STUDY

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Comparative analysis of monetary policy and inflation dynamics in the euro area and the United States

Compilation of papers

Economic Governance and EMU Scrutiny Unit (EGOV)
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Comparative analysis of monetary policy and inflation dynamics in the euro area and the United States

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Monetary Dialogue November 2023

Abstract

After a series of unprecedented interest rate hikes on both sides of the Atlantic, inflation in the euro area and the United States is cooling down from a 40-year high. However, uncertainty about the inflation and growth outlook remains high, as the European Central Bank and the Federal Reserve are considering their next moves. Five papers were prepared by the ECON Committee's Monetary Expert Panel, making a comparative assessment of inflation dynamics and monetary policy stances in the two monetary areas, as well as implications for the euro area of a possible divergence in the future.

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 27 November 2023.

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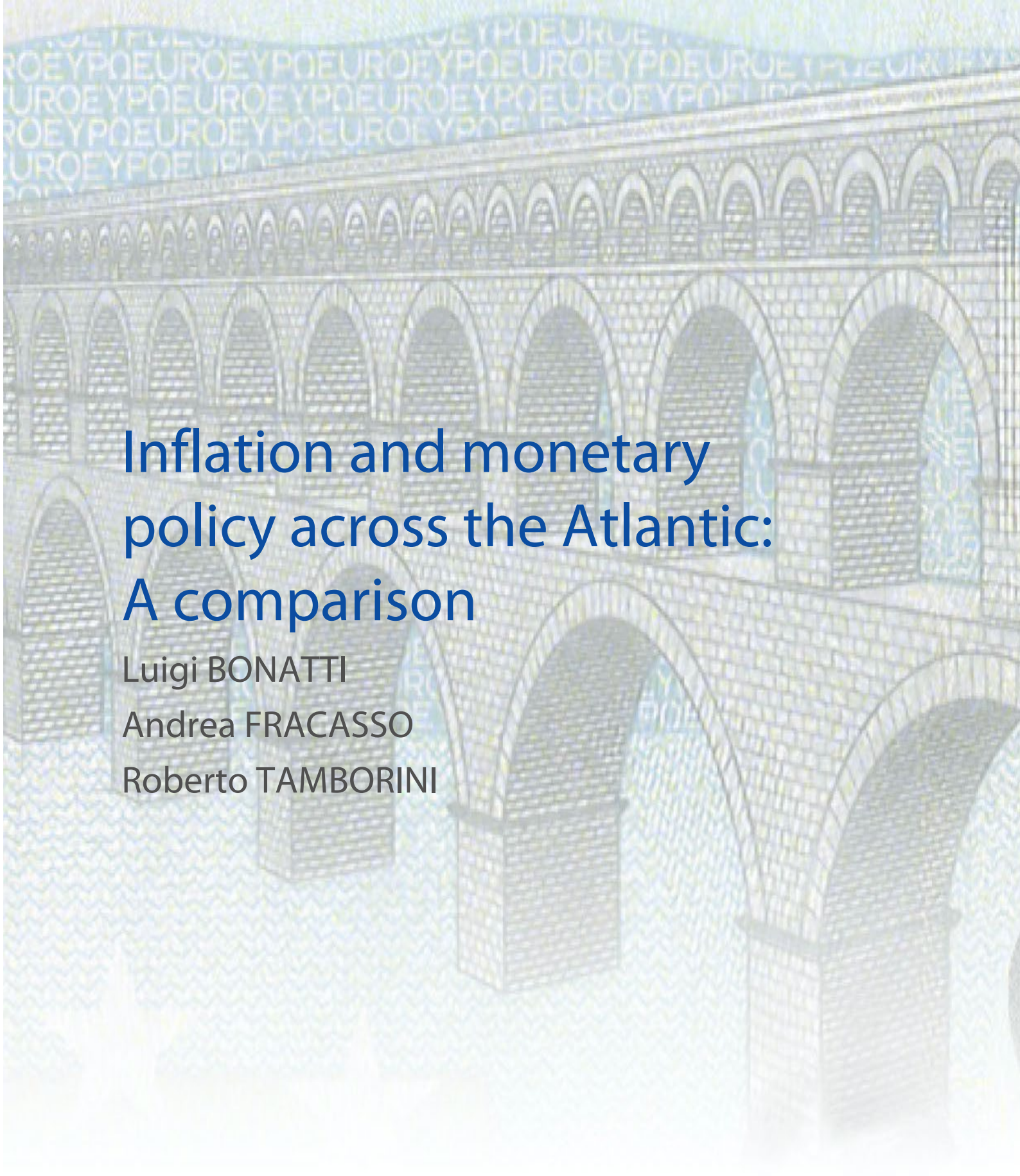

Inflation and monetary policy across the Atlantic: A comparison

Luigi BONATTI
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Abstract

Under the stress test of the inflation process, the two central banks' stances across the Atlantic share similarities but show also significant differences. Similarities and differences are reflected also in inflation dynamics in the US and the euro area. Differences are mainly due to the mix of factors that originated the take-off of inflation, some structural features of the economies, the institutional contexts and associated fiscal stances.

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 27 November 2023.

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LIST OF ABBREVIATIONS

EA	Euro area
ECB	European Central Bank
Fed	Federal Reserve
GDP	Gross domestic product
HICP	Harmonised index of consumer prices
IMF	International Monetary Fund
ITZ	Inflation targeting zone
US	United States

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EXECUTIVE SUMMARY

- The US Fed and the ECB share the basic general principles of modern central banking, namely independence, autonomy, and "inflation targeting" as the blueprint of best implementation of the mandate of price stability. The recent reformulation of the policy strategy of the two central banks can be interpreted as moving closer to **inflation-targeting zone.**
- Under the stress test of inflation, the central banks' stances across the Atlantic **share similarities but show also significant differences**.
- Differences are mainly due to the **mix of factors** that originated the take-off of inflation, some **structural features** of the economies, the **institutional contexts**, and the associated **fiscal stances.**
- In the largest euro area countries, there was a delay compared to the United States both in the reopening of the economy after the lockdowns due to the COVID-19 pandemic, which delayed the return to the pre-COVID level of economic activity, and then in the beginning of the series of interest rate increases by the respective central banks. **This time lag somehow affected the subsequent disinflationary process in both areas.**
- **The euro area is a large net importer of gas and oil**, unlike the US, which has recently become a net exporter of fossil energy. Therefore, the cost-push shock from the raise in gas and oil prices, strongly accentuated by the Russian invasion of Ukraine, led to a **fall in real income in the euro area, which did not happen in the US**.
- **Fiscal support during the COVID-19 pandemic was more massive in the US than in the euro area**. This difference in the weight of fiscal policy between the two sides of the Atlantic has become very accentuated in during 2023, with a government budget deficit that will not greatly exceed 3% of euro area's GDP, whereas in the US it is expected to soar to almost 7.5% of the GDP.
- **The different functioning of the labour market has obvious consequences on how the euro area and US economies react to shocks.** In the US, where the labour market is more competitive and wages respond more promptly to changes in supply and demand, wages will adjust more rapidly to demand and supply shocks, as well as to shifts in inflation expectations. In Europe, where collective bargaining has more weight, wages tend to react more slowly both downwards and upwards. **The disinflation process is necessarily affected by these different modalities of wage adjustment.**
- **The ECB has to be concerned about the highly diverging trends emerged across the member states** as persistent and large differences can lead to serious trade imbalances (through changes in the real exchange rates) and to differences in the real interest rates.
- Finally, the ECB must consider **the risks of adverse economic and financial dynamics spurred by a long-lasting increase in public debt service** and unfavourable housing market developments, that may severely affect growth and price stability in the euro area.

1. INTRODUCTION

After a long, unprecedented sequence of policy rate hikes, both the European Central Bank (ECB) and the Federal Reserve (Fed) recently decided to pause hiking policy rates. Indeed, the ECB started increasing the rate on the deposit facility in July 2022, which at the time was still at zero, bringing it with a continuous series of gradual increases to 4.5% in September 2023; in turn the Fed began to increase the Federal Funds rate in March 2022, also starting from zero, bringing it to target of 5.25-5.5% in July 2023 and leaving it unchanged to date. Whether it will only be a pause, after which one or the other of the two central banks—or perhaps both—will begin to increase interest rates again, or whether instead a plateau has been reached from which rates can only fall, will depend on whether the disinflation process underway on both sides of the Atlantic will continue at the pace desired by the respective central banks, as well as on geopolitical risks that have been more pronounced recently and which can have further effects on energy prices/restoring price stability in next months

In fact, headline inflation in the euro area was in September at an annual rate of 4.3%, more than halved from the peak of 10.6% reached in October 2022. According to Eurostat's flash estimate, in October inflation fell to 2.9%. Even core inflation, which excludes volatile prices of food and energy, fell in the euro area to 4.5% in September (estimated 4.2% in October). Equivalent figures for the United States (US) in September were 3.7% for headline inflation (as gauged by the Consumer Price Index (CPI)), down from a peak of 9.1% reached in June 2022, and 4.1% for core inflation (see Figure 1). The successes obtained so far by the central banks in reducing inflation have reinforced the beliefs of the majority of operators, whose expectations look well anchored, since they are not significantly departing from the path that the central banks have indicated to return to their 2% inflation target.

However, if the disinflation process today appears to be proceeding in a similar way in the US and in the euro area, the performances of the two areas appear to differ in terms of growth. In the second quarter of 2023, real GDP grew 0.1% year-on-year in the euro area and 2.1% in the US, and in the third quarter of 2023, GDP was estimated to decrease by 0.1% in the euro area and to grow at a surprisingly high rate of 4.9% in the US. Although the strong difference in terms of GDP growth between the euro area and the United States which occurred in the two central quarters of the current year is destined to reduce due to the expected cooling of US growth, the projections of future GDP growth appear to confirm a growth differential in favour of the United States even in the medium term (for example, the International Monetary Fund (IMF) attributes annual growth of 1.5% to the US and 1.2% to the euro area for 2024). The ability of the US economy to maintain a more than decent growth rate so far despite the long sequence of interest rate increases has surprised most commentators, some of whom are convinced that at this point it is possible for the US economy to complete the disinflation process without incurring a recession. This optimism, however, is more of a minority view concerning the euro area. In fact, many are convinced that the latter can return to an inflation rate close to 2% in a reasonably short time only by going through a period of negative growth.

This paper will focus on some of the features that differentiate the way in which the euro area and the US are reacting to the disinflationary policies undertaken by their respective central banks. Particular attention should be given to the following.

First, there was a delay in the largest euro area countries compared to the US both in reopening the economy after the lockdowns due to the COVID-19 pandemic, which resulted in their delay also in returning to the pre-COVID level of economic activity (see Milesi-Ferretti, 2021), and then in the start of interest rate increases by the respective central banks. This time lag somehow affected the subsequent disinflationary process of the two areas.

Second, the euro area is a strong net importer of gas and oil, unlike the US, which has recently become a net exporter of energy of fossil origin. Therefore, the shock due to the increase in the price of gas and oil, strongly accentuated by the Russian invasion of Ukraine, led to a fall in real income for the euro area, which did not happen for the US (see Bonatti et al., 2023). The subsequent drop in this price was then equivalent for the euro area countries to an increase in their real income, an effect which was obviously absent in the US. This different incidence of changes in the price of fossil energy in the euro area and in the US should be kept in mind in the assessment of the implications for the two areas of a possible widening of the ongoing conflict between Hamas and Israel, with the foreseeable increases in the price of oil and gas that it would entail.

Third, fiscal intervention to support the economy during the COVID-19 pandemic was more massive in the US than in the euro area. This difference in the weight of fiscal policy between the two sides of the Atlantic has become very accentuated in the current year, with a government budget deficit that will not greatly exceed 3% of the area's GDP in the euro area, whereas in the US it is expected to soar to almost 7.5% of the GDP.

Fourth, the slowdown in international trade due to COVID-19, the redefinition of supply chains with the reshoring of some production operations, the green transition with the prospective decline of some industries and the development of others, together with the ongoing slowdown of the Chinese economy, are impacting very differently on Germany and the euro area, an area whose growth has always been export-led and based on traditional manufacturing industries, compared to how they are impacting the US, an economy whose growth is typically driven by domestic demand and more based on advanced technology sectors.

Fifth, the different functioning of the labour market has obvious consequences on how the euro area and US economies react to shocks. In the US, the labour market is more competitive and wages respond more promptly to changes in supply and demand, , as well as to shifts in inflation expectations. In Europe, where collective bargaining has more weight, wages tend to react more slowly both downwards and upwards. The disinflationary process is necessarily affected by these different modalities of wage adjustment.

The rest of this paper is organised as follows. Section 2 compares the evolution of headline and core inflation in the euro area and in the US, Section 3 discusses analogies and differences emerging in the policy strategies, and the "philosophies", of the Fed and the ECB, Section 4 assesses the prospects of the euro area and the US with respect to the ongoing disinflation process and the risk of recession that both areas are facing. Section 5 concludes.

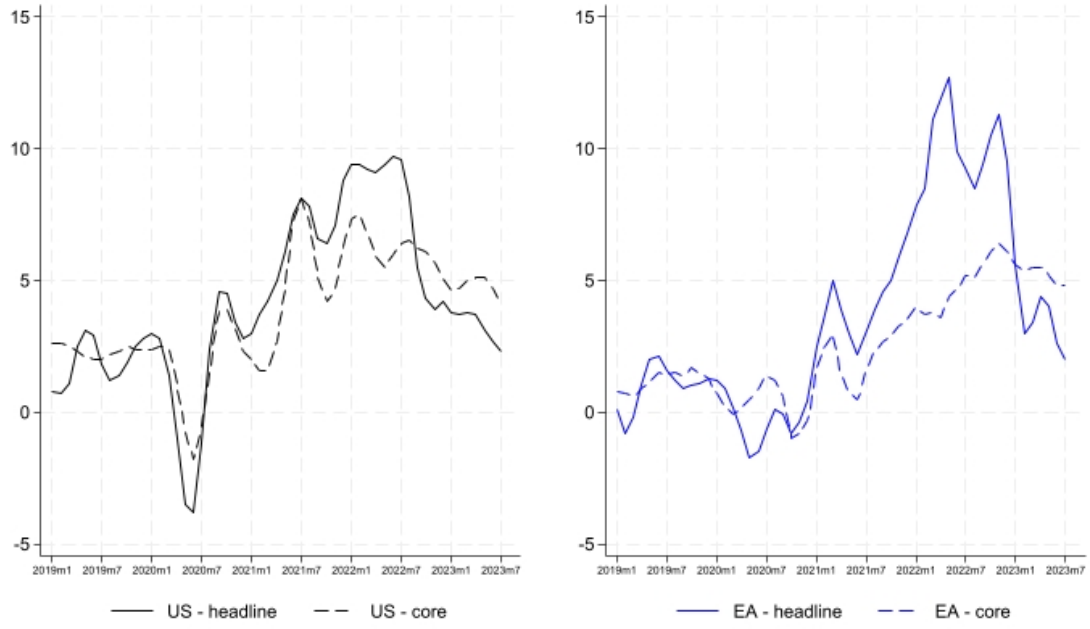
2. COMPARING THE EVOLUTION OF HEADLINE AND CORE INFLATION

To compare the evolution of headline and core inflation in the euro area and in the US, we employ the data provided by the IMF in its flagship publication, the World Economic Outlook, issued in October 2023. The two main measures of headline and core[1] inflation are provided: the Harmonised Index of Consumer Prices (HICP) for the euro area and the Consumer Price Index (CPI) for the US.

In both areas the headline inflation has fallen remarkably since mid-2022, mainly due to a fall in energy and food prices, as well as imported products. However, some differences distinguishing the dynamics of headline inflation on the two sides of the Atlantic have emerged: the reduction has been larger in the euro area but from a higher level, where prices did increase the most in 2021 and 2022.

Core inflation has slowed down more gradually than headline inflation in both areas, but some differences among them can be easily observed: while the reduction of core inflation in the US has occurred steadily along a downward trend started in mid-2021, in the euro area the contraction of core inflation emerged only recently. It must be noticed, however, that core inflation passed 5% in early 2021 in the US, whereas it remained below this value until the second half of 2022 in the euro area.

Figure 1: Headline and core inflation rates in the euro area and in the US (1:2019-7:2023), in %



Source: IMF WEO (October 2023).

The IMF distinguishes the sources of variation in the headline inflation rates. First, there are headline inflation shocks (i.e., the deviations from core inflation) that are typically driven by relative price changes in particular industries (such as energy, food, and the like). Second, core inflation dynamics reflect three components: the slack or tightness in labour markets, the changes in long-term inflation expectations, and the pass-through of past headline shocks to core inflation (see Ball et al., 2022; Dao et al., 2023).

[1] Excluding prices for food and energy and, only for the euro area also alcohol and tobacco.

