary policy or the loss of purchasing power of disposable incomes caused by high inflation.

Strong wage increases will delay the deceleration of inflation. Wages react usually with some delay to changes in the economic environment, for example, because collective wage agreements usually apply for longer periods. The current economic environment of high labour supply shortages and high inflation implies strong wage increases going forward (Schnabel, 2023a). From a cost perspective the scope for large second-round effects of increasing wages on prices—in the sense of further increasing prices—seems to be limited for the time being. The strong price increases—with only sluggishly adjusting wages—have resulted in a decline in real unit labour costs, which reflect the compensation of employees relative to their productivity measured by nominal GDP. In 2022, real unit labour costs in the euro area approached low levels in historical comparison (Figure 4: Real unit labour costs).

[6] To decompose changes in the GDP deflator into changes of the components of the income side of GDP, changes in nominal income side components are related to changes in real GDP. This purely statistical decomposition does not reflect causal relationships as income side components and prices are influenced by underlying economic factors. In the System of National Accounts gross operating surplus corresponds to the renumeration of the production factor capital. This implies that firm must service capital costs, such as consumption of fixed capital, from gross operating surpluses. Recently, capital costs measured by interest rates or prices of capital goods have increased so that gross operating surpluses in the System of National Accounts may have increased stronger than profits that are adjusted for capital costs in firm accounts.

Therefore, increasing wages can be met by many firms without further prices increases and would lead for given prices first of all to a normalisation of real unit labour costs. However, increasing wages will also lead to increasing disposable incomes of private households and thereby fuel demand for consumer goods. This will lead to additional upward price pressure and could thereby delay the deceleration of inflation.

Figure 4: Extra savings and real unit labour costs



Source: Eurostat, own calculations.

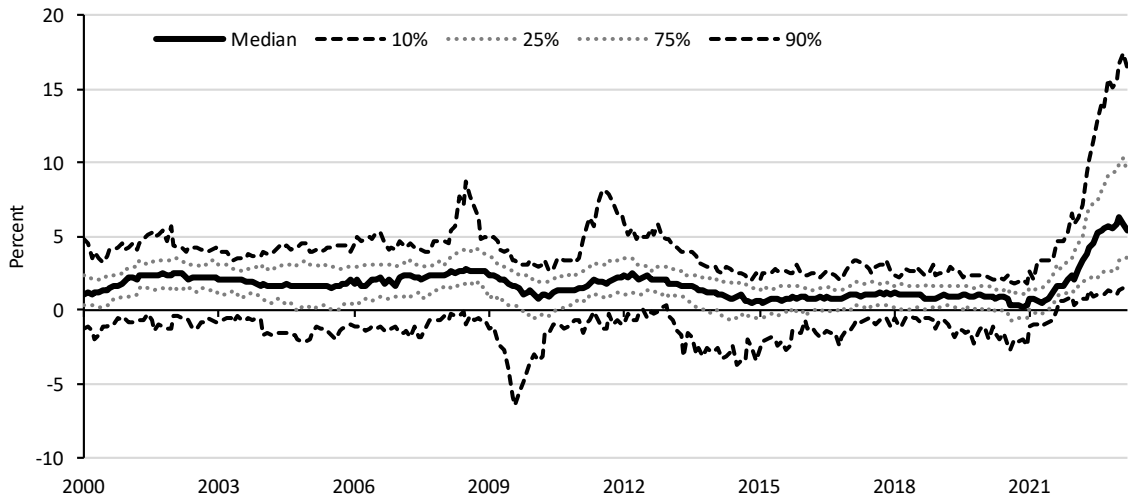
Notes: Extra savings are calculated as the cumulative difference from 2020 to 2022 between actual savings and savings if the savings rate would have remained constant at the pre-pandemic rate of the year 2019. Real unit labour costs measure compensation of employees per employee (nominal) in relation to GDP per employee (nominal); 2023,2024: Forecast of the European Commission.

Given that high inflation is predominantly driven by domestic factors, monetary policy has the tools to dampen inflation, even though the current economic environment differs from previous high inflation periods. Usually high inflation coincides with high capacity utilisation. However, previously high capacity utilisation was mainly driven by increasing demand. At the current juncture, declining production capacities probably contributed considerably to the increase in capacity utilisation. It is uncertain to what extent production capacities are permanently reduced, for example due to the economic consequences of the pandemic or the energy crisis, and to what extent they are temporarily reduced, for example due to supply bottlenecks or labour shortages, which will fade out after some time. Moreover, while capacity utilisation approached levels similar to previous boom periods, inflation by far exceeded levels observed before in the euro area suggesting that the Phillips curve relationship between the output gap and inflation has changed recently (Benigno and Eggertson, 2023). Reasons behind this phenomenon could be unusually strong labour shortages or the specific economic consequences of the pandemic, particularly the large amount of extra-savings which probably has raised the willingness to pay of private households. All of this makes it more difficult for central banks to assess the impact of its monetary policy on real economic activity and inflation.

3. HETEROGENEOUS EFFECTS OF INFLATION ON HOUSEHOLDS

As the inflation dynamics are broad-based, all households experience a loss in purchasing power, but especially poorer households experience hardship. In principle all households suffer from rising prices, but the extent is unevenly distributed and depends on household characteristics, such as their income dynamics, specific consumption patterns, and savings. A disaggregated view reveals that inflation dynamics are broad-based across consumer goods (Figure 5). The distribution of sub-group inflation rates of 101 categories shows a strong upward shift, which has not been observed before in the euro area. During previous phases of increasing oil prices, e.g. 2008 and 2011, the distribution of prices shifted, but only a limited number of goods were affected (75 and 90% quantile). The median inflation, i.e. half of all goods experience either a higher or lower inflation rate, fluctuated only to a limited degree around its long-term average of 1.6%. In the current inflation process, the median inflation rate increased to a maximum rate of 6.3% in January 2023. Recently, the rate decreased somewhat to 5.9% in February and then 5.4%in March, but still remains at a historically high level. Also, the other distributional statistical measures, such as the 10, 25, 75, 90% quantile, still point to a broad-based inflationary process. The broad-based price increases affect all households with their different consumption baskets. However, the household-specific inflation rates depend on the weight of certain goods in the consumption basket and hence can deviate strongly.

Figure 5: Distribution of sub-group inflation rate for the euro area



Source: Refinitiv, ECB, own calculations.

Notes: The figure shows the distribution of sub-group inflation rates for the euro area. In total 101 sub-groups (4-digit level) are considered in the calculation of the distributional measures.

Poor households that either receive social transfers or have a low wage income are most affected by inflation. Essential products, such as food, energy and rent, have a particularly high weight in their consumption baskets (Charalampakis et al., 2022). Especially food and energy prices increased at higher rates than other core goods and services in all euro area countries since 2021 (Figure 6 a, b, c). Thus, the specific inflation rate for poor households is higher than the national inflation rate published by the statistical authorities, which is based on the aggregate consumption pattern of all households.

The difference in inflation rates between low- and high-income households reached a historical maximum in the euro area since mid-2021. Charalampakis et al. (2022) report that the difference in inflation rates between the lowest and highest income quantile reached a historical high of almost 2 percentage points in the euro area. Before the pandemic, the difference in inflation rates was zero, i.e.

low- and high-income households experienced basically the same inflation rates. In the recent past, differences widened in times of high oil prices. Charalampakis et al. (2022) decompose the difference that has emerged since mid-2021 into its drivers. In particular, food and energy prices drive this difference as these categories account for a larger share in the consumption baskets of poorer households. Claeys et al. (2023a) have created a database, where they regularly publish updates on the evolution of inflation rates for the bottom and top income quantile for each Member State of the European Union. The different weights used to calculate the consumption baskets of poor and rich households are based on household budget surveys. The difference between these inflation rates faced by poor and rich households defines a measure of "inflation inequality". Claeys et al. (2023a) show that EU countries with particularly high inflation rates also have a relatively high inflation inequality.

While inflation rates based on different consumption baskets are indicative of distributional aspects of the inflation process, they cannot provide a complete indication of the hardship faced by households. Claeys et al. (2023b) find that, for Germany, high income households actually faced a higher inflation rate than poor households between January 2021 and September 2022.[7] This is mainly due to high price increases of some non-essential goods, which have a relatively higher share in the consumption baskets of richer households. This result shows that this approach does not provide a full picture of the hardship due to high inflation, as wealthier households can draw on higher incomes and have more scope to adjust their consumption basket to mitigate the impact of high inflation than poor households. However, for most EU countries this measure based on different consumption baskets indicates that poor households experienced higher inflation.

A more complete view of household hardship due to high inflation needs to include household characteristics, such as income and savings. Particularly in the period when the incomes or transfers of poor households do not increase, but prices rise at a high rate, these households experience hardship as they have to adjust their consumption pattern or even reduce their consumption of essential goods. Charalampakis et al. (2022) report that the share of households expecting to pay their utility bills late has increased since mid-2021. While the share increased for almost all household income quantiles, the percentage point increase was particularly high for low income households (1st quantile). This is an indication that the living standard of low households has come under significant pressure in this period. As wages tend to adjust only slowly and decisions to increase transfers take time in the political process and are rarely automatic, these households are prone to experience severe hardships.

Middle- and high-income households have several buffers in order to cope with rising prices. These households have more scope to adjust their consumption baskets by quantity and quality, than poor households, in particular when prices of essential goods are increasing. For example, these households are more likely to be able to switch from high quality (such as organic) products to regular food products. Moreover, these households can rely on their higher income or their higher savings if they do not want to adjust their level and structure of consumption.

While food inflation is still very high, energy inflation decreased significantly. While most agricultural commodity prices already declined from their recent peaks, a slowdown of consumer food inflation is not yet materialising (Figure 6a). In addition to commodity input prices, energy costs also play an important role for production and processing of food. However, recent surveys of food retailers' price expectations point to a slowdown in food price inflation in addition to falling agricultural and food commodity prices. While price increases may slow, the price level is likely to remain elevated. Energy prices in some euro area countries have started to decline at the consumer level (Belgium, Greece,

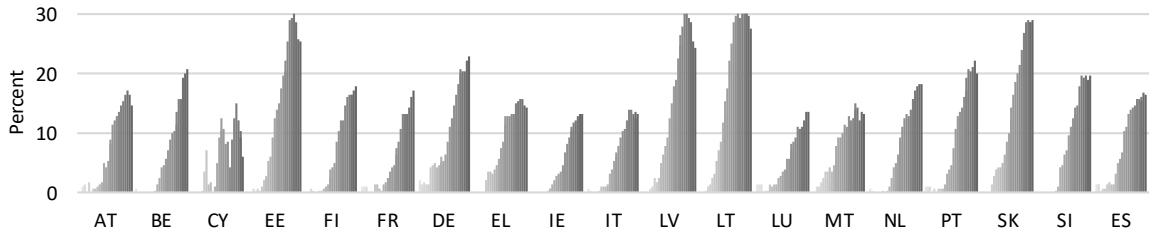
[7] While the measure of inflation inequality fluctuates over time, in March 2023 the inflation rate was higher for high-income households than for low-income households in Sweden, Belgium, Sweden, Denmark, France, Finland, Netherlands and Spain (Claeys 2023 a).

Luxembourg, Netherlands, Portugal and Spain). While this is partly a base effect, i.e. reaction to the elevated price level after the onset of the war in Ukraine, there is also an additional contribution of lower energy input costs. In other euro area countries energy prices are still increasing, but the dynamic slowed down significantly. (Figure 6b). Going forward, the hardship of high price increases, in particular for food and energy, could ease somewhat, but current forecasts suggest that the price level will remain considerably higher than expected before 2021.

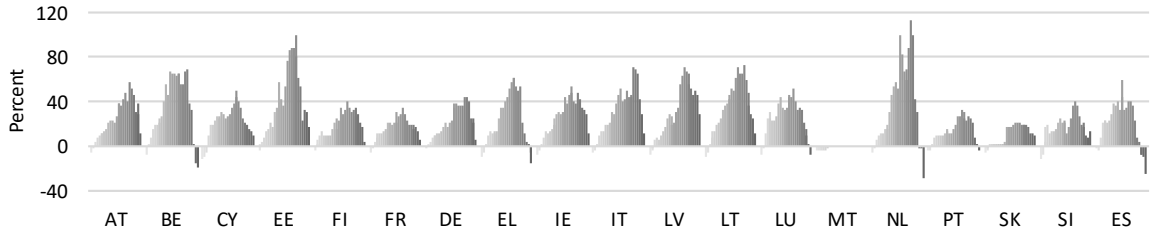
In order to analyse the heterogeneous effects of inflation more comprehensively, the drivers of inflation have to be considered. The heterogeneous impact of high inflation on households may be different when it is caused by price increases in imported energy or food prices than when it is caused by domestic factors. Moreover, high inflation due to domestic factors could coincide with higher property and entrepreneurial income, higher wages or higher social transfers, implying heterogeneous effects for households. The increase in inflation since 2021 was due to both higher import prices and domestic factors. While social transfers have mitigated the negative impact on the purchasing power of many households, wages have so far not kept pace with the high inflation, whereas property and entrepreneurial income has increased relatively strongly. Going forward, however, it seems likely that wage growth will be stronger and will, at least partly, offset the loss of purchasing power experienced by many households due to high inflation. In this respect, the general economic environment is also important for the impact and the consequences of high inflation on households. The widespread labour shortages will contribute to stronger wage increases. In the United States, the wage growth tracker of the Federal Reserve Bank of Atlanta (2023) provides insights into the wage dynamics of households across several household characteristics. Wage growth has been higher for households with a relative low skill level, a relatively low level of education and a relatively low income (1st and 2nd income quantile), recently.

Figure 6: Inflation rates for food, energy and core goods and services in the euro area

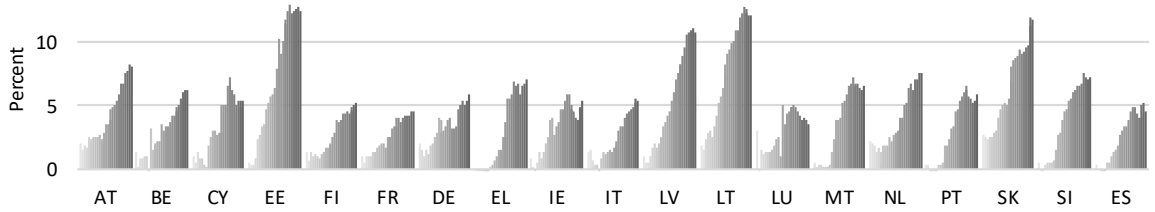
a) Food inflation



b) Energy inflation



c) Core inflation



Source: Refinitiv, Eurostat.

Notes: The figures show the inflation rate of the categories food, energy and core goods and services for all euro area members for each month since 2021. The last data point is March 2023. Core inflation refers to the inflation rate, which excludes the dynamics of the categories food and energy.

4. IMPACT OF THE MONETARY TIGHTENING IN THE EURO AREA

Monetary policy can affect real economic activity by various transmission channels. We first describe relevant transmission channels and empirical results on the impact of monetary policy on real economic activity from a general perspective (Section 4.1), before analysing in detail the impact of the recent monetary tightening by the ECB on financial conditions and economic activity (Section 4.2). Finally, we assess whether the monetary tightening may have heterogeneous effects on private households (Section 4.3).

4.1. The impact of monetary policy on economic activity: Transmission channels and empirical evidence

Monetary policy can affect economic activity via several transmission channels. For example, an increase in interest rates leads to increasing costs of capital, which dampens investments of firms and households. Higher interest rates also reduce cash flow available for spending of indebted firms and households or of fiscal authorities. The strength of this channel depends not only on the speed at which higher interest rates are transmitted to firms and consumers but also on the extent to which higher interest revenues of interest-bearing assets counteract this effect. Tighter monetary policy can also lower the risk appetite and thereby lead, for example, to a reduction of the supply of bank loans and tightening credit standards (Bauer et al., 2013). By influencing the exchange rate, monetary policy can have a direct effect on prices to the extent that changes in the exchanges rates are passed through to import prices or affect prices by import substitution. Other transmission channels include wealth effects and intertemporal substitution that influences saving and investment decisions due to changes in the interest rates. Some theories stress the relevance of indirect effects of monetary policy via general labour market conditions or fiscal policy, which in turn can influence disposable incomes of private households and thereby private consumption (Kaplan et al., 2018). Via these channels monetary policy can influence real economic activity, which in turn affects – by changes in economic slack – prices.[8] All of these transmission channels work through the impact of monetary policy on financial markets so that changes in the stance of monetary policy are reflected in financial conditions. By influencing financial conditions monetary policy can have particularly strong effects on long-run investment decisions, i.e. on the housing market or fixed investments of firms (Corsetti et al., 2022; Miranda-Agrippino and Ricco, 2021). Another important transmission channel of monetary policy works via inflation expectations. Well-anchored inflation expectations at the inflation target reduce the risk for persistent deviations of inflation from the target and could thereby lower the need for monetary policy interventions.

The impact of monetary policy on the real economy and on inflation depends on the general economic environment. There are several factors related to the transmission channels of monetary policy that can influence its impact on real economic activity or prices. For example, expansionary monetary policy could have larger effects in periods of high financial distress—when it is able to lower distress considerably—compared to periods in which financing restrictions do not play a major role for investment decisions of firms or households. There is extensive empirical evidence that the impact of monetary policy is indeed state-dependent. For example, there is evidence that monetary policy is more effective in recessions than in expansions (Bruns and Piffer, 2022; Lo and Piger, 2005; Santoro et al., 2014; Weise, 1999).[9] With regard to the direction of monetary policy intervention more recent studies find that contractionary shocks have larger effects on real economic activity, including unemployment, than

[8] For a more detailed description of the transmission channels of monetary policy, see for sample Lane (2022).

[9] However, some results point into the opposite direction (Alpanda et al., 2021; Tenreyro and Thwaites, 2016) indicating that the results can crucially depend on the methodology or the economic area and the period investigated.

expansionary shocks (Angrist et al., 2016; Barnichon and Matthes, 2018; Debortoli et al., 2020; Tenreyro and Thwaites, 2016). Some of these studies, however, suggest that the opposite is true for prices, namely that expansionary monetary policy has larger effects on prices and vice versa. One theoretical rationale behind this finding could be downward rigidity of wages so that the impact of a contractionary monetary policy shock on wages (and prices) is smaller and the impact on quantities larger compared to an expansionary shock. In view of the period after the global financial crisis, one additional reason why it could be more difficult for monetary policy to stimulate rather than to dampen economic activity could be the zero lower bound, which makes it more difficult for central banks to further stimulate the economy if unconventional monetary policy measures are less effective or have other effects than conventional monetary policy.

Monetary policy can have unintended side-effects that can influence its impact on the economy. Expansionary monetary policy leads to increasing risk-taking, as this is one transmission channel of central bank interventions (Drehmann et al., 2012; Rajan, 2005, Maddaloni and Peydro, 2011). As a consequence, prolonged periods of expansionary monetary policy could lead to excessive risk-taking and thereby create financial imbalances and increase financial fragility (Jorda et al., 2023). These findings could also support the hypothesis that contractionary monetary policy can have larger effects when it is conducted after a prolonged period of expansionary monetary policy, when asset prices have completely adapted to low interest rates and financial imbalances may have increased. Moreover, there is evidence that low real interest rates can contribute to a misallocation of resources and thereby dampen productivity (Cette et al., 2016; Monacelli et al., 2023). To the extent that monetary policy leads to prolonged periods of low real interest rates this could therefore dampen productivity and in turn potential output so that increases in demand have ceteris paribus larger effects on inflation.

Uncertainty about the timing and the size of the effects of monetary policy makes it difficult for central banks to conduct their policy. There is a consensus that the transmission of monetary policy works with long time lags (Havraneka and Rusnak, 2013). These time lags are variable because the effects of monetary policy depend on the general economic environment. Some studies find that monetary policy can have meaningful quantitative effects already in the short-run (Miranda-Agrippino and Ricco, 2021). One reason behind could be that if monetary policy is able to reduce financial distress and uncertainty in periods of financial turmoil, it may mitigate immediate declines in output. However, longer-lasting time lags are plausible as monetary policy usually can only influence output and economic slack indirectly by changing financial conditions, which in turn influences prices. In this regard, the relationship between economic slack and inflation that can be measured via the Phillips curve is relevant for central banks to conduct their policy. Estimates of the Phillips curve suggest that this relationship has weakened in recent decades, implying that a one-percentage-point decline in the output gap only dampens inflation less proportionally (BIS, 2017; Blanchard et al., 2015; IMF, 2013; Eser et al., 2020). To the extent that the estimated weak relationship is mainly due to an effective monetary policy that was successful in offsetting demand shocks or in stabilising inflation expectations this might be less of a concern for central banks than if it is mainly due to structural factors, such as increasing globalisation. However, taken literally such estimates suggest that monetary policy has to engineer a strong decline in the output gap to bring inflation back to target given the high inflation rates. However, the increase in inflation since 2021 by far exceeded the increase in capacity utilisation and the output gap pointing to a potential non-linear relationship between inflation and the output gap that may also work in the opposite direction (Benigno and Eggertsson 2023). Uncertainties about the appropriate stance of monetary policy arise also due to the question, how expansionary or restrictive the current stance of monetary policy is. Theoretically, the natural interest rate (the real interest rate that prevails if GDP equals potential output and the inflation rate equals the inflation target) provides information about the impact of monetary policy. For example, the more interest rates are above the natural interest

rate, the more restrictive is monetary policy. However, the natural interest rate cannot be observed but has to be estimated. In practice, estimation uncertainty in real-time is so large that estimates of the natural interest rate contain only little information for central banks to conduct their monetary policy (Fiedler et al., 2018). Therefore, incoming data is likely to play an important role for central banks in adjusting their policy stance.

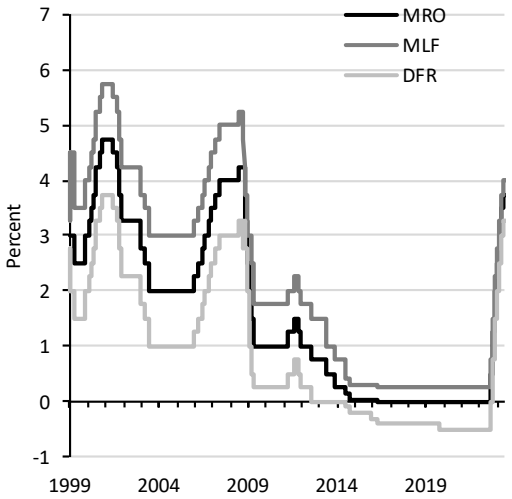
4.2. Impact of monetary tightening on governments, households and corporations

The ECB raised interest rates for the deposit facility within 11 months from -0.5 to 3.25%. The ECB prepared markets for an interest hiking cycle since December 2021, when the Governing Council announced the intended ending of net purchases under the large-scale asset purchase programmes. The pandemic purchase programme ended in March 2022 and the regular purchase programme (APP) ended in June 2022. The main refinancing rate, which approached the zero lower bound in March 2016, and the deposit facility rate, which had been steadily lowered into negative territory since June 2014, were raised by the ECB for the first time in July 2022 (Figure 7a). The ECB started with large steps of 0.5 percentage points, then switched to two steps of 0.75 percentage points in the face of rapidly accelerating inflation, before returning to 0.5 percentage point steps. In May 2023, the ECB raised interest rates only by 0.25 percentage points suggesting that for the time being interest rates might be close to the peak of the hike cycle.[10] However, further monetary policy decisions of the ECB will depend on whether incoming data indicate that monetary policy is sufficiently restrictive to bring inflation back to target. In historical comparison, the ECB increased interest rates more strongly and much faster compared to previous interest rate hike cycles even though the interest rate levels are still below historical peaks.

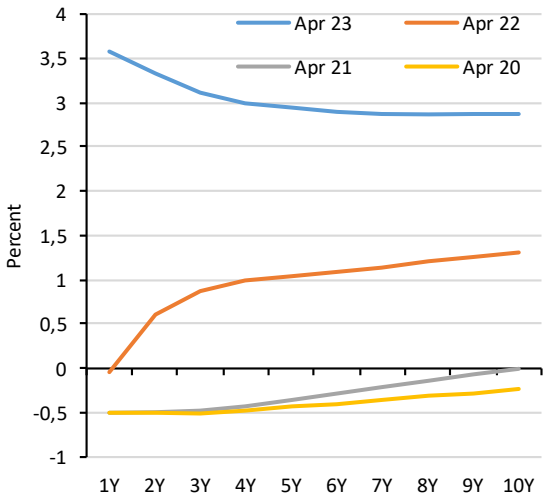
[10] Vice-President De Guindos (2023) classifies interest rate hike sizes of 0.5 to 0.75 percentage points as "extraordinary steps" as the size is unusual with respect to past tightening cycles, but also acknowledged that they were warranted because of "extremely high inflation". The ECB in May 2023 returned to a 0.25 percentage points hike size as the ECB has "now entered the home stretch" of the monetary tightening cycle.

Figure 7: Key interest rate corridor and term structure of interest rates

a) Key interest rate corridor



b) Term structure of interest rates (OIS)



Source: Refinitiv, ECB, own calculations.

Notes: The interest rate corridor consists of the marginal lending facility (MLF), main refinancing operations (MRO) and deposit facility rate (DFR). Panel b depicts the risk-free term structure of interest rates derived from overnight index swaps (OIS). Here the average of the daily data is calculated for the month April in 2020, 2021, 2022 and 2023 in order to track the evolution of the whole term structure over time. Overnight index swaps mostly depict the financial market expectations on the evolution of the path of short-term interest rates. Additionally, a term premium affects the yields of longer maturities. In contrast to yield curves derived from sovereign bonds, the OIS term structure is not affected by a credit or default risk premium (Bundesbank 2023).

Medium- to longer-term interest rates along the yield curve started to rise before the ECB raised key interest rates. With the announcement of the end of the large-scale asset purchases in December 2021, market expectations about the path of short-term interest rates started to adjust (Figure 7b). Medium- to long-term yields theoretically can be decomposed into expectations of the future prevailing short-term interest rate and a term premium.[11] The increase in yields along the term structure was driven by expectations about the path of the short-term interest rates and only partly by an increase in the term premium. The term premium was dampened by large-scale asset purchases. The maximum effect on 10-year government bonds is estimated to be in the order of 180 basis points and depends on the total stock of bonds on the balance sheet of the ECB (Schnabel, 2021). The ECB reduces the size of its bond holdings only slowly by not reinvesting the money received from maturing bonds (passive approach of quantitative tightening). Therefore, the half-life of the dampening effect on the term premium is often estimated to be long (Eser el al., 2019). In May 2023 the ECB adjusted the pace of quantitative tightening as the phase-in period of EUR 15 billion per month from March 2023 to June 2023 will be increased to roughly EUR 30 billion from July 2023 onwards (ECB, 2023 a). In theory, an adjustment in the amount of quantitative tightening shortens the half-life of the dampening effect on the term premium and thus leads to an upward adjustment in medium- to long-term yields. In practice, however, this effect should have already materialised in recent months as financial markets are forward-looking and formed expectations of this policy adjustment.[12] In the process of adjusting the monetary

[11] The term premium compensates for the risk, which is due to the longer maturity and increasing uncertainty of the future. One risk premium for example is related to the risk of an interest rate change (also called duration risk), which leads to an abrupt devaluation of the price of bonds (Figure 16).

[12] In a recent interview the Vice-President of the ECB Luis De Guindos (2023) responded that the ECB estimates the effects of quantitative tightening on 10-year government bond yields to be in the order of 60 to 70 basis points.

policy stance quantitative tightening supports the brake intensity of interest rate hikes (Sonnenberg, 2023).

10-year government bond yields have risen sharply since December 2021, largely in line with expectations about the path of short-term interest rates. The rise in government bond yields is mostly in line with the rise in the 10-year overnight index swap, i.e. the adjustment in yields is in line with the change in the expectations of the future path of short-term interest rates.[13] The spread between the 10-year government bond yields and the 10-year overnight index swap serves as an indication of the extent to which other components like credit, default, and re-domination risk premia drive government bond yields.[14] In particular, the spread for Italian and Spanish government bonds widened during the euro sovereign debt crisis (Figure 13 Appendix). In the current tightening cycle, which was initiated in December 2021, the spread widened only for Italian bonds. It rose from a level of roughly 0.8 percentage points to 1.6 percentage points. In contrast, the spread on Spanish bonds remained constant. In July 2022, the ECB introduced the Transmission Protection Instrument (TPI), which aims to ensure a smooth transmission of the monetary tightening cycle in all euro area member countries (ECB 2022). It can be shown that prior to the introduction of the TPI the spread widened, when financial markets expected a stronger interest rate response to the inflationary dynamics by the ECB. After its introduction, the spread remained constant, although the expected interest rate peak increased (Schnabel 2023b).

The average maturity of government debt in the euro area, which determines the speed of the transmission of higher interest rates to an actual increase in interest payments, is distributed around 8 years. Given the upward adjustment along the whole yield curve, fiscal authorities in the euro area are facing rising interest payments on their debt. The longer the average maturity of the outstanding debt stock the longer it takes that the roll-over of debt leads to rising interest payments. In addition, net lending increases the interest expenditure of the fiscal authorities. The absolute amount of debt, which needs to be rolled-over, depends also on the size of the outstanding stock of government debt and it can be approximated by combining the average maturity of the debt with the outstanding debt stock.[15] The average maturity surpasses 10 years in Austria, Belgium, Ireland and Slovenia (Table 1 column 3). In the other euro area countries, the average maturity is roughly between 7 and 8 years. As the debt-to-GDP ratio differs strongly in the euro area (Table 1 column 1), the amount of roll-over in relation to GDP is distributed diversely. For example, Italy, Spain and Portugal must roll-over debt in the order of 20%, 15% and 16% relative to GDP, respectively (Table 1 column 5). The rise in the interest payments also depends on the yield of the outstanding debt stock and the new yield level. However, as the yield on new issues has risen rapidly, the downward trend in interest payments should be reversed for all euro area countries.

[13] From overnight index swaps (OIS) of different maturity a risk-free yield curve for the euro area can be constructed (Figure 7b). The yield curve derived from OIS only consist of the expectations on the future path of short-term interest rates and a term premium. Yield curves derived from government bonds additionally can include risk and liquidity premia.

[14] For German bonds a special characteristic leads to a disproportionate increase in the yields relative to overnight index swaps, i.e. the spread is actually negative (Figure 13 Appendix). German bonds serve as a risk-free collateral in many financial market transactions and generally serve as a safe haven in times of market stress. These specific demand characteristics, coupled with limited supply, result in a convenience yield that rationalises the negative spread. (Deutsche Bundesbank, 2023).

[15] If the average maturity of the debt stock was equal to one year, then within one year the whole debt stock would have to be rolled over. If the average maturity was equal to two years, then within one year only half of the debt stock would have to be rolled over. This can serve as an approximation, but in practice the maturity profile is more complex and deviations from this simple rule of thumb can arise.

Table 1: Government debt statistics for euro area Member States

Country	Debt level (% of GDP)	Debt level (EUR billion)	AVG maturity debt (Years)	Annual roll-over (EUR billion)	Annual roll-over (% of GDP)
Austria	78	351	11	31	7
Belgium	105	578	11	53	10
Croatia	68	46	6	8	12
Cyprus	87	23	8	3	11
Finland	73	195	8	26	10
France	112	2,950	8	354	13
Germany	66	2,563	8	339	9
Greece	171	356	9	39	19
Ireland	45	225	11	21	4
Italy	144	2,757	7	391	20
Latvia	41	16	8	2	5
Lithuania	38	26	9	3	4
Luxembourg	25	19	7	3	4
Malta	53	9	8	1	6
Netherlands	51	480	8	57	6
Portugal	114	273	7	39	16
Slovakia	59	63	9	7	7
Slovenia	70	41	10	4	7
Spain	113	1,503	8	193	15

Source: Refinitiv, ECB, Eurostat, own calculations.

Notes: The debt level (% of GDP and EUR billion) refers to the Q4 2022 values. The average maturity of debt is equal to the 12-month average from the monthly statistic from March 2022 until March 2023. The annual roll-over (EUR billion) is approximated by combining the average maturity of debt with the total debt stock.

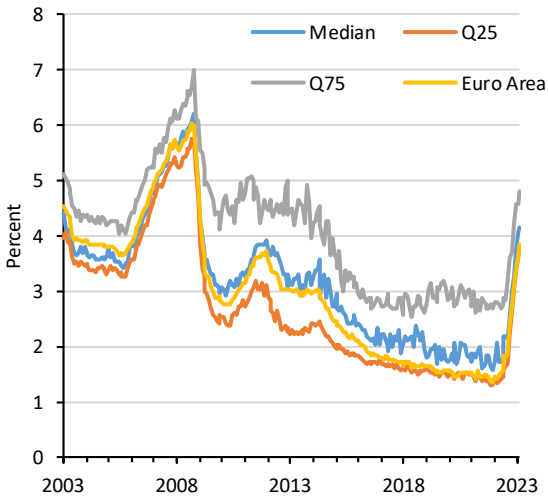
In the fourth quarter of 2022, aggregate interest payments of euro area governments were already 51% higher than the 2020-2021 average (Figure 18 Appendix). The interest payments of euro area governments are available in the sectoral accounts. Although only a fraction of the outstanding debt stock has been rolled-over, interest payments in the fourth quarter of 2022 are already significantly higher than the average interest payments in 2020 to 2021, which represents a trough for almost all euro area Member States. For France and Italy, the increase was 81% and 70%, respectively. For Germany and Spain, the increase was lower at around 45%. In the Netherlands the increase was only 20%. While this statistic is only published with a time lag one can assume that the interest payments will continue to rise.

The change in the interest rate environment also led to adjustments in the financing conditions of the private sector. In order to make financing conditions in the euro area comparable, the ECB has developed indicators that represent the composite cost of borrowing for households and corporations. Compared with the larger role of capital markets in the United States, the financing conditions for the

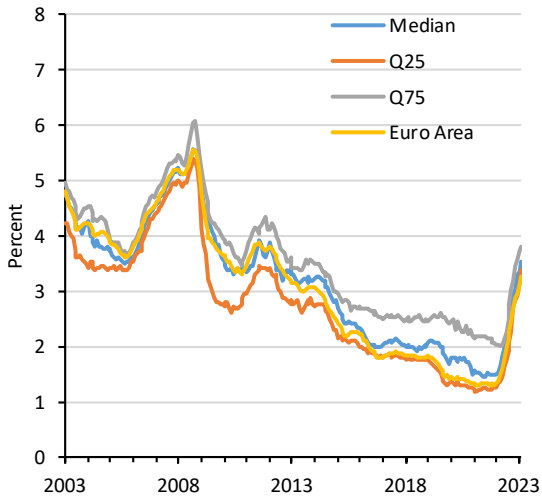
private sector in the euro area depend more on bank lending conditions. The composite cost of borrowing indicators combine interest rates on new short- and long-term loans either for house purchases of private households or loans to corporations. To compile an indicator, the interest rates on short- and long-term loans are weighted by their volumes.[16] The indicators show that the steep rise in short-term interest rates and the adjustments along the yield curve had a significant impact bank lending conditions for corporations and households (Figure 8). The bank lending conditions reached historical low levels before the outbreak of the pandemic in 2020. In the face of the monetary tightening cycle, the current interest rate level has returned to the level in 2003 when the indicators were introduced.

Figure 8: Composite cost of borrowing for non-financial companies and households in the euro area

a) Non-financial companies



b) Households



Source: Refinitiv, ECB, own calculations.

Notes: The cost of borrowing indicator is based on a harmonisation approach by the ECB. It combines the evolution of short and long-term interest rates by the respective lending volume of outstanding credits. The volume applied in the weighting is based on a 24-month moving average.

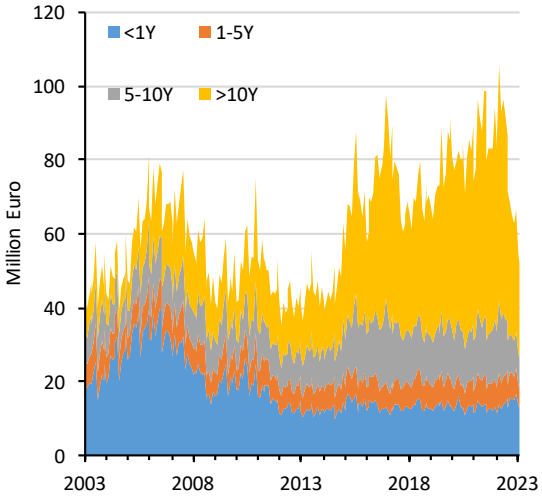
Interest rates for housing loans rose sharply and the demand for housing loans corrected by -40% year-on-year for the euro area (Figure 9). Faced with higher interest rates on housing loans, households reacted by sharply reducing their demand. New housing loans with a long-term fixed interest rate of more than 10 and 5-to-10 years corrected by -50% while loans with a fixed interest rate of 1-to-5 years corrected by -25%. Loans with an initial rate fixation of less than 1 year increased by 4%. Since 2015, the issuance of new housing loans was rising driven by a steady decline in interest rates (Figure 9). This ended abruptly with the sharp rise in financing costs. While the correction in Germany with -53% is even more pronounced than for the euro area as a whole, the correction in France with -40% is in line with the general trend in the euro area. Since 2015, Germany and France have each accounted for about 25% of the total new issuance of the euro area. The next most important housing market is the Netherlands, which also corrected by -50%. The correction in the demand for loans in Italy (the fourth largest market) was more muted with only -5%. The role of the Spanish housing sector has changed sharply since the beginning of the currency union. While it accounted for almost 20% of all

[16] However, in order to abstract from short-term volatility, the volume is smoothed by a 24-month moving average.

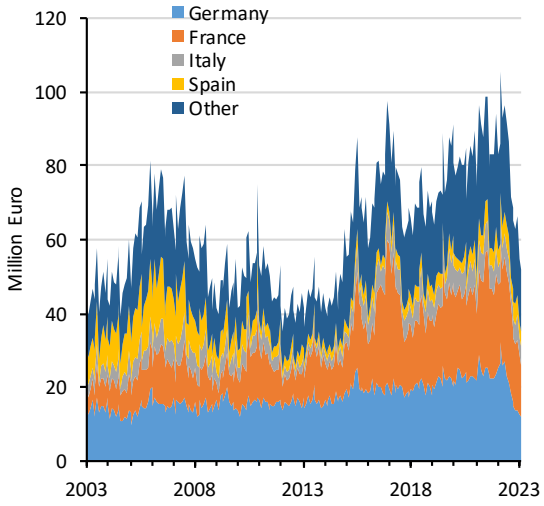
new loans from 2003 to 2008, its share fell to around 5% after the housing boom ended in 2008. From this lower level the demand corrected by -20% from a year ago. In the other euro area Member States of the euro area the correction was -40%. In the euro area bank lending survey, most of the reduction in demand is due to the "general level of interest rates", but also the categories "housing market prospects" and "consumer confidence" play an important role (ECB, 2023b). In addition to adjusting lending conditions with regard to the interest rates, banks have also tightened credit standards. The tightening in credit standards is mainly driven by "risk perceptions" and the "banks risk tolerance", but recently also "cost of funds and balance sheet constraints" play a role. In this context, banks have mentioned in the survey that the adjustment in TLTRO-III conditions and asset purchases also contributed to a tightening of lending standards. For the second quarter of 2023, banks expect a further tightening of credit standards.

Figure 9: New business volume of housing loans with initial interest rate fixation and country share (euro area)

a) New business volume of housing loans with initial interest rate fixation



b) New business volume of housing loans per country



Source: Refinitiv, ECB, own calculations.

Notes: Panel a shows the new business volume of housing loans. The total volume can be separated into 4 categories indicating the length of initial interest rate fixation. Panel b separates the total volume of new housing loans into the absolute contribution of Germany, France, Italy, Spain and other euro area countries.

There are signs of a house price stagnation or decline in some euro area countries.[17] The change in the interest rate environment has led to a repricing of many assets. Since 2020 the yields on German government bonds of different maturity (2Y, 5Y, 10Y, 30Y) have increased by 2 to 3 percentage points (Figure 16 Appendix). The corresponding price correction for German government bonds since 2020 has been more pronounced the longer the maturity of the bonds . The 30-year government bond since 2020 has lost almost 45% of its value. For a 10-year bond the correction was equal to -20%. In principle, this effect due to the change in the interest rate environment should also be reflected in other asset markets.[18] The correction in the bond market was rapid as it is very liquid with high trading volumes.

[17] For an overview on the development of house prices in the euro area, see: https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Housing_price_statistics_-_house_price_index#Annual_and_quarterly_growth_rates. Schnabel (2023b) also provides an overview of monthly indicators of the biggest housing markets in the euro area.

[18] For the housing market, however, different dynamics are in place. Rents are currently also rising. If a persistent change in the expected future cash flows occurred, this could stabilise prices and dampen the price effect by a change in the interest rate environment. Also, supply is limited

The liquidity in the housing market and the daily trading volumes are very different. Affordability of house purchases is low with "old" peak prices and the current high interest rates.[19] Hence, the loan demand of households has declined sharply. On the other hand, the willingness of sellers to accept lower prices seems to be limited. As a result, the housing market is currently characterised by a mismatch between supply and demand with transactions at a low level. Against this backdrop, available indicators suggest that the tightening of monetary policy has already had a significant impact on the housing market and will weigh on construction investment. The European Commission (2023) expects a decline in construction investment in the euro area in 2023.

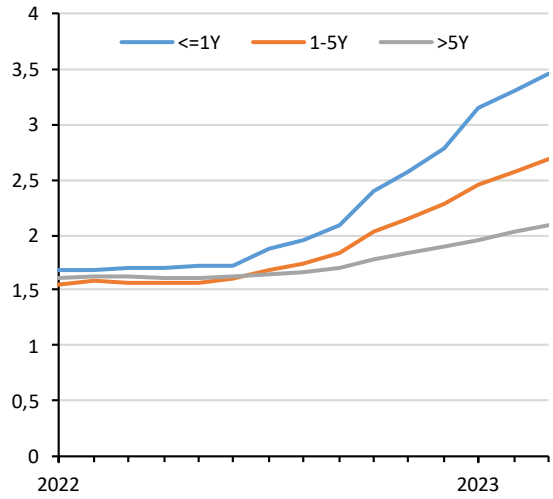
Financial conditions for new housing loans reacted quickly to the rise in interest rates, but the full impact has not yet reached all households. The new issuance of housing loans before the interest rate tightening cycle represented around 1.5 to 2% of the outstanding stock of housing loans since 2015. During the property boom in Spain and Ireland in the early phase of the currency union, the level ranged even higher between 2 and 2.5%. With the correction triggered by the current monetary tightening cycle the share of the new issuance to the outstanding stock dropped to 1%. A similar correction was observable in the period after the great financial crisis and euro crisis. The full impact of the new interest level has not yet reached the outstanding stock of housing loans. This effect becomes obvious when one compares the average interest rate of the stock of outstanding loans (Figure 10a) and the newly issued loans (Figure 10b). The interest rates on new housing loans went from a level of 1.5% in the beginning of 2022 to an interest level of 3 to 4% depending on the initial rate fixation. For the stock of outstanding loans however the rise is more benign. Loans with an original maturity of more than one year and up to 5 years and longer than 5 years were less affected. This suggests that most of these loans have not yet been rolled-over. On the other hand, loans with an original maturity of less than one year were similarly affected by the rise in interest rates, as they had already been rolled-over.

in the housing market and demand was high, hence if the supply can be fully absorbed by the remaining demand, then the price correction can also be limited.

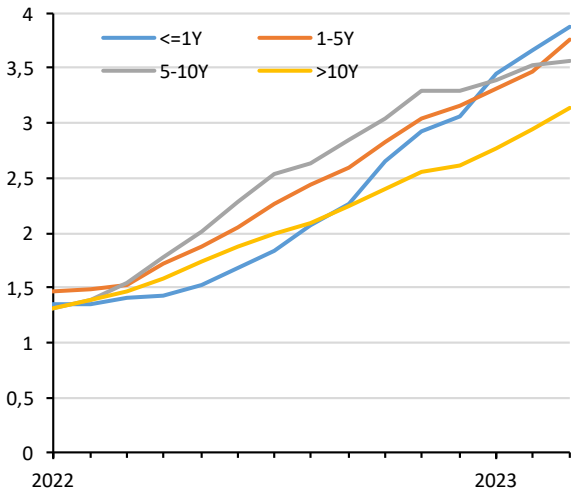
[19] One indicator pointing in the same direction is that the rejected loan applications reported by banks increased sharply since the first quarter of 2022 (ECB 2023b).

Figure 10: Interest rates on housing loans - outstanding stock and new business

b) Average interest rates of outstanding stock of housing loans



c) Average Interest rates on new issuance of housing loans



Source: Refinitiv, ECB, own calculations.

Notes: Panel a shows the increase of interest rates of the outstanding stock of housing loans for three categories since 2022. The categories indicate the original maturity of the loans. Panel b shows the increase of interest rates of new housing loans for three categories since 2022. The categories indicate the length of initial interest rate fixation.

The speed and timing with which households are fully affected by the new interest rate environment depends on the extent to which interest rates on housing loans are fixed. Table 2 shows the percentage of all new housing loans with a variable interest rate over the period 2003 until March 2023. The pass-through of an increase in the interest rate level is immediate with variable interest rates. Households in Germany, France, Slovakia and the Netherlands seem to be relatively well shielded as the percentage of variable interest rate loans is low over the whole time period. In Spain, Portugal, Finland, Estonia, Latvia, Lithuania and Ireland variable interest rate loans are more common and hence in these countries households should be already facing a higher interest payment burden. It can be expected that in these countries the dampening effect on household consumption should be relatively higher than in countries with a higher share of fixed interest rates. For the euro area as a whole, the importance of variable interest rates decreased over time, but until 2011 it was the most important product and it represented more than 40% of all new loans (Figure 14 Appendix, Table 2). Since 2011, housing loans with a fixed interest rate for more than 10 years gained in importance. From 2016, this category represents more than half of all new housing loans.[20] This can also be associated with the timing of the housing booms in the euro area. Until the global financial crisis a boom took place mainly in Spain and Ireland, where the share of loans with a variable interest rate is higher. Since 2010 a boom has mainly taken place in Germany, France and the Netherlands, where housing loans with long fixed interest rates are more common. However, the longer the current interest rate level persists the greater will be the exposure of all households to the new interest rate environment.

[20] The shares of the categories with an initial rate fixation of 1 to 5 and 5 to 10 years is relatively constant over time and they represent between 10 and 20%.

Table 2: Share of variable interest rates in new housing loans (in %)

	2003-2005	2005-2010	2010-2015	2015-2020	2020-2023
Austria	50	61	78	56	40
Belgium	39	20	17	6	6
Cyprus		31	46	81	84
Germany	17	16	16	12	11
Estonia			48	79	84
Spain	84	91	76	45	28
Finland	94	96	95	97	97
France	28	18	9	2	3
Greece	77	55	58	67	20
Croatia			42	38	14
Ireland	85	82	83	50	18
Italy	81	61	78	36	27
Lithuania				92	97
Luxembourg	73	70	66	45	39
Latvia			8	76	77
Malta		33	54	26	54
Netherlands	30	23	22	15	14
Portugal	97	98	95	71	69
Slovenia		49	97	57	26
Slovakia		10	18	3	3
Euro area	49	45	31	19	17

Source: Refinitiv, ECB, own calculations.

Notes: The table shows the averages of the relative share (in %) of new housing loans with variable interest rates for the time period 2003-2023. The colours indicate if the relative share is unusually high (red) or unusually low (green) for all members of the euro area.

Corporate bond yields have risen in line with government bonds since December 2021, and the new issuance has fallen sharply as a result. Since the start of the currency union the outstanding stock of corporate debt securities rose steadily, but the trend reversed since the fourth quarter of 2021. With the change in the interest rate environment, the new issuance dropped heavily. In the fourth quarter of 2022 it was down 10% from a year ago (Figure 17a Appendix). In comparison, during the global financial crisis and the euro crisis the issuance fell by 2 and 4%. During the phase of the taper tantrum in 2015, when bond yields rose rapidly around the world, the decline was 6%. The current steep rise in interest rates hence led to the strongest drop in the new issuance of corporate bonds since the start of the currency union. Since 2020 the yields on corporate bonds with a rating of AAA and BBB rose by 2.8 and 3.5 percentage points respectively (Figure 17b Appendix). The spread between the AAA and BBB bonds also widened since the beginning of the monetary tightening. It averaged roughly 0.6 percentage points between 2015 and 2020 and currently is equal to 1 percentage point, while it reached its local maximum of 1.5 percentage points at the end of 2022. The spread at that point was even higher as compared to the early phase of the pandemic, when bond yields rose quickly. Anyhow, the current spread is of a different magnitude than during the great financial and euro crisis, when it reached levels above 3 percentage points.

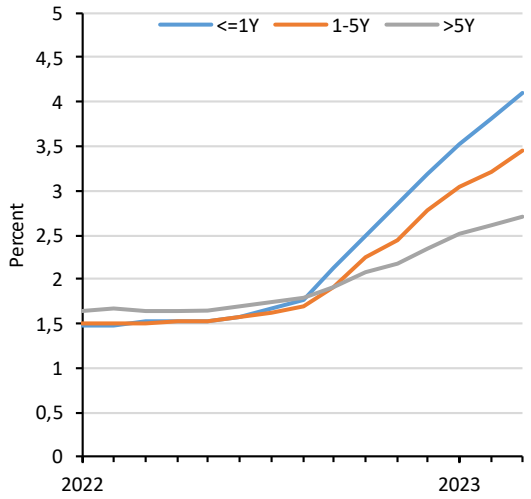
Bank lending conditions to non-financial corporations were also tightened. Outstanding loans to non-financial corporations are at a level of EUR 5,000 billion in March 2023, while the outstanding corporate bonds reached a level of EUR 1,600 billion in the fourth quarter of 2022. Therefore, the developments regarding bank lending rates is an important aspect to evaluate the financing conditions

for corporations in the euro area. Since 2022, the interest rates on new loans to non-financial corporations rose by 3.5 percentage points (Figure 11b). There is no big difference observable for loans with different initial interest rate fixation. The average interest rates on the outstanding stock of loans to non-financial corporations is shielded to a certain degree by fixed interest rates. While outstanding loans with an original maturity of less than one year experienced the same interest rate adjustment as new loans, the loan categories with an original maturity of 1 to 5 and more than 5 years increased less (Figure 11a). This points to a significant degree of interest rate fixation also regarding corporate loans. The new business volume of loans to corporations did not contract like in the case of households (Figure 12a). The bank lending survey shows that corporate demand for loans during 2022 rose because firms needed funds to finance inventories and working capital, this demand somehow stabilised the loan demand in general (ECB, 2023b). The categories "general level of interest rates" and "fixed investment" however led to a lower demand for loans. In combination with these aspects, the historical decline in the new issuance of debt securities on the side of non-financial corporations suggests that partly a shift from bond funding to bank funding took place. This might constitute another reason why the new business statistic until now is relatively stable. In contrast to housing loans the original maturity of corporate loans is shorter (Figure 15). From the category of loans with an original maturity of less than one year at least partly a demand for roll-over results. This also becomes obvious by the share of new business loans to the outstanding stock of corporate loans which lies quite constant at 10% since 2010. For households the share is significantly lower at 1-2%.

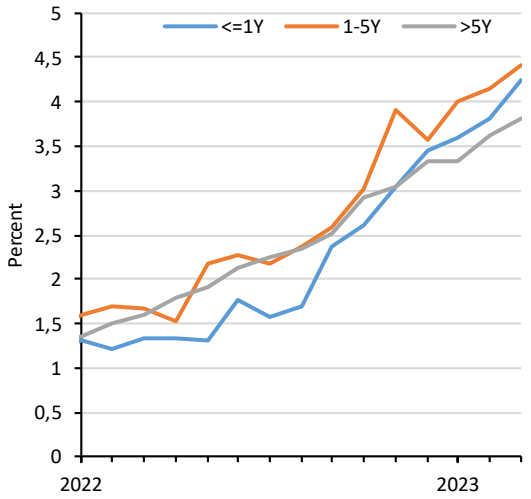
Bank lending conditions to corporations are well aligned across euro area countries. For corporations, the interest rates reached a level of 4.2% for the euro area aggregate in March 2022 (Figure 8a). The interest rates in the 20 Member States of the euro area distribute closely around this value. The 25 to 75% quantile ranges from 4.1% to 5.2%. While the percentage point increase in the current monetary tightening cycle is comparable for the countries, even before the start of the monetary tightening cycle the level of interest rates was higher in Estonia, Cyprus, Greece, Ireland, Lithuania and Latvia. During the euro crisis the financing conditions especially in crisis countries were affected by an increase in risk factors and widening spreads in bond markets (ECB, 2023d). As mentioned before the recent increase in the spread of Italian bonds over the overnight index swaps hints at an increase in risk premia, but until now financing conditions for Italian corporations seem to be well aligned with the developments in other euro area countries.

Figure 11: Interest rates on loans to non-financial companies - outstanding stock and new business

a) Interest rates on outstanding loans to non-financial companies w.r.t. original maturity profile



b) Interest rates on new loans to non-financial companies w.r.t. initial interest rate fixation

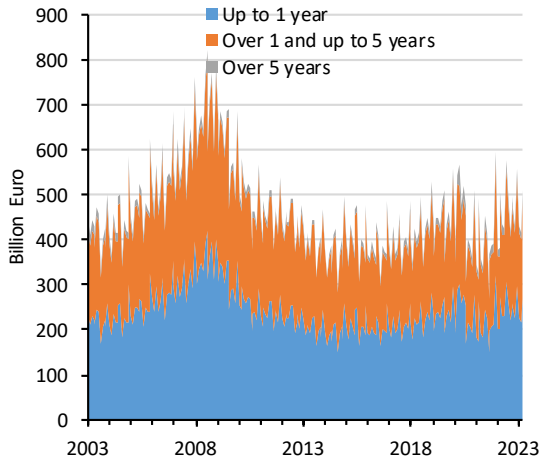


Source: Refinitiv, ECB, own calculations.

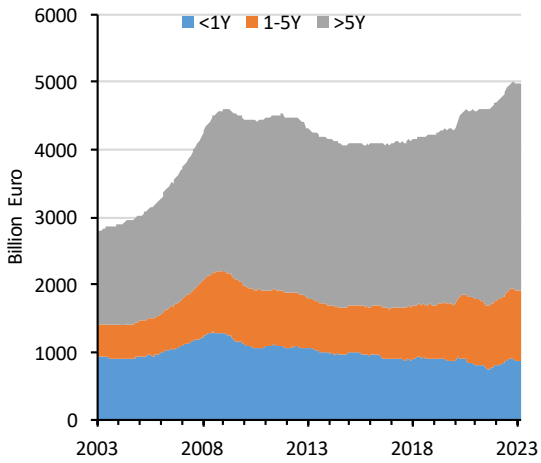
Notes: Panel a shows the increase of interest rates of the outstanding stock of loans to non-financial companies for three categories since 2022. The categories indicate the original maturity of the loans. Panel b shows the increase of interest rates of new loans of non-financial companies for three categories since 2022. The categories indicate the length of initial interest rate fixation.

Figure 12: New business volume and outstanding stock of loans to non-financial companies

a) New business volume of loans to non-financial companies w.r.t. initial interest rate fixation



b) Outstanding stock of loans to non-financial companies w.r.t. original maturity profile



Source: Refinitiv, ECB.

Notes: Panel a shows the new business volume of loans to non-financial companies. The total volume can be separated into 3 categories indicating the length of initial interest rate fixation. Panel b shows the outstanding stock of loans to non-financial companies. The total stock can be separated into 3 categories indicating the original maturity of the loans.

As the general interest rate environment adjusts, the interest expenses for debtors increase, but at the same time interest income for creditors also increases. Fiscal authorities are mostly net debtors. Hence an increase in interest rates leads to an increase in interest payments, but not in interest receipts (Figure 18 Appendix). However, the full impact of higher interest rates does not materialise

immediately as the debt maturing and being rolled-over only represents a small share of the outstanding debt stock. While the interest expenditures increase slowly, they increase steadily the longer the higher interest rate level prevails. The distribution of companies and households, who either face higher payments or receive a higher interest income, is complex and heterogeneous. Companies and households face rising interest payments on their debt, while they also receive higher interest income on their financial assets. Therefore, the net effect of rising interest rates on individual companies and households can vary. For the euro area as a whole, non-financial corporations pay more interest than they receive (Figure 18 Appendix). However, households in the euro area as an aggregate receive more interest payments than they pay out (Figure 18 Appendix). This is due to the fact that, since 2015, the euro area as a whole receives more interest payments from the rest of the world, than it pays to the rest of the world.

4.3. Distributional effects of monetary policy

Heterogeneity of households is a long-neglected dimension in the analysis of monetary policy. The effects of monetary policy on the real economy have traditionally been discussed in terms of macroeconomic aggregates such as consumption, GDP, inflation and employment, based on models populated by a representative household, with interest rates and asset prices being important elements in the transmission (Gali, 2015). However, as in reality, the quantity and structure of financial assets widely differs across households and they are differently attached to the labour force, effects of monetary policy on households will be heterogeneous.

Various channels can be identified that lead to heterogeneity in the effects on household consumption. Standard monetary policy works through variation of interest rates and affects household consumption directly and indirectly (Kaplan et al. 2018). It directly affects the household's saving decision and its net financial income. In response to a rise in the interest rate the household will shift consumption into the future and increase savings. At the same time, higher policy rates will raise interest payments for outstanding debt (to the extent that lending rates are variable) and increase interest income on short-maturity assets. The net effect depends on the composition of the household's portfolios with respect to financial assets and liabilities. In addition, indirect effects occur through adjustments of wages, prices and economic activity in reaction to the initial adjustment of consumption and the response of corporate investment. Lower aggregate demand will lead to a decline in output and reduce employment and wages relative to a situation with unchanged monetary policy. Households will be differently affected by these indirect effects depending on how exposed employment and income are to fluctuations in economic activity. Typically, low-income households tend to have higher cyclical income risks (Guvenen et al., 2014). Another source of heterogeneity is the effect of monetary policy on asset prices, which tend to fall in response to a tightening of monetary policy. Although the change in asset prices primarily redistributes wealth between the holders of the assets – those who plan to sell the asset lose out, whereas those who plan to buy gain –, there is empirical evidence that there is also a wealth effect on consumption both for stocks and for housing (McKay and Wolf, 2023).

Different transmission channels dominate in different income groups of households, but overall the effect on consumption is relatively even. While the dampening impact on labour incomes through downward pressure on wages and employment is particularly important for households with low net worth and low income, households with higher net worth are disproportionately affected by higher mortgage rates and asset depreciation. The direct effect of higher interest rates on consumption is large for households with high spending commitments relative to income and liquid assets ("hand-to-mouth" households). For households with higher net worth, higher interest income works in the opposite direction. On balance, McKay and Wolf (2023) find for the US that the consumption changes

in response to a monetary policy innovation (in that case, a reduction of interest rates) are relatively even. Results in Ampudia et al. (2018) for the euro area, who also account for the effects of unconventional monetary policy in the form of asset purchase programmes, go in the same direction, although they conclude that expansive monetary policy, both standard and non-standard, tends to reduce income and wealth inequality. This is because the indirect effects are relatively more important for poor households and hand-to-mouth households are concentrated in this group. However, the size of the effects of monetary policy is small relative to other determinants of the distribution of wealth and income, with the possible exception of the effect of the sharp recession in the early 1980s in the United States (Coibon et al., 2012). Thus, at the current juncture, the distributional effects of monetary policy should not be a major concern in the discussion about the appropriate policy stance. In any event, other policy areas such as fiscal, labour market or income policies would be better equipped to correct any distributional outcomes of the current tightening cycle deemed to be unacceptable.