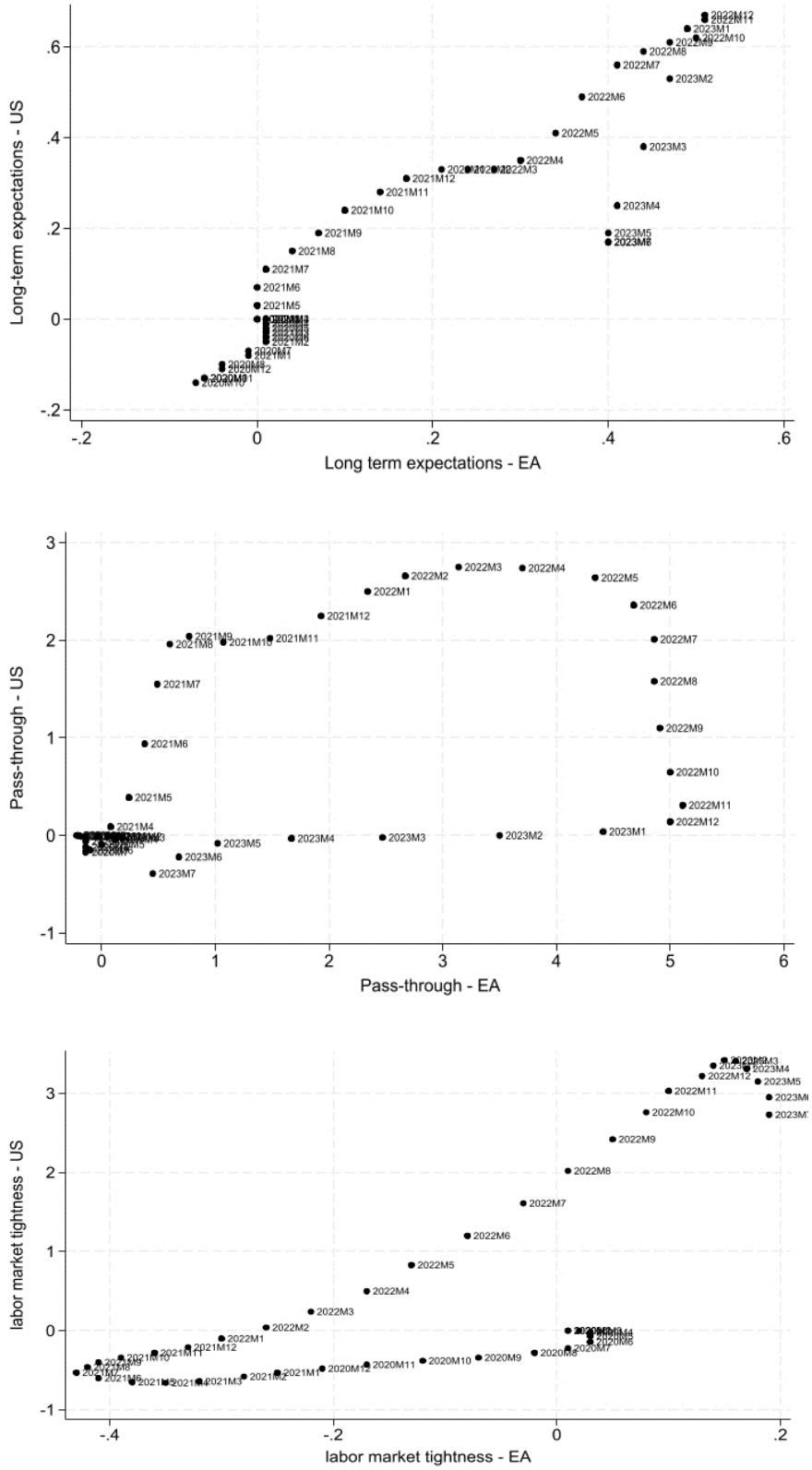
Considering the deviations of three-month annualised inflation from December 2019, the IMF produced estimates of these distinct channels for the US and the euro area (IMF, 2023). The IMF decomposition reveals that much of the past increase in core inflation in the euro area can be traced back to the pass-through of large headline inflation shocks; in the United States, instead, domestic overheating and labour market tightness were responsible for the observed dynamics. In both areas, long-term inflation expectations have remained fairly stable over the period. As discussed in Bonatti et al. (2022), such differences in the fundamental drivers of inflationary shocks affected the stance of monetary policy across the Atlantic, with a more restrictive approach adopted in the US. It is worth noticing that in 2023 the euro area and the US continue to exhibit different underlying conditions.

We report in the panels of Figure 2 below the three effects, and we plot the values estimated for the US against those for the euro area during the period between January 2020 (1:2020) and July 2023 (7:2023). Longer-term inflation expectations have remained well anchored in both areas and they added little to recent movements in core inflation (panel a). If the adjustment in long-term inflation expectations has been almost identical across the Atlantic until the end of 2022, a faster absorption of these effects can be seen more recently in the US. Panel b reports the pass-through of past headline shocks into core inflation: the euro area exhibits values that are far larger than the US since March 2022 onwards. These effects have not been entirely re-absorbed yet. This is in line with additional evidence on the long-lasting impact of the abrupt increase in energy and food prices on euro area inflation. Panel c regards labour-market related pressures. These have been remarkably large in the US since mid-2022 and reached a peak in early 2023; although moving in the same direction of the US ones, labour-market related effects in the euro area turned positive again only in august 2022 (in February 2022 in the US) and remained one tenth of those estimated for the US.[2]

Long-lasting price dynamics owe to the relationship between changes in wages and prices. Changes in profits appear very large in both areas in the period 2020 and 2021, whereas since 2022 the US have seen an important increase in labour costs. As profit-related inflation can be due to temporary imbalances in demand and supply before wages can adjust, the relevance of profits inflation during the pandemic period is consistent with the bottlenecks in international production caused by the virus and the restrictive policy measures. Probably due to the consequences of the Russian invasion of Ukraine, bottlenecks in production have remained relatively more stringent in the euro area and labour costs have remained more stable than in the US. While it could be argued that firms have gained some space to accommodate rising wages without increasing their prices further, thereby making profits a buffer, whether this will be enough to prevent the inception of a wage-price spiral is early to say. Most likely, to the moderation of wages in the euro area will contribute the contraction in global and local demand.

[2] It is worth noticing that part of these differences is due to the methodology adopted by the IMF. Labor market tightness is measured on the basis of on the unemployment gap in the euro area and on the basis of the ratio of job vacancies to unemployed in the US. This difference is due to a shift in the Beveridge curve in the US after Covid19.

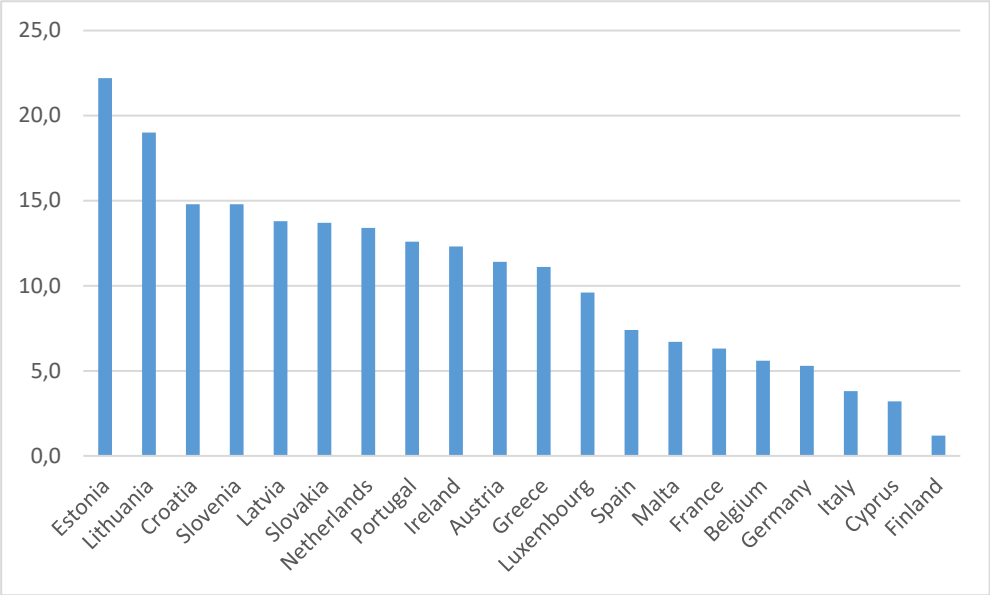
Figure 2: Drivers of core inflation in the euro area and in the US (1:2020-7:2023). Panel a: long term inflation expectations (percentage points). Panel b: pass-through of headline shocks (percentage points). Panel c: index of labour market tightness.



Percentage points; three-month annualized inflation; deviation from December 2019. Source: Authors elaboration based on IMF, WEO October 2023.

Differences in inflation dynamics across the Atlantic reflect also with divergent patterns in housing markets. Given the differences in the methodologies used by the statistical offices in the euro area and the US to include rents and housing services in their price index (see Bonatti et al., 2022), it is difficult to quantify precisely the relative importance of this channel. What is certain is that differences have been extremely marked across euro area countries: the rates of change in annual deflated house prices in 2022 (as calculated by Eurostat) vary in a range of values that goes from +1.2% in Finland to +22.2% in Estonia (Figure 3). A large dispersion in house price developments holds also in the US, with house prices still increasing in 2023 in the South Atlantic Census Division and contracting in the Pacific Census Division (Figure 4).[3]

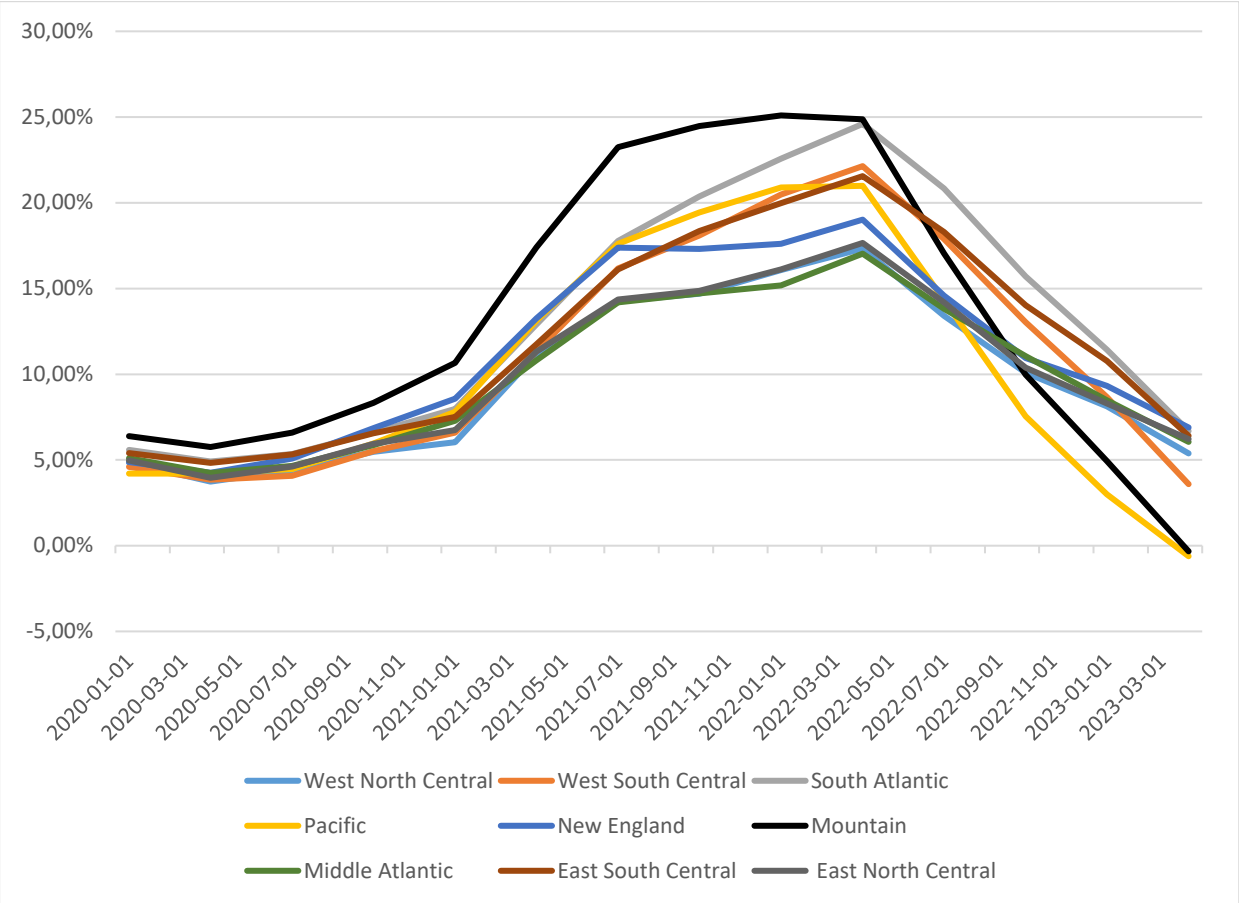
Figure 3: Annual % change in house prices in euro area Member States, 2022



Source: Eurostat (data code: prc_hpi_q__custom_8432284).

[3] The US Census divisions are: New England and Middle Atlantic (North East Region), East North Central and West North Central (Midwest Region), South Atlantic, East South Central and West South Central (South Region), Mountain and Pacific (West Region). The South Atlantic Division includes the following states: (Delaware, Florida, Georgia, Maryland, North Carolina, South Carolina, Virginia, Washington, D.C., and West Virginia. The Pacific division includes Alaska, California, Hawaii, Oregon, and Washington.

Figure 4: Year-on-variations in all-transactions house price index for several US Census Divisions. Source: U.S. Federal Housing Finance Agency

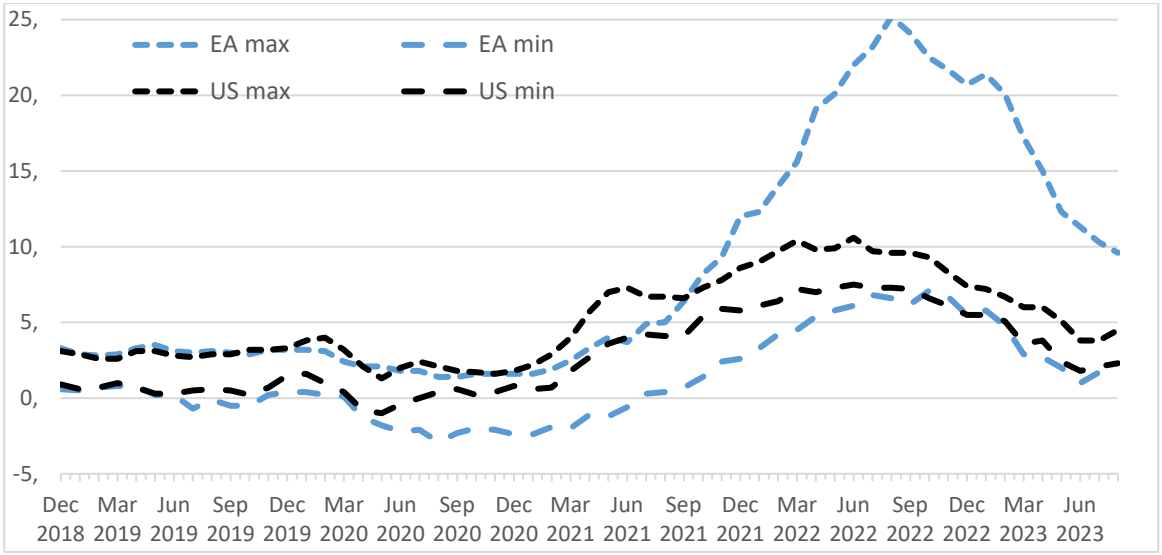


Source: retrieved from FRED on 10 November 2023.

These findings **suggest that the dispersion of inflation rates within the euro area and within the US should be considered**. The first way to compare the dispersion of annual price changes is to consider the maximum and minimum values recorded in each area. In the case of the euro area, we consider the HICP for each euro area Member State; in the case of the US, we resort to the "Consumer Price Index for All Urban Consumers" calculated for nine Census Divisions.[4] Figure 5 shows that, since 2022, the dispersion is always much larger in the euro area than in the US. This is due to the very high inflation rates recorded in Latvia and Estonia in 2022 (and in Slovakia since June 2023), probably because of the typically large shares of energy in the HICP baskets of Baltic and Eastern European countries. Even when excluding these countries, important differences can be found across the other euro area countries. This scale of heterogeneity is a relatively new phenomenon: until 2019 inflation differentials were relatively small across the euro area Member States.

[4] The divisions are New England and Middle Atlantic (North East Region), East North Central and West North Central (Midwest Region), South Atlantic, East South Central and West South Central (South Region), Mountain and Pacific (West Region).

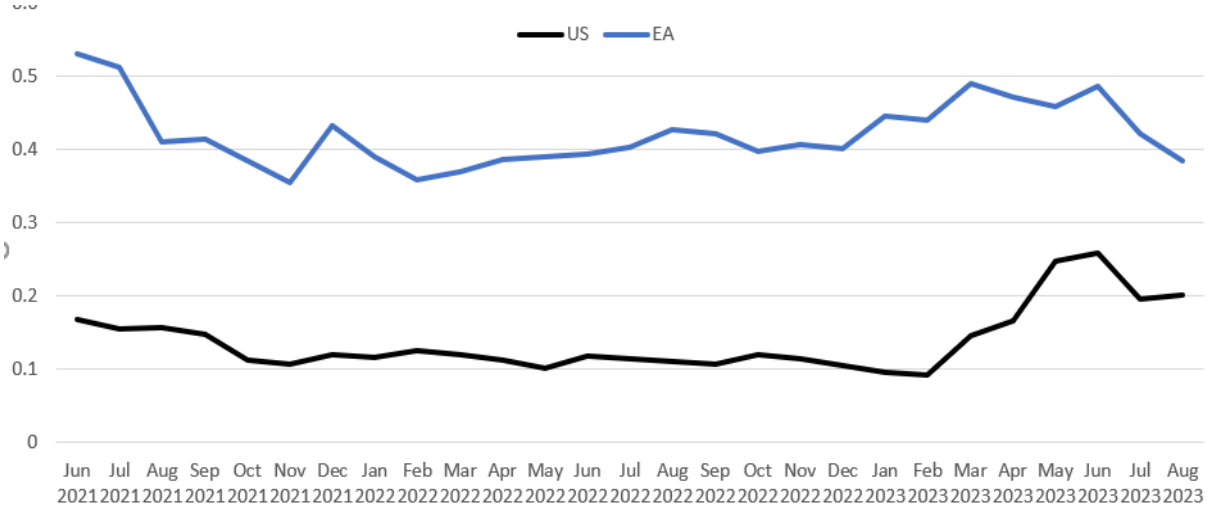
Figure 5: Dispersion of monthly inflation rates (%) across euro area Member States and US Census Divisions



Sources: Eurostat (euro area) and US Bureau of Labor Statistics (BLS) (US).