5. CONCLUSION

The increase in inflation in the euro area since 2021 has been driven by higher import prices for energy goods and food, as well as by domestic factors. While the contribution from energy has diminished, inflation is now mainly driven by domestic factors, which are reflected in high capacity utilisation. Capacity utilisation is high because both temporary and permanent factors have dampened production capacity and the post pandemic recovery has boosted demand. Limited supply and robust demand have led to an increase in firms' gross operating surpluses, while wages will only increase with some delay. Given the low level of real unit labour costs, higher wages will not necessarily lead to strong second-round effects on inflation from a cost perspective, but will stimulate demand and thus delay the deceleration of inflation. Individual inflation rates have been heterogeneous across households, but only provide an incomplete measure of hardship caused by high inflation. In most European countries inflation rates measured by individual consumption baskets have risen more for poor households because prices for energy and food, which have higher weights in their consumptions baskets, have increased particularly sharply. From a general perspective, hardship due to rising prices tends to be higher for poor households anyway, because they can rely less on savings and have less scope to adjust their consumption basket. For a more comprehensive picture of hardship due to higher prices, the drivers of inflation need to be taken into account, because a domestically driven inflation may have different effects than an imported inflation.

The tightening of monetary policy has materialised in financial conditions, but its quantitative impact on the real economy is uncertain. Financial conditions as measured by long-term yields, lending rates or credit standards, have tightened significantly since the ECB began its monetary policy normalisation at the end of 2021. The sharp decline in housing loans suggests that tighter monetary policy is already having a strong impact on the housing market and is dampening real economic activity by restraining construction investment. However, given the varying time lags in the transmission channels of monetary policy and the relevance of the general economic environment for the effectiveness of monetary policy it is uncertain how large the impact of the tightening will be and when it will reach its full effect on the real economy. Model-based assessments suggest a potentially large impact of the monetary policy tightening on real GDP growth in the euro area of about 2 percentage points per year on average between 2022 and 2025 (Darracq-Paries et al., 2023). According to these estimates GDP growth in 2022 was dampened by about 2 percentage points on average across different models. The impact on inflation is somewhat smaller and takes place somewhat later with an average impact across models of about 2 percentage points per year between 2023 and 2025, with a relatively small impact on inflation in 2022. Given the current macroeconomic projections for the euro area, which expect annual GDP growth rates of 1% or more from 2023 onwards (ECB, 2023c; European Commission, 2023), such a strong impact of monetary policy suggests that either the euro area would have experienced an exceptional boom period or that the projections do not fully take into account the dampening effect of monetary policy, for example due to the uncertainties about monetary transmission. There is also uncertainty about the appropriate stance of monetary policy and the extent to which the current stance is restraining economic activity given the uncertainty about the natural interest rate that defines a neutral stance of monetary policy. Given that inflation expectations are by and large close to the inflation target of the ECB, it seems plausible that the current stance of monetary policy is restrictive. However, it is uncertain whether monetary policy is sufficiently restrictive to bring inflation back to target.

Fiscal policy should be aware of the current constraints on output and aim to contribute to disinflation by pursuing an overall restrictive stance. In an environment of high capacity utilisation and tight labour markets, and with ample extra savings available for private households to finance

consumption, a fiscal policy stimulating aggregate demand would lead to further upward pressure on prices. Rather a policy that contributes to reducing demand pressure would assist monetary policy in its pursuit to re-establish price stability. It would thus reduce the degree of monetary tightening necessary to achieve this goal and the risks for financial stability associated with large swings in the monetary stance. Given that automatic stabilisers should be allowed to fully work in order to limit the negative consequences of the potential fallout from monetary restriction in terms of growth and employment on households and firms, other spending and tax measures should be reviewed carefully.

Broad-based emergency measures should be wound down and any further support to firms and households needs to be strictly targeted. Last year's initial responses of governments in the euro area were predominantly consisting of general tax cuts or subsidies, or caps on energy prices affecting everyone (Schnabel, 2023). These measures were effective in stabilising demand, also for fossil energy, and thus fuelled the inflationary process. Fading them out will result in a restrictive impulse that is appropriate from a macroeconomic perspective in order to bring inflation down. While the lifting of energy price caps could mean upward pressure on inflation in the very short term, the outlook for inflation going forward would improve as purchasing power is restrained and incentives to reduce energy consumption are increased. Continued support of low-income and liquidity-constrained households may, however, remain appropriate on distributional grounds, but any such measures should be strictly targeted and temporary.

Striking a balance between policies to cope with longer-term issues and cyclical requirements is a challenge. Governments need to respond to numerous challenges with potentially large budgetary impacts. The war in Ukraine has raised awareness of a need to increase military spending; the energy crisis that followed Russia's invasion of Ukraine is an impetus to achieve energy independence and accelerate the energy transition; migration and refugees are putting increasingly strain on public services, including education, and housing, at least in some countries; digitalisation and European networks remain on the agenda; measures to reduce dependencies in critical sectors are gaining ground in the context of increasing geopolitical uncertainties and rising risks to the multilateral trading system; structural reforms designed to raise potential growth and mitigate the impact of the demographic change may involve additional fiscal resources, at least in the short term. While the Next Generation EU programme provides a source of funds that is particularly welcome in high-indebted countries, the problem remains that aggressive public investment programmes put additional demands on the economy that is still recovering from global supply chain disruptions and experiencing labour shortages in many sectors. In this environment, there is a risk that governments delay disinflation and crowd out private expenditures, with potentially negative effects on potential output growth. Governments should thus carefully review fiscal initiatives with respect to size and timing in order to minimise the potential conflict with monetary policy.

Fiscal policy needs to be sustainable in order to preserve the necessary room to manoeuvre for the central bank. The independence of the central bank is a cornerstone of modern macroeconomic management, with price stability assigned as the primary goal in the case of the ECB. While *de jure* independence is not disputed, *de facto* independence may be at risk when central banks have to worry about the impact of interest rate decisions on the financial position of government and the possibility of a sovereign debt crisis (Brunnermeier, 2023). The spectre of fiscal dominance – the central bank is prevented to pursue its goals efficiently due to concerns about fiscal implications – remains present in the euro area given that public debt has increased to very high levels in response to the recent crises and the absence of credible fiscal rules or a credible sovereign default mechanism (Fiedler et al., 2020). From this perspective too, fiscal consolidation is an appropriate strategy in the current environment.

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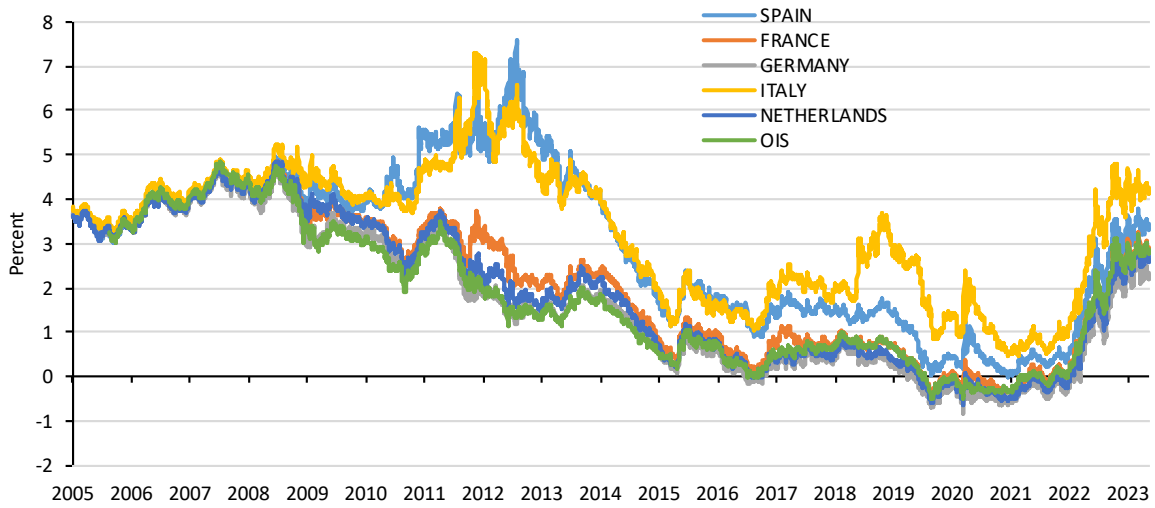
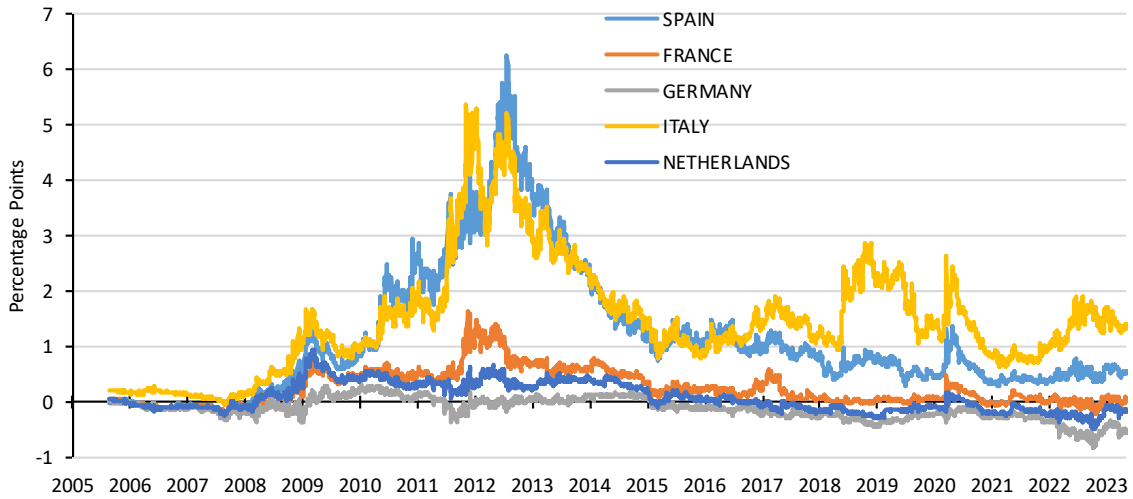
ANNEX

Figure 13: 10-year government bond yields and 10-year overnight index swap (OIS)

a) 10-year government yields and 10-year overnight index swap (OIS)



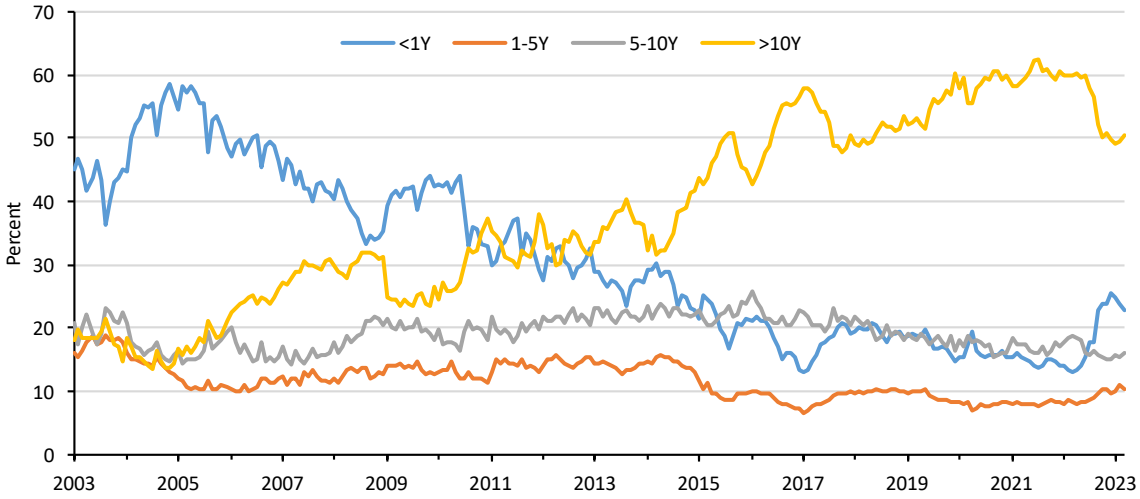
b) Spread between 10-year government yields and 10-year overnight index swap (OIS)



Source: Refinitiv, own calculations.

Notes: Panel a shows the yields of 10-year government bonds of Spain, France, Germany, Italy and the Netherlands. Additionally, the yield of the 10-year overnight index swap (OIS) is shown, which serves as an indicator for financial market expectations on the future path of short-term interest rates. Panel b shows the spread between the government bond yields and the OIS, which serves as an indicator if the rise in government bond yields is in line with the expectations on the future path of short-term interest rates. If the spread widens it is a sign of that risk premia are driving bond yields.

Figure 14: Share of variable and fixed interest rates of new housing loans in the euro area

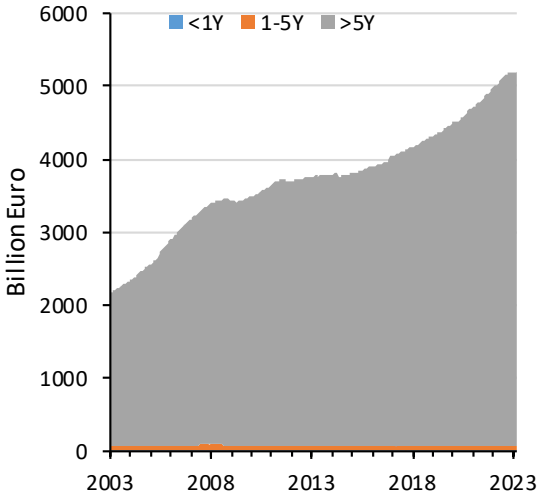


Source: Refinitiv, ECB, own calculations.

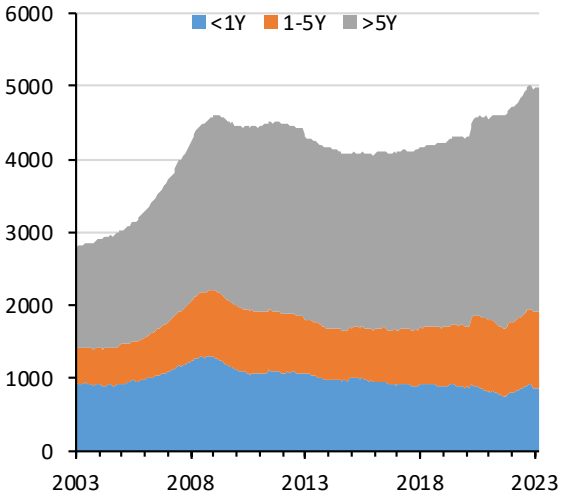
Notes: The figure shows the relative share of the different categories of new housing loans in the euro area. The categories refer to the initial interest rate fixation. In total there are 4 categories depending on the length of initial interest rate fixation.

Figure 15: Original maturity profile of outstanding loans to households and non-financial companies

a) Original maturity profile outstanding stock of housing loans



b) Original maturity profile outstanding stock of loans to non-financial companies

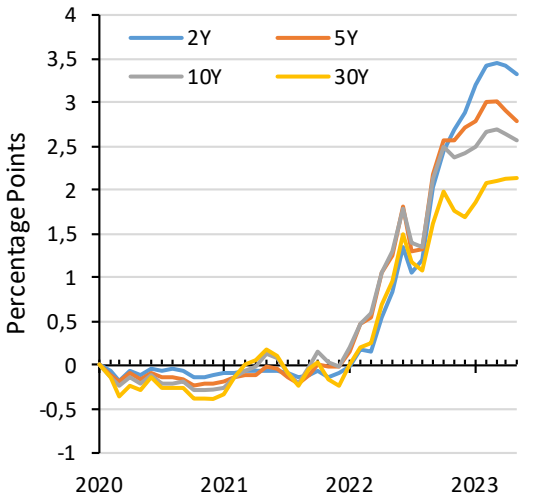


Source: Refinitiv, ECB.

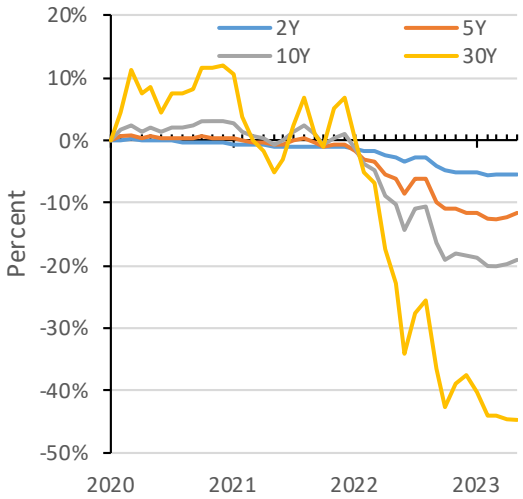
Notes: Panel a shows the outstanding stock of housing loans in the euro area with its original maturity profile. Panel b shows the outstanding stock of loans to non-financial companies in the euro area with its original maturity profile.

Figure 16: German government bond yield and price adjustment since 2020

a) Rise in yields on German government bonds since 2020



b) Price correction of German government bonds since 2020

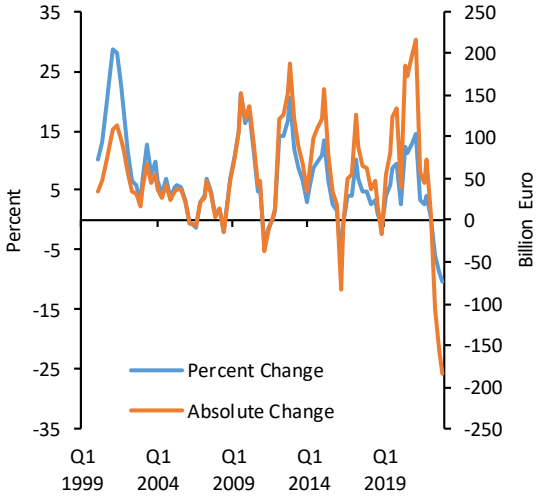


Source: Refinitiv, own calculations.

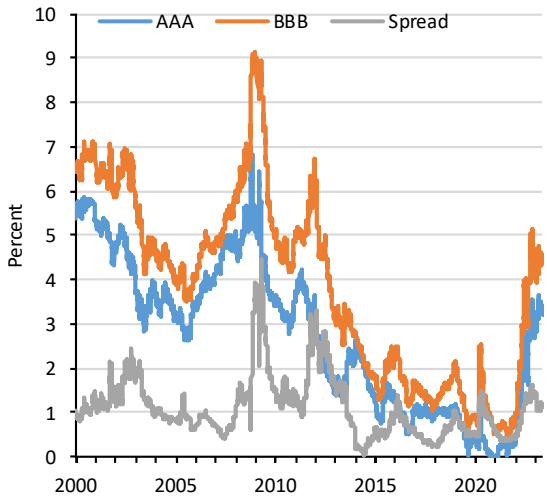
Notes: Panel a shows the percentage point increase in yields for 10-year German government bonds from January 2020 to April 2023. Panel b shows the respective correction in the prices of 10-year government bonds from January 2020 until April 2023.

Figure 17: New issuance of debt securities of non-financial companies and yields on corporate bonds

a) Outstanding debt securities of non-financial corporations



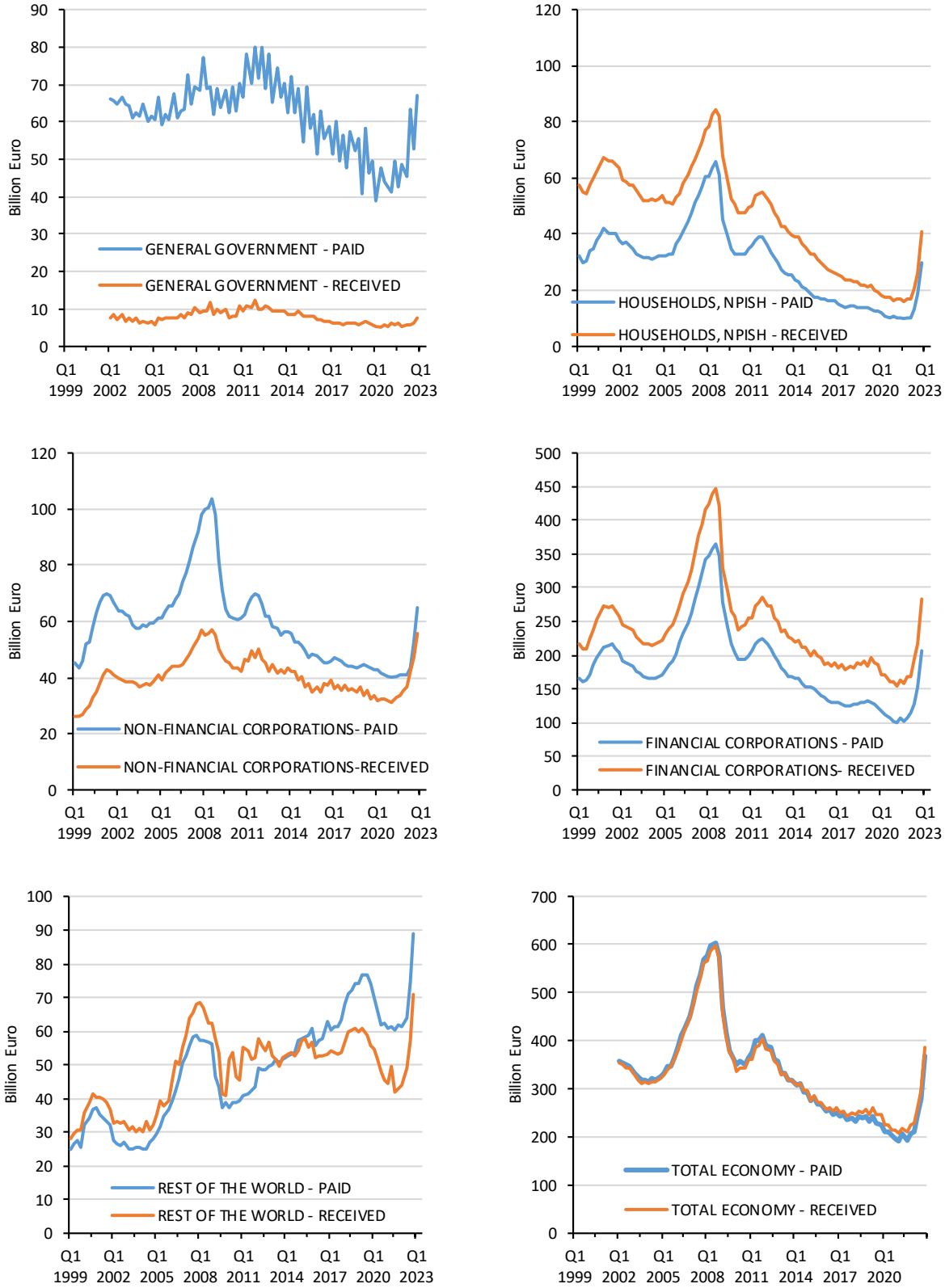
b) AAA and BBB corporate bonds



Source: Refinitiv, ECB, IBOXX, own calculations.

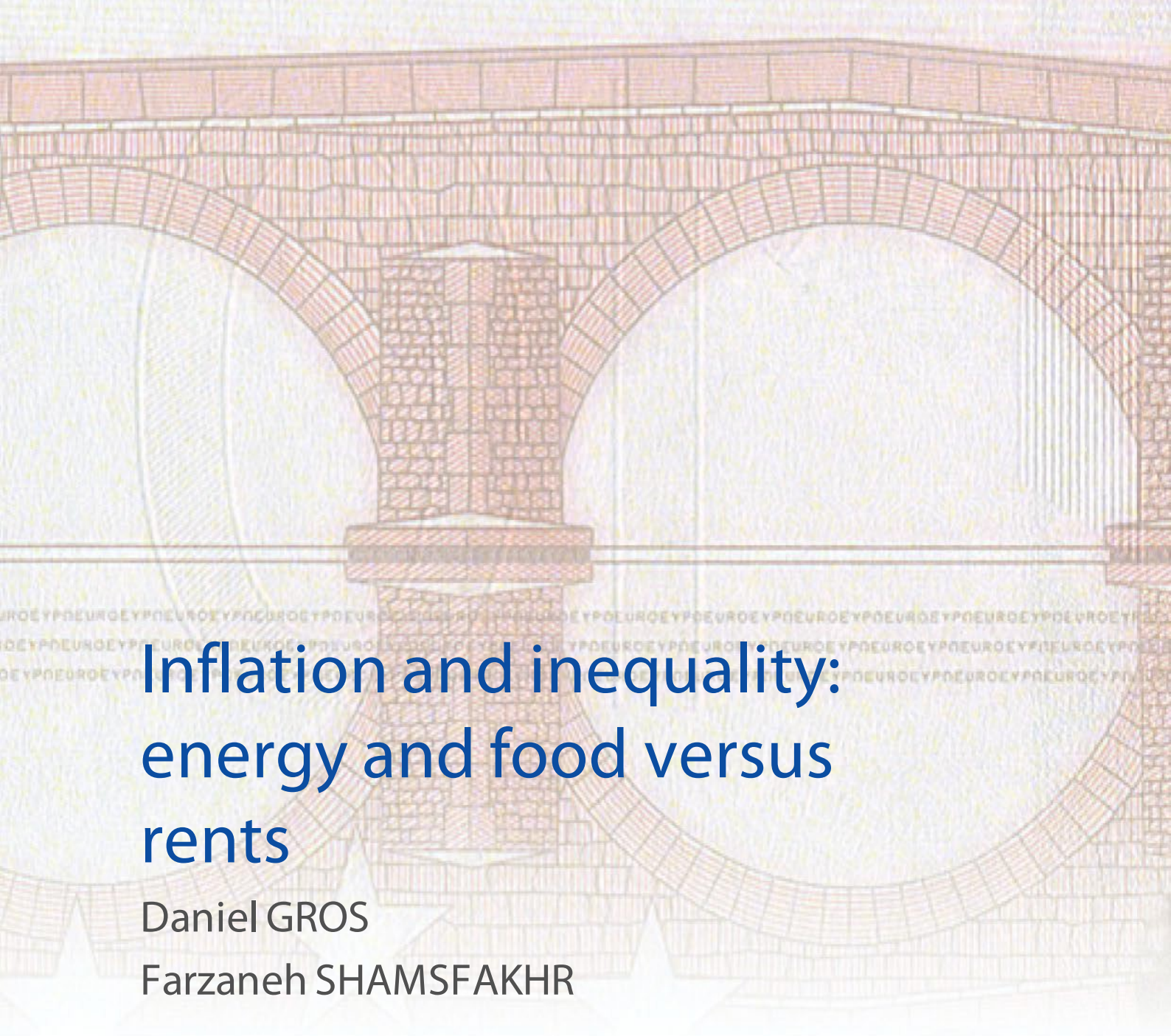
Notes: Panel a shows the absolute and percent change (YoY) for each quarter from Q1 1999 until Q4 2022. Panel b shows the yields on European corporate bonds with the rating AAA and BBB and the spread between both series.

Figure 18: Interest paid and received by sectors in the euro area (sectoral accounts)



Source: Refinitiv, Eurostat.

Notes: Interest paid and received for different sectors of the euro area derived from the sectoral accounts for the time period Q1 1999 until Q4 2022.



Inflation and inequality: energy and food versus rents

Daniel GROS
Farzaneh SHAMSFAKHR

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.

This document was provided by the Economic Governance and EMU Scrutiny Unit at the request of the Committee on Economic and Monetary Affairs (ECON) ahead of the Monetary Dialogue with the ECB President on 5 June 2023.

CONTENTS

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 forteriori,* 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 measures[21] and have greater weights in higher-income household costs, have increased at a higher rate than core inflation.

[21] For more details see Gros and Shamsfakhr (2021).

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.

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.

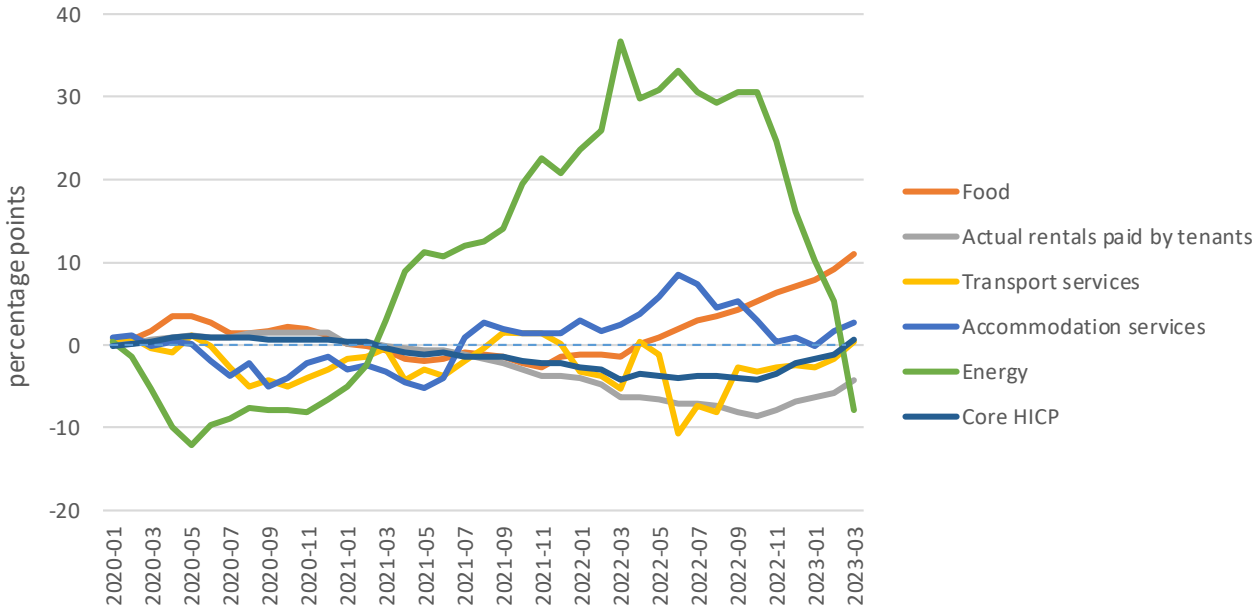
Energy prices clearly represent an outlier. During 2022, they increased an order of magnitude more than other categories, but they are now (based on April 2023 data) only slightly higher than 12 months ago, while other prices have continued to increase.