If we were to consider a statistical measure of dispersion that accounts for all values of inflation in the regions in the euro area and in the US, and not only the extremes, we would reach similar conclusions. Figure 6 plots the coefficient of variation of inflation rates in the euro area and the US between June 2021 and August 2023. **The dispersion across the euro area is always larger than in the US, and the distance has recently diminished due to the increase within the US.**

Figure 6: Coefficient of variation for regional inflation rates (euro area: Member States; US: Census Divisions) over the period 6:2021-8:2023

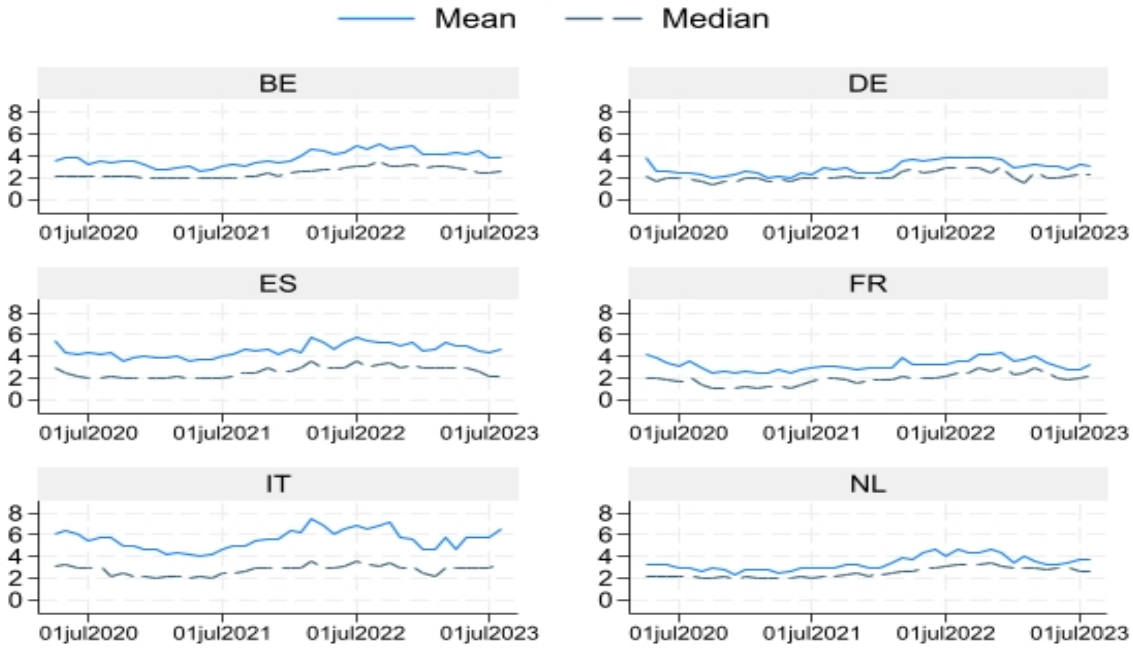


Sources: Eurostat (euro area) and BLS (US).

The heterogeneity in annual inflation rates has a potential impact on the appropriateness of the policy rates set by the ECB for the entire euro area. The importance of this potential problem, in fact, depends on the degree of anchoring of inflation expectations because the long-term real interest rates depend on inflation expectations, not on current inflation. Moreover, inflation differences may become more entrenched if expectations diverge: second-round effects depend on the size and persistence of the underlying shocks and on how wage and prices are set, but also on the expectations informing wage and price negotiations. Using homogeneous data from consumer surveys, we report in Figure 7 the

main aggregate indicators from the Consumer Expectations Survey (CES) related to inflation so as to gauge the developments in inflation expectations. Unfortunately, these measures are available only for six countries (BE, DE, ES, FR, IT and NL).

Figure 7: Median and mean inflation expectations 3-year ahead, in %



Source: ECB Consumer Expectations Survey (CES).

While this does not allow us to assess the situation in those euro area countries that have suffered most of high inflation rates, it permits to appreciate three stylized facts: first, the mean and median values of 3-year ahead inflation expectations have been relatively stable over time; second, the mean value of future inflation is always higher than the median value, and the difference is large where inflation is higher; third, some non-negligible heterogeneity in the mean value of inflation expectations is present across these countries.[5]

[5] Market-based measures of inflation expectations are available for a larger number of countries, but they reflect both actual inflation expectations and inflation risk premia.

3. NEW STRATEGIES UNDER THE INFLATION STRESS TEST

So far we have examined comparatively how the Fed and the ECB have reacted to the insurgence of inflation, which took off across the advanced economies roughly at the same time in the course of 2021. In the US, headline inflation first surpassed the 2% threshold in April 2021, in the euro area in August (core inflation in May 2021 in the US and in November in the euro area). As said, the Fed begun its series of increases of the policy rate in March 2022, the ECB did so four months later.

We have also pointed out the existence, and the role of, differences in the origin of inflation (imported energy prices relative to domestic boosters) as well as in the institutional environment of the two central banks (namely labour market institutions and, above all, the multi-country multi-government nature of the euro area; more on this point in section 4). Both central banks have accompanied their "conventional" policy of higher interest rates with the downsizing of their balance sheet, and yet this operation is more complex and critical for the ECB in consideration of different sovereign debt exposures. Not least, the US economy is proving to be more resilient to the monetary tightening than the euro area, which shows a widespread stagnation.

These elements may account for the differences between the two central banks in the timing and implementation of policy decisions as well as in the style of communication and "forward guidance". Looking at a more general level, and further into the future, in this section **we address the issue whether deeper differences are emerging in the policy strategies, the "philosophies" of the two major central banks among the advanced economies.**

To begin with, it is worth recalling that **the Fed and the ECB share the basic general principles** that have been reshaping modern central banking, namely independence, autonomy, and "inflation targeting" as the blueprint of best implementation of the mandate of price stability.

The Fed officially adopted inflation targeting in 2012, with a target set at 2% annual increase in the consumer price index[6] (Reifschneider and Wilcox, 2021), although other authors argue that this adoption was only implicit (Famiglietti and Garriga, 2021). In August 2020, the Fed clarified that its target should be understood as an average value measured over the medium term (Board of Governors of the Federal Reserve, 2020).

> *"In order to anchor longer-term inflation expectations at this level, the Committee seeks to achieve inflation that averages 2 percent over time, and therefore judges that, following periods when inflation has been running persistently below 2 percent, appropriate monetary policy will likely aim to achieve inflation moderately above 2 percent for some time."*

In July 2021 the ECB, too, announced its long-awaited revision of policy strategy. The relevant documents (ECB 2021a, 2021b) cover a number of issues, but the kernel of the revised strategy, namely the operational (re)definition of "price stability", can be summarised in two points (ECB 2021a):

- *"the Harmonised Index of Consumer Prices (HICP) remains the appropriate price measure for assessing the achievement of the price stability objective"* (p. 1), with the intention to recalibrate the index with the inclusion of the costs of the owner-occupied housing, and to downgrade the weight of the most volatile components such as energy prices;
- *"price stability is best maintained by aiming for two per cent inflation over the medium term"* (p. 2), with "symmetric commitment" to this target. *"Symmetry means that the Governing Council considers negative and positive deviations from this target as equally undesirable"* (p. 2).

[6] The Fed's preferred measure of inflation is the Personal Consumption Expenditure (PCE).

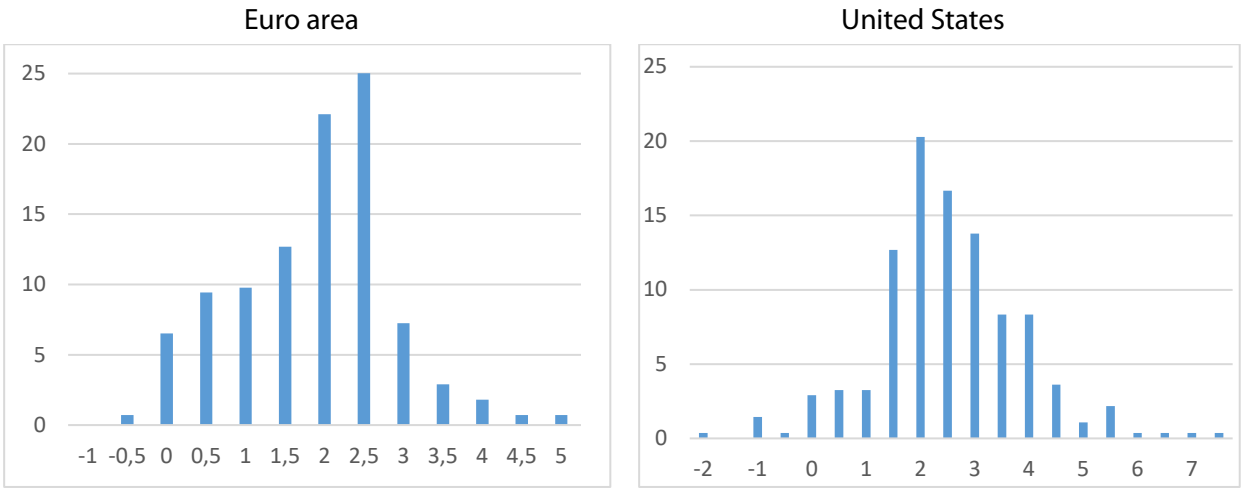
The second point introduces the most apparent modification with respect to the previous definition of price stability as a year-on-year increase of the HICP "below but close to 2%" dating back to 2003. In order to provide an appropriate background, Table 1 and Figure 8 summarise the essential statistical evidence of the past record of the monthly observations of the year rates of change of the consumer price indexes in the euro area and the US from 1999 up to the end of the immediate emergency phase of the COVID-19 pandemic in 2021.

Table 1: Monthly observations of the year rates of change of the consumer price index, 1999:1-2021:12

	Euro area	United States
Mean	1.67%	2.24%
Min., Max	-0.6%, 5.0%	-2.0%,7.0%
Variance	0.98	1.82
Obs. < 2%	61.2%	44.6%
Obs. <1%, 3%>	77.2%	66.7%
Obs. <0.5%, 3.5%>	89.5%	78.7%

Source: Elaborations on ECB, Statistic Warehouse, HICP series; FRED, Consumer Price Index, All Items.

Figure 8: Distribution of the monthly observations of the yearly rates of change of the consumer price index, 1999:1-2021:12, in %



Source: Elaborations on ECB, Statistic Warehouse, HICP series; FRED, Consumer Price Index, All Items.

As far as the euro area is concerned, at first glance, an average yearly inflation of 1.67% seems consistent with the definition of"below but close to 2%". Comparatively, the US fared slightly above 2%. Nonetheless, 61.2% of observations below 2% in the euro area, *vis-à-vis* 44.6% in the US provide clear evidence of a downward bias. This corresponds, as is well known, to the twelve years (2009-20) between the Great Recession and the COVID-19 pandemic, when inflation remained systematically below 2%. On the other hand, the US display a few more extreme events (during the Great Recession on the negative tail, and during the post-pandemic rebound on the positive tail), resulting in a larger overall variance.

Several commentators have welcomed the new definition of price stability of the ECB, with a clear-cut target value of 2%, as an improvement in view of a more consistent and transparent application of inflation targeting as a general framework for monetary policy conduct and communication (e.g. Wyplosz, 2021; Demertzis, 2021; Darvas and Martins, 2021, Blot et al., 2021). The new definition of price

stability "is now symmetric and it allows for temporary overshooting as needed" (Wyplosz, 2021, p. 6). This interpretation rests on the two statements reported above: that upward and downward deviations are equally undesirable, *and* that the 2% target is to be achieved over the medium term, implying that deviations will not be corrected immediately.

There are also differences in the policy strategies announced by the two central banks which have been matter of accurate exegesis (see e.g. Darvas and Martins, 2021) but which fall beyond the scope of this paper. An important one to be mentioned is that, unlike the Fed, the ECB does not refer to 2% as an average. This different wording, if taken at face value, may imply that in the face of an upward (downward) deviation of inflation from 2%, the Fed might feel allowed to let inflation deviate downward (upward) by the same and symmetric amount, whereas the ECB might feel committed to driving inflation back just to 2%.

Overall, there remain also non-trivial margins of ambiguity, which are being brought to the fore by the rapid inflationary evolution of the post-pandemic scenario. With early assessments of the two strategy revisions being under way (e.g. Wyplosz, 2021; Darvas and Martins, 2021; Blot et al., 2021), they were suddenly put under test by the upsurge of inflation in the course of 2021.

In this perspective, the reformulation of the policy strategy of the two central banks can be interpreted as moving closer to the **inflation-targeting zone** (see, for example, Chung et al., 2020, and Demertzis, 2021) because the reference to 2% as a medium-term target implies, first, that inflation may be subject to fluctuations that will not be systematically offset, and second, that these fluctuations will still be contained around the target.

Targeting zones (TZs) are generally associated with exchange rate systems, where they may also be set officially, as was the case with the European Monetary System. Less common is the association of TZs to monetary policy. Across different uses and meanings, a typical feature of an inflation targeting zone (ITZ) is that the central bank is **committed to keeping inflation within a range of values**. As a consequence, the central bank **has to intervene** when inflation is expected to breach either the floor or the ceiling of the range, but it **may decide not to intervene** as long as inflation is expected to fluctuate within the range.

While no central bank has an official ITZ, reference to ranges of values around a point inflation rate is common practice, known as **thick inflation targeting** (Castelnuovo et al., 2003; Chung et al., 2020). This may have different characterisations, for which Chung et al. (2020) provide the following useful taxonomy: (i) *uncertainty ranges*, "that acknowledge uncertainty about inflation outcomes", (ii) *operational ranges*, "that define the scope for intentional deviations of inflation from its target"; (iii) *indifference ranges*, "over which monetary policy will not react to inflation deviations" (p. 1).

Considering Chung et al. (2020) comparative analysis of central banks' practices, one may conclude that uncertainty ranges are the most common, operational ranges are the least common, and indifference ranges rest somewhere in between (with a few conceptual as well as practical overlaps with uncertainty ranges). The kind of (implicit) ITZs adopted by the Fed and the ECB seem close to the definition of operational ranges.

ITZs share the common notion that inflation is a volatile phenomenon which can hardly be pinpointed at its target value all the time, a *caveat* that central banks also wish to communicate to the public. Implicitly, the idea is that no matter how great the benefits may be in keeping inflation at bay, there are also costs to be borne, ranging from frequent or volatile use of the appropriate instrument(s) to side effects on particular sectors of the economy as a whole. The width of the ITZ is the result of the trade-off between the benefit of intervening on inflation and the cost of the spillovers of the intervention (Orphanides and Wieland, 2000; Della Posta and Tamborini, 2023).

The second, related, rationale for an ITZ is that policy decisions are taken in the light of the current state of the relevant variables (i.e. data driven policymaking) as well as their projections. Yet projections are subject to errors. The risk of undershooting the policy rate should be assessed against the risk of overshooting it and of implementing quick reversals of the policy rate: this concern typically results in a "smoothing" of the manoeuvre of the policy rate (Sack and Wieland, 2000; Lei and Tseng, 2019).

Besides denting central bank's credibility and predictability, the main negative by-product of the policy-rate volatility induced by point inflation targeting arises in the context of flexible inflation targeting, i.e. when the central bank attaches some value to output stability in addition to price stability. A further source of concern relates to financial stability. After the earlier consensus that price stability was a necessary and sufficient condition for financial stability collapsed with the global financial crisis, central bankers' conventional wisdom seems now turned upside down. The ECB pedagogy about its various asset purchases programmes hinges on financial stability as a precondition for price stability (Lane, 2020; Schnabel, 2021). By the same token, inflation-targeting activism may run counter financial stability, triggering "financial fragmentation" as it is now dubbed in the ECB vocabulary (Wyplosz, 2021; Schnabel, 2021).

Does the adoption of an ITZ ease or hamper price stability? As suggested by Ehrmann (2021), the assessment of ITZs can be organised around two alternative hypotheses.[7] One, which can be traced back to Stein (1989), is the **flexibility hypothesis**. In the face of uncertainty and weak commitment, central banks may have appetite for flexibility. The objection is that the adoption of an ITZ can be interpreted *ex-ante* as a relaxation of the commitment to stay on target resulting in the de-anchoring of expectations, and *ex-post* as a curtain that obscures central bank accountability. By contrast, the **credibility-enhancement hypothesis** (e.g. Bernanke, 1999; Mishkin, 2000) argues that for the central bank's credibility it is better to deliver more likely on the promise to keep inflation within a thick band than to fail almost surely to keep inflation on the point target. Yet this argumentation raises the question of what the consequence may be of trespassing even the thick band.

Ehrmann (2021) tests on a dataset of 20 economies (half advanced and half emerging) the two alternative hypotheses mentioned above, namely whether "targets with intervals (i) lead to less anchoring, e.g. because they provide more flexibility to the central bank, or (ii) better anchoring, because they are missed less often, leading to an enhanced credibility" (p. 1). He finds support for the latter hypothesis, though no variant outperforms the others systematically. The focus on the role of ITZs in anchoring expectations distinguishes this study from others, which is a point particularly relevant as will be seen subsequently.