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 19: 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 3: 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.

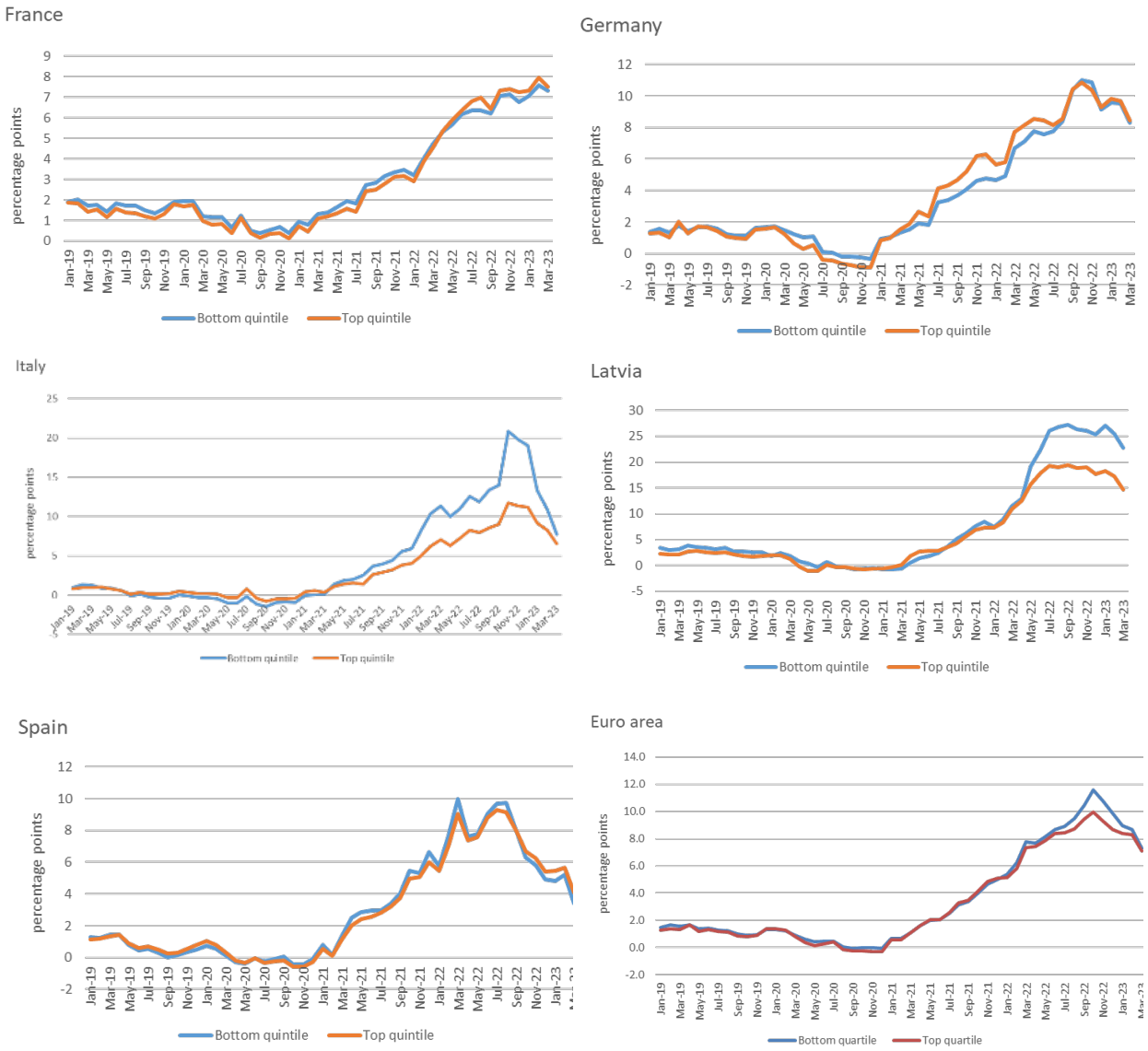
More recently, one finds more and more Member States with the opposite pattern. One reason for this is that energy prices are no longer rising more than the average as illustrated above, but rents continue their trend of below-average growth. Another reason is that higher-income households spend relatively 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 the 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 20: 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 measures[22] 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.

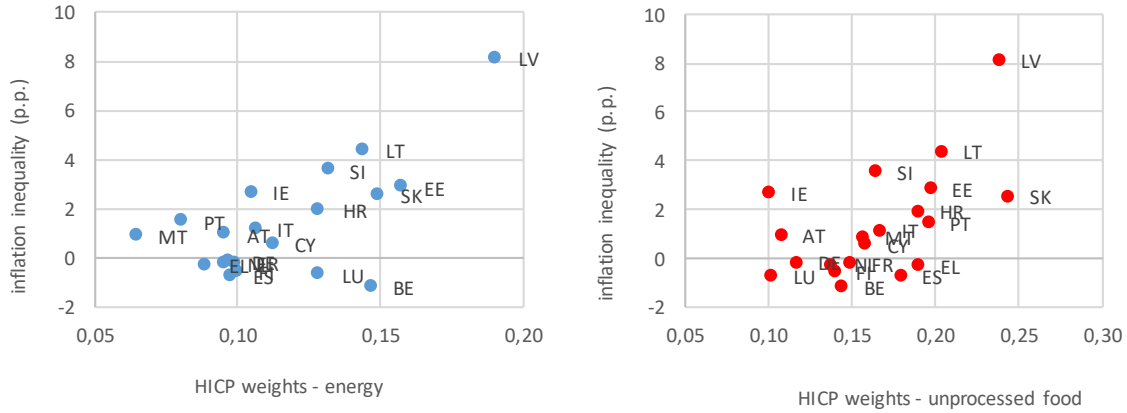
[22] For more details, see Gros and Shamsfakhr (2021).

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 21: 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 4: 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 area[23]. 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.[24]

[23] More details on the regression results are available upon request.

[24] 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 hat 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.

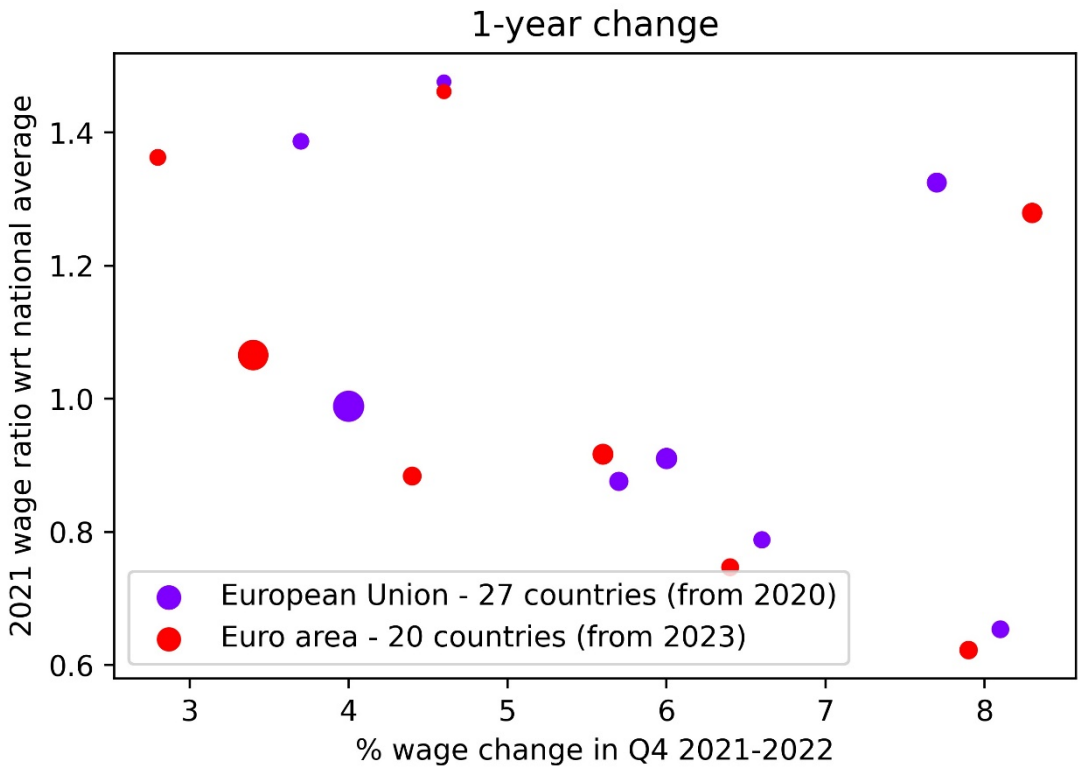
The one-year change cannot be considered to indicate a trend because large changes in any particular sector might just represent a catch-up from previous years of low increases. Panel (c) in the figure thus reports the change over the three years to the end of 2022, spanning the entire post-COVID-19 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.[25]

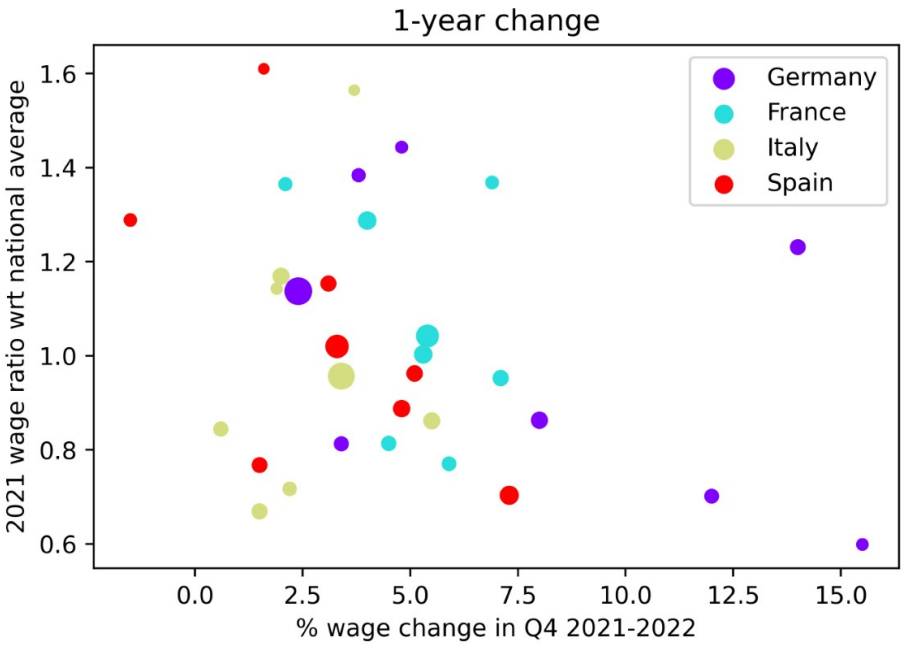
[25] Additional data available upon request.

Figure 22: Changes in relative wages

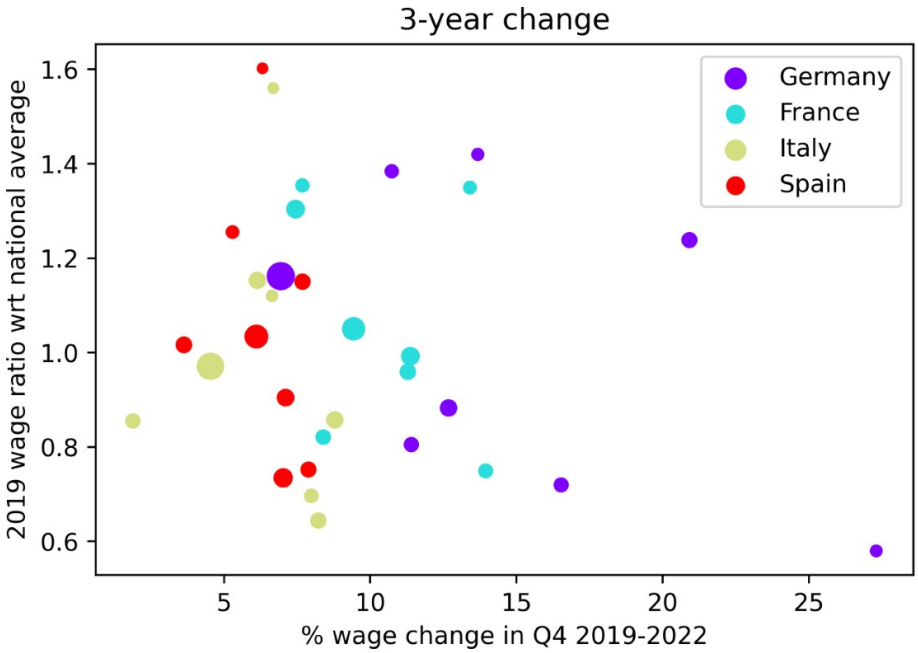
a)



b)



c)



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).

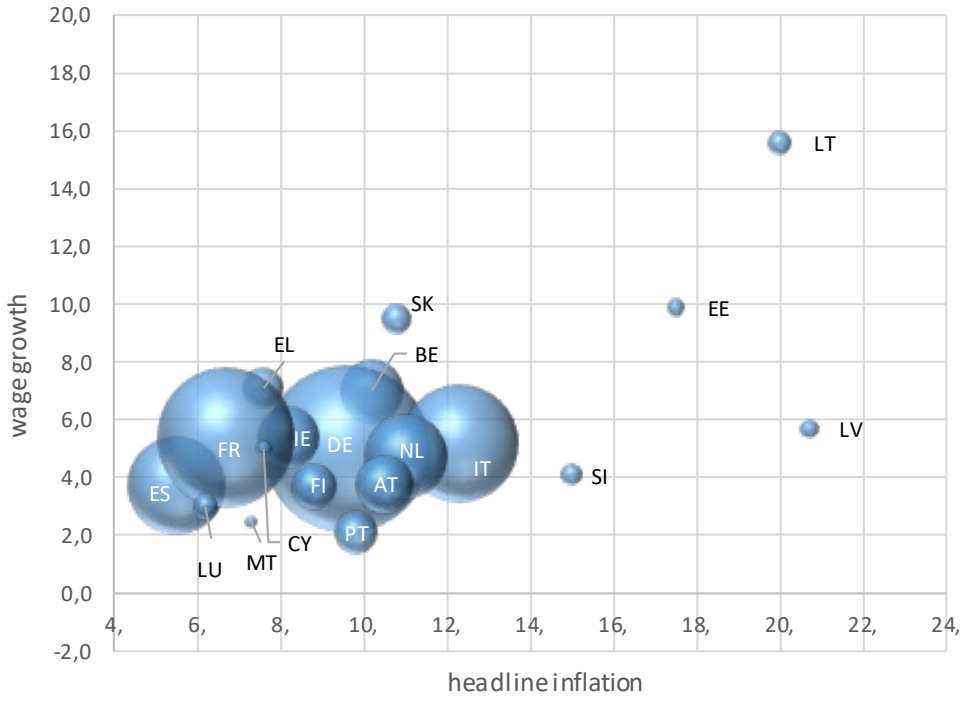
It is of course too early to conclude that this is the case today as well. We provide one piece of evidence that would support the hypothesis that a wage-price spiral has not yet taken hold in the euro area by looking at the cross-country evidence.

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 23: 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.

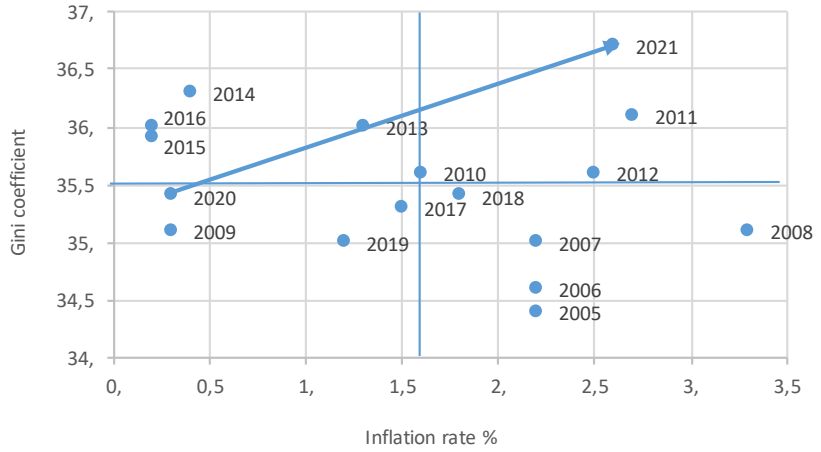
The 2009 financial crisis had a significant impact on inequality and inflation in the euro area. The crisis led to a sharp economic contraction followed by a period of low inflation. However, the impact of the financial crisis on inequality in the euro area was more complex and varied across different 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.

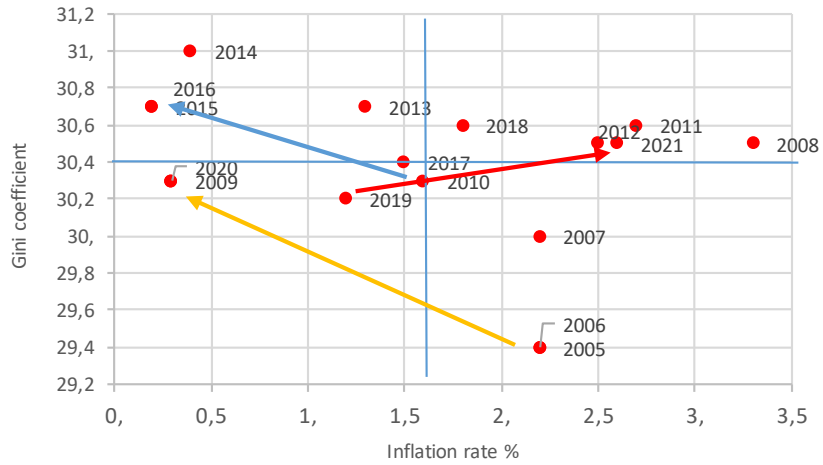
Both the 2009 financial crisis and the euro area debt crisis pushed inequality and inflation rates in opposite directions – leading to higher inequality and lower inflation, albeit to different degrees. The 2020 COVID-19 crisis was not of the same nature. Between 2020 and 2021, both inflation and income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

Figure 24: Inflation and income inequality in the euro area, 2005-2021

a) Excluding social transfers in inequality measures



b) Including social transfers in inequality measures



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.

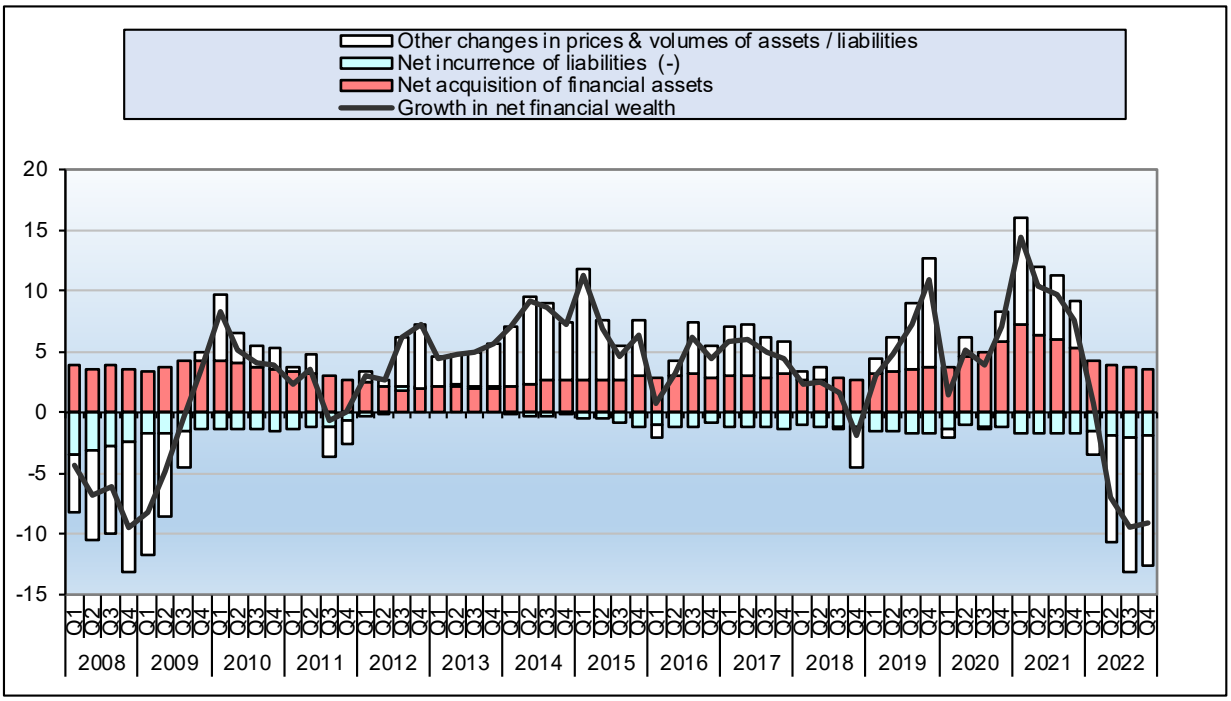
Furthermore, compensation of employees contributed to a notable growth of nominal household disposable income in the euro are over the course of 2022[26]. The labour market in the euro area is projected to remain resilient. This, coupled with the strong wage growth, is likely to prevent a substantial 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

[26] 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 25: 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, an 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 if 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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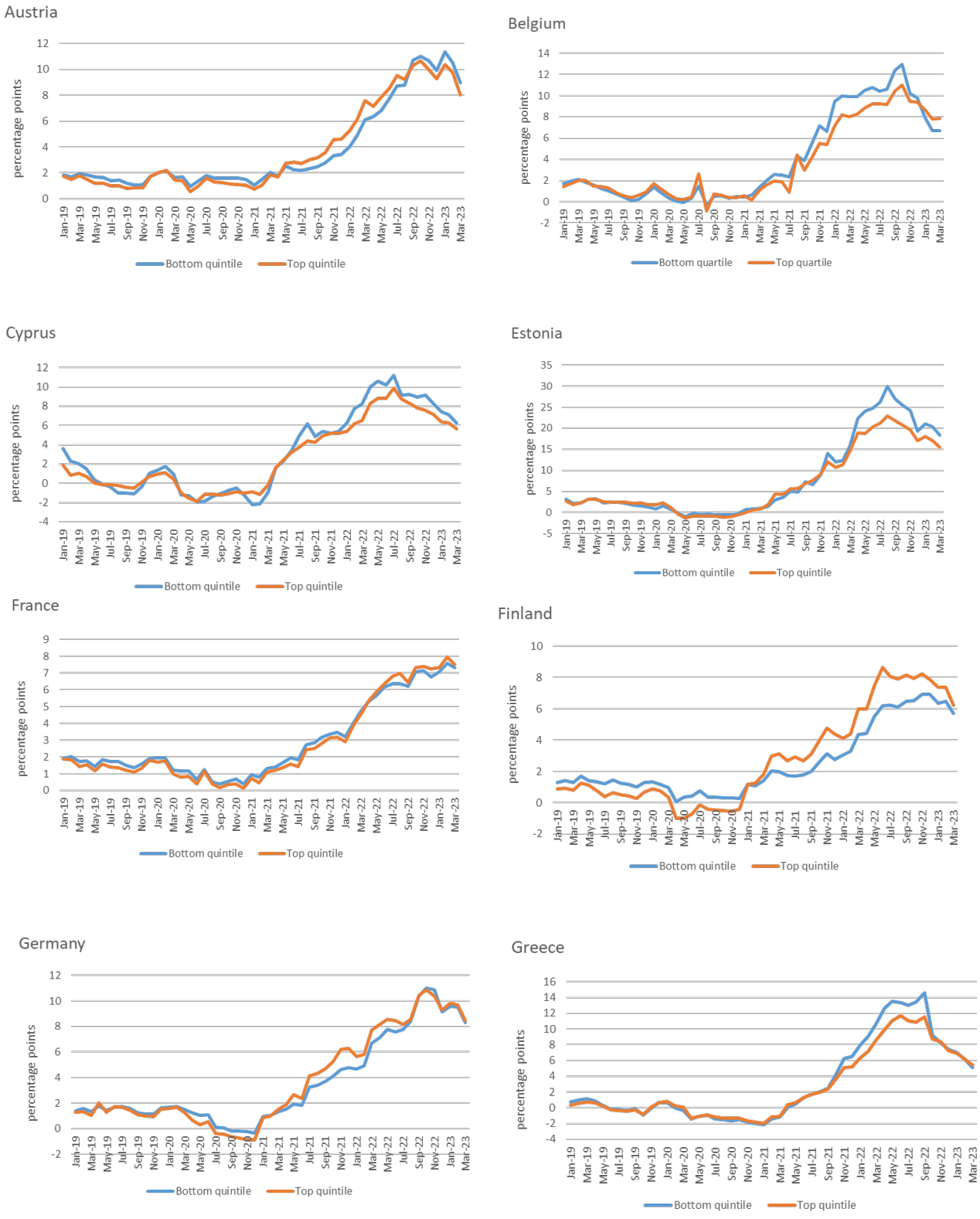
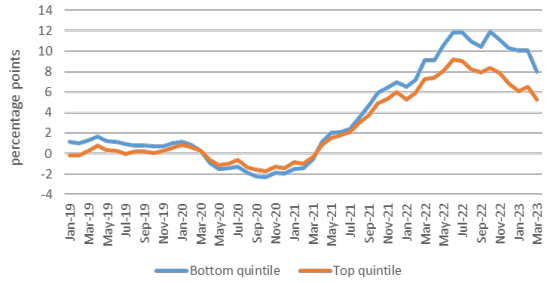
ANNEX

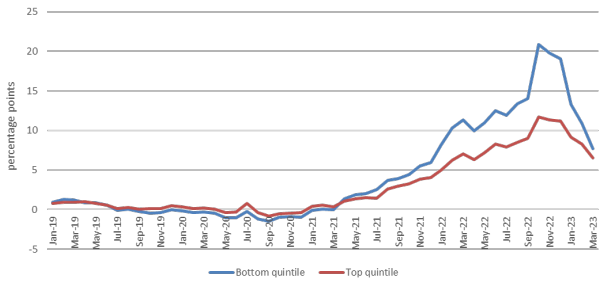
Figure A.1: Inflation inequality – euro area countries



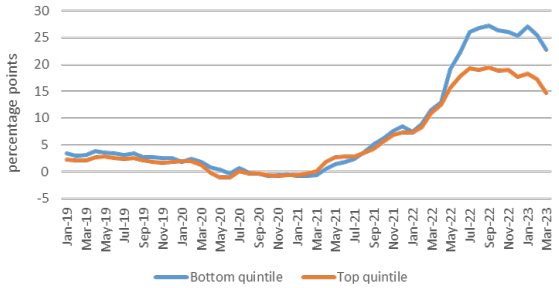
Ireland



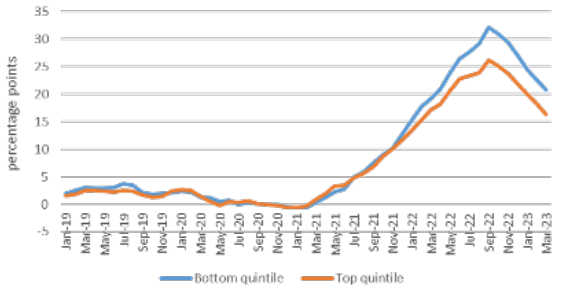
Italy



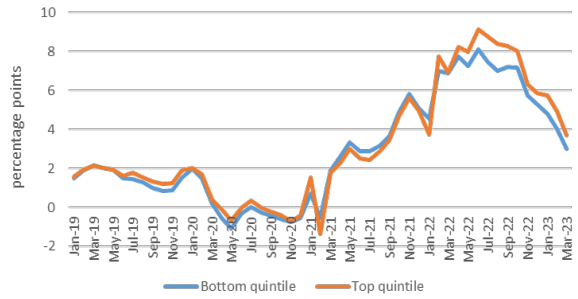
Latvia



Lithuania



Luxembourg



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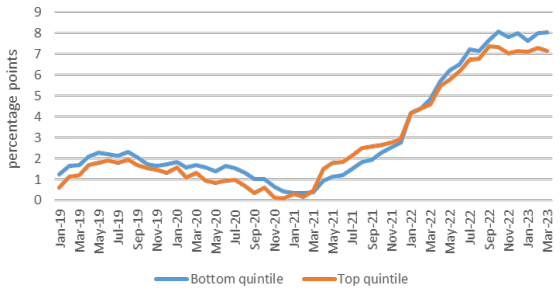
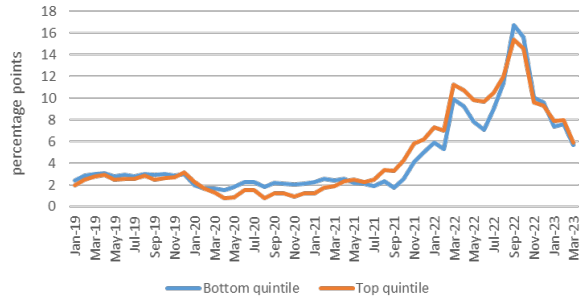
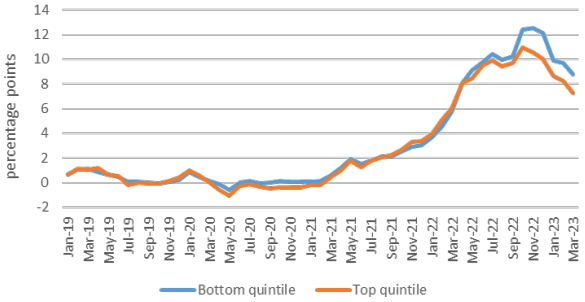


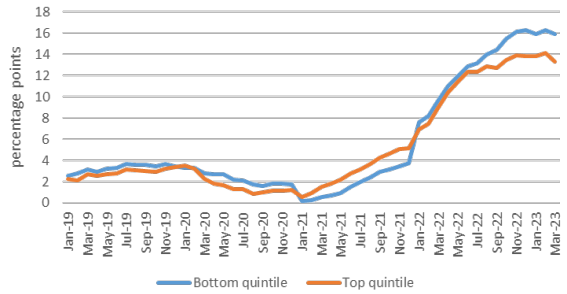
Netherlands



Portugal



Slovakia



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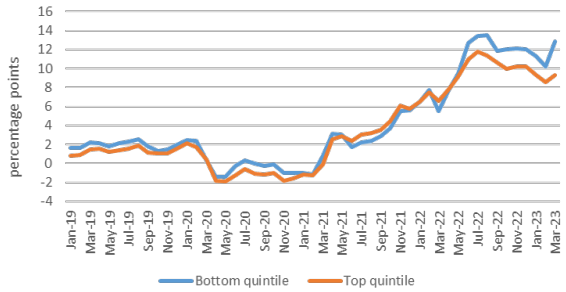
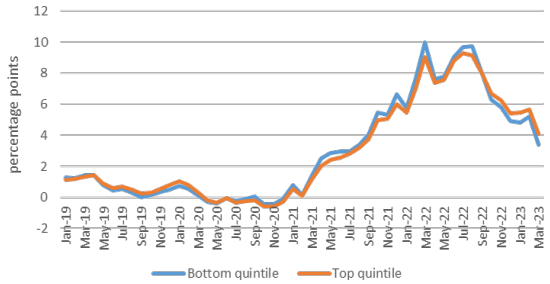
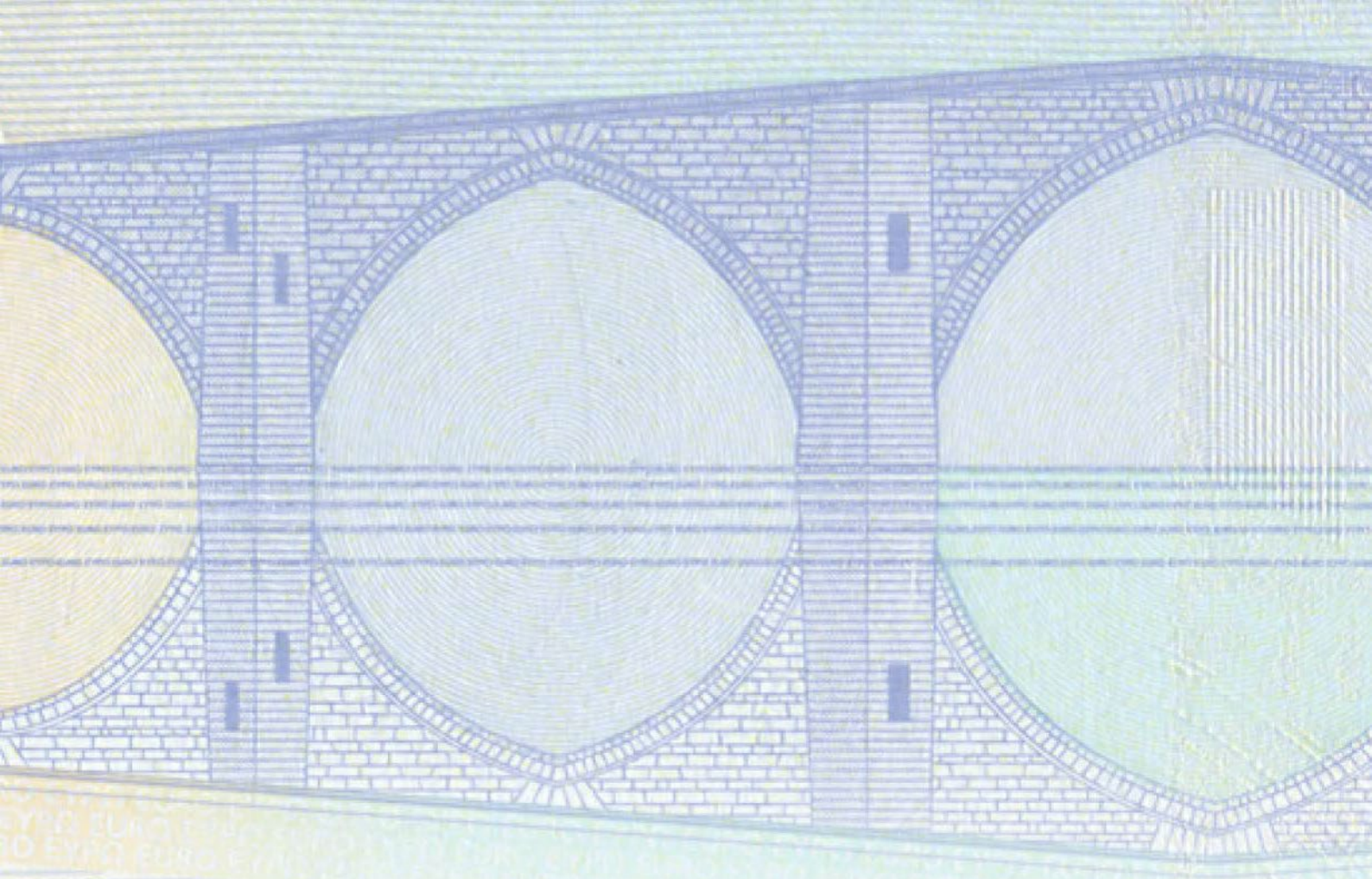


Spain



Source: Authors' elaboration based on data from Bruegel.



Real challenges to the ECB

Charles WYPLOSZ

Abstract

As it brings inflation down, the ECB faces lingering real-side disturbances inherited from the pandemic and the invasion of Ukraine. Its actions sometimes even deepen these disturbances. The paper argues that it simply cannot deal with them, and should not try to.

This document was provided by the Economic Governance and EMU Scrutiny Unit at the request of the Committee on Economic and Monetary Affairs (ECON) ahead of the Monetary Dialogue with the ECB President on 5 June 2023.

CONTENTS

LIST OF ABBREVIATIONS

APP	Asset purchase programme
ECB	European Central Bank
EU	European Union
GDP	Gross domestic product
HICP	Harmonised index of consumer prices
OMT	Outright monetary transactions
PEPP	Pandemic emergency purchase programme
TPI	Transmission protection instrumen

LIST OF FIGURES

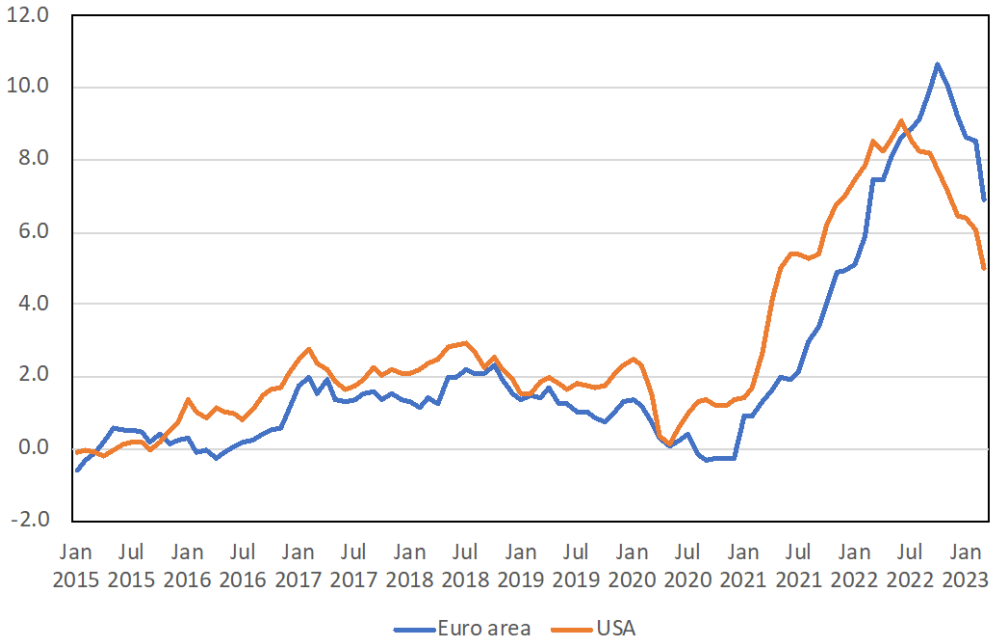
EXECUTIVE SUMMARY

- **As the ECB battles inflation, it is confronted with headwinds from the real economy**. The classic trade-off between strong inflation and weak growth is made worse when inflation has a strong supply-side origin, because monetary policy acts on the demand side. In the case of the ECB, the challenge is even more difficult by heterogeneous situations across and within the member countries and as the transmission of its policies is undermined.
- **Fiscal policies enacted during the pandemic and extended in the wake of the Ukraine invasion do not help with the fight against inflation**. In many countries, the budget deficits remain large and are not expected to be significantly rolled back. They support growth just as the ECB needs to create enough slack to moderate price hikes. Their financing, which requires issuing more public debt instruments, complicates quantitative tightening, which implies unwinding of holdings by central banks of the same instruments.
- **Raising interest rates fragilise high public debts that keep growing**. This represents a threat to financial stability.
- **Interest rate on borrowings by households and firms are markedly different among euro area member countries**. This undermines the transmission of monetary policy and stands to lead to very different abilities to recover from the succession of shocks that occurred since 2020.
- **The labour markets are generally very tight**. This situation encourages nominal wage increases, which feeds the inflation spiral. As a result, the ECB must raise the interest rates further and longer, until the labour markets soften.
- **Yet, real wages have declined**. They have borne the lion's share of the transfers to producers of imported primary commodities (including oil and gas) whose prices have sharply increased. Even if these prices revert to their pre-pandemic levels and the transfers stop, domestic consumer prices are unlikely to decline. For real wages to recover, nominal wages will have to keep increasing, which will feed the inflation spiral.
- **Several distributional issues lie at the intersection between fiscal policies and the evolution of labour markets**. The shocks have had a differentiated impact on individual earnings and economic sectors. Governments have often stepped in to protect those worse hit, but these policies must be discontinued, just as the tight monetary policy stance may further skew income distribution.
- **Inflation has differed among euro area member countries**. This means that some countries have lost price competitiveness against others. Since there are no exchange rates among euro area member countries, future inflation rates will have to undo what past inflation rates have done. The ECB is unable to do anything about this.
- **As it faces a more challenging situation than other central banks, the ECB should be spared unhelpful criticism**. It is not omnipotent and most of the real-side issues identified here belong to the domain of government responsibilities. Avoiding a recession is clearly desirable but this may be an unavoidable effect of the fight against inflation. The inflation surge is not entirely due to monetary policy. If governments do not wish to discontinue their exceptional support measures, the ECB should not be asked to help out. Nor should it be pressed to lower interest rates to support public and private investment.

1. INTRODUCTION

The inflation surge that started in 2021 is historically unique. [27] It has come after a long period when inflation has been too low despite unsuccessful efforts by many central banks to bring it up to their stated targets. As Figure 1 shows, it started during 2020, mid-year in the United States (USA) and at the end of the year in the euro area. It picked up speed in the aftermath of the lockdowns imposed during the COVID-19 pandemic, when many commodity prices began to rise due to disruptions in global supply chains. This is also the time when most governments, eager to soften the blow of the pandemic, extended historically large transfers to households and firms. Much of these transfers were maintained until the end of 2021 when it was perceived that the acute phase of the pandemic was ending thanks to vaccinations and immunity from exposure. Parts of these savings were pent during 2022, leading to rapid expansions that fed inflation. The invasion of Ukraine added more pressure, even though a frequent narrative wrongly asserts that this is what caused the inflation surge.

Figure 26: Consumer price inflation



Source: *International Financial Statistics*, IMF.

The inflation surge is thus driven by many different shocks that occurred in short succession. They combine demand and supply shocks, which originate from, and affect, both the monetary and real sides of the economy. Facing this unusual combination, most central banks dithered. It took time for them to recognise that the surge was not a short-lived temporary phenomenon. Like most public and private forecasters, they were blinded by their forecasting models, which had been developed and estimated in the "normal" period that preceded. Having lost some precious time, the central banks then swung into resolute action. Not only they had to shift to a contractionary policy stance, but they first had to reverse the highly stimulating stance that has prevailed over the previous decade.

They also had to counteract the expansionary fiscal policy stance maintained by many governments. In addition, stung by spectacular forecasting errors, they have abandoned their vaulted forward guidance and must now rely on observed data. Given that monetary policy deploys its effects with a long lag, from 12 to 18 months, they are likely to keep restraining growth and inflation for too long.

[27] Hall and Sargent (2022) draw a fascinating parallel with the two World Wars.

They fully accept this risk as they draw lessons from previous episodes during which premature policy relaxation led to a resumption of inflation, which imposed heavy costs (Schnabel, 2022).

The euro area is in a more difficult situation than the USA because it is a large net importer of oil and gas, which means that a significant part of incomes must be transferred to foreign oil producers, hurting growth. In contrast, as a net exporter of oil and gas, the USA benefits from these transfers. Dependence on Russia has greatly complicated the adjustment to sanctions imposed after the invasion of Ukraine. A further complicating factor is the need to deal with climate change.

It is not surprising, therefore, that criticism of central banks is mounting. The risks of a recession and of financial instability feed a view that monetary policy is excessively tight, especially as it disproportionately hurts the poorer households, which are less well equipped to face the situation. This is undoubtedly true. Yet, it does not mean that the criticism is warranted. The primary responsibility of central banks is to ensure price stability. In an era of high inflation, which disproportionately hurts the poorer households, central banks must adopt unpopular policies. This is precisely why central banks are independent. Hopefully, the criticism will not threaten that independence, which has proved crucial for a long while now.

The next section starts by reviewing two major real aspects of the current situation, the strong fiscal response of governments and the tight labour markets, which directly impinge on monetary policy. Section 3 brings into the picture two little-discussed aspects that are specific to the euro area: changes in member country price competitiveness and cross-country divergences in the cost of private borrowing, both of which affect the real side of the economy. These various developments greatly complicate the task of the European Central Bank (ECB) as it belatedly struggles to bring inflation to the 2% target. The concluding Section 4 reviews some of the most prominent criticisms addressed at the ECB and argues that they are unhelpful because monetary policy cannot deal with real-side disturbances.

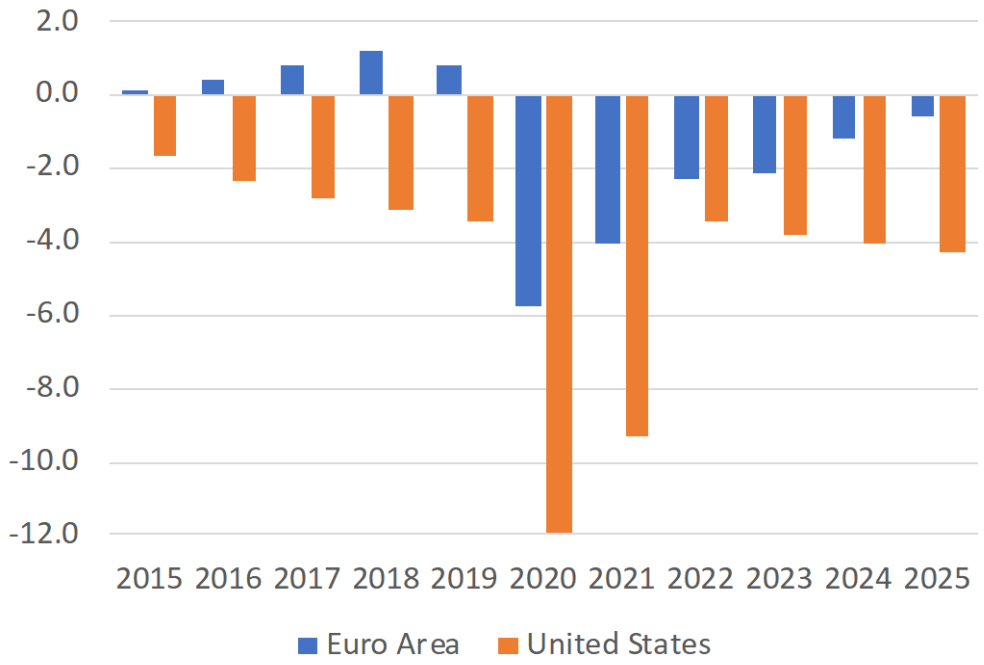
2. PUBLIC POLICIES

Much of the on-going discussion about inflation centres on supply-side factors such as commodity prices and supply chain disruptions. While these aspects are important, they are not the whole story. This section points two other important developments, fiscal policies and the situation in the labour markets.

2.1. Fiscal policies

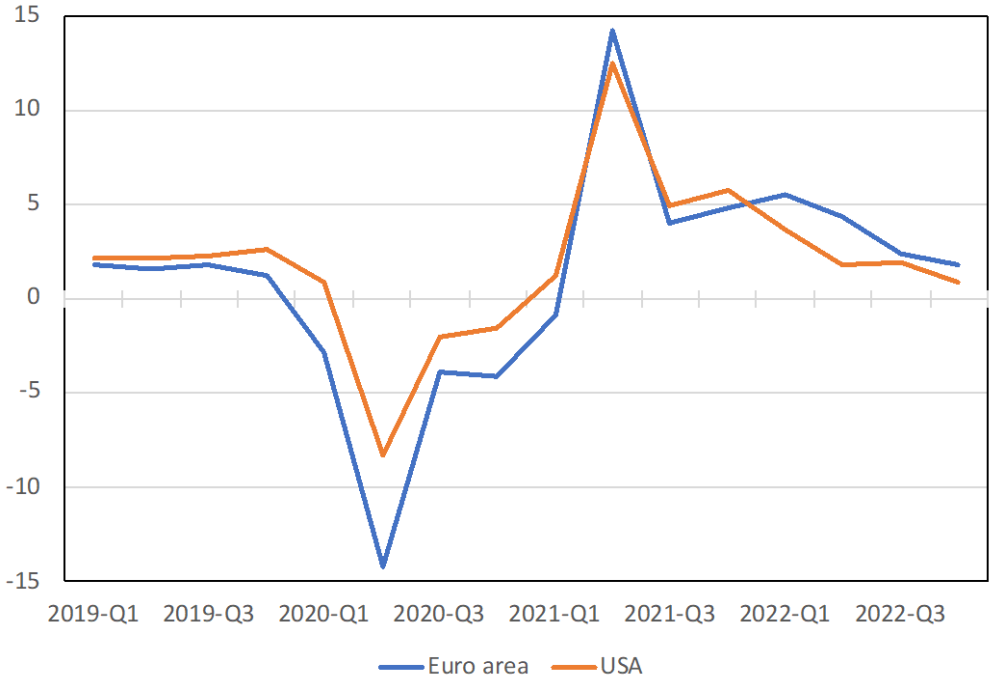
The shift to highly expansionary fiscal policies has been spectacular. Compared to 2019, in 2020 the primary budget deficits – deficits net of public debt service – as a ratio to gross domestic product (GDP) increased by 6.5 and 8.5 percentage points in the euro area and the USA, respectively, see Figure 2. The aim was to soften the blow of the social distancing measures taken to face the onslaught of the COVID-19 pandemic. Under the prevailing troubled conditions, the sharply rising deficits were not an immediate source of inflation, but they remained large in 2021 when growth bounced back, as shown in Figure 3. This is when inflation took off.

Figure 27: Primary budget deficits (% of GDP)



Source: *Fiscal Monitor*, IMF, 2023.

Figure 28: Real GDP growth rates (%)

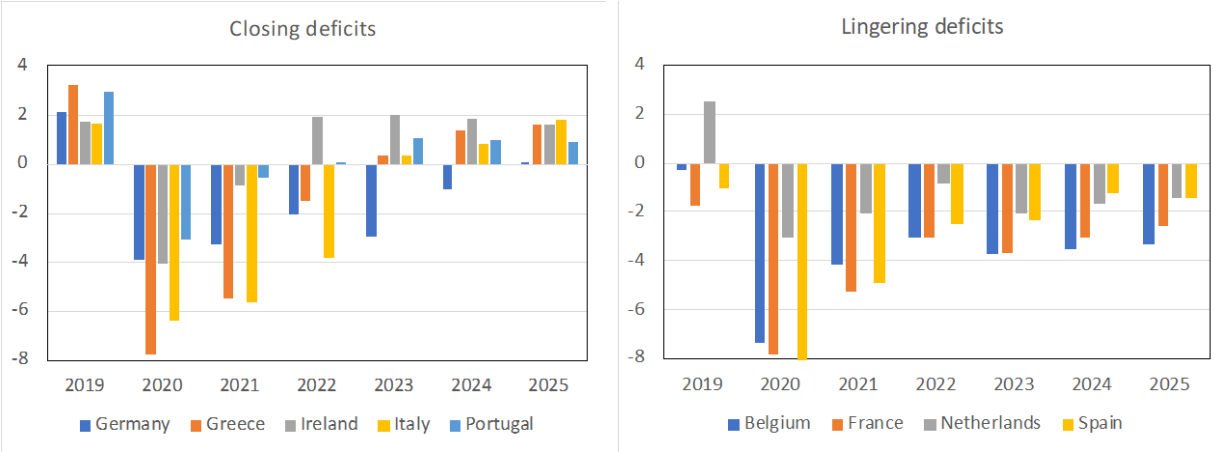


Source: *Economic Outlook, OECD.*

Clearly, large budget deficits alone do not explain the inflation surge. Figures 1 and 2 show that the US deficit was much larger than in the euro area and, yet, inflation has increased further (but later) in the euro area. Part of the explanation is that the energy and commodity price shocks have been larger in the euro area. Still, it is not possible to ignore the impact of the budget deficits, especially as they matter for the future.

Indeed, a big question is how and when these deficits will be closed. It has not helped the central banks that monetary and fiscal policies were set in opposite directions. In addition, because the combination of high and rising interest rates and of quantitative tightening (QT) is a making financial markets fragile, the large public debt increases of the recent past need to be reversed in due time, especially in countries where indebtedness was already high before the pandemic. Public debt risks will emerge as an important issue in the euro area, calling up memories of the debt crisis of the 2010s. Early indications are mixed, and disquieting. Figure 4 display the evolution of primary deficits, including forecasts by the International Monetary Fund (IMF) for 2023-2025. The left-hand side chart shows the case of countries where the deficits are rapidly closing down and are expected to turn into surpluses, while the right-hand chart identifies countries where the deficits are lingering. Interestingly, the "virtous" countries were already virtuous before the pandemic while, with one exception (the Netherlands), the "spendthrift" countries were already spendthrift in 2019 and they increased their deficits much more in 2020 and 2021.

Figure 29: Primary budget balances (% of GDP)



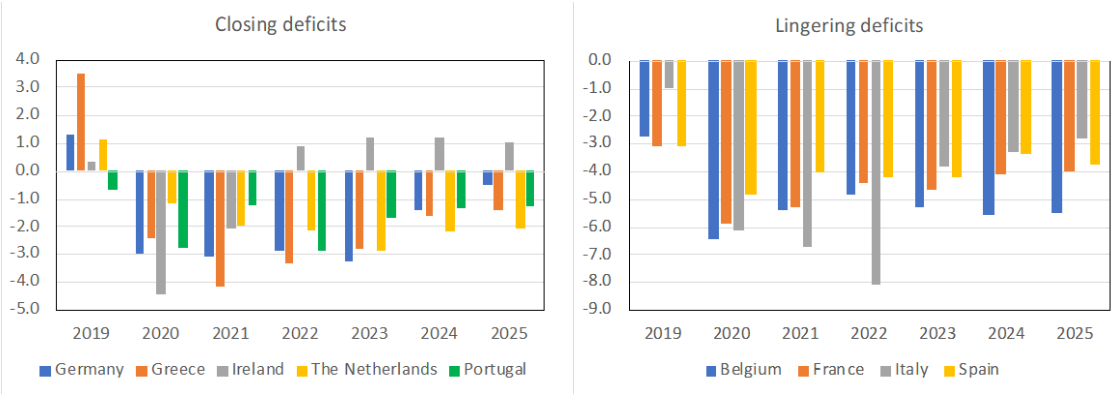
Source: *Fiscal Monitor*, IMF, 2023.

Figure 5 presents the cyclically adjusted primary balances of the same countries as those displayed in Figure 4. To recall, these deficits are a better measure of what governments choose since they take into account the automatic budgetary impact of business cycles. The comparison between these two figures leads to a number of observations:

- The large increases in actual deficits in 2020 are partly due to the recession.
- The improvements in 2021 and after are partly due to the return of growth.
- Except for Ireland, even the "virtuous" countries are not expected to bring their cyclically adjusted primary deficits – which ignore debt service – to balance by 2025.
- The cyclically adjusted primary deficits are not expected to be reduced in the spendthrift countries.
- Looking at the cyclically adjusted primary budgets, the Netherlands moves to the 'virtuous' category while Italy joins the spendthrift country group.

Overall, according to the IMF projections, only two euro area countries (Cyprus and Ireland) are expected to bring their 2025 cyclically adjusted primary balance back to the 2019 level.

Figure 30: Cyclically adjusted budget balances (% of GDP)



Source: *Fiscal Monitor*, IMF, 2023.

For 2023-25, these are forecasts, which may change. Taking them at face value, the implications for monetary policy are:

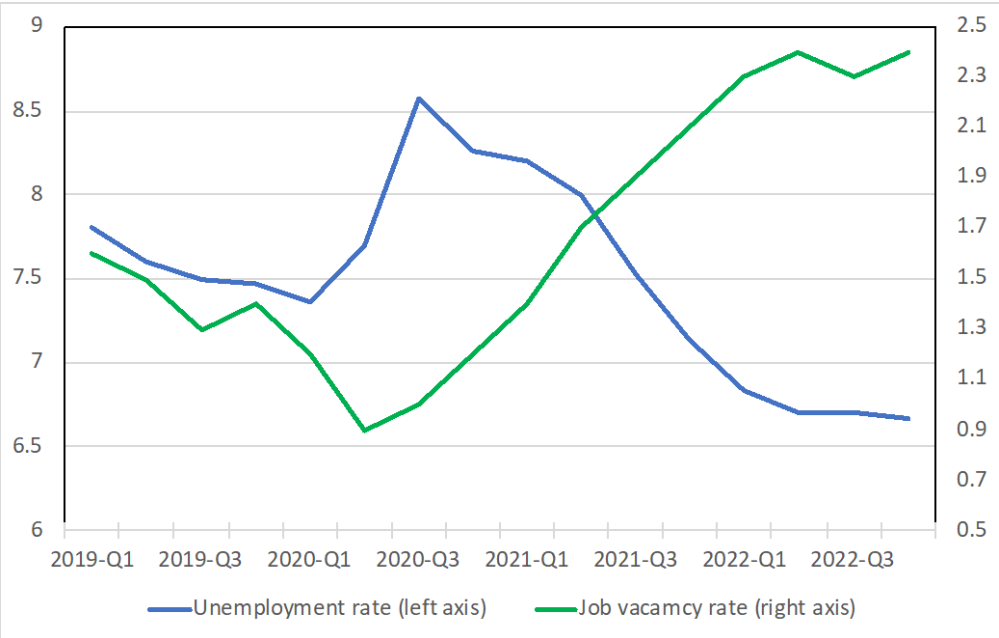
- Over 2022-23, fiscal policies are not helping the ECB in its effort at bringing inflation down to 2%, in effect they force the ECB to lift its interest rate higher and faster, with a negative impact on financial stability.
- The Eurosystem should also seek to normalise the sizes of central bank balance sheets. After many years of quantitative easing (QE), the Eurosystem holds about one third of euro area public debts. QT implies large run-offs or sales of these debts, which would be made easier if new borrowing to finance deficits were reduced. The forecasts envision no significant reduction of deficits from 2023 onwards.
- The inflation surge has mechanically reduced the ratio of public debts to GDP in 2022. If the ECB manages to cut inflation down, this side effect will disappear, which could raise pressure on the most indebted governments.

2.2. Labour markets

2.2.1. Labour market tightness

Euro area labour markets are historically tight. Figure 6 shows that the unemployment rate in the euro area briefly jumped when the first lockdown was imposed but then declined to a level unseen since the Great Recession of 2009. It also shows that the job vacancy rate recovered even faster after an early decline. The ratio of the unemployment rate to the job vacancy rate, a measure of labour market tightness, declined from 11.4 in 2015Q1 to 4.9 in 2019Q1 and to 2.8 in 2022Q4. Firms are looking to fill more jobs from a lower pool of unemployed workers. Numbers differ from country to country, but the situation is fairly general in the euro area. This tightness is not due to a reduction in labour force participation, which stands at a high level.

Figure 31: Unemployment and job vacancy rates in the euro area (%)

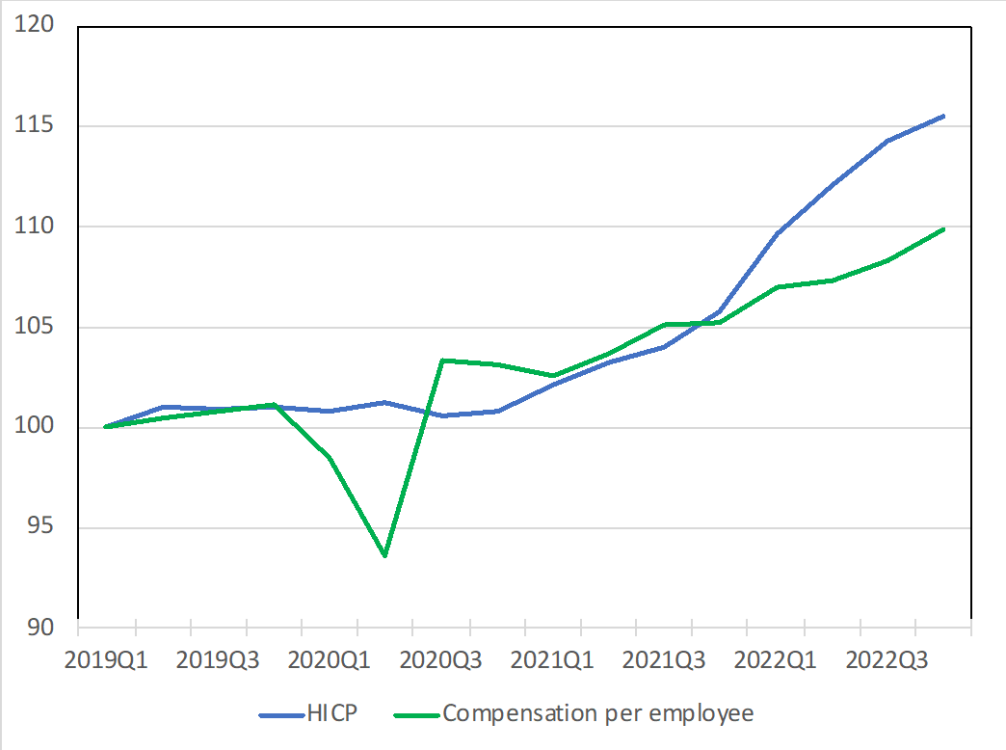


Sources: Unemployment rate: *Employment Outlook*, OECD; Job vacancy rate: Eurostat.