Overall, if the judgement in the empirical literature is mixed as to whether ITZs bring better result in terms of inflation control, no evidence is found that it determines worse results systematically.[8]

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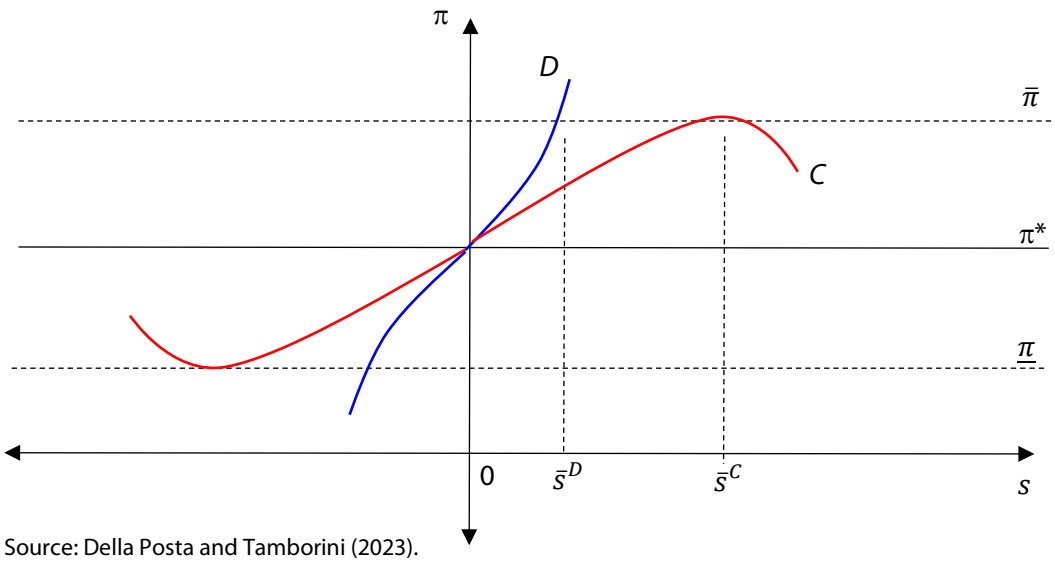
[7] To begin with, the empirical evidence on the performance of inflation targeting (IT) is mixed. One reason being that the performance may be assessed under different dimensions. While some authors claim that IT did not work because the inflation performance of OECD countries was not affected by its adoption (Ball and Sheridan, 2005), Gonçalves and Salles (2008) show that it implied a systematic reduction of inflation rates in developing countries. Bhalla et al. (2023), distinguish between early adopters (pre-2000) who experienced a success in reducing inflation, and late adopters, exhibiting mixed results. The specific effect of ITZs is not easily discernible. Castelnuovo et al. (2003) extend their skeptical assessment of IT to countries that adopt ITZs in the form of allowed ranges of deviation from the target (Norway, Sweden, Canada) as opposed to "thick targeting" (Australia, New Zealand). Some studies examine the behavior of inflation at the upper and at the lower bound of the band of tolerance, also known as "asymmetric ITZs" (Ruge-Murcia, 2003; Martin and Milas, 2004; Naraidoo and Raputsoane, 2011; Akdoğan, 2015): the persistence of inflation at the upper bound seems lower than at the lower bound. Naraidoo and Raputsoane (2011), however, find that central banks remain passive as long as inflation is within the band whereas they become increasingly aggressive when it deviates from the band.

[8] It should also be considered a limit of these empirical studies, namely that they assess the performance of ITZs relative to some statistics of the inflation process alone whereas the aim of ITZs is to minimize the negative spillovers of inflation control onto other policy-relevant variables. Hence a complete assessment should also include the extent to which this aim has been achieved.

Whatever one's assessment of the past experiences of the various central banks, it is a fact that the confidence in high-precision inflation targeting gained during the years of the Great Moderation has been eroded in the past fifteen years. We live at a time of sharp increase in macroeconomic volatility, high sensitivity of expectations, and hence central banks' appetite for flexibility. In this perspective, according to Demertzis (2021), "the most important feature of a tolerance band [around the 2% target] is that it provides a very clear framework for evaluating central bank performance" (p. 4), while it dispenses with identifying the time horizon of deviations explicitly. "For as long as inflation is within the tolerance band, then it is also at 2% on average" (p. 3). This statement, however, is not warranted, since inflation might well remain within a band centred on 2% without averaging to 2% to the extent that it remains above or below most of the time (see Figure 7). As we shall explain later, a specific mechanism of reversion to the mean (possibly not reliant on benevolent features of shocks) is also necessary.

Della Posta and Tamborini (2023) show that an ITZ may or may not deliver the desired results depending on **the degree by which market agents are certain about its boundaries**. If this condition holds, the dynamic path of inflation after a shock is curbed so that the central bank can also accommodate larger shocks before intervening. However, the main shortcomings pointed out in current discussions of ITZs (such as larger, on average, deviations from target, de-anchoring and self-confirming fluctuations in expectations) do arise **in the case of uncertainty about the true boundaries of the ITZ.** The reason may be better understood by means of the following figure, which depicts the dynamic path of inflation π as a function of a shock *s*, and π^* is its target value, $\overline{\pi}$ the upper bound, and $\underline{\pi}$ the lower bound, of the ITZ.

Figure 9: The dynamic paths of inflation after a shock



Source: Della Posta and Tamborini (2023).

Curve *C* (convergence) shows the benefits of the ITZ in case of certainty, that in the TZ literature are dubbed **honeymoon effect**. The first is that, even in the presence of some de-anchoring of expectations after a shock, and the central bank not intervening but at the upper bound, the dynamic path of inflation is bent towards its target. In fact, each point along the curve indicates that for the corresponding shock of size *s* inflation decelerates. The reason lies in the expectation component. As the shock unravels, the anticipation for sure of the central bank's intervention at the upper bound pulls inflation down. This effect is stronger, the closer inflation is to the upper bound. The second beneficialeffect is that, as a consequence, the central bank can also accommodate a larger shock $\overline{s}^C$

before intervening. Finally, the upper bound operates as a "reflecting barrier", meaning that the inflation process is reflected towards the interior of the band.

By contrast, curve *D* (divergence), shows the reversal of the benefits of the ITZ when its boundaries are uncertain, that is the **divorce effect**. This may be the consequence of the public assigning a sufficiently high probability to an upper bound of the ITZ higher than the one the central bank has set to itself. Note that this may not only be due to the fact that the central bank has not announced the upper bound, but also to low credibility of the central bank's announcement. Therefore, as the shock unravels, the expectation component pushes inflation up and makes it accelerate. If the central bank does not intervene, inflation will actually trespass the boundary. The figure shows that, in order to prevent this from happening, the central bank should intervene earlier and with higher interest rate.

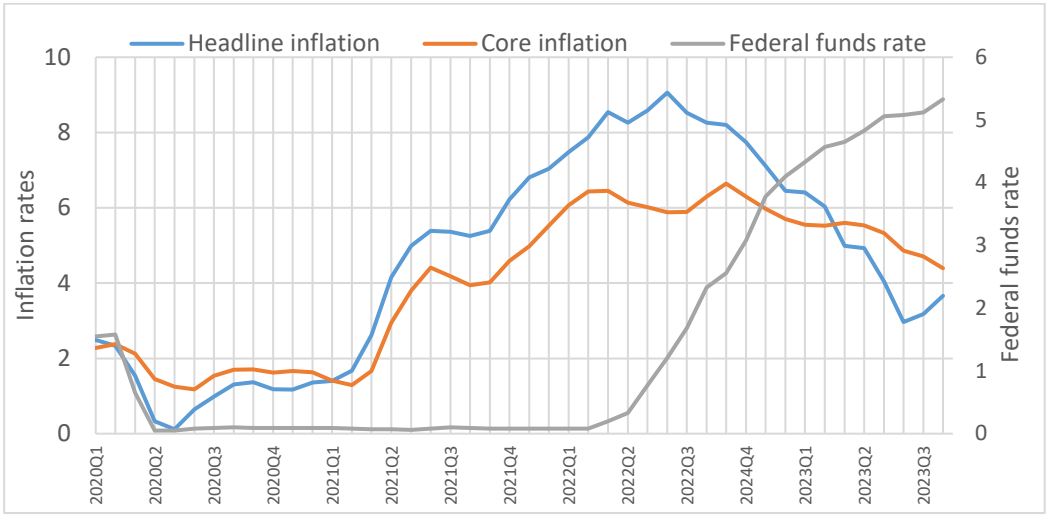
This theoretical discussion shows that it may be matter of concern that neither the Fed nor the ECB have stated the magnitude of tolerable fluctuations around the target, consistently with the general reluctance of central banks to tie their hands to a precise numerical definition of tolerance bands (Chung et al., 2020). The ECB new strategy "remains vague regarding the margin of tolerance and the time allowed for overshoot" (Wyplosz, 2021, p. 6). In the case of the ECB, past experience may suggest a tolerance band like 1-3% or 0.5-3.5% (see Table 1). The same ranges of values also seem to fit the US data, though, as already remarked, more tail events are present. Such reluctance, as argued, may backfire to the extent that it affects expectations.

Also because of the lack of official statements, mapping the actual decisions of central banks onto this theoretical framework is not straightforward. Nonetheless, the initial reaction to the upsurge of inflation (discussed in previous sections) and the latest decisions regarding the future path of interest rates may be read through the lenses of ITZs. Figure 10 provides the basic information regarding the track of the policy rate *vis-à-vis* headline and core inflation for the two central banks since 2020.

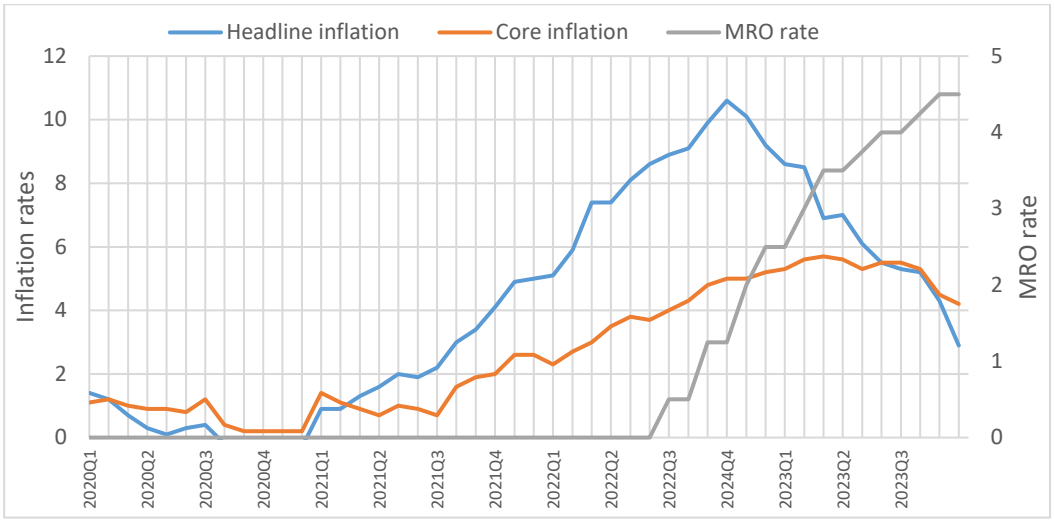
According to a widespread interpretation of inflation targeting, the prompt and determinate reaction of the central bank at the early stages of the inflation process is key to containing and curbing inflation, especially as a means of preventing the de-anchoring of expectations. Accordingly, the Fed, and to a greater extent the ECB, have been criticized for their delayed intervention. The first intervention of the Fed (March 2022) occurred with headline inflation at 8.5% and core inflation at 6.5%, in the case of the ECB (July 2022) headline inflation was at 8.9% and core inflation at 4%. The intervention trigger value of headline inflation was almost the same, while the ECB was more pre-emptive on the front of core inflation.

Figure 10: Headline inflation, core inflation and policy rates in the US (upper panel) and in the euro area (lower panel), in %

United States



Euro area



Source: ECB, Statistical Warehouse; FRED Database.

However, delayed reaction at the first stages of inflation acceleration may be seen part of an ITZ management, as long as inflation is projected to remain within the no intervention zone, rather than the consequence of undervaluation of inflation risk or excess dovish-ness. As a matter of fact, the ECB Governing Council on 21 July 2022 announced its first increase in the policy rate of 50 basis points, possibly followed by further 25-50 basis points later, as "*the new staff projections foresee annual inflation at 6.8% in 2022, before it is projected to decline to 3.5% in 2023 and 2.1% in 2024 – higher than in the March projections*" (ECB, 2022). These projections turned out to be wrong, but as explained above, uncertainty regarding the future development of inflation, and consequent possible mistakes in the policy stance, are indeed an element in the rationale for a no intervention zone or, more likely, a smoothed adjustment of the policy rate. This was particularly warranted in the euro area, where growth is expected to slow down at a faster rate and heterogeneity across jurisdictions risk jeopardising financial stability and the monetary transmission mechanism.

Coming to the latest decisions of the two central banks, in consideration of the downward trend of inflation both the ECB and the Fed announced that the respective policy rates will be kept constant as

long as necessary to consolidate the convergence of inflation towards the target.[9] The expression "*policy rates will be set at sufficiently restrictive levels for as long as necessary*" used in the ECB statement on monetary policy decision, captures the current policy stance that is broadly in line with the management of an ITZ at the upper bound. As shown by Figure 8, at the upper bound the central bank raises the policy rate as much as necessary to keep inflation within the band and holds it as long as necessary to induce convergence to the target.

If this is the case, it may be argued that the turning point of the inflation process has materialised at the non-trivial level of about 10% of headline inflation both in the US and the euro area, possibly beyond what both central banks may regard as a fair upper bound. However, the point at which the policy rate begins biting inflation depends on a number of circumstances that fall beyond the central bank's control, so that where the "true" ceiling of the inflation process materialises is uncertain for the central bank too. On the other hand, recurrent monitoring of various sources of inflation expectations, from business to households, have not shown, and are not showing, strong evidence of de-anchoring or divorce effect, indicating that the two central banks' strategy is regarded as broadly credible over a medium-term perspective.

The stability of expectations does not only contribute to the reduction in inflation by reducing this pass-through component (as shown in section 2), but it also allows the central banks to carry out an ITZ policy that is data-driven and effective.

[9] From the Federal Reserve, FOMC Statetement 11-01-2023. "The Committee seeks to achieve maximum employment and inflation at the rate of 2 percent over the longer run. In support of these goals, the Committee decided to maintain the target range for the federal funds rate at 5-1/4 to 5-1/2 percent. The Committee will continue to assess additional information and its implications for monetary policy". From the ECB, Monetary policy decisions 26 October 2023 "The Governing Council today decided to keep the three key ECB interest rates unchanged. The incoming information has broadly confirmed its previous assessment of the medium-term inflation outlook (…) ased on its current assessment, the Governing Council considers that the key ECB interest rates are at levels that, maintained for a sufficiently long duration, will make a substantial contribution to this goal. The Governing Council's future decisions will ensure that its policy rates will be set at sufficiently restrictive levels for as long as necessary..

4. BETWEEN DISINFLATION AND RISK OF RECESSION

Having examined comparatively inflation developments, and the reactions of the Fed and the ECB in Section 2, and having discussed the extent to which these reactions can be traced back to the new policy strategies of the two central banks previously announced, we now turn to an assessment of their stance in the face of the challenge of disinflation *vis-à-vis* the risk of recession. As will be seen, the different institutional environment in which the two central banks operate is now at the centre of the stage.

The rapid increase in inflation that took place in the euro area and US was caused by the supply shocks that hit these two areas because of the disruptions in the production and logistics chains due to the COVID-19 pandemic. When, with the end of the lockdowns, the demand for goods and above all for services—forcibly repressed during the pandemic—quickly and lively recovered, bottlenecks and delays in restoring normal supply conditions pushed up the prices of commodities, manufactured goods and especially services. The Russian invasion of Ukraine in February 2022 then strongly exacerbated the already ongoing increase in food, gas and oil prices.

Although the major central banks were slow to realise that the inflation hike would not be quickly reabsorbed, the determination they then showed in implementing their path of monetary restrictions avoided the de-anchoring of longer-term inflation expectations to the upside, thus reducing the cost associated with the disinflationary process. This undoubted success of the strategy pursued by the monetary authorities allowed the rapid decline in headline inflation, which has accompanied the fall of fossil energy and food prices from the levels reached in the aftermath of the Russian invasion of Ukraine. Apparently, this validates the objection made to those commentators arguing that monetary tightening is not the appropriate cure for supply-shock driven inflation, according to which such tightening is still necessary, regardless of the initial source of the price hikes, in order to prevent persistently high headline inflation from de-anchor long-term inflation expectations.

To consolidate the results obtained so far and bring inflation back steadily to around 2% within two or three years without causing a deep recession, both the Fed and the ECB will have to be very careful in measuring their moves in light of the incoming macroeconomic data. In fact, they will have to avoid, on the one hand, unnecessarily depressing the economy with excessive monetary restrictions and, on the other, overheating the economy by allowing demand to expand at a pace incompatible with a return to their 2% target. The institutional and macroeconomic framework within which the two central banks find themselves operating is, however, quite different.

During the COVID-19 pandemic, policy makers implemented an aggressive fiscal stimulus on both sides of the Atlantic to finance health spending and support households and firms. However, the US did it much more massively than the fiscal authorities in the euro area. In fact, after having had a budget deficit of more than USD 3 trillion in 2020, equal to almost 15% of US GDP (whereas in that year the euro area's budget deficit was on average 7.2% of GDP), the US federal government reduced its deficit to just under 12% of GDP in 2021, twice as large the public deficit run by the euro area as a percentage of GDP in the same year (i.e., 5.3%). Once the pandemic was over, a fiscal consolidation effort was made in 2022 in both areas, with the budget deficit reduced to 3.6% of GDP in the euro area and to around 4.1% of GDP in the US.[10] This effort has continued in the euro area, where a budget deficit of 3.2% of GDP is expected in 2023, but not in the United States, where the budget deficit will increase again in

10 Officially, the Federal deficit was $1.375 trillion for the fiscal year that ended September 30, 2022. However, the actual deficit was approximately $1.05 trillion, since President Biden's Federal student debt cancellation plan—which the Supreme Court struck down before it took effect as unconstitutional—should not be included.

2023, reaching around USD 2 trillion, or almost 7.5% of US GDP.[11] The expansionary fiscal policy that the US federal government is continuing to fuel growth driven by consumption: in the 3rd quarter of 2023, private consumption contributed to US GDP growth by 2.7%, growth which in turn has continued until now to increase the number of employed people. Projections for the public deficit as a percentage of GDP in 2024 are 6.0% in the US according to the Congressional Budget Office, and 2.8% in the euro area according to the Eurosystem Staff.[12]

The much more massive fiscal intervention that has characterised the US compared to the euro area implies that from the empirical analyses it emerges how aggregate demand shocks—such as those generated by an expansionary fiscal policy—have a much greater role in the US than in the euro area in explaining the rise in core inflation since 2021 (see Dao et al., 2023; Di Giovanni et al., 2022; Di Giovanni et al., 2023). As shown in section 2, in the euro area, unlike in the US, core inflation is primarily the result of pass-through from past headline shocks, such those concerning the prices of food and energy.

The fact that Europe, as a net importer of fossil energy, is particularly vulnerable to increases in the prices of gas and oil, as well as of some agricultural commodities that it imports, has led many European governments to intervene with deficit-financed measures aimed at reducing the impact on businesses and the population, especially the poorest groups, thereby also reducing their impact on inflation. These "unconventional" fiscal measures acted on headline inflation partly directly and partly indirectly through the lower pass-through to core inflation (Dao et al., 2023). Aside from their redistributive effects, these measures tend to smooth the path of inflation by spreading the impact of increases in energy or food prices over time. Thanks also to the fact that the shocks that pushed these prices up proved to be temporary, the inflation-controlling effect of these unconventional measures dominated the effect they exert on it through their expansionary impact on aggregate demand: Dao et al. (2023) estimate that together they reduced euro area inflation by 1 to 2 percentage points in 2022.

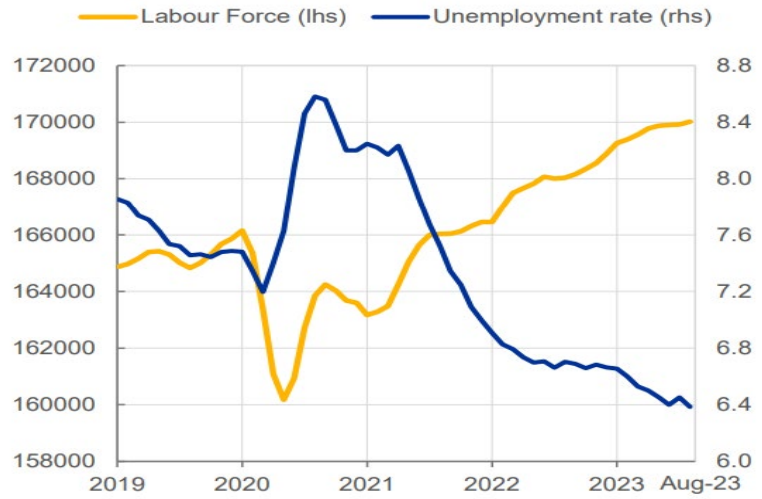
Furthermore, what is happening in the labour market is crucial in both the US and the euro area to understand if and how the disinflationary process will proceed. Beyond the rapid decline in unemployment that followed the economies' reopening at the end of the lockdowns, the euro area, as well as the US, has seen a strong recovery in the number of active workers over the past two years, after many of them had left the ranks of the workforce during the COVID-19 pandemic (see Figure 10).

This made it possible to alleviate those labour shortages which, under the pressure of the rapid increase in demand—concentrated above all in the service sectors—led to strong upward pressure on wages. This effect was particularly strong in the United States where wage determination responds more promptly than in Europe to the forces of supply and demand. It is also evident how an effective measure of labour market slack should account for the increasing share of direct transitions from inactivity to employment, which make indicators such as the unemployment rate and even the vacancy-unemployment ratio not always reliable measures on the cyclical state of the labour market. The importance of assessing how tight labour markets are is apparent in the light of recent studies that explain the surge of inflation in the 2020s as the result of a nonlinear Phillips curve that steepens as firms compete for increasingly scarce workers, thus pushing nominal wages up (Ball et al., 2022; Benigno and Eggertsson, 2023).

[11] The official US budget deficit for the fiscal year 2023 is projected to be approximately $1.7 trillion, but the actual deficit is $321 billion larger since the official deficit was reduced to account for the student debt cancellation plan that the Supreme Court struck down.

[12] For the US, see www.cbo.gov/publication/59096. For the euro area, see https://www.ecb.europa.eu/pub/projections/html/ecb.projections202309_ecbstaff~4eb3c5960e.en.html

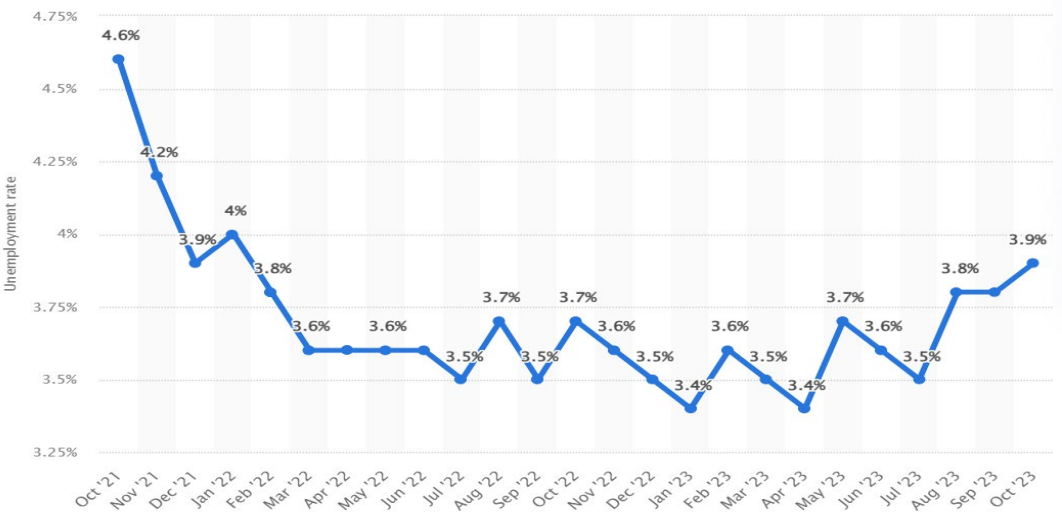
Figure 11: Unemployment rate and labour force in the euro area (lhs: thousands of persons; rhs: percentage of the labour force)



Source: ECB calculations based on Eurostat data.

The signals coming from the labour markets in the euro area and in the US point in opposite directions. While the euro-area labour market is gradually tightening (see Figure 11), the US data seem to indicate its progressive cooling over time (see Figure 12).

Figure 12: Monthly unemployment rate in the United States (October 2021-October 2023)



Source: Statista 2023.

Wage growth has continued to slow gradually since March 2022, when annual price increases reached a peak close to 6%: in October 2023 average hourly earnings rose 4.1% from a year earlier, not so far from the 3% to 3.5% annual growth rate that is needed for inflation to return close to the 2% target, and down from 4.3% in the 3rd quarter and from 4.5% in the 2nd quarter of 2023. Furthermore, in October 2023 US unemployment rose to 3.9%, the highest rate since January, with the number of people working or looking for work that fell for the first time since April 2023.

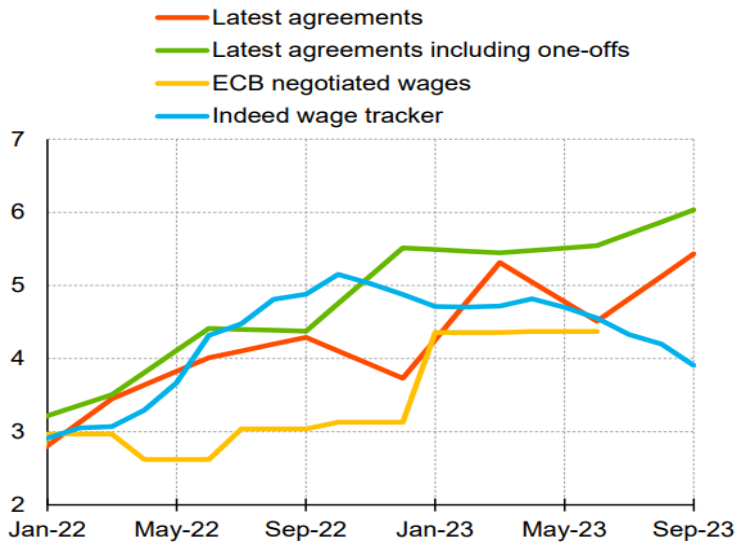
It follows that the most recent data regarding the US labour market appear compatible with a soft landing scenario, in which the medium-term return to 2% inflation is achieved by the Fed without subjecting the US economy to a severe recession, or even—in the best scenario—avoiding a recession altogether.

The scenario for the euro area is more pessimistic. Net of the possibility that the serious geopolitical crises taking place at the borders of the euro area could determine a new shock to food and energy prices, the euro area is now close to stagnation and exposed to the risk that the structural problems of some of its major Member States might translate into a prolonged period of stagflation for the entire area. If the sharp decline in euro area's headline inflation (which reached according to Eurostat flash estimate 2.9% in October 2023) benefited from a rather favourable base effect, given that just one year ago energy prices reached their maximum levels and then fell drastically in the following months, the euro area core inflation (according to Eurostat flash estimate 4.2% in October 2023) is still far from levels compatible with the 2% target. In order for it too to move on a path towards 2%, it becomes critical, as Isabel Schnabel pointed out in a recent speech (Schnabel, 2023), the demand channel of monetary policy, which has to steer wage- and price-setting along the "*last mile*" towards the ECB inflation target.

At this stage, this task is certainly not made easier by the functioning of the euro area labour market. Collective-bargaining agreements are covering a much higher fraction of workers in Europe than in the US (around 60% across the EU), with deals typically lasting one year or more. This implies that wages are less responsive to current economic conditions and take more time to adjust to them. Wage pressures do not immediately follow inflation hikes. When the latter occur, workers' real wages fall and firms' profits bloat. But after a while, especially if workers and their unions expect that inflation is going to stay high, they use their bargaining power to make up for their lost purchasing power, even if in the meantime economic conditions began to worsen. ECB officials are well aware of this situation, where in the euro area labour shortages remain near historic highs across sectors, particularly in the services sector (see Figure 13): "*Our indicators, especially those tracking recently signed wage agreements, point to continued strong wage growth at a time when inflation is already falling […]. These are the slow-moving second-round effects of the adverse supply-side shocks that hit the euro area economy in previous years*" (Schnabel, 2023).

As anticipated in section 2, the ECB has to be concerned for the diverging trends emerged across jurisdictions. Not only the heterogeneity in the euro area is larger than in the US, but it has much larger implications for fiscal policy and financial stability.

Figure 13: Wage trackers (annual percentage change)



Source: ECB (2023).

Notwithstanding the new tools introduced to address excessive interest rate spreads among government bond yields, such as the Transmission Protection Instrument (TPI), the ECB has to consider the risk of bad dynamics spurred by a long-lasting increase in public debt service and unfavourable

housing market development. On the one hand this calls for strong determination in reducing inflation towards the 2% quickly, so that long-term inflation expectations remain anchored to low levels. On the other hand, markets may prince in too-high-for-too-long policy rates. Recent experience has shown that, in case of multiple equilibria, preventing the negative equilibrium is easier than exiting from it.

5. CONCLUSION

The ECB and the Fed have recently paused their prolonged sequence of policy rate hikes started in 2022. Although inflation rates remain above the desired targets, both central banks decided to take a pause in light of the contrasting incoming data from the real economy and of the potential risks ahead.

Despite these common features, both the inflation dynamics and the paths of policy rates across the Atlantic show non-negligible differences. Even allowing for the statistical differences in the price indices used as reference in the two currency areas, the evolution of both headline and core inflation has followed different patterns. Similar considerations apply to policy rates.

At the theoretical level, such differences can be explained either by differences in the monetary policy stance (and in its effectiveness) or by differences in the economic environments. **In this paper we have argued that the second dimension has been the most relevant one in the past and we maintain that it will remain so in the future.**

As regards the past, much of the increase in core inflation in the euro area can be traced back to the pass-through of large headline inflation shocks, while domestic overheating and labour market tightness were the main drivers of inflation dynamics in the US. Several distinctive factors characterising the euro area can be seen as responsible: the delayed reopening of the economy after the COVID-19 lockdowns in the euro area, the euro area's net importing position of gas and oil and its greater exposure to the inflationary consequences of the Russian invasion of Ukraine, the different patterns of fiscal interventions to support the economy, the greater exposure of the euro area to the redefinition of international supply chains (due to the export-led and manufacturing-based growth model), the divergent developments in the domestic housing markets, and, finally, the different functioning of labour markets.

On the contrary, **the strategies adopted by the two central banks seem to be characterised by similar features**, with a relatively "conventional" policy of higher interest rates accompanying the downsizing of the balance sheet. The "philosophies" of the two central banks do not differ too much and can be explained by the so-called **inflation targeting zone approach** (whereby inflation may be subject to fluctuations that are actively contained around the 2% target but not systematically offset by the central bank over subsequent periods), which was introduced with the revisions of the monetary policy strategies adopted in the recent years.

Inflation targeting zone policies allow central banks to reduce the unpleasant consequences of the erratic/excessive policy responses that result from point inflation targeting. Frequent changes in the policy rates risk having negative side effects on banks and the financial system, as well as on the most exposed economic sectors; moreover, the inflation projections used to make policy decisions are subject to considerable error, especially in times of high macroeconomic and geopolitical volatility. In addition, frequent policy reversals risk undermining the credibility and predictability of central bank, thereby weakening the anchoring of inflation expectations. In the euro area, in particular, excessive inflation-targeting activism may run counter financial stability, triggering financial fragmentation. Indeed, the delayed monetary policy reactions in the first stages of inflation acceleration can be explained by the implementation of an ITZ regime, where inflation was projected to remain within the no intervention zone. Similarly, the "higher-for-longer interest rate environment" that both monetary authorities have decided to create is also broadly consistent with the management of an ITZ at the upper bound.

The stability of inflation expectations observed on both sides of the Atlantic suggests that the policy stances adopted on the basis of this new monetary strategy were well received by the

financial operators and the general public. The stability of expectations contributed greatly to the reduction in inflation by reducing the pass-through component of inflation shocks, but it also allowed the central banks to pursue an ITZ policy appropriate to the high level of uncertainty. In turn, the successes obtained in reducing inflation from its peak have reinforced the beliefs of the majority of the operators, thereby contributing to keep inflation expectations well anchored.

In order to consolidate the disinflationary results achieved so far and to reach the 2% target within two or three years without causing a deep recession, the Fed and the ECB will be very careful to avoid both excessive monetary tightening and uncontrolled overheating of the economy. We believe that the likely differences in the policy decisions made by the Fed and the ECB in the future will continue to reflect the differences in the two economic environments rather than the central banks' philosophies.

First, the expansionary fiscal policy run by the US federal government has supported consumption-led growth and strong employment, and there are no clear signs of a reversal of the fiscal stance. In the euro area, instead, the **reactivation of the Stability and Growth Pact and the growing pressure of higher interest rates on debt service are likely to limit GDP growth**. On the other hand, being the euro area a net importer of fossil energy, thus vulnerable to increases in the prices of gas and oil, European governments have intervened with deficit-financed measures aimed at reducing the impact of higher costs on firms and households: these "unconventional" fiscal measures have lowered the pass-through of headline inflation shocks to core inflation and smoothed the impact of inflation shocks over time. Should the euro area governments decide to reduce the size of deficit-financed redistributive interventions to offset commodity-related shocks, euro area monetary authorities may be forced to intervene more intensively. The disinflationary process in the US and in the euro area, moreover, will be strongly affected by the developments in domestic labour markets, which in turn are influenced by the specific functioning of wage bargaining and industrial relations. While US labour market conditions seem compatible with a soft-landing scenario, in which the Fed achieves a return to 2% inflation in the medium term without subjecting the US economy to a severe recession, stronger pressures from wage bargaining in the euro area seem highly plausible due to their lower responsiveness to worsening of economic conditions.

Moreover, unlike the US, the monetary authority of the euro cannot help but be concerned about the very diverging trends that have emerged across the euro area Member States. Although it is a platitude to state that one monetary policy does not fit equally all countries in the currency area, the divergence in inflation rates observed in the euro area is remarkable. This is problematic as persistent and large differences can lead to serious trade imbalances (through changes in the real exchange rates) and to differences in the real interest rates.

Finally, the ECB must eventually take into account that undesirable economic and financial dynamics fuelled by a prolonged increase in public debt service and adverse developments in the housing markets may severely affect the euro area. European authorities have learned from the painful experience of the sovereign debt crisis the negative consequences of adverse feedback loops associated with banks holding large shares of the debt of their own countries.