Notes: The unemployment rate measures the percentage of the number of unemployed people to the number of of working age (15-64). The job vacancy is the ratio of open positions to the number of total jobs.

Labour market tightness usually encourages wage increases. Over 2022, average labour costs indeed increased by 5.7% in the euro area, a figure not seen since the end of the inflation period of the 1980s. However, over the same period, the harmonised index of consumer prices (HICP) rose by about 9%. Figure 7 depicts the evolutions of the price level (HICP) and of average compensation per employee since 2019. Compensations declined during the lockdown because many workers were put on leave or laid off, but these measures did not affect the "indispensable" workers who were mostly occupying low skill jobs. The average compensation caught up as the higher skilled workers returned to work. Then, over 2021 and 2022, wages did not keep up with inflation. Compared to early 2019, in late 2022 the loss amounted to 5.6%.[28] These contrasted evolutions are important for monetary policy.

Figure 32: Prices and wages in the euro area (index 100 = 2019Q1)



Source: ECB.

The early view that inflation would be temporary and therefore did not require a tightening of monetary policy was based on the assumption that, once the increases in primary commodity prices stabilise, consumer prices would stabilise as well. For this assumption to work, wage increases should be limited, so production costs would only grow because of higher costs in intermediate products. In contrast, the inflation spiral view holds that price increases lead to wage increases which lead to price increases and so on. It was often described as outdated. As it turned out, the inflation spiral view is not outdated. The ECB will not bring inflation down until wage increases moderate.

2.2.2. Absorbing the increases in imported commodity prices

The gap between labour compensation and the price level exhibited in Figure 7 means that the purchasing power of wages has declined on average by more than 5% since 2019. This is a frequent impact of quickly rising inflation as wage increases lag, due to infrequent wage negotiations. But there is more to it this time around. The increase in imported primary commodity prices means that,

[28] Over time, wages grow faster than prices. The difference captures on-going advances in labour productivity.

collectively, the euro area is transferring income to the producers. This income loss, estimated at some 2% of GDP, must be shared somehow. The decline of the purchasing power of wages shows that the burden has been borne mostly by workers so far.

Will this loss be erased eventually? If primary commodity prices retreat to levels seen before the pandemic, the income transfers will stop. If consumer prices decline accordingly, the purchasing power of wages could be restored without wages increasing further. This is an unlikely scenario, though. A generalised price decline, that is deflation, is a rare event, and one that the ECB would not wish to see after having battling too low inflation over a decade. A more likely scenario is that wages increase faster than prices in the coming years, which would make it difficult to break the inflation spiral.

Thus, the future evolution of commodity prices presents the ECB with two difficult situations. If passed through to the consumer price index, a return to pre-2020 prices could lead the ECB to promptly reverse its policy stance to block any return to too low inflation. [29] If instead the prices of commodity prices remain at their current levels, the loss in the purchasing power of labour compensation stands to be reversed through a continuation of the inflation spiral, which would lead the ECB to maintain its policy stance.

2.2.3. Income distribution

A number of distributional issues lie at the intersection between fiscal policies and the evolution of labour markets. The shocks have had a differentiated impact on earnings and economic sectors. A detailed view is emerging with a rich web of effects that have changed over time. A brief summary is as follows:

- Through social distancing measures and self-restraint, the COVID-19 pandemic has led to a sharp contraction in the service sector, hitting recreation, travel, and hospitality. Other services, which can function through remote work have been spared, or even benefitted. Public transfers to households have led them to accumulate savings, some of it went into purchases of durable goods.
- During that period, government programmes also encouraged work at home and job retention. Those left out of these programmes were severely hit. The "essential" workers suffered from exposition to COVID-19, restrictions from public transportation and difficult working conditions but have also continued to earn wages. Middle-income workers, who could not work from home seem to have been hit more than lower-income "essential" workers and higher-income workers who worked from home and saved on transport costs. [30]
- When normality started to return, dissaving boosted the industrial sector but the recovery was weak or even inexistent in sectors affected by supply chain constraints (e.g., the car industry). Similarly, demand for services surged but supply was hampered by labour market tightness. The result has been an uneven recovery and a reallocation of workers across sectors.
- The increase in energy and food prices has taken a heavy toll on poorer people. Many governments have responded with various support measures.
- The interest rate increases have affected the housing market. Mortgages have become more expensive, especially where they are indexed to short-term interest rates. Financial market

[29] It would also represent a setback for the fight against climate change, which has been boosted conveniently by the increase in energy prices.

[30] Gros (2023) argues that we know little about whether income inequalities have increased or decreased.

turmoil is leading to tightened access to bank lending, affecting both households, especially the less well-off, and firms that face difficulties to carry out productive investments.

These real-side developments complicate monetary policy. Monetary policy is never neutral but, as it shifts back and forth from accommodating and restrictive stances, the burden ends up being shared over time across income groups. Coming on the steps of the COVID-19 and post-COVID-19 shocks and the Ukraine crisis, the tightening under way often hurts the same less-favoured groups and the firms that emerged fragilised from the pandemic. There is nothing that the ECB can do about the impact of its policy stance, short of prematurely giving up on its efforts to bring inflation down. Income distribution is an issue that belongs to governments. It is incumbent on them to decide how to deal with inequities. A natural response is to use fiscal policy, but any inflationary impact may force the ECB to push interest rates even higher. Re-distributing income from the better-offs and winners of the past shocks to those who are hurt and don't have resources to cope with the shock, while keeping a lid on the budget deficit, is possible. It calls for precisely targeted measures.

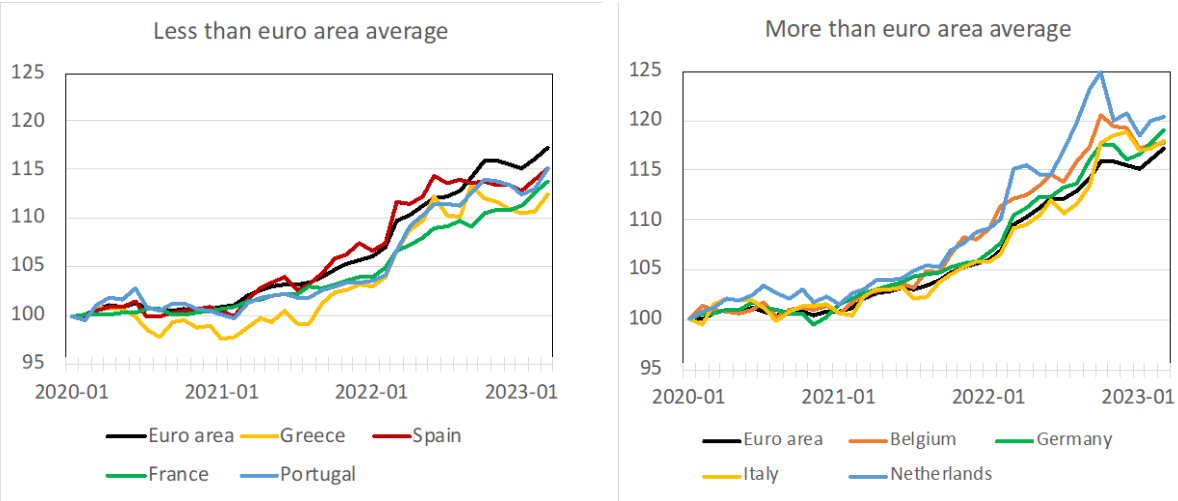
3. COMPETITIVENESS WITHIN THE EURO AREA

The heterogeneities presented in the previous section suggest that the effects from the shocks vary across the euro area member countries as well. The absence of exchange rates within the euro area, mean that differences affecting price competitiveness cannot be easily corrected. With risk premia also affected, differences in interest rates affecting public debts, as well as the costs of public and private investment, cannot be dealt with traditional monetary policy.

3.1. Price developments

Figure 8 depicts the evolution of the consumer price index in two groups of countries. The left-hand chart shows the cases of some countries where the price level rose less than the euro area average, while the right-hand chart shows the cases of some countries where the price level rose more than the euro area average. It seems that these differences are largely driven by policy measures. The countries with less inflation are those where governments subsidised firms to allow them to absorb the shocks without raising prices too quickly. In the countries that appear in the right-hand chart, the subsidies were smaller or much delayed as in Belgium and the Netherlands. These subsidies varies but they usually included direct transfers to firms and wage supports. The differences also reflect the extent of the shocks, for example the collapse of tourism in Greece or the dependence on oil and gas imports from Russia as in Germany and the Eastern countries.

Figure 33: Evolution of consumer prices (index: 100=January 2020)



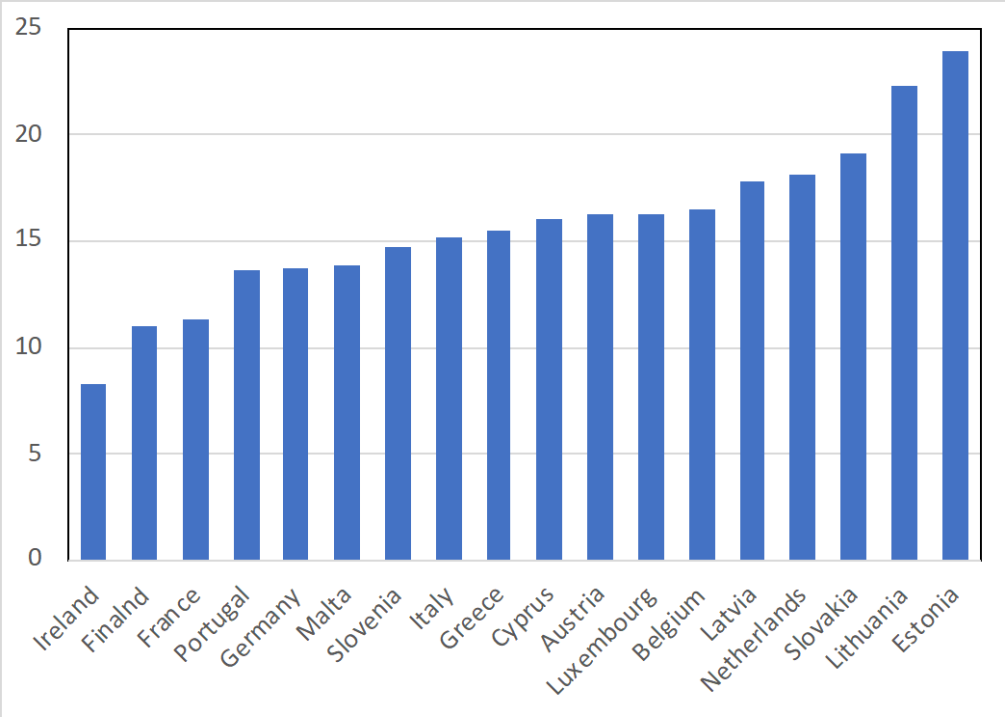
Source: Eurostat.

What matters here is that divergent price evolutions affect countries' competitiveness, a real side characteristic. Consumer prices may not a good description of price competitiveness as they include nontraded goods and services. A better measure is the price of industrial goods, which are generally either exported or imported, at any rate subject to foreign competition. The increases in the prices of industrial goods are reported in Figure 9. They are aligned with the evolution of consumer prices. The differences across countries are significant. For example, the index rose by 8.3% in Ireland and by 24.0% in Estonia.

An open question is whether and how these differences will be corrected in the future. It will depend on the causes that lie behind the differences. One cause is varied government support schemes – including energy subsidies. These schemes will have to disappear reasonably soon, both because they are costly and because they run against Single Market rules that have been temporarily lifted. Another cause is the dependence on Russian imports. This effect will also diminish as the most affected

countries diversify their imports. The more challenging aspect is the flip side of dependence on Russia – including as a customer. Some countries had previously benefitted from a comparative advantage in terms of lower energy costs. As this advantage disappears, they will have to undergo an industrial restructuring, which is bound to be protracted. The common currency makes it impossible to absorb the blow with exchange rate adjustments. This is one aspect of the well-understood fact that the main costs of belonging to a monetary union is the occurrence of asymmetric supply shocks.

Figure 34: Increase in industrial goods prices (%, 2020:1 to 2022:3)



Source: Eurostat.

Note: The index excludes energy prices.

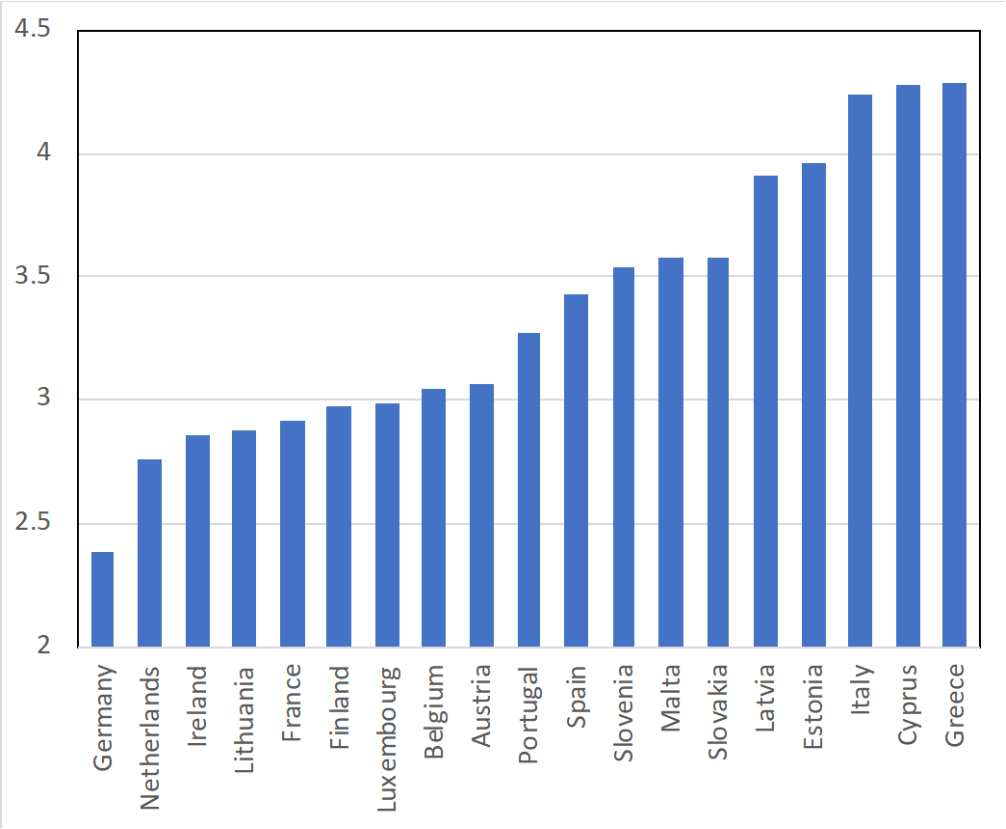
3.2. Interest rates

The recovery and the adjustment to climate change will require an increase in productive investments. Countries where borrowing costs are higher will face a competitive disadvantage. This will also affect the costs of servicing the public debt. As can be seen from Figure 10, long-term interest rates exhibit large differences across euro area member countries. These are nominal interest rates, while those that matter for investment are the real rates. Unfortunately, to compute real interest rates, we need corresponding measures of expected inflation and existing forecasts are not reliable at this juncture. [31]

In general, private borrowing rates are related to public borrowing rates. In turn, public borrowing costs are driven by the rates set by the central bank, and how they are expected to evolve over time, and by a risk premium that is related to the sustainability of the public debt. Since the euro area countries share the same central bank, differences in public borrowing rates reflect the risk premia. Private borrowing is customarily seen as less safe than public borrowing, which implies an additional risk premium.

[31] There is no discernible relationship between the nominal rates and current inflation.

Figure 35: Interest rates (10-year bonds, %) – March 2023



Source: ECB.

This is not the end of the story, though. The link between the interest rates displayed in Figure 10 and national public debts is very weak. In addition, in the euro area, it is not obvious that private borrowing riskiness should be tightly related to public debt in the home country. Within the EU, private borrowers can in principle borrow in any country and the Banking Union is meant to encourage cross-border borrowing and lending. However, the Banking Union is incomplete and factors such competition in the financial sector and the legal framework play an important role, as documented in Van Leuvensteijn et al. (2011).

More generally, like many economic variables, the current levels of interest rates in the euro area must be driven by many of the exceptional factors that make the current situation special. The message from Figure 10 is that the euro area countries face different challenges as they need to invest to deal with the real-side difficulties that have arisen since 2019. The euro area is not the level-playing field that the ECB needs to conduct its policy. The much-vaulted transmission of monetary policy is deeply perturbed and there is no obvious way to circumvent this challenge.

4. CONCLUSION: UNHELPFUL MYTHS

Fighting inflation is the bane of central banks as they must enact unpopular contractionary policies. This is made worse when inflation has a strong supply-side origin because monetary policy acts on the demand side and thus faces a difficult trade-off between strong inflation and weak growth. In the case of the ECB, the challenge is even more difficult as it faces heterogeneous situations across and within the member countries, and as the transmission of its policies is undermined. With the Outright Monetary Transactions (OMT), Pandemic Emergency Purchase Programme (PEPP) and the Transmission Protection Instrument (TPI), the ECB has already shown a willingness to depart from its traditional one-size-fits-all approach to respond to threats to national public debts. Dealing with divergent inflation rates, differences in interest rates and, more generally, asymmetric shocks that may linger, a priori seems impossible. It is also difficult to see how it can deal with the income distribution consequences of monetary policy, and therefore it should not try.

All this adds up to unusual challenges for the ECB as higher interest rates and QT are needed to bring inflation down to its target. At least, its task would be made easier if a number of myths are not taken seriously by the various actors shaping economic and financial conditions.

The myth of central bank omnipotence. Central banks have been successful at keeping inflation rates low, at trying to raise them when they were too low and at responding to bouts of financial instability, apparently with quasi-infinite resources. They have acquired the status of problem-solvers of first resort, but many of the current challenges lay outside their competence. This is the case of the various heterogeneities that have emerged across and within euro area member countries. The ECB has no instrument and no legal basis to deal with these heterogeneities.

The myth of avoiding a recession. There are numerous claims that monetary policy tightening should be moderated, possibly even stopped, to avoid an outright recession and to limit increases in unemployment. The only tool available to central banks when they need to bring inflation down is to create enough slack in the economy, including in the labour markets, to discourage prices and wages from spiralling up. Given the massive uncertainty that currently prevails, any hope of fine-tuning monetary policy to bring inflation down without entering into a recession is unrealistic. The ECB is clearly aware of the difficulty (Lane, 2023; Schnabel, 2023).

The myth that inflation is entirely due to monetary policy. Obviously, external price increases (food, energy, primary commodities) have played a role in the inflation surge. Unusually large fiscal expansions have also contributed. It remains true that, in the long run, it is monetary policy that will determine inflation, which is why the ECB is right to focus on this objective, but we are still in the process of digesting the shorter-run impact of exceptional shocks.

The myth of supporting fiscal policies. The emergency fiscal measures taken during the COVID-19 pandemic and following the invasion of Ukraine can be withdrawn. If, for some reason, governments decide that some measures cannot be discontinued, they now should finance them through reductions in spending or tax increases. Criticism that monetary policy should assist governments by lowering the interest rate runs counter to the objective of price stability, which is the key responsibility of central banks.

The myth of urgent need to invest. It is often claimed that now is the time to carry out public investment to deal with climate change and the scars left by the shocks. In the same vein, it is claimed that private investment is urgently needed to sustain and amplify the recovery. Implicitly, these claims imply that bringing inflation back to target can wait. These claims are based on two misleading premises. First, they ignore the fact that it is more costly to fight inflation it becomes entrenched, which

occurs the longer it lasts. Second, investments take a long time to deploy their beneficial effects, but spending comes first and stands to undermine ECB's efforts.

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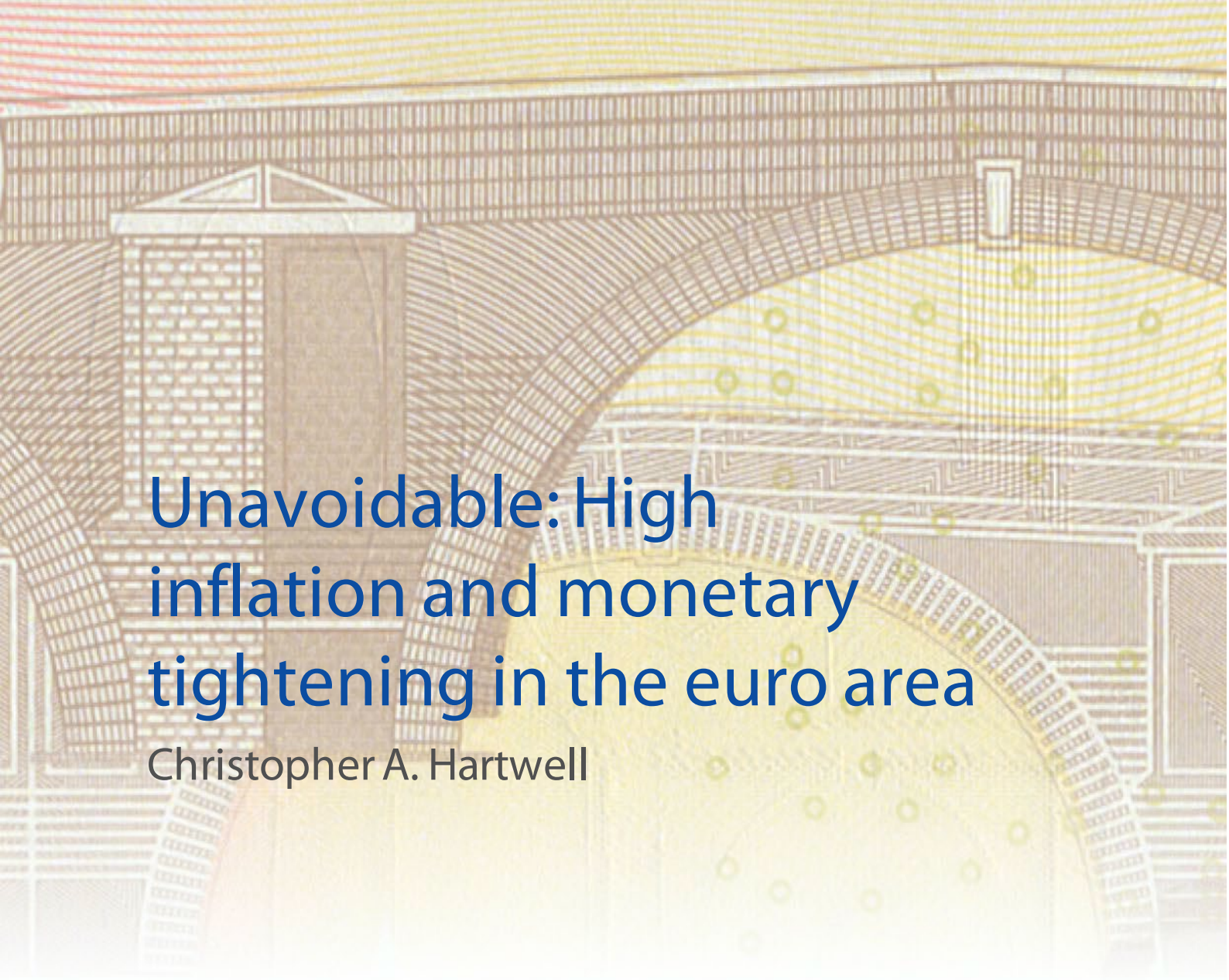

Unavoidable: High inflation and monetary tightening in the euro area

Christopher A. Hartwell

Abstract

This paper examines the unavoidable effects of the long overdue normalisation of monetary policy on households and firms in the euro area. While the costs are higher than they would have been if such normalisation started much earlier, they are unavoidable in order to fortify the euro area economies. This is imperative because the threats of de-globalisation and geopolitical risk – along with the EU's own future plans - may entrench inflationary pressures well into the future.

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CONTENTS

LIST OF ABBREVIATIONS

BIS	Bank for International Settlements
CPI	Consumer Price Inflation
ECB	European Central Bank
EEA	European Environment Agency
EU	European Union
GDP	Gross domestic product
HICP	Harmonised index of consumer prices
NPL	Non-performing loan
PEPP	Pandemic emergency purchase programme
SGP	Stability and growth pact
SVB	Silicon Valley Bank
USD	US dollar

LIST OF FIGURES

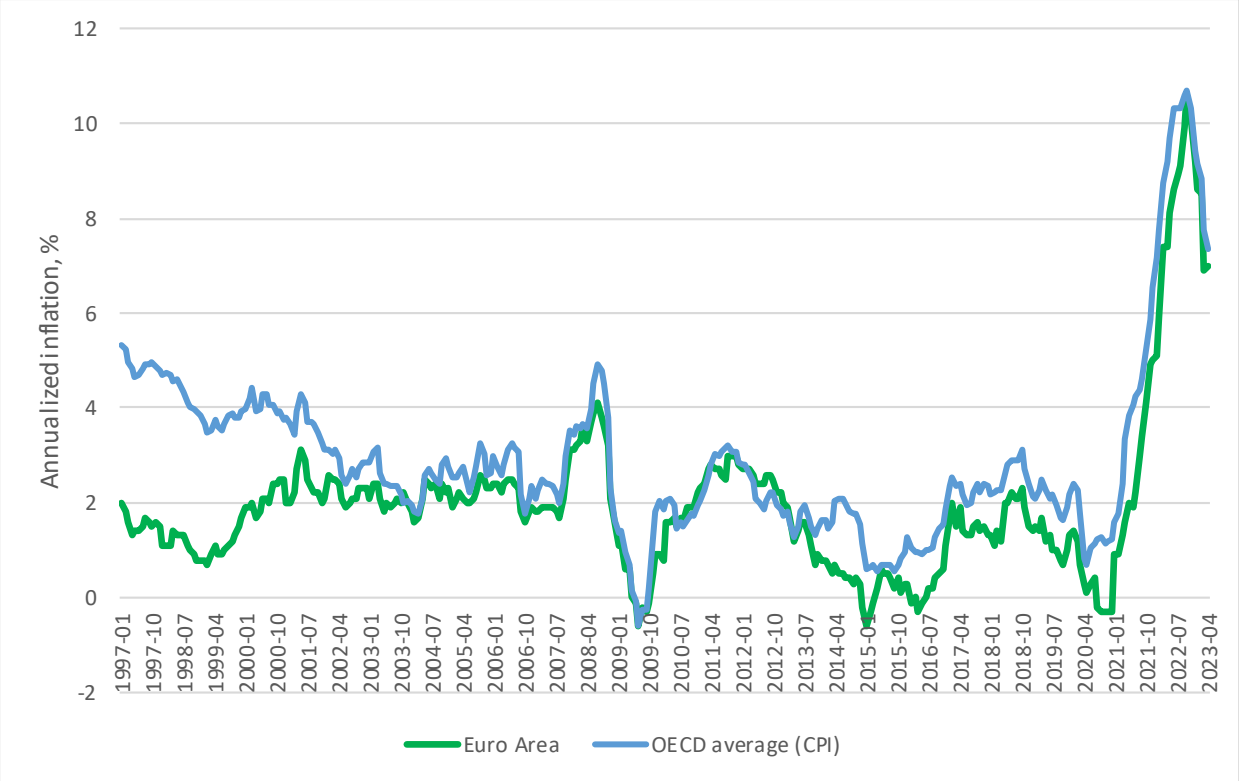
EXECUTIVE SUMMARY

- **The monetary normalisation of the European Central Bank (ECB) in the face of increased inflation is long overdue.** Over a decade of low interest rates has resulted in malinvestment and mispricing and it was unavoidable that the ECB would eventually have to attempt to price capital correctly.
- At the same time, **the effects of the monetary contraction are unavoidable.** While there will be heterogeneity in the scale of the effects across the euro area, the direction of the effects will be similar and predicted by theory and empirics.
- With regard to the effect on **firms,** the credit channel will be the largest factor affecting expansion and balance sheets. However, normalisation of monetary policy also serves the function of Schumpeterian creative destruction, forcing inefficient firms to exit and strengthening existing firms.
- For **households**, the main effects will be felt in household debt and in the housing market, although these effects will be vastly disparate depending upon local conditions and which particular Member State a household is located in.
- Despite the short-term economic pain that will come with normalisation, the ECB must see it through as **its own credibility is on the line**. Any wavering in normalising monetary policy will diminish the credibility of the ECB and make it harder to combat inflation in the future – as well as possibly entrench inflationary expectations. As recent research shows, a loss of credibility for the ECB may also result in a fall in the resilience of the euro area economy.
- The normalisation of monetary policy is even more crucial given the **massive challenges that the European Union and the euro area face globally.** The return of **geopolitical risk** is one of the largest challenges, including the Russian invasion of Ukraine and de-globalisation. Continued support of industrial policy and protectionism have the ability to increase prices in key sectors for years.
- In addition to the inflationary pressures from geopolitical risk, there are **structural dangers for inflation** within in the euro area. These dangers are connected with EU and Member State fiscal policy, and in particular the push for a **green transition**. Increased spending – even if introduced more gradually over time – coinciding with contractionary monetary policy makes the monetary normalisation less effective and perhaps more painful. The EU and its Member States need to rethink the wisdom of an immediate transition, especially considering how it will complicate normalisation and how its benefits are theoretical at this point in time.
- A final structural issue which will keep inflationary pressures high throughout the EU is **demographic decline**, which has the potential to skew economic behaviour in the Union towards consumption and away from savings and investment. Such a positive aggregate demand shock also has potential to build in decades' worth of inflationary pressures especially when combined with the negative aggregate supply shock that ageing creates.