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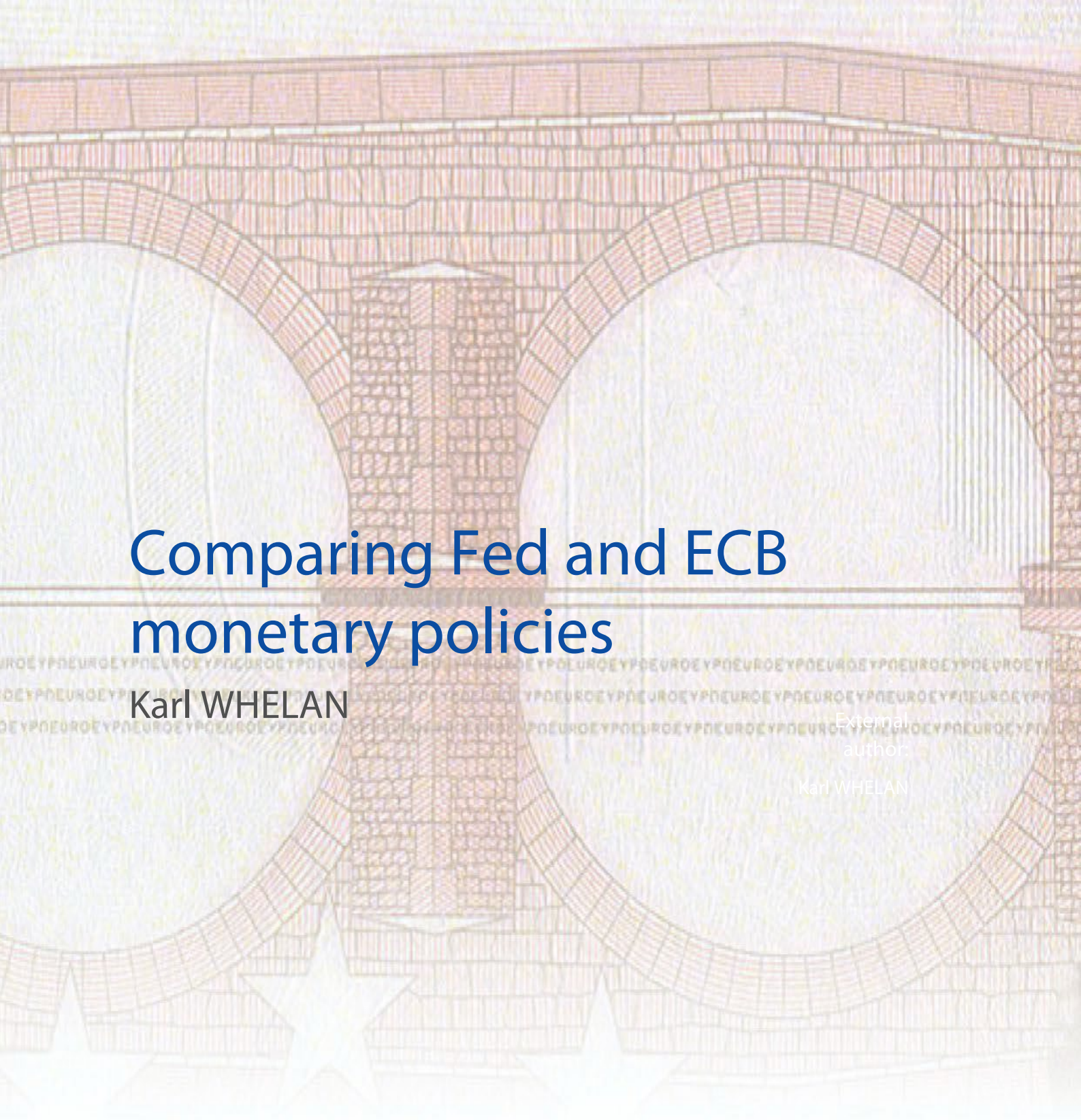

Comparing Fed and ECB monetary policies

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Abstract

The European Central Bank and Federal Reserve have taken similar approaches to tightening monetary policy to tackle high inflation. However, relative to the US, euro area inflation has been driven more by supply shocks and less by strong demand. The euro area economy is also weakening while the US economy is still growing solidly. Markets expect the Fed to ease more than the ECB in 2024 but falling inflation and a weak euro area economy may see the opposite occur.

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LIST OF ABBREVIATIONS

CPI	Consumer price index
ECB	European Central Bank
GDP	Gross domestic product
HICP	Harmonised index of consumer prices
IMF	International Monetary Fund
NFC	Nonfinancial corporation
TLTRO	Targeted longer-term refinancing operations

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EXECUTIVE SUMMARY

- **The European Central Bank (ECB) and Federal Reserve (Fed) have taken similar approaches over the past 18 months to tightening monetary policy to tackle high inflation.** Since early 2022, the Fed has raised its policy rate by 5.25% and the ECB has raised its key deposit facility rate by 4.5%.
- **This similar response has occurred despite some important differences in the factors driving inflation in the two economies.** Relative to the US, euro area inflation has been driven more by supply shocks**.** In particular, euro area inflation in 2022 was largely fuelled by the food and energy price increases triggered by Russian invasion of Ukraine.
- **Aggregate demand has been weaker in the euro area than the US, partly reflecting differences in fiscal policies.** US fiscal policy has been highly expansionary this year, reflecting tax cuts and spending commitments in President Biden's Inflation Reduction Act and Creating Helpful Incentives to Produce Semiconductors (CHIPS) and Science Act.
- **The surge in food and energy prices triggered by the Russian invasion of Ukraine has been a significant "terms of trade" effect for the euro area economy.** This has raised inflation and reduced real incomes. In contrast, the US is now a net exporter of energy so this shock did not have such a negative impact.
- **Euro area inflation was 2.9% in October (according to the Eurostat flash estimate) so it is getting close the ECB's target**. "Core" inflation (excluding food and energy prices) was 4.2%. Core inflation is sometimes interpreted as the "underlying" inflation rate but this paper provides some arguments for why this is not always the case. In the presence of a large supply shock, core inflation can be a lagging rather than a leading indicator.
- **There is evidence that higher profit margins for firms have played a role in generating high inflation in the euro area over the past year.** However, the size of this effect is a lot smaller than the impact of the "terms of trade" shock. Also, focusing on the mechanical determinants of higher prices (how much of these lead to higher profits and how much pay for higher wages) can miss the underlying supply and demand factors that drive inflation.
- **The euro area economy is weakening while the US economy is still growing steadily**. According to Eurostat preliminary flash estimate, year-over-year growth in the euro area in the third quarter was basically 0%, while it was 3% in the US. The euro area economy is likely to enter recession this quarter.
- **Wage growth in the euro area is relatively high but it is still lower than inflation and there is evidence that salary growth is falling**. Further declines in inflation and a weakening labour market due to the economic slowdown also point towards slowing wage inflation.
- **Markets expect the Fed to ease more than the ECB in 2024 but a weak euro area economy and falling inflation may see the opposite occur.**

1. INTRODUCTION

The surge in inflation around the world since the easing of the pandemic in 2021 has seen all major central banks implement monetary tightening with the aim of bringing inflation back to moderate levels. While the timings of their policy decisions have been somewhat different, the overall patterns of tightening introduced by the Fed and the ECB has been similar. Starting in March 2022, the Fed raised the mid-range of its target for the federal funds rate from 0.13% to its current value of 5.38%. The ECB raised its deposit facility rate from minus 0.5% to 0% in July 2022 and has since raised it further to its current level of 4%.

In this paper, we will look at the factors that have driven these decisions and discuss the prognosis for future policy rates for both the Fed and the ECB. The principal theme of the paper is that despite some similarities in the path of inflation and in the policy response across the two cases, there are some important differences in the forces driving inflation and in the current situation faced by the two central banks.

While both the US and the euro area experienced negative supply shocks, the supply shocks due to the Russian invasion of Ukraine have had a larger impact in raising inflation via higher food and energy prices in the euro area than in the US. In contrast, as we will discuss below, highly aggressive fiscal policy in the US has contributed to a much stronger path for aggregate demand in the US than in the euro area. The US economy continues to expand at a steady rate, with third quarter real GDP up 2.9% from a year earlier while the euro area economy in the third quarter was only 0.1% larger than a year earlier and the most recent quarter showed a small contraction of 0.1%.

The ECB's October Survey of Monetary Analysts showed its sample of experts predicting that the ECB will not cut interest rates until the third quarter of next year and that the deposit facility rate will be 3.25% at the end of 2024, an easing of 75 basis points. The Fed's September Survey of Market Participants showed an expectation that the Fed will start cutting policy rates in the first quarter of next year and that its mid-range target policy rate will be 3.88% at the end of next year, an easing of 150 basis points.[13]

I argue in this paper that the likely errors in these scenarios lie with anticipating too much easing from the Fed and too little easing from the ECB. With the US economy still growing at a steady pace, the Fed may not see inflation cooling as much as it is currently hoping for and further rate rises may be required. In contrast, falling inflation and a weakening economy may push the ECB to cut policy rates relatively soon.

The paper is structured as follows. Section 2 presents evidence on how inflation has behaved in the US and the euro area since 2020, discussing the role of supply and demand factors. Section 3 provides a discussion of the contribution of wage inflation and firms' operating surpluses to inflation and repeats some evidence from a recent paper by Haskel (2023) on the impact of these factors as well as terms of trade effects on inflation in the euro area. Section 4 concludes with an assessment of the recent policy approach of the ECB and a discussion of the prospects for policy over the next year.

[13] The Fed survey is available at https://www.newyorkfed.org/medialibrary/media/markets/survey/2023/sep-2023-smp-results.pdf. The ECB survey is available at https://www.ecb.europa.eu/stats/ecb_surveys/sma/shared/pdf/ecb.smar231030_october.en.pdf

2. ECONOMIC DEVELOPMENTS IN THE US AND THE EURO AREA

This section discusses economic developments in the US and euro area economies. We will first discuss the recent behaviour of inflation and then describe the economic conditions likely to influence its future path.

2.1. Inflation

Figure 1 shows headline consumer price inflation for the US and the euro area. The chart shows some clear similarities in the recent behaviour of inflation: In both cases, inflation slumped to close to or below zero during the initial phases of the COVID-19pandemic, then began to increase during 2021, reaching peaks close to 10% in 2022 before easing more recently. These common elements hide some important differences in the underlying driving forces.

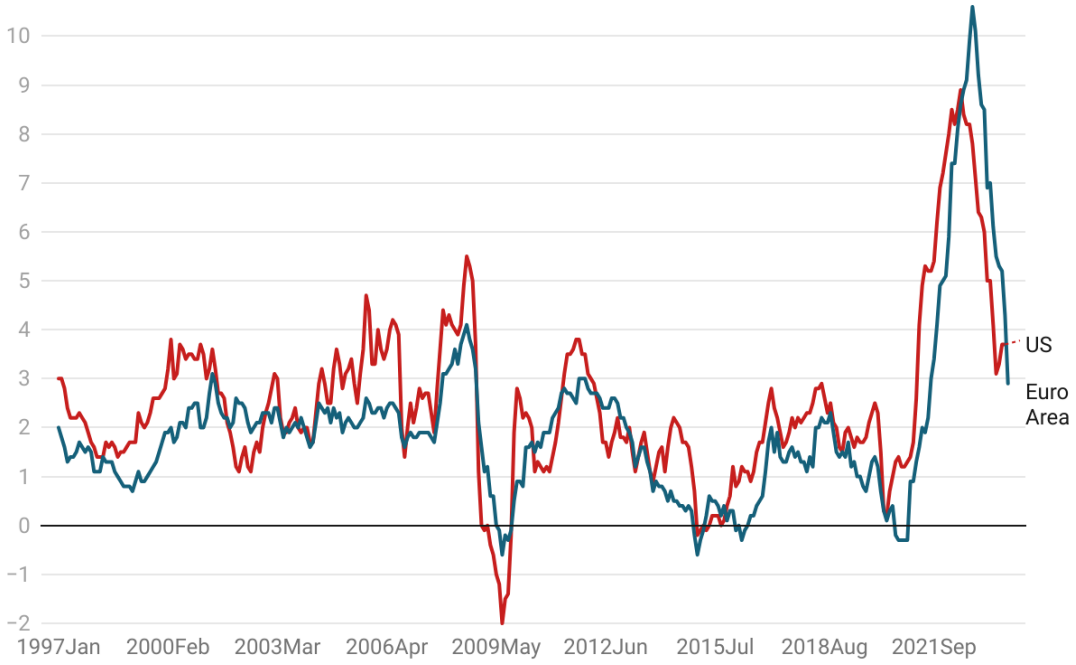
Inflation started to rise during 2021 as successful vaccine rollouts and rising immunity began to reduce the impact of the pandemic on the economy. Energy prices, which had slumped during early stages of the COVID-19 pandemic, began to rise and with demand for services still weakened by sporadic lockdowns, goods prices began to increase globally (see Figure 2). The US saw a faster increase in inflation than the euro area, due in part to a less-focused approach to government supports which saw a much larger fiscal stimulus to the economy than in Europe, including three different rounds of stimulus cheques sent to households. Figure 3 shows the International Monetary Fund (IMF)'s estimates of the structural budget balance in the areas. The IMF estimate the structural budget deficit in the US increased by 5.4% of GDP between 2019 and 2021 while the change in this measure for the euro area was 3% of GDP.

In January 2022, a month prior to the Russian invasion of Ukraine, "headline" inflation for the euro area's Harmonised Index of Consumer Prices (HICP) was 5.1% but "core" inflation (excluding food and energy prices) was only 2.3%. So at that point, inflation in the euro area was largely above target because of global issues. In contrast, in January 2022, headline CPI inflation in the US was 7.6% and core CPI inflation was 6.1%, so US inflation problems clearly went beyond the global supply and demand factors influencing energy and food prices.

The Russian invasion of Ukraine then had a much greater effect on inflation in the euro area than in the US. Headline euro area inflation jumped to 7.4% in March 2022 and moved up to a peak of 10.6% in October 2022, going higher than the peak rate in the US. The key drivers were higher food and energy prices. Figure 3 shows that prior to the Russian invasion, energy prices in the US and euro area had increased by similar amounts but after the invasion, they spiked much higher in Europe than in the US. This was primarily driven by higher prices for natural gas: Figure 4 shows that natural gas prices in the euro area peaked at about 120% higher than their December 2022 level, compared with a 60% peak increase in the US.

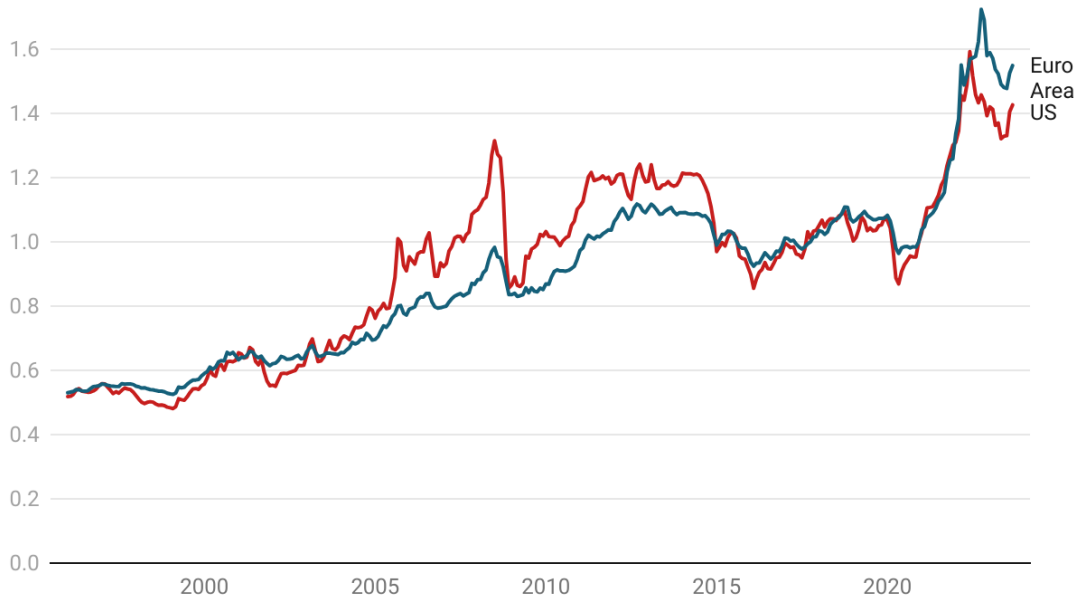
Furthermore, Figure 5 shows that food price inflation also spiked higher in Europe after the Russian invasion of Ukraine, jumping from 3.5% in January 2022 to a peak of 15.5% in March 2023. The effects of the war-related supply shocks are now easing and headline inflation in the euro area in October was 2.9% compared with 3.7% for the most recently available reading for the US CPI inflation rate from September 2023.

Figure 1: Year-over-year price inflation for the US CPI (red) and euro area HICP (blue), in %



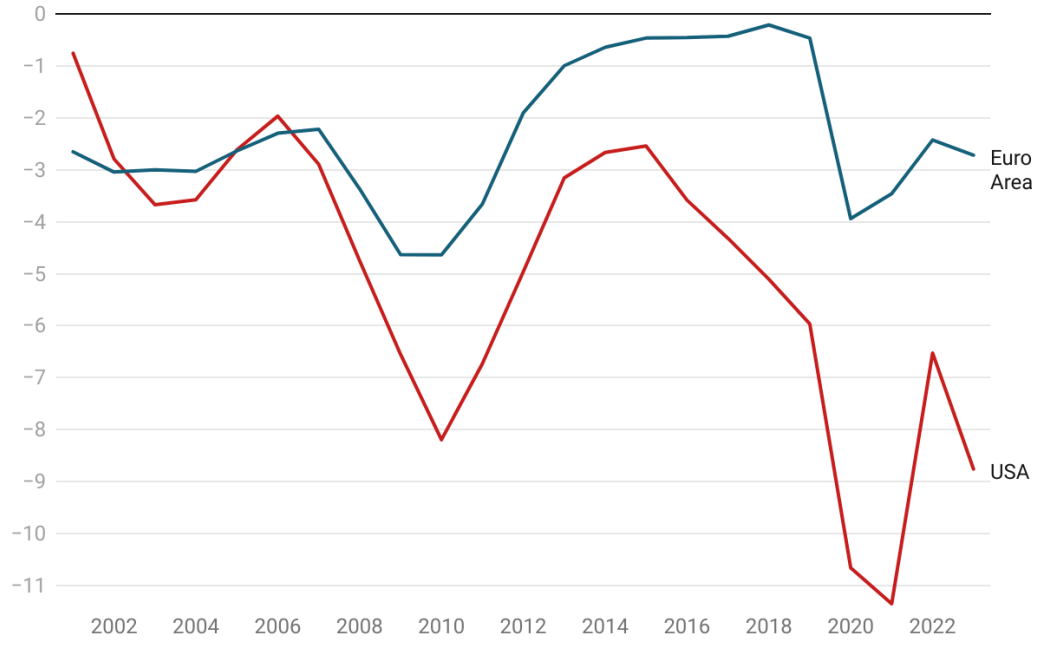
Source: Author's calculations based on data from ECB Data Portal and the Federal Reserve Bank of St. Louis's FRED database.

Figure 2: Consumer energy prices (indexed to equal 1 in December 2020) in the US (red) and euro area (blue)



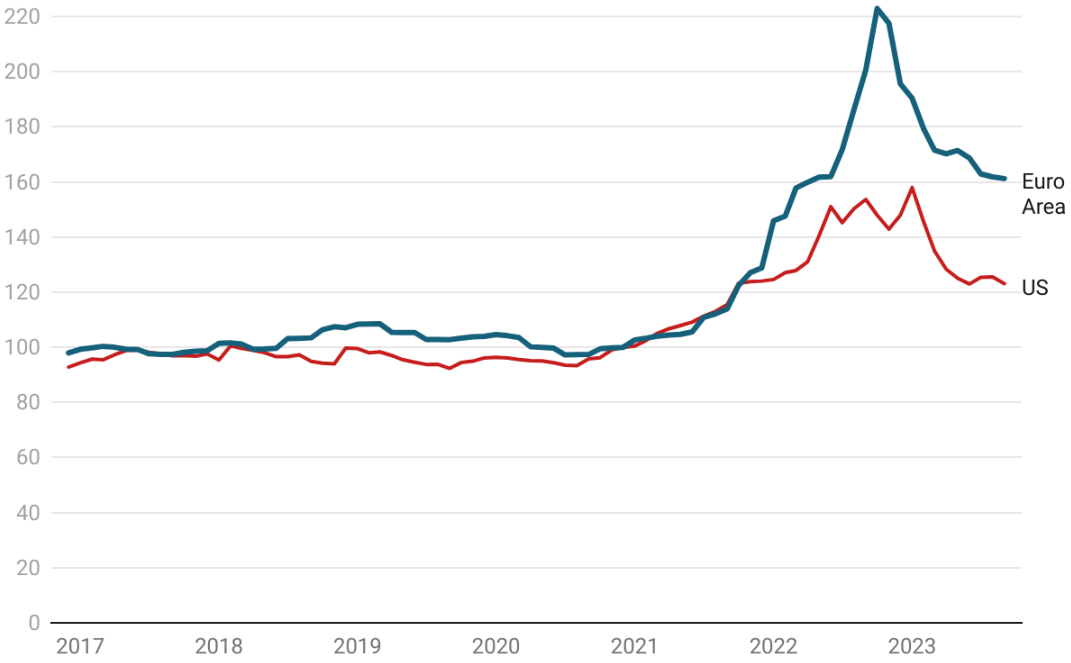
Source: Author's calculations based on data from ECB Data Portal and the Federal Reserve Bank of St. Louis's FRED database.

Figure 3: IMF estimates of structural budget balance as a share of GDP in the US (red) and euro area (blue)



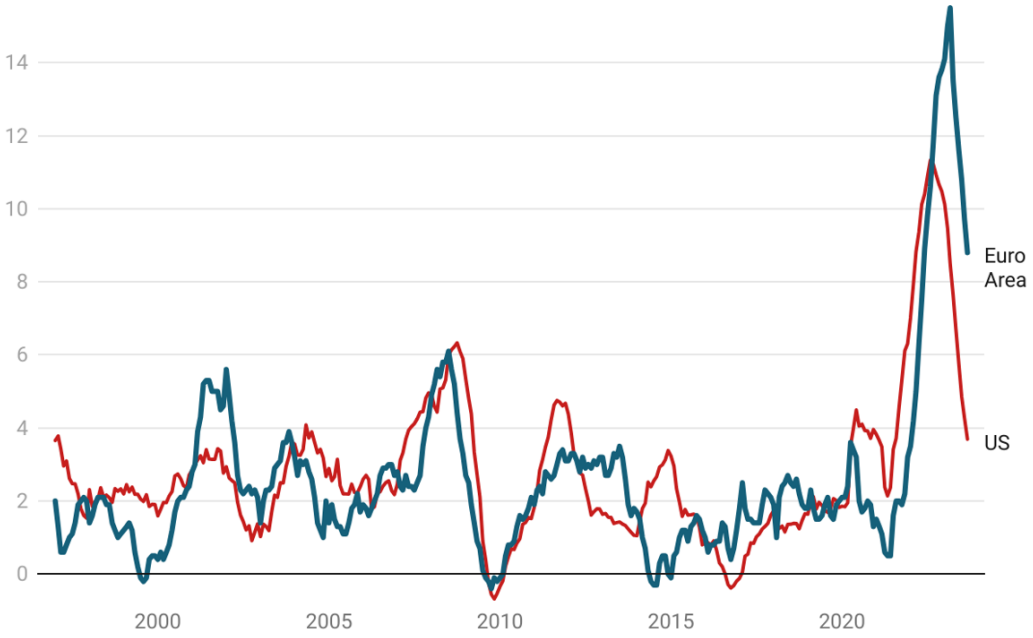
Source: Author's calculations based on data from the IMF World Economic Outlook Database.

Figure 4: Natural gas prices for consumers (indexed to equal 100 in December 2020) in the US (red) and euro area (blue)



Source: Author's calculations based on data from ECB Data Portal and the Federal Reserve Bank of St. Louis's FRED database.

Figure 5: Year-over-year food price inflation for consumers in the US (red) and euro area (blue), in %



Source: Author's calculations based on data from ECB Data Portal and the Federal Reserve Bank of St. Louis's FRED database.

As illustrated in Figure 1, inflation in both the US and euro area appears to have peaked, so central banks are now focusing on how long it will take it to return to target. In these debates, discussion often focuses on so-called "core" measure of inflation. This measure excludes food and energy prices because they tend to be more volatile than other prices. One has to be careful in interpreting core inflation, for a few reasons.

First, central banks with a responsibility for price stability such as the ECB are not charged with keeping prices stable apart from food and energy. The price stability that matters for the public is for the full basket of goods and services. So by this measure, the ECB is already very close to its price stability goal, since headline inflation had fallen to 2.9% in October. Core inflation being well above the ECB's target, on its own, is irrelevant.

Second, removing food and energy prices does not give us a measure of inflation that is immune from the influence of supply shocks. Energy is a key input for every sector and the Ukraine-related jump in gas prices contributed to higher prices for services and manufactured goods in Europe. Food also plays a prominent role in household budgets and thus high food price inflation places upwards pressure on wages, which in turn influence other prices. These factors seem to be the most likely explanation for why core inflation in the euro area increased after the Russian invasion of Ukraine, rising from 2.3% in January 2022 to a high of 5.7% in March of this year (see Figure 6). Core inflation is now easing in both the US and the euro area. Much of this likely reflects the indirect effect of falling energy prices and falling food price inflation, though in the euro area it may also reflect the impact of a slowing economy.

Third, core inflation is sometimes considered to be a more useful measure of "underlying" inflation.[14] In other words, core inflation is sometimes considered a better measure of what inflation is going to be

[14] ECB officials often refer to measures of HICP inflation excluding various items as measures of "underlying inflation". For example, see slide 4 of this presentation by the ECB Executive Board member Philip Lane. https://www.ecb.europa.eu/press/key/date/2023/html/ecb.sp231108~37a8ac4e2b.en.pdf

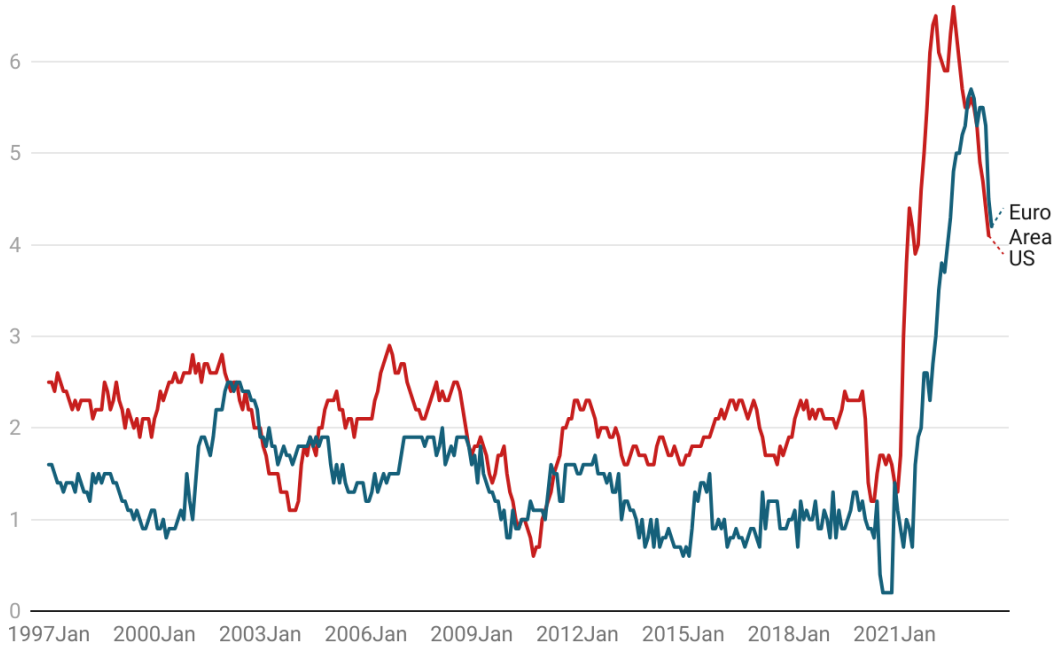
over the next year or two. At times, core inflation measures can perform this function reasonably well. For example, Figure 1 shows that at various times after the global financial crisis, euro area HICP inflation rose above the ECB's 2% target but Figure 6 shows that core inflation never did. Each of the times inflation rose above 2%, it was because of temporary jumps in food and energy prices which were subsequently reversed. Does this mean that October's core inflation reading of 4.2% is a better indicator of what inflation is likely to be over the next year? Not necessarily.

Despite the example just given, there is little statistical basis for the idea that core inflation is necessarily the best predictor of future inflation. For example, Table 1 below reports ordinary least squares regression using data on HICP inflation since the introduction of the euro. The regression uses both HICP inflation from 12 months earlier and core HICP inflation to predict current inflation. The table shows that past headline inflation has been a statistically significant predictor of current inflation but that core HICP inflation has not. Note also, however, that the fit of this linear regression is poor, with an R-squared of 0.19. This means that the model does not do a particularly good job of fitting the data, meaning inflation in the euro area has not been easy to predict on the basis of its own past values.

Also, when there is a large supply shock such as the Ukraine-related shock, it is likely that core inflation represents a lagging indicator of inflation rather than a leading one. In both the US and the euro area, core inflation measures rose slower than headline inflation and peaked later as "second-round" effects of supply shocks on other prices took time to feed through. See Figures 7 and 8. In the euro area, headline inflation peaked at 10.6% in October 2022 while core inflation peaked at 5.7% five months later. It is likely that the fall in energy prices from their peak levels will take time to feed through into lower core inflation. The latest readings for core inflation being higher than headline inflation isn't necessarily a sign that headline inflation is going to rise. It may just be a sign that core inflation is going to fall further in the coming months.[15]

[15] The different possible arguments that can be used in relation to headline and core inflation can sometimes lead to people adjusting the arguments they use in order to justify their preferred monetary policy stance. For example, after an inflation-raising supply shock, you may see inflation "hawks" moving from first emphasising that headline inflation is the target rate that central banks need to focus on but then switching later to emphasising that core inflation is measuring "underlying" inflation when the supply shock has been reversed and headline inflation is lower than core. Similarly inflation "doves" may make the opposite switch.

Figure 6: Year-over-year core consumer price inflation (excluding food and energy) for the US CPI (red) and euro area HICP (blue), in %



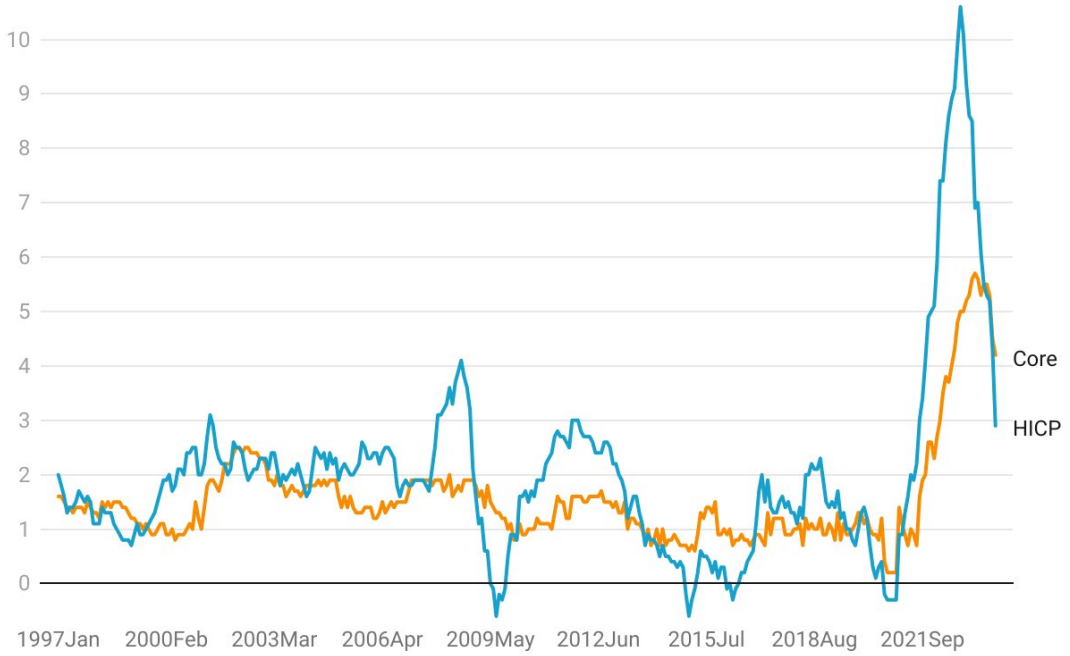
Source: Author's calculations based on data from ECB Data Portal and the Federal Reserve Bank of St. Louis's FRED database.

Table 1: Coefficients from a regression of HICP inflation on HICP inflation from 12 months earlier and core inflation from 12 months earlier

Explanatory variables	Coefficients
Constant	1.37 (0.26)
HICP inflation (12 months earlier)	0.62 (0.12)
Core HICP inflation (12 months earlier)	-0.29 (0.27)
R-squared	0.19

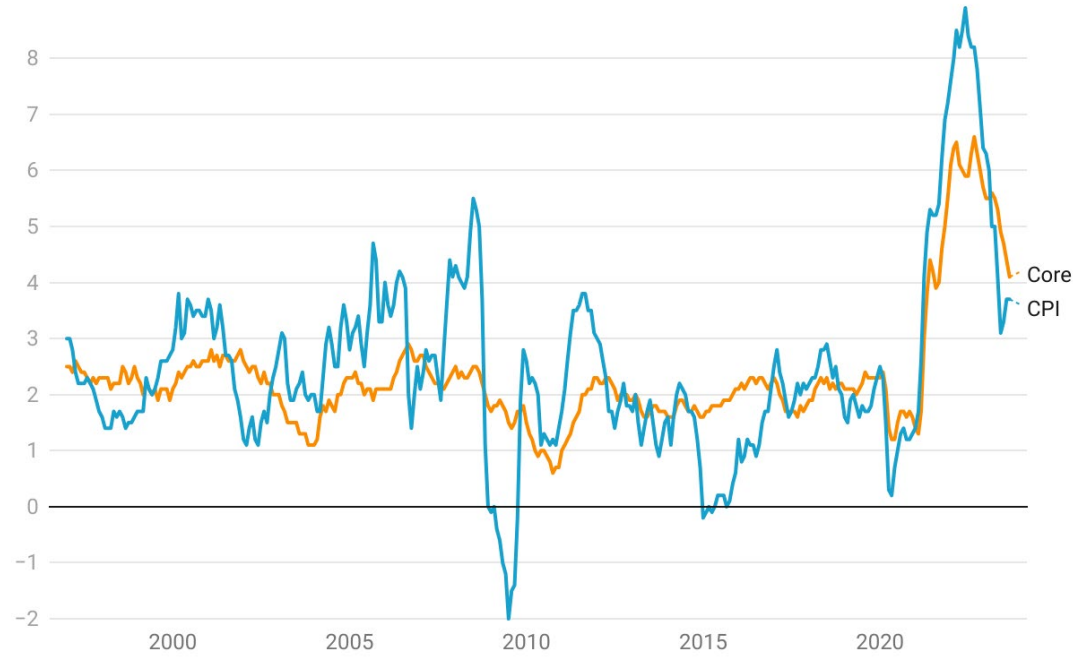
Source: Author's own calculation based on Eurostat data.
Note: Sample is January 2000 to October 2023. Standard errors in brackets.