1. INTRODUCTION

The unwinding of the prohibitions on economic activity associated with the COVID-19 pandemic and the reality of massive fiscal stimulus on top of the monetary stimulus of the past 15 years has finally begun to manifest itself in price data. Indeed, after years of quantitative easing, zero interest rate policies, asset purchases, and the "unconventional" - which rapidly became "business as usual" - the consequences of loose monetary policy are now evident, aided by a perfect storm of roaring demand, massive fiscal stimulus, and geopolitical tension restricting supply. In the euro area and elsewhere around the globe, inflation, heretofore subdued under a cloak of slack capacity and/or constrained supply, has come roaring back. In the euro area, annual headline inflation was 7.0% in April 2023 and food prices alone reaching levels of 15% in the same month, and while inflation has tapered from its highs in October 2022, it still remains more than three times what it was on the precipice of the pandemic (Figure 1).

Figure 36: Annual rate of change, harmonised index of consumer prices (HICP), monthly



Source: Eurostat, series PRC_HICP_MANR, OECD database.

Note: OECD average included for comparison. OECD uses consumer price index (CPI) changes rather than HICP methodology.

As the title of this study asserts, this state of affairs was going to come to fruition in some manifestation, given the course that global monetary policy was on since the global financial crisis. But the return of inflation has confronted policymakers with a challenge, as it has forced central bankers to increase interest rates on economies in order to stop the inflation from achieving a high plateau. Thus, also unavoidable from this point onward is the reality that the fragile economic recovery of the 2010s will be upended, reversed, or at least redirected as capital is priced accordingly. At the same time, the resumption of the time value of money and (more) accurate pricing of capital after a decade and a half of unconventional monetary policy also carries an institutional challenge for central banks: while

headline inflation appears to be abating somewhat off its highs immediately post-pandemic, inflationary expectations are climbing.

If modern central banks (including the ECB), which have made inflation targeting their reason for existence, are found to be consistently missing these targets from above (i.e., failing to prevent inflation rather than create it), these banks and their policies will be perceived as less credible than they were pre-pandemic (Hartwell and Siklos, 2023). In what could be a downward spiral, less credible central banks are less likely to be effective in fighting inflation and, more importantly, can weaken a country's economic resilience even further.

This institutional threat is compounded by the circumstances surrounding the return of inflation, while predictable, are also unique given the disruption that the global economy has faced since the global financial crisis, disruptions which have made countries in the euro area and elsewhere already rather fragile. In the first instance, the rise of economic nationalism and the return of industrial policy has provided headwinds for the euro area, heralding the return of geopolitical risk as a potent factor in business decisions and price formation. While such risk has always existed for firms and national level economies, its form had mutated in the globalised world of the 1990s and 2000s; no longer was it about large armies fighting each other in pitched battles, instead it was about non-state actors, informal networks, corruption, cyber-attacks, and above all terrorism. Such incidents were localised and had little effect on overall price levels.

Beginning in the 2010s, however, the ascendance of China and its willingness to behave in a manner antithetical to the liberal rules-based trading order (aided and abetted somewhat by the United States' abdication of global leadership in trade liberalisation) started to raise geopolitical risks and transform them back into its familiar state-to-state form. The unprovoked second Russian invasion of Ukraine in February 2022, which sparked a major land war in Europe and which Russia has portrayed as a clash of Russia and the West, confirmed that the old forms of geopolitical risk had returned. In fact, the invasion alone showed the power of such risk for monetary outcomes, as it gave an additional push to massive energy and commodity price increases; at the same time, it accelerated the trend towards de-globalisation which began during the global financial crisis, breaking global supply chains and threatening to erase the efficiencies – and price reductions – which came during the era of globalisation in the 1990s.

Thrown into this mix is also the wild card of fiscal policy, a policy lever which was somewhat muted during the post-global financial crisis world (especially given the constraints placed on governments during the sovereign debt crisis in the euro area), but which emerged again during the pandemic. The COVID-19 pandemic poured fuel on the structural fire with massive stimulus packages meant to mitigate prohibitions on economic activity ("lockdowns" in the popular vernacular). Indeed, although the explosive combination of loose monetary policy and aggressive fiscal policy has been found historically to be the main accelerant of high- and hyper-inflation (Miller and Zhang, 1997), the exigencies of the lockdowns appeared to require high levels of fiscal stimulus in order to stave off economic collapse and/or widespread societal discontent. To this end, the European Union's fiscal rules under the Stability and Growth Pact (SGP) were widened to allow for deviations in 2020 and have yet to be re-tightened, with a proposed plan to ease the pathway back to fiscal rectitude based on country-specific circumstances. Combined with the overall policymaker-led push to create a "green transition" – involving projected spending of approximately EUR 520 billion *per year* at both the private and the public level – the fiscal path ahead for the EU does not appear to be leading back in the direction of fiscal rectitude (European Commission, 2021). Indeed, actually building in massive fiscal transfers at a time of high inflation risks only perpetuating the price pressure for an extended period of time via increased aggregate demand even if – as the architects of the transition claim – it will eventually lead to lower prices in the long run.

This paper looks at the prospects for inflation in the euro area and its effects on the real economy from the perspective of business and policymakers. The first – again, unavoidable - conclusion is that the real economy is suffering from a long overdue correction after over a decade of easy money, with distortions introduced by these policies necessarily in the process of being uprooted from the euro area economy and discarded. While the ECB is interested in price stability – that is, avoiding a scenario where the correction itself threatens price and financial stability – there may be little in the way of softening the blow due to the EU's policies being on an emergency footing for so long. Indeed, the consequences of the monetary bubble bursting, as predicted (Hartwell, 2019), have been made worse by the long delay in normalisation of monetary policy but remains necessary in order to return the euro area (as well as the United States, the United Kingdom, and Japan) to sustainable growth paths. However, the pain of this adjustment will fall on firms and households, likely reversing the gains of the soft post-global financial crisis recovery. We will discuss what the path of normalisation of monetary policy will look like in particular in the euro area and what the implications of this path will be in the aggregate, considering the fact that this normalisation is coming during a time of de-globalisation.

The second conclusion of the paper is that the EU and especially the euro area continue down a dangerous inflationary path without simultaneous normalisation of fiscal policy, not just at the Union level but of course at the Member State level as well. The taps are already open for increased spending, and although the euro area budget deficit average has decreased to 3.4% of GDP in 2022 from approximately 4.8% in 2021 (i.e., during COVID), a full 20 Member States are running deficits of up to as much as 8% of GDP (in Italy, according to Eurostat). The proposed green and digital transitions may be good for the EU's competitiveness in the longer-term and may contribute (slightly) towards more environmentally friendly activities, but they need to come out of an organic, bottom-up process from different layers of environmental governance within Member States rather than be imposed from the top-down (whether that "top" be the Commission, the ECB, or even the governments of Member States) – and they need to be timed to accord with demand and external circumstances.

Even in a situation where the citizenry may support the spending of public money for such a transition, economic policymakers such as the ECB should be expressing forbearance rather than jumping into the fray. Moreover, any energy transition in particular needs to be done in a measured and gradual manner: the Russian invasion of Ukraine and the spike in energy prices since that time show that the euro area needs more energy, not less, with secure and available energy generation kept in place rather than shut down. This lesson has somewhat been learned already the hard way, but it must not be seen as a simple emergency measure in reaction to a specific event, instead it must be thought of as part of the process. If this is not done, inflation will be effectively made structural, driven by high energy prices and low supply, and combined with recurring fiscal stimulus and the lingering price effects of de-globalisation hinted at above.

The rest of this paper proceeds as follows. The next section examines the implications of the normalisation of monetary policy as we near the midpoint of 2023 with an emphasis on the effects on households and firms, while Section 3 explains why how the new world of geopolitical risk and de-globalisation will still be exerting upward pressure on prices. Section 4 offers some closing remarks.

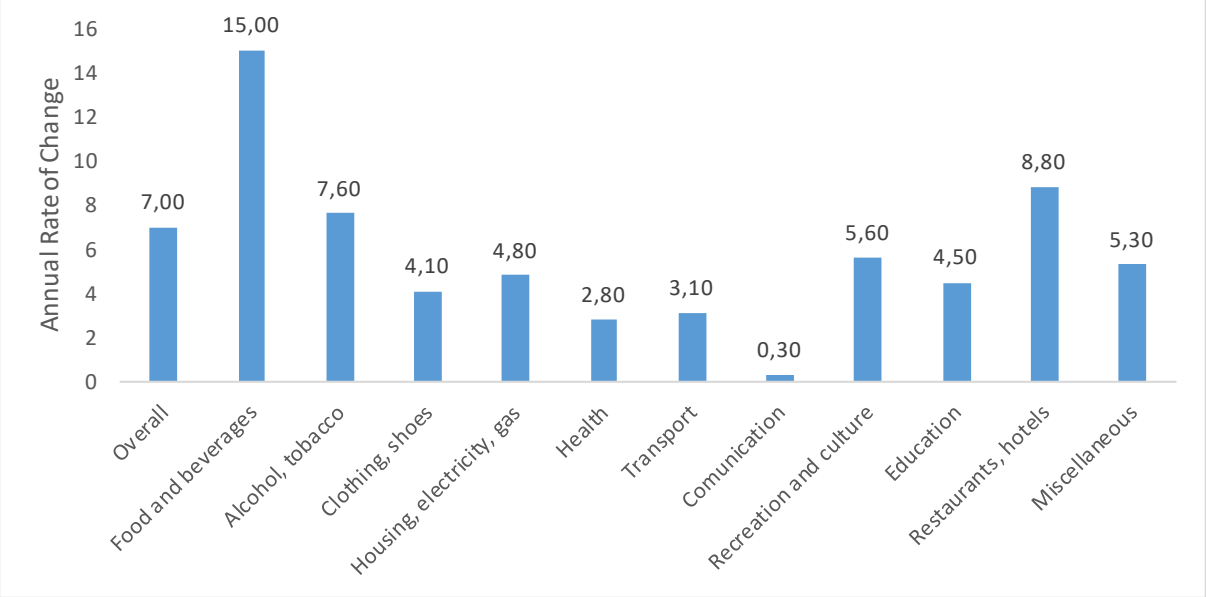
2. THE IMPLICATIONS OF THE NORMALISATION OF MONETARY POLICY

2.1. State of play in the euro area

As noted in the introduction, the euro area faces substantial challenges as a result of continuing and elevated (especially against the benchmark of the past 15 years) headline and core inflation. While Section 3 will examine some of the existing and new drivers for inflationary pressures in the euro area, this part of the paper will focus on the implications of the current and anticipated normalisation of monetary policy for the real economy of the euro area.

In order to understand where the euro area might be going, however, we need to first understand where we are in terms of inflationary outcomes and expectations across the EU; this will help to clarify the way in which normalisation of monetary policy may actually impact the real economy. In the first instance, inflation has been driven in 2023 mainly by large increases in food and beverages, with the hospitality industry (including restaurants and hotels), alcohol and tobacco, and recreation contributed to an overall price increase of 7% in April 2023 (Figure 2). Food and beverages have been on a steady upward climb since mid-2021, reaching new highs in each successive month and driven by geopolitical instability (more on this in Section 3) and an increase in the price of fertilizer and other inputs (including energy).

Figure 37: Harmonised index of consumer prices, by component, April 2023



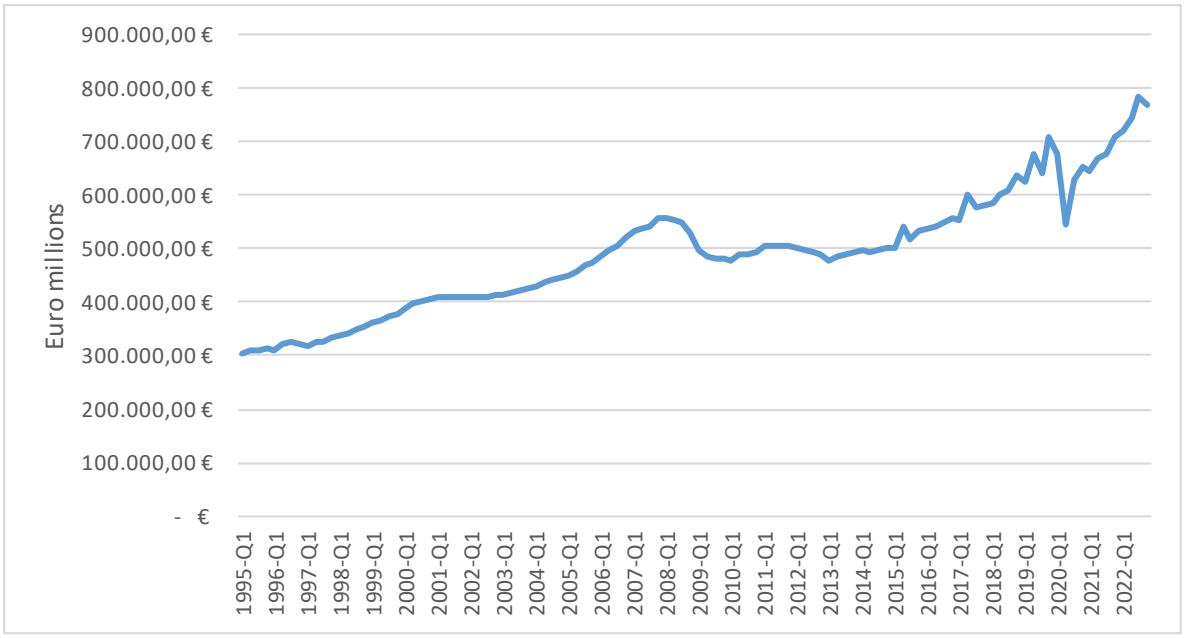
Source: Author's elaboration from European Central Bank Statistical Data Warehouse and ECB Dashboard.

Note: Shown is the annual rate of change of prices by component for April 2023.

This component-based approach to understanding inflation only can get us so far in terms of understanding inflationary drivers, as in reality it tells us what influences the index rather than what is actually driving prices and perceptions. A key issue which has not resolved itself since the global pandemic (and realistically since the global financial crisis, see Section 3) has been supply chain issues across several goods and services, driving up prices in an area (especially in food and manufacturing) where prices have been muted precisely due to globalisation (Koester et al., 2021). While we discuss this phenomenon more in the next Section, suffice it to say that the restriction of supply due to disruptions in logistics and market access have necessarily increased prices. At the same time, an

idiosyncrasy of the pandemic has generated elevated levels of inflation, namely labour shortages in specific sectors, including services (di Giovanni et al., 2022). More aptly thought of as the introduction of labour market rigidity, the on/off lockdowns and restrictions on economic activity made it more difficult for sectors to reallocate labour to those which were most needed, restricting supply and, in many cases, increasing demand. The slow unwinding of pandemic restrictions led to slower labour reallocation, especially in euro area economies which tend to have large-scale impediments to reallocation in the best of times.

Figure 38: Gross fixed capital formation in the euro area, quarterly, 1995 to 2022



Source: Author's elaboration from European Central Bank Statistical Data Warehouse.

Of course, these issues exacerbated the monetary precipitant of inflation in the euro area, mainly an accommodative monetary policy which (in the author's opinion) remained accommodative for too long. With refinancing policy rates kept below 1% from 2011 through September 2022, the euro area was awash with liquidity; European Central Bank (ECB) analyses attempted to explain the lack of inflationary pressure during this time (especially from 2013 to 2019) on slack capacity and in particular an underestimation of the size of the slack (Koester et al., 2021). However, as noted in another briefing done for the European Parliament (Marmefelt, 2020), coordination in markets relies on price signals, and for over a decade the basis of prices (the time value of money) was negated. Slack capacity itself was due in part to lack of investment, and investment was flat in the euro area until the months immediately preceding the pandemic (perhaps in anticipation of monetary normalisation, see Figure 3). In fact, it has only been accompanying the normalisation of monetary policy that investment has begun to climb again in the euro area, suggesting that the causality from slack capacity to loose monetary policy may have been running in the other direction.

2.2. The possible path of normalisation

In any event, the advent of inflation has given the push needed to normalise monetary policy. In reality, there are three separate ways via which the ECB can attempt a normalisation of the unconventional policy that it has administered for the past decade plus:

1. *"Strong normalisation,"* where a path of uninterrupted interest rate hikes are carried out in order to wring the liquidity out of the euro area, with concurrent warnings regarding overly accommodative fiscal policy;

2. *"Moderate normalisation,"* where interest rate hikes are accompanied by fiscal policy measures to possibly cushion the deleterious effects of normalisation. Alternatively, a moderate approach to normalisation may entail periods of consolidation, where interest rate increases are pushed off or even reversed to provide "breathing space;" and

3. *"Weak normalisation,"* where interest rate hikes cease the minute that inflationary levels appear to have peaked, and no further normalisation is envisioned by the ECB (and is communicated thusly).

The effect of monetary policy normalisation will thus likely be similar in its channels affecting the real economy no matter which path is chosen (i.e., impact on households through increased borrowing costs, impact on financial firms through cost of capital), but each of these approaches will have different impacts on inflation. Based on creeping expectations of inflation, it is likely that approaches 2 and 3 will be far less effective than the approach of strong normalisation, therefore creating a situation where firms are both being harmed by monetary policy but not necessarily helped by a cessation of inflation. Approaches 2 and 3 are also likely to have other consequences beyond the real economy and inflation, as we will explore below.

2.3. Normalisation: effect on financial firms

While this study is targeted primarily at the effects of normalisation on the real economy, it is crucial to consider the sector that the reversal of loose monetary policy will affect first, and that is the financial sector. No matter which approach is chosen, already globally the increase in interest rates has begun to trickle through to overleveraged banks, as witnessed by the spectacular failure of Silicon Valley Bank (SVB) in the United States in March 2023, the failure of Signature Bank at the same time, and the additional failure of First Republic Bank in California in May 2023 (with combined total assets across the three banks of USD 548.5 billion, approximately 2.4% of all assets in the US banking system).[32] The prospect of other bank failures has US markets rattled, and bank stocks have undergone substantial volatility due to short-sellers, risk contagion, and worries about fundamentals as encapsulated in commonly-used capital ratios.

Figure 39: STOXX 600, Europe 600 Banks Index, 2018 to 2023

Source: Prices taken from Yahoo! Finance.

[32] According to data from the Federal Deposit Insurance Corporation (FDIC) and the Board of Governors of the Federal Reserve System.

As the popular saying, tweaked somewhat, says, when US banks sneeze, the world catches a cold, a reality brought into stark relief during the global financial crisis. In the euro area, the European Banking Authority (EBA) launched a stress test exercise in January 2023, modelling scenarios which may have seemed pessimistic when devised in 2022 but now may even be optimistic in terms of the worst-case scenario (where long-term rates top out at 6%); the results of this exercise will not be available until July 2023, but the accumulation of negative shocks with regard to GDP, home prices (see below), and unemployment are likely to show moderate stress on several banks across the euro area. Indeed, the effect of the SVB failure resulted in consecutive days of decline in the STOXX Europe 600 Banks benchmark index (Figure 4), with the index now where it was on the eve of the pandemic; while equity prices have calmed down since that event, it is undeniable that the effect of any additional bank failures will have a cumulative effect on markets. It is far too soon to say we are out of the woods with the stability of the financial sector, as the risk of contagion remains real. Added to this issue, further negative shocks in the real economy or increased hikes from the ECB are likely to continue the stress on euro area banks, with countries showing low capital ratios and/or higher levels of NPLs facing more stress from markets (i.e., being targeted by investors) in the short- and medium-term (including Greece, Spain, and Portugal).

As the purpose of this study is not to survey the exact effect of normalisation on the financial sector, we will not go further in-depth into the possible course ahead for euro area banks. However, the possible effects of normalised monetary policy on the real economy go first and foremost through the credit channel, mediated by the financial sector. Already banks within the euro area have reported a substantial tightening of credit standards for lending to enterprises owing to decreased risk tolerance and a higher cost of capital (European Central Bank, 2023), a reality which will make it more difficult for firms in the euro area to invest and expand. Indeed, for firms, the increased cost of capital and the inability to access finance for expansion may be the largest way in which the non-financial sector may be impacted. This difficulty will be felt most strongly in the first approach, that of strong normalisation, but is likely to permeate financial sector institutions no matter which approach is chosen; in reality, uncertainty regarding the cost of capital is likely to manifest itself in a risk premium, meaning that even moderate or weak normalisation will generate higher capital costs and/or tight lending requirements.

The effect on the financial sector need not be uniformly negative however, and research from Nelson et al. (2018) shows that contractionary monetary policy may be bad for banks but good for shadow banking, which tends to expand its share of the market during monetary contractions. As shadow banking assets in the euro area, as measured in 2018 (before the pandemic) stood already at 40% of all assets in the financial sector (Hodula, 2020), any expansion of this intermediary could help to address credit shortages for firms and keep capital flowing. At the same time, the accurate pricing of capital could draw other lenders and holders of capital into financial intermediation, as high pricing benefits lenders (Dopeke and Schneider, 2006); given that demand for capital is unlikely to fall to zero, even during a recession, higher interest rates could increase the supply of capital at the margins from non-banks and other financial sources and also bring more "traditional" finance into the sector, driving prices down again through the competition channel. This comports with results from Ibrahim (2021), who find that countries with high financial sector efficiency will see very little income redistribution as a result of a contractionary monetary policy shock.

2.4. Normalisation: effect on the real economy

The financial channel is just one way in which normalisation of monetary policy in the euro area will affect households and firms, both for better and for worse. Unfortunately, there are many other ways in which rising interest rates and the fight against inflation can also have adverse and heterogeneous effects on the real economy across Europe – as well as possible positive effects from the transition (and not just its outcome).

As noted in the previous section, the rising cost of capital will dampen investment by firms but may also entrench existing businesses by making firm entry harder (more likely under strong normalisation). While such a restriction of firm entry may generate upward price pressures domestically, this is not likely to occur in the current environment due mainly to the concurrent effect on aggregate demand. However, the area where lack of firm entry will be felt is in the variety of products offered to consumers, meaning a reduction in societal welfare and aggregate productivity (Hamano and Zanetti, 2022). But, like the opportunities opened in financial intermediation by accurately priced capital, Hamano and Zanetti (2022) also show that aggregate productivity may be helped as well through contractionary monetary policies. In particular, the monetary shock has the potential to play the role of Schumpeterian "creative destruction," causing inefficient firms to exit. In this scenario, the malinvestment created by overly accommodative monetary policy will likely be exposed by rising interest rates, meaning an increase in non-performing loans and a further tightening of credit; the effect will be to liquidate firms and projects which should never have been begun in a period of accurate pricing of capital. Thus, in addition to the benefits of holding inflation in check, normalisation of monetary policy may also provide a benefit to an economy through better allocation of resources – setting the stage for the recovery period.

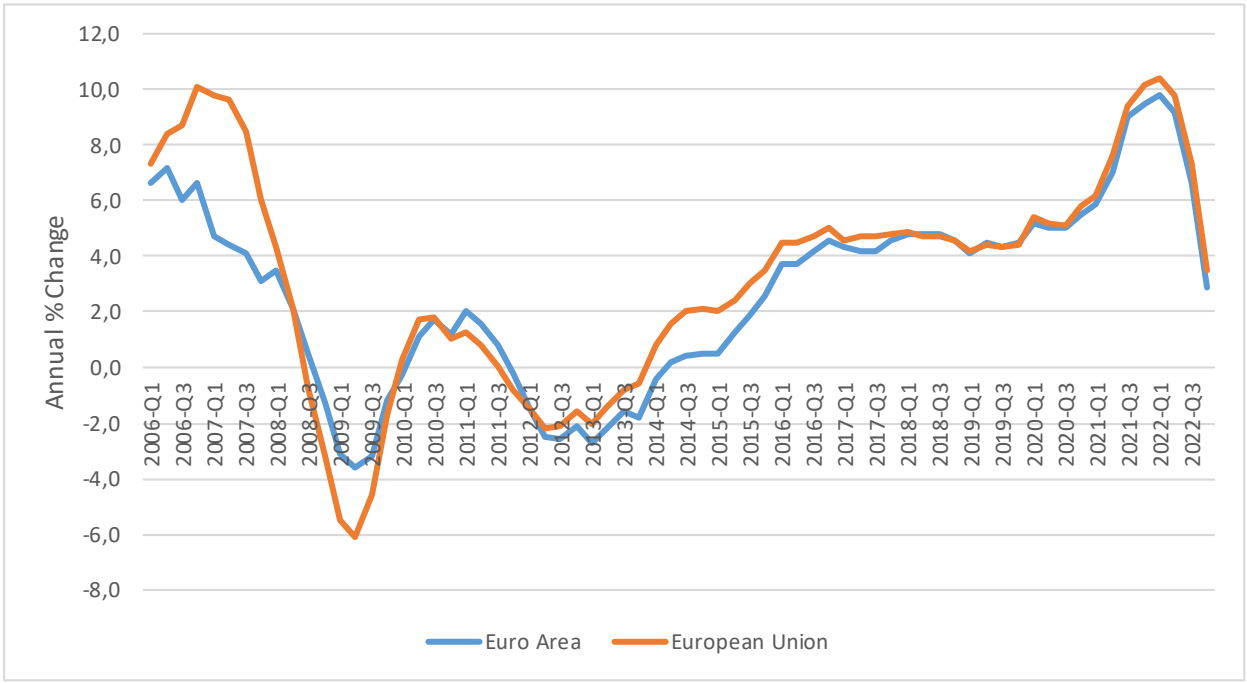
For households, there also will be a melange of effects, with some also countervailing, in the euro area. In the first instance, households taking on debt will also be harmed by the increase in interest rates, although this is unlikely to be a major issue across the euro area: according to statistics from the ECB[33], household indebtedness has fallen substantially since the worst of the pandemic and is currently at the level it was at in 2015 (approximately 58% of GDP). Interest rate increases are likely to harm households through the slow adjustment of food and beverage prices, continuing to strain household budgets, as well as via the possibility of higher housing prices: with housing starts harmed by increasing costs of capital, constricted supply will mean higher housing prices in the short-term for those actually looking to purchase (manifested in mortgage rates rather than actual prices), and even possibly higher rents for those staying put, given the lack of turnover and supply. Again, this is a two-tiered effect, as house prices themselves are exhibiting a "disorderly house price correction" downward (Valderrama et al., 2023), but the real cost of owning a home will increase because of the cost of mortgages increasing. In any event, these should be short-term dynamics but have the ability to further harm euro area households.

However, the exact extent of these effects is conditional on the specific Member State. We have spoken to this point in a broad sweeping manner about the possible effects of normalisation of monetary policy based on the path chosen by the ECB, and to some extent we will keep this approach up for the next section as well. But it has to be noted that there is extensive heterogeneity across households and firms and even Member States, meaning that the transmission of the contractionary monetary shock will be uneven; we have already hinted at this in terms of the effects on the financial sector in the euro area, where some Member State banks are more fragile than others. However, this heterogeneity across firms and households will necessarily affect the *extent* of the effect from normalisation, however, rather than the *direction*, as we can expect the transmission effects of the tightening from the ECB to be similar in composition across countries and economic actors. The effects of a monetary contraction may not follow regular and predictable patterns, but in most instances the impact of a reversal of monetary policy – especially after a decade and a half of the opposite – is going to be uniform in terms of its direction. Indeed, Shibamoto (2016) shows that the impact on real variables from monetary policy shocks are likely to be much larger if the policy does not align with market expectations.

[33] https://www.ecb.europa.eu/press/pr/stats/ffi/html/ecb.eaefd_full2022q4~31b4c8fce3.en.html

An example of these transmission effects, dependent upon heterogeneity for impact but not direction, can be seen in the balance sheets of households and firms. According to Igan et al. (2017), contractionary monetary policy works through the balance sheets of economic agents (including in the financial and non-financial sector), but the effects take longer depending on how well-situated a firm or household is prior to the shock and/or depending on the term structure of (and reliance on) debt. With an increase in interest rates, the cost of liabilities (mainly loans) incurred by households and firms will correspondingly be higher, leading to more difficulties in balance sheet management. In the euro area, in the run-up to the normalisation of monetary policy, several Member States saw an increase in liabilities: Lithuania topped the list in annual changes, seeing the liabilities of households rising 16.2% from 2020 to 2021, while Slovakia also saw a rise of 13.0%, according to Eurostat data. For these smaller Member States, increases in interest rates are likely to hit household balance sheets harder than countries such as Italy, which saw liabilities increase by 3.4%, or Finland, which had an increase of 3.6% over the same timeframe.

Figure 40: Housing prices in the EU and euro area, annual % change, 2006-2022



Source: Eurostat, series PRC_HPI_Q.

Another example of the heterogeneity of households and Member States with regards to transmission of monetary policy comes from the state of a country's housing market. Increases in the real interest rate will have a dampening effect on the demand for housing, as well as increase the costs to construction and real estate development firms, and this effect has been dramatic in both the EU and the euro area (Figure 5). However, there is no reason that the housing market in each Member State would have a similar scale of effects in response to the normalisation of monetary policy and, in fact, Figure 5 shows a slowdown in housing prices but as of yet no actual decrease in their cost across the euro area (as occurred during the global financial crisis). In Estonia, Lithuania, and Croatia, house prices continue to show large increases on an annualised basis, over 16% from 2021 to 2022, while countries such as Italy and Cyprus have seen much more muted gains (2.8% and 4.4% respectively) and countries such as Finland, Sweden, and Denmark have seen actual declines in house prices on the order of between 2 and 4%. In all of these instances, the increase in interest rates has reversed the previous trends of price increases but at a different magnitude depending upon local conditions. As Tzamourani (2021:1) noted, "the heterogeneity of [interest rate] exposures across euro area countries is largely attributable to the differences in the prevalence of adjustable-rate mortgages (ARMs)" which, by itself, can explain how sensitive a housing market is to any further increases.

A final point regarding the normalisation of monetary policy which has not been considered to this point (and is very rarely in monetary policymaking) is that the ECB's policies have a massive effect on non-euro members of the EU as well. As Kucharčuková et al. (2016) showed, the effect of a conventional monetary shock on these countries is similar to the effect that is observed within the euro area, especially on output and inflation. This is to be somewhat expected, given that non-euro central banks tend to move in lockstep with policies of the ECB, even though business cycles may not be entirely synchronised and the levels of targets very different. Thus, normalisation will not just have an impact on the euro area, it will reverberate throughout the entire EU; importantly, however, as Kucharčuková et al. (2016) demonstrated, normalisation in the euro area will also help to rein in the disparate impacts that unconventional monetary policy had in the non-euro EU countries. This needs to be regarded as a positive externality for the fight against inflation Europe-wide.

2.5. Normalisation: effect on the ECB

A final consequence of normalisation and the path in which normalisation is conducted is the effect that it has on the monetary policy authority of the European Union, the European Central Bank. As the institution charged with overseeing maintenance of the euro, the ECB has been sole driver of monetary policy in the euro area and the reason why unconventional monetary policy remained in place as long as it did. Thus, one can make the argument – as I have, and continue to do so now – that the policies of the ECB created the conditions for the inflation that the euro area now faces, with an assist from other events (COVID-19, fiscal policy, and, as we will see in the next section, geopolitical risk).

Fortuitously for the ECB, as this manifestation of inflation in broader consumer prices is a worldwide phenomenon (most central banks moved in lockstep in pursuing accommodative monetary policy for far too long, with all of them creating conditions for inflationary pressure), the ECB has retained some measure of credibility (perhaps seen best in the ECB-commissioned *Survey of Professional Forecasters*, which shows confidence in the ECB in fighting inflation). This credibility, indeed, still held across nearly all central banks globally, has remained strong despite the reality that all of the consequences of loose monetary policy and then normalisation should have been foreseen – and, given the massive delay in normalisation, the consequences are now necessarily more severe than they would have been in previous years. This is not a fact which is unique to the ECB but is shared across the US Federal Reserve, the Bank of England, the Bank of Japan, and others. And the sheer fact that the ECB is still seen as a credible institution also means that it may be able to transmit its monetary policies more effectively, as

markets will believe the commitment to fighting inflationary pressures (as noted in the aforementioned Survey).

However, the credibility of the ECB is likely to be tested severely by the need for normalisation, and any wavering will lead to a diminution of its credibility; put into the language of Section 2.2, moderate or weak normalisation paths have the largest opportunity to damage trust in the ECB.[34] The effects of such an eventuality can make it much harder for the ECB to fight inflation, as inflationary expectations will become entrenched (and if there is an expectation of inflation, especially from the producer side, actors will act like the inflation is there and will actually will it into existence). Moreover, the loss of credibility of a central bank can have far-reaching deleterious effects: as work done by myself and Pierre Siklos (Hartwell and Siklos, 2023) shows, central banks which lose their credibility with the public (generally by missing inflationary targets) degrade the resilience of the entire economy. This analysis, focused on single countries rather than multiple country groupings such as the euro area, nonetheless still applies to the ECB and in fact can be even more of a warning: if the ECB loses its credibility, it is likely to have real institutional effects in the euro area economy.

The lesson that comes from this research is thus simple: the normalisation of monetary policy is not only an imperative for the real economy, no matter how much short-term pain it will bring, but it is imperative for the credibility of the ECB. If there is any wavering or backsliding regarding normalisation, inflation will be harder to combat, and the ECB will be less well situated to fight it. As former Fed Chairman Alan Greenspan (2007:156) put it, "The [Federal Open Market Committee] has always recognized that in a tightening cycle, if we stop too soon, inflationary pressures will resurge and make it very difficult to contain them again. We therefore always tend to take out the insurance of an additional fed funds increase, fully expecting that it may not be necessary." This approach should also be adopted by the ECB in order to ensure that both inflation is conquered, and that the ECB's credibility remains intact.

[34] Of course, in many ways, the ECB is going to be attacked no matter what. There already have been calls in the press that the normalisation is harming ordinary people and thus needs to be abandoned. However, from the point of view of financial markets and the real economy, credibility is related to the ECB doing the job that it is charged with, that is, price stability.

3. WHY IT MATTERS: HEADWINDS AND PRESSURES FROM ABOVE

The previous section has shown that the way out of the problems which the ECB and other central banks have caused must be to continue wringing liquidity out of the system; in the words of Winston Churchill, "when going through hell, keep going," meaning one does not stop in the middle, as the pain will still be there. But although tightening is necessary as a correction away from the unorthodox and ultimately structurally harmful policies pursued since the global financial crisis, it will likely push fragile economies in the euro area and elsewhere towards recession.

The prospect of recession within the euro area is doubly problematic at this specific point in time, as the global economy has already provided some massive headwinds in the form of heightened geopolitical risk. Geopolitical risk, defined as "the threat, realization, and escalation of adverse events associated with wars, terrorism, and any tensions among states and political actors that affect the peaceful course of international relations" (Caldara and Iacoviello ,2022:1197) by itself would likely not be sufficient to raise inflationary pressures (although Caldara et al. [2023] argue that it is). However, the rise in risk has manifested itself through growing de-globalisation, starting with the pandemic and continuing through Russia's invasion of Ukraine, breaking global supply chains, and precisely hitting the mechanisms which have helped to keep inflation low in developed economies even during a time of profligate monetary policy.

Occurring at the same time as increases in geopolitical risk has been another short-term inflationary pressure generated from within the halls of the EU and supported by a large proportion of the EU's citizenry. While there has been discussion of using fiscal policy to counterbalance the deleterious effects of the normalisation of monetary policy, the EU and especially its Member States are finding themselves with far less fiscal space to undertake such actions, mainly because of its commitment to massive fiscal expenditures in the pursuit of twin transformations, one green and one digital. With the timing of such expenditures called into question by the uncertain external environment – and the path and timing of the transformation being initiated from the top down, both from the EU and Member State governments – the additional costs in terms of higher inflation may make the entire endeavour a net negative for the EU and especially its competitiveness.

This section examines these two challenges for the euro area economy within the context of high inflation, noting that these two shocks – one exogenous, one endogenous – can be overcome by euro area countries. However, due to the monetary policies of the past, the EU is much weaker and less resilient than it could have been to face any one of these challenges in isolation, much less all three at the same time. Facing this new external environment will also require a successful completion of the normalisation process and a return to economies that price capital correctly, have appropriate market signals, and which heed economic tenets rather than political ones.

3.1. De-globalisation, monetary policy, and energy/food inflation

An overdue monetary correction, while having real effects on the real economy, is not the real threat facing the European economy or even the global economy; the effects of normalisation too will pass and leave a stronger euro area ahead, as inflation is more dangerous for the health of the EU than normalisation. Of more consequence in terms of inflationary trends, however, are the structural issues accruing globally, with the largest threat to subdued inflation being de-globalisation and the re-emergence of geopolitics as a key player in economic policy. The rise of inter-state conflict has far more destructive potential than capital once again being priced accordingly, and the re-emergence of geopolitical risk has become a defining factor in international economic policy. From Russia's invasion

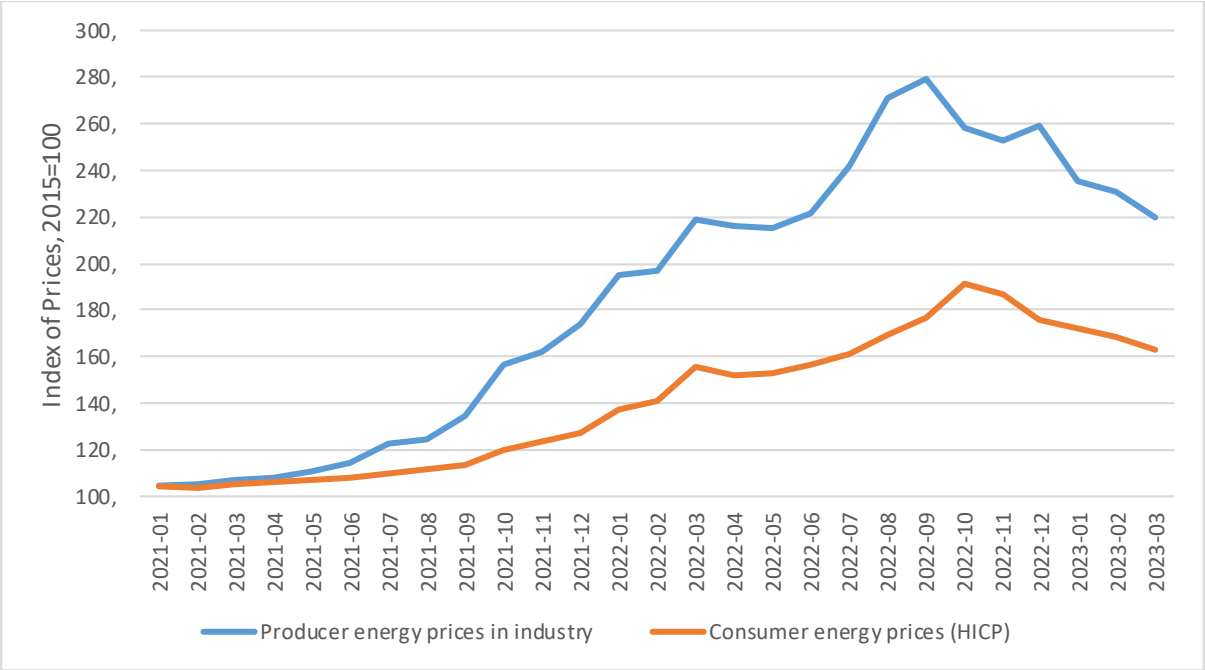
of Ukraine to China's inevitable slowdown (and destabilising policies from COVID obfuscation to sabre-rattling over Taiwan), the global economy faces several challenges to price stability in the coming years.

The move towards de-globalisation after the global financial crisis, coupled with monetary policy, already created some inflationary pressure within advanced economies, but it was not until broad-based de-globalisation was explicitly the policy of major actors such as the United States that consumer price inflation was given an entryway to affect the economy. Globalisation in the 1990s and 2000s was a major contributor to breaking the back of demand-push inflation, as product competition lowered prices for consumers (Rogoff, 2003) while openness also contributed to keeping central bank inflationary biases low because of a larger output-inflation trade-off (Badinger, 2009). The collapse and subsequent slow recovery of trade during the global financial crisis and especially the advent of trade wars between the US and China starting in 2017 took aim at these inflation-dampening mechanisms, generating pressure for domestic inflation due to lessened competition. The continued waging of trade wars by the United States under President Biden (the misnamed "Inflation Reduction Act," for example, contains several overt and misguided industrial policy elements to which the EU objects) has also further threatened the gains of globalisation with regard to prices. However, it was the COVID-19 lockdown shock was the straw that broke the camel's back, with the closing off of foreign competition allowing domestic firms to pass through price increases to consumers without suffering any loss of market share (Amiti et al., 2023). In a world where trade continues to be subjected to political imperatives rather than market forces, price levels will be artificially higher than they should be.

De-globalisation is only one manifestation of the increase in geopolitical risk, with the other, more prominent one, being the threat of and initiation of hostilities by state actors. While the 1990s and 2000s were relatively peaceful compared to previous decades, the threat of large-scale war, including in Europe, has returned with a vengeance due to Russian President Vladimir Putin. The act of war initiated by Russia with no legal reason has had large ripple effects throughout the global economy, also enabling inflation to take root.

The first inflationary consequence of the invasion has been a spike in energy prices, feeding through as a main (but not the only) driver of price inflation in the euro area. As the ECB (2022) noted, "in the first two weeks after the invasion, the prices of oil, coal and gas went up by around 40%, 130% and 180% respectively" and prices continued to rise throughout the incredibly hot summer that Europe faced (Figure 6). Despite a decline off the highs occasioned by uncertainty, even as of the time of writing of this paper (May 2023), energy prices were at the level they had jumped to at the beginning of the invasion in February 2022. The war has necessitated not only energy saving measures throughout the EU, but it has also forced a reorientation away from Russian oil and gas, which constituted approximately 23% of EU imports of energy in 2021. This forced transition, coupled with other measures that the EU has voluntarily taken on (see below), has not only resulted in higher energy prices but also in higher price volatility, constituting an increasing cost to the real sector. And, as is well known, high and variable energy prices pass through to firm investment decisions (Yoon and Ratti, 2011), meaning that continued uncertainty related to the current war will also continue to dampen activity in the real sector. This is to say nothing of additional geopolitical risks which are gathering, including the very real possibility of China launching a similarly unprovoked invasion of Taiwan or the acquisition of nuclear arms by Iran (who has already been supplying Russia with weaponry for its invasion).

Figure 41: Energy prices in the euro area, 2021-2023



Source: Eurostat, series PRC_HICP_MIDX and STS_INPPD_M.

Similarly, food prices have also been affected by the Russian invasion of Ukraine, as Glauber et al. (2023) note that "over 2019-2021, [Russia and Ukraine] accounted for 12% of global agricultural trade on a kilocalorie basis, with a combined market share of 34% for wheat, 26% for barley, 17% for maize, and 75% for sunflower oil." The disruption of supply chains, both through the conflict itself and also through the imposition of sanctions, led to global increases in the price of wheat of as much as 60% by June 2022, with corn prices rising by approximately 24% over that same period (based on data from the World Bank). The COVID-19 pandemic, by closing off supply routes and imposing severe restrictions on economic activity, already had led to an increase in food prices worldwide (Ahn and Norwood, 2021), and the prospect of further supply-side shocks has the ability to once again force prices upward. The ongoing Russian invasion has furthermore led to greater volatility regarding food prices and the prospect of additional disruptions and trade diversion, especially if the net of sanctions (and secondary sanctions) are to expand further.

The rise of geopolitical risk more generally is likely to be a driver of inflationary pressure albeit in an uneven manner. While other geopolitical risks may not have such effects on these specific commodities, it is difficult to wave away the inflationary pressures which may come with an invasion of Taiwan by China. Already the erratic behaviour of the Communist Party in China surrounding its treatment of Uyghurs in the country's west and especially regarding the origin of the COVID-19 pandemic (and its precise effect on China) has made business with China riskier than it has been for decades. The pandemic further accelerated a de-coupling of at least the US economy with China, and China's centrality in the global trading order and supply chains has been called into question repeatedly (Free and Hecimovic, 2021). In the event of a full-scale invasion of Taiwan, the labour and materials that China supplies to the world would likely be dramatically scaled back, leading to an enormous productivity and supply shock and a long period of continued inflation in developed economies. These effects would accrue no matter what happened with the war itself, its duration, and whether or not advanced democracies get themselves involved; in any event, such a disastrous event would dramatically alter the global economic structure which has evolved to keep inflation low.

3.2. Fiscal policy and inflation

The rise of geopolitical risk has been a mostly exogenous shock for the European Union. On the other hand, an additional threat to prices over the longer-term comes from wholly endogenous sources, namely the planned expansion of EU fiscal policy (at both the supra-national and especially the Member State level) over the next twenty-five years. Indeed, the effects of monetary policy and exogenous shocks on energy and food prices have been and will be compounded by the EU's ambitious move towards a "green" and a "digital" transformation. These twin transformations have the goal of fundamentally remaking the structure of European economies, focusing first and foremost on energy and then on a sector heavily dependent on energy, technology.

The green transition in particular contemplates massive government outlays in an attempt to change the structure of production across the euro area, a way to increase aggregate demand for "green" products and processes over two decades while simultaneously engineering a temporary negative supply shock papered over by fiscal policy; in fact, although the ostensible goal of the green strategy is to generate competitiveness and resource efficiency, the disruption of the transition away from traditional methods of doing business imposed from above will create difficulties in the short- and medium-term in maintaining competitiveness,[35] especially in labour markets (Fleming and Mauger, 2021). This will necessitate even more additional fiscal policy tools, including perhaps industrial policies, in order to keep EU businesses afloat. Over the long term, however, the green transition is implicitly presented as a way to lower prices, as the increased effectiveness of the overall economy and removal of non-"sustainable" technologies will generate efficiencies over time that more than offset the pump priming of the transition.

In reality, it appears that the effect of the "Green New Deal" will be threefold on prices, with a tendency towards price increases rather than long run decreases. In the first and most obvious instance, EU policies will flood the market with fiscal stimulus which would necessarily be counteracted by the disruption of business in the short run and during the transition; it can be argued that this is also necessary as it corrects a "market failure," but such failure only exists if policymakers know precisely what the optimal energy mix should be in an economy to match with the future structure of production and the market is not delivering this precise mix. In any other situation than this highly unlikely one, the disruptions would be for an uncertain future, one which can be theorised but not conclusively known. Existing research shows that such environmental initiatives tend not to deliver as much as promised and rarely enough to exceed the costs of the disruption (Dechezleprêtre and Sato, 2017). Indeed, even the costs of climate change itself pale in comparison to the costs meant to undertake its mitigation, especially in the euro area: according to the European Environment Agency (EEA), the total cost of *all* weather and climate-related events from 1980 to 2021 in the EU amounted to EUR 560 billion, an amount slightly more than the projected *one year* of investments needed to effect a "green transition."[36]

Increased demand and dampened supply is not the goal of the transition, however, as EU documents (European Commission, 2022) make clear that the purpose of the transition is to improve competitiveness in the long run, meaning increasing supply at some point. In this eventuality, upward

[35] Already issues with such top-down green transitions have been seen in the United States, where environmental diktat has led to the replacement of better-performing items with less efficient ones (as in low-flow showers and toilets) or in eliminating effective methods altogether (as in the coming ban in California city San Francisco on gas stoves and hot water heaters) – see Rothman (2023) for a comprehensive series of examples. These outcomes flow from the model of Ambec and De Donder (2022), who show that environmental consumerism may lead to lower quality goods but still give consumers a "warm glow" due to the environmental friendliness of the good. In other words, consumers face trade-offs.

[36] European Environment Agency website, https://www.eea.europa.eu/publications/assesing-the-costs-and-benefits-of#:~:text=According%20to%20these%20data%2C%20the,States%20(EU%2D27).

pressure on prices would have already occurred as a result of the stimulus but would be expected to fall as the transition is completed, and a new equilibrium longer run output is achieved. However, this approach ignores the effect on aggregate demand coming from fiscal stimulus, meaning that prices may not decrease and may even increase, depending on the extent of the stimulus. This effect will be seen even more where the reliance of green companies on government subsidies rather than on organic, market-based innovation is greatest. This would mean that further stimulus is built into the medium-term and put more upward pressure on prices. This has already been seen in the United States, where many forms of "green" energy are subsidiaed to up to as much as 70% of their cost as a result of the "Inflation Reduction Act;" already the EU has countered with an increase in subsidies (the Economist, 2023). The European Commission has also called for a "green deal industrial plan," institutionalising subsidies on a vast scale (European Commission, 2023).

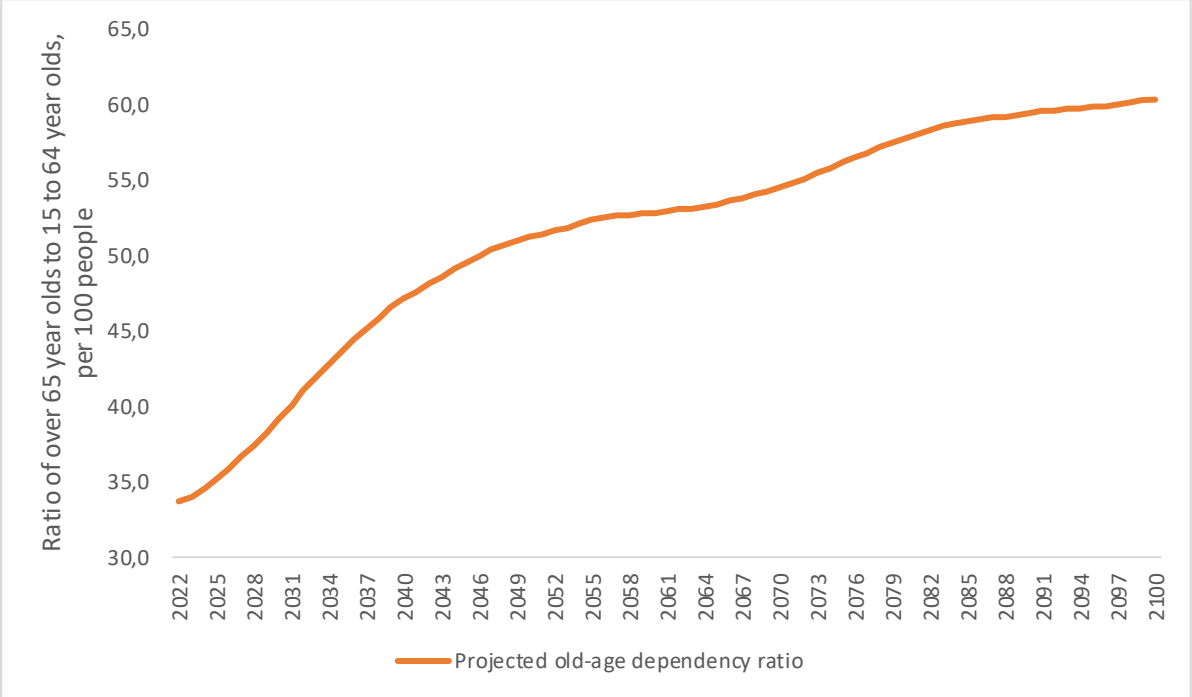
The second channel via which the green transition will delay the fight against inflation is its effect on the ability of EU Member States to mitigate the effects of normalisation. A common refrain heard from politicians and legislatures surrounding the effects of monetary contractions is that they can be softened somewhat by a countervailing fiscal policy, especially given that contractionary monetary shocks increase inequality (Coibion et al., 2017). In theory, using fiscal policy as a counterbalance might be efficacious if such a policy was targeted towards those who were hardest hit from contractionary monetary policy (Furceri et al., 2018), mainly the lowest strata of the economy. However, such redistributive schemes in an ongoing fight against inflation will face two major problems: first, the fiscal space of Member States will be severely restricted by the outlays necessitated by the green transition, making the amount available for mitigation much lower than in the absence of concurrent fiscal stimulus (this has in fact been used as an argument in favour of greater EU-wide stimulus and revisions of current budgetary rules such as the SGP – arguing for more fiscal space and subsequently more stimulus and complicating inflation mitigation further). Second, the fact that mitigation will be undertaken at the same time as stimulus is akin to attempting to put out one part of a fire while fuel is added to another part of it (even if the time horizons for fuel/mitigation are slightly different). Yes, there might be some success in limiting the spread of the fire in one direction, but the fire will continue to grow, either directly or in laying down the fuel for the future. Continued fiscal stimulus will make the fight against inflation more difficult.

As a third effect on prices, and in line with the effects of the Russian invasion of Ukraine, the green transition's effects also have more immediate importance for Europe with regard to its energy security. The green transition is just that, a transition, meaning a period where energy sources will be replaced and re-fitted throughout the economy. A problem in this transition, however, is that many of the replacement technologies are not necessarily either at the scale at which they need to be to replace existing energy sources or – more problematic from the point of view of prices – require continuing government subsidies to survive. In this situation, as Germany is finding (Pegels and Lütkenhorst, 2014; Murray, 2019) with its decision to close its (emissions free) nuclear power plants, the effects of the energy transition will be to increase energy costs in the short- and medium-term rather than dampen them. Again, with a policy almost entirely designed to create inflationary pressure in the short run, it should not be surprising that fighting this pressure will be made more difficult.

A final additional problem accompanying the massive spending envisioned for the green transition is the structural inflation that Europe faces as the demographic shift occurs across the continent (Figure 7). Standard lifecycle theories teach us that early adults through retirees tend to save, driving investment, while both the very young and very old dis-save, driving consumption. With an economy seeing more and more elderly and fewer workers, the structure of the economy will shift towards more consumption, i.e., higher demand for goods and services, a classic Keynesian positive aggregate demand shock. Using a standard aggregate demand/aggregate supply framework for the short-run,

this increased demand will increase prices in the short-run but the increased prices for inputs – and the lack of workers – will decrease aggregate supply, meaning a long-run equilibrium of higher prices. This effect will of course be confounded with other policies, such as the aforementioned envisioned positive supply shock combined with subsidies, but it does not point to a great lessening of inflationary pressures. A move towards older populations will mean more consumption, more demand, and higher prices over the long run.

Figure 42: Demographic change in the euro area



Source: Eurostat, series TPS00200.

Note: Shown is the ratio of over 65 people in the euro area to those aged 15-64 per 100 people. Higher numbers indicate much higher percentages of the non-economically active population. Projections are from 2021.

This is precisely the situation that the euro area (and the broader EU) finds itself in at the moment, as the old age dependency ratio shown in Figure 7 is projected to balloon from 34 in 2023 to over 60 in 2100 (one pensioner's age from now). Almost doubling the number of the economically inactive while halving the number of those who are economically active will shift the structure of the euro area's consumption and investment patterns, and likely drive prices higher as consumption increases. In this environment, matching massive fiscal expenditures for a green transition along with demographic decline (and the concomitant rise in pensions and healthcare expenditures) is a recipe for elevated prices far into the future. If the structural inflation engendered by the demographic shift then leads to popular calls for further fiscal redistribution – and people over the age of 40 and especially over 65 tend to vote in much larger numbers (Goerres, 2007) – this could entrench inflationary pressures even further. And while the demographic decline in Europe threatens price inflation over a longer period of time, if during the entire period of the transition towards greater private fiscal outlays the EU poured fuel on the fire with massive fiscal stimulus, price inflation could become substantial.

4. CONCLUSION

This study has examined the prospect of inflation in the euro area and the effects of the normalisation of monetary policy after a decade and a half of unconventional policies. As stressed throughout, such a normalisation was unavoidable but was severely delayed as a matter of convenience rather than necessity. This delay has led to several deleterious consequences, including a less resilient euro area, a major problem for economic policy as the EU faces global headwinds. Rather than having the luxury of normalisation during more placid times, the euro area must now undertake interest rate hikes under the threat of entrenched inflation, global geopolitical instability, and restricted fiscal space (restricted further by the lowering of economic activity effected by normalisation itself).

However, a theme which should have emerged is that the normalisation of monetary policy is crucial and necessary, with its costs paling in comparison to the potential costs if such a normalisation is further delayed. While the effects, as shown in this paper, will be painful for both the financial and non-financial sectors, as well as households, they are a necessary stabilisation in a tumultuous world. Indeed, for liberal democracies to be able to meet the extensive inflationary and destabilising challenges which exist today, they need to have economies which are both deep and resilient – and this cannot occur if they remain tethered to a monetary policy which keeps these economies brittle. The short-term pain connected with conquering inflation will reap benefits in the long run against an external environment which is tailor-made for increasing inflation.[37] While geopolitical risks cannot be erased, they can be mitigated, and the biggest buffer against geopolitical shocks is economic strength.

Along these lines, fiscal policies also play a role in fighting against inflation in the euro area, but not in the "usual" (i.e., redistributive) sense. The "Green Deal" is likely to be a major driver for sustained inflation in the EU and euro area over the next two decades – can policymakers say how long the "transition" will take and when we will know it is completed? - and it is important that its goals are not confused with the means of achieving them; by this, I mean that positive environmental outcomes will not come about solely because of a top-down directive to reduce all emissions. In reality, the inflation-minded solution for the euro area in the area of energy is to increase the opportunities for more production and transmission (including and especially in clean production, such as nuclear) from private sources. While parts of the Green Deal may have been envisioned as a way to facilitate private investment in the direction of cleaner technology, this approach towards encouraging a true green technology would emphasise parts more in line with market tenets (regulatory sandboxes, for example) and minimise those with overt industrial policy overtones (where the conversation has gone in 2023). With more energy available, the euro area countries will be better placed to weather exogenous shocks; moreover, from the point of view of inflation, increased production need not be accomplished through government subsidies, further straining finances and adding to price level increases, but instead can be accomplished by government policies which ease entry into the energy sector. An increased supply of energy will help to ease price pressure due to constant or rising demand and constrained supply, making the real economy a key ally in keeping inflation low.

In any event, the current state of affairs was in fact unavoidable but the strange circumstances of the past three years, including the pandemic and the Russian invasion of Ukraine, made it inevitable. Luckily, this is not necessarily the case for the future of inflationary pressure within the euro area,

[37] One could argue that this would also be true about the green transition. This argument ignores two specific realities: one, the mispricing of capital was done precisely through government policy for over a decade and removing a distortion is not the same as radically transforming the energy sources of an entire continent. Secondly, the price mechanism is well understood as the basis for a modern market economy and the consequences of altering their functioning demonstrated in example after example; on the other hand, a massive transformation of energy, based on technology which – while improving – is still not up to the challenge is a much bigger leap of faith than a mere correction.

meaning that a return to normalisation in a world that is increasingly not "normal" will be an effective panacea for the structural issues which still exist.

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High inflation negatively affects firms and households in a variety of ways, including by eroding real incomes and by widening inequality. Central banks responded by tightening monetary policy stances significantly. This has naturally constrained demand through rising borrowing costs and smaller credit flows to the real economy. The negative impact on economic activity and growth is a standard feature of tightening, yet it deserve to be closely monitored.

Four papers were prepared by the ECON Committee's Monetary Expert Panel, discussing how the real economy is impacted by high inflation and monetary tightening.

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