Figure 7: Year-over-year euro area HICP inflation (blue) and year-over-year core HICP inflation (excluding food and energy) (orange), in %



Source: Author's calculations based on data from ECB Data Portal.

Figure 8: Year-over-year US CPI inflation (blue) and year-over-year core CPI inflation (excluding food and energy) (orange)



Source: Author's calculations based on data from the Federal Reserve Bank of St. Louis's FRED database.

2.2. Other economic indicators

Forecasting the economy is hard and inflation has historically been particularly difficult to forecast. Some of the most important factors influencing the future path of inflation are innately unpredictable. For example, a serious conflict in the Middle East could produce an even larger supply shock than the ones just experienced. But, absent such a shock, the key influence on inflation over the next few years is likely to be the state of the economy. Here again, there are some clear differences between the US and the euro area.

The euro area economy has proved more resilient over the past year than I had anticipated. In the September 2022 briefing paper, I wrote that the euro area was likely to enter recession in 2023 under the pressure of higher energy prices and monetary tightening.[16] This didn't happen as quickly as I thought it would but the latest data show the euro area economy has flattened out over the past year and now seems likely to enter recession this quarter.[17] (See Figure 9). Readings for leading indicators that tend to forecast GDP, such as purchasing managers indices, are consistent with economic contraction. Indeed, as Figure 9 shows, each of the previous times the euro area economy's growth has decelerated to zero, the result has been recessions lasting at least a few quarters.

In contrast, the US economy has continued to surprise people by performing well despite a substantial monetary tightening from the Fed. The most recent data show real GDP in the third quarter up 3% relative to a year earlier and the monthly payroll reports continue to show increases in employment. There are some areas of weakness such as construction sector and the delayed effects of the Fed's interest rate increases may well tip the US economy into recession in the coming months but, as of now, there is a definite risk that the strong economy results in US inflation remaining higher for longer than the Fed is currently now anticipating, triggering further policy rate increases.

The contrast in economic performance between the US and the euro area likely has a number of sources. First, US fiscal policy has been highly expansive in 2023. As shown in Figure 2, the IMF's estimate of the US structural budget balance increased from a deficit of 6.5% of GDP in 2022 to 8.8% of GDP this year, implying an additional 2.3% of fiscal stimulus. This unusually procyclical fiscal policy stems from the spending commitments in President Biden's Inflation Reduction Act and CHIPS and Science Act, both of which were passed in August 2022.[18] The Inflation Reduction Act has provided substantial tax breaks to the private sector to encourage investment in green energy technologies and the CHIPS and Science Act is providing subsidies for investments in the semiconductor sector. This has lead to a boom in construction of manufacturing plants, which was up 60 % year on year in September.[19] In contrast, the IMF estimates the structural budget deficit for the euro area is effectively unchanged this year at 2.7% of GDP, so European fiscal policy is not offsetting the contractionary impacts of fiscal policy.

Second, the euro area is a net importer of energy while the US has become a net exporter of energy in recent years. While US households have been hurt by higher energy prices, these higher prices are benefiting firms and workers in the energy sector. In the language of economists, Europe has had a large "terms of trade" shock because of an increase in the price of its imports relative to its exports.

[16] Whelan (2022).

[17] I should perhaps have factored in the legendary economist Rudi Dornbusch's warning that "In economics, things take longer to happen than you think they will, and then they happen faster than you thought they could."

[18] https://www.thetaxadviser.com/issues/2023/jun/what-the-inflation-reduction-and-chips-acts-could-mean-for-us-importers.html

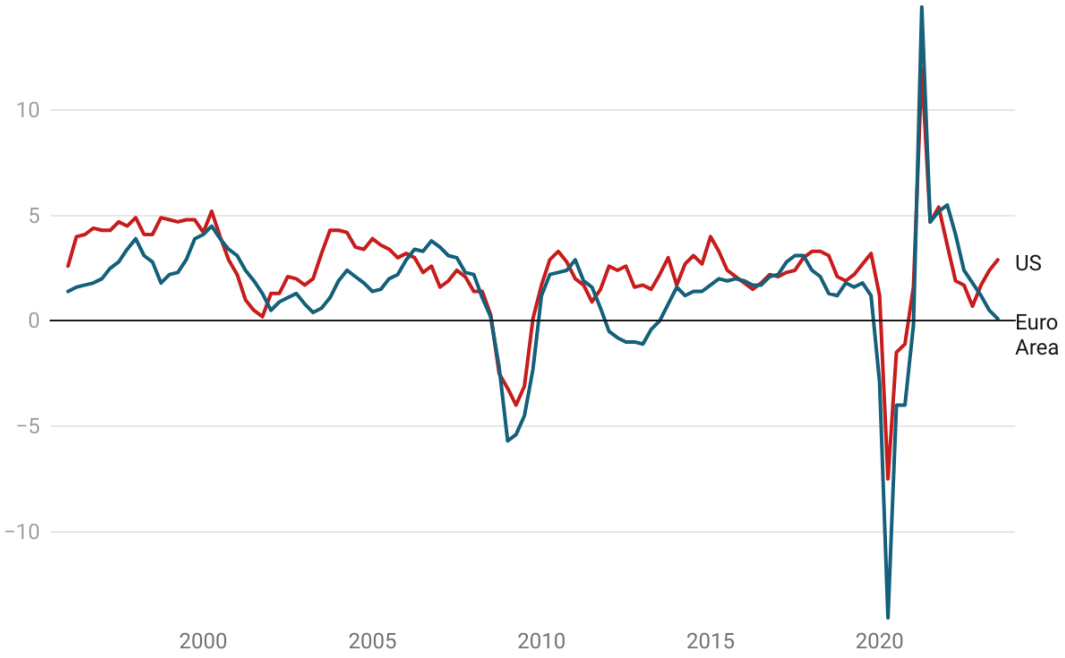
[19] Data on this is available from the St. Louis Fed at https://fred.stlouisfed.org/series/TLMFGCONS

These kinds of shocks make people on average worse off, while the net impact on US real GDP of the higher energy prices has been essentially neutral.

One common pattern having a negative influence on economic growth in both the US and Europe is that monetary tightening is having its expected negative impact on the supply of credit. Figures 10 and 11 show year-over-year growth in total loans to households and to non-financial corporations for both the euro area (Figure 10) and the US (Figure 11). Both countries show a sharp deceleration in the supply of credit and the (slightly more recent) latest data for the euro area suggest we are likely to see year-on-year declines in the credit supply to both firms and households over the next year, just as was seen previously during the global financial crisis and the euro crisis.

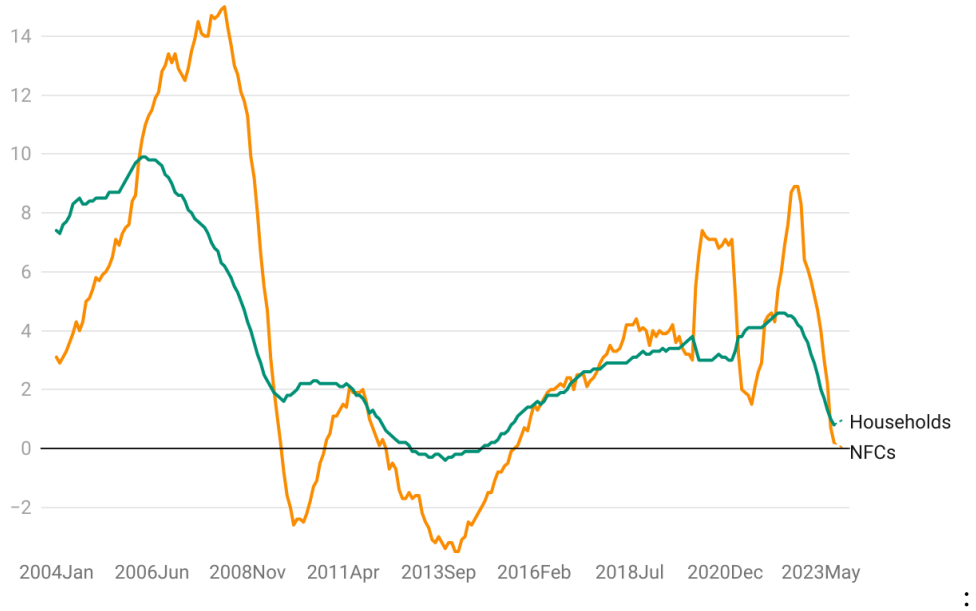
With much of the impact of the ECB's tighter policy still to be felt, the data suggest the state of the euro economy is likely to be a drag on inflation over the coming year.

Figure 9: Year-over-year GDP growth in the US (red) and euro area (blue), in %



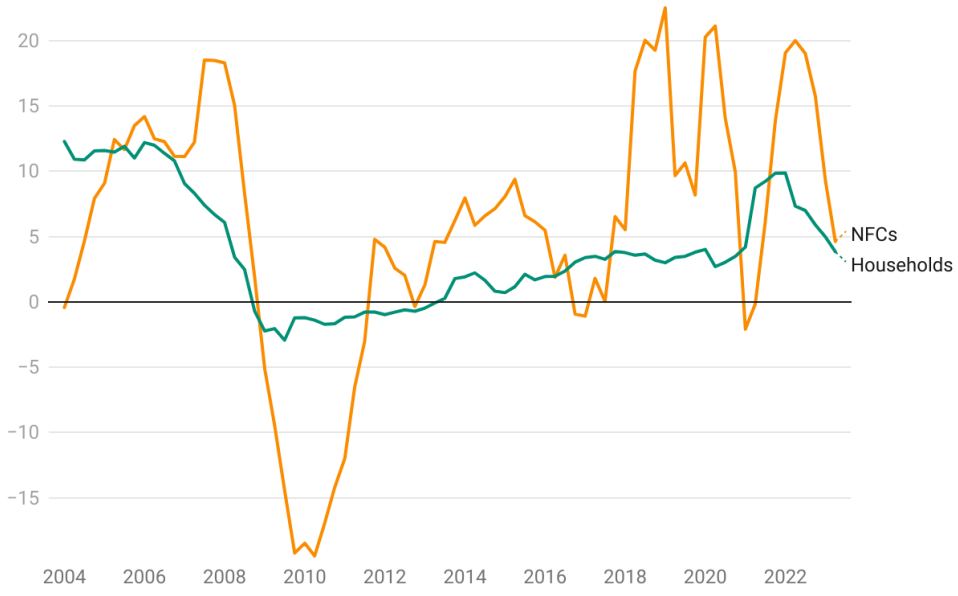
Source: Author's calculations based on data from ECB Data Portal and the Federal Reserve Bank of St. Louis's FRED database.

Figure 10: Euro area monthly data on year-over-year growth in total loans to households and to nonfinancial corporations (NFCs), in %



Source: Author's calculations based on data from the ECB Data Portal. Last observation is September 2023.

Figure 11: US quarterly year-over-year growth in total loans to households and to nonfinancial corporations (NFCs), in %



Source: Author's calculations based on data from the Federal Reserve Board's Financial Accounts (Z1 release). Last observation is 2023:Q2.

3. PROFITS AND WAGES

The fundamental causes of high global inflation have been some negative supply shocks and strong aggregate demand due to stimulus from macroeconomic policies. However, commentary on recent inflation has often focused, not on the fundamental causes, but on the *mechanics* of how inflation. In other words, people focus on the higher profits and/or wages that emerge from higher prices and then view these as the problem.

For example, a lot of commentary has focused on the idea of "greedflation", i.e. that higher inflation represents a surge in profits from corporations taking advantage of economic conditions to raise their profit margins. "Greedflation" is not a particularly useful term. Corporations have always sought to maximise their profits and it seems unlikely that there has been a sudden surge in the "greediness" of corporate CEOs. However, as discussed in a widely-publicised paper by Weber and Wasner (2023), profits of US non-financial corporations as a share of their value added have reached a multi-decade high during this period of high inflation.

As noted, focusing on wages and profits might be not particularly useful way to understand what is driving high inflation. However, while these explanations of inflation may be "mechanical", it is still worth documenting the mechanics.

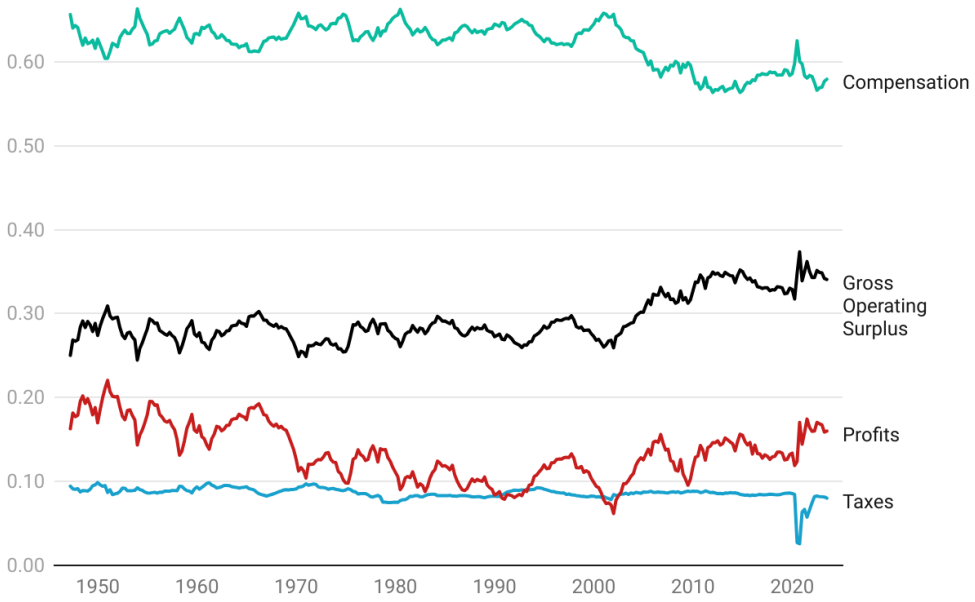
Figure 12 presents information on the shares of income generated by US non-financial corporations. The data are expressed as fractions of total gross value added generated by the corporations. The green line shows the fraction of value added that was spent on compensation for employees. The blue line shows the fraction of value added that went to the government in the form of production taxes and the black line shows the remaining amount, labelled "gross operating surplus." The red line is corporate profits – this deducts depreciation and interest costs from gross operating surplus.

Figure 12 shows that there has been a spike in the profit share of gross value added since the start of the COVID-19 pandemic. At first, this was triggered by a cut in production taxes but this higher level has been sustained since then even as production tax rates returned to normal. If this increase was fully due to higher prices that translated into higher revenues, then we would expect a similar-sized increase in the income share of gross operating surplus but this share has increased by about half as much relative to pre-pandemic levels. This suggests that as well as higher prices, other factors such interest and depreciation costs have contributed to the multi-decade high for corporate profits as a share of value added.

As of the most recent data, the shares of both gross operating surplus and employee compensation are both relatively close in the most recent US data to their pre-COVID-19 levels. The compensation share is relatively low by historical standards and the operating surplus share is relatively high but, as Figure 12 shows, this reflects a pattern that emerged during the early 2000s and which prevailed during a period of low inflation.

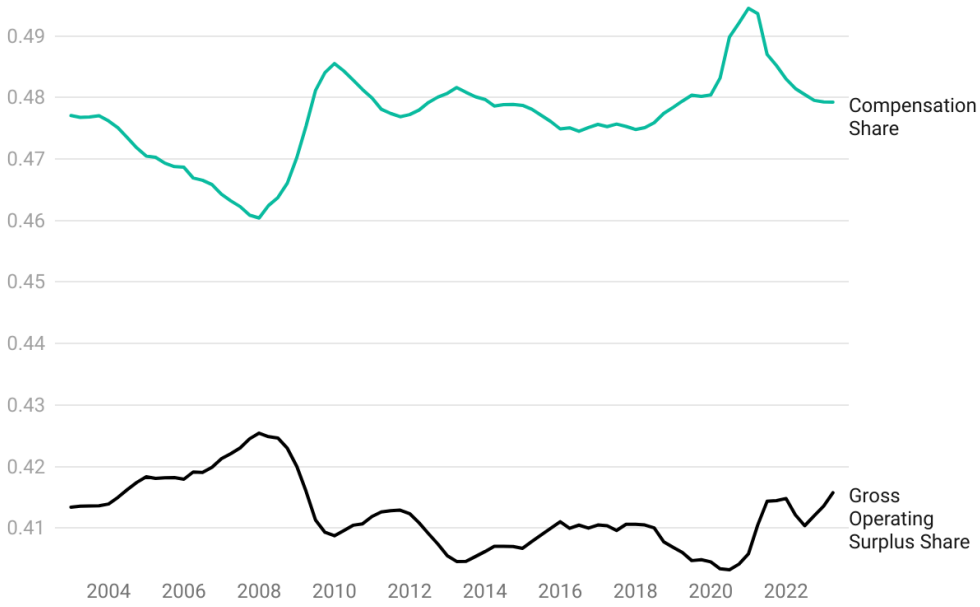
Figure 13 shows corresponding data for gross operating surplus and compensation shares for the total euro area economy. The latest data, from 2023:Q2, show the compensation share of gross value added (which spiked upwards in 2020) has returned to pre-pandemic levels while the gross operating surplus share is a bit higher than prior to the pandemic. This suggests that, at least in a mechanical sense, higher profit margins have had an impact on euro area inflation.

Figure 12: Quarterly data for shares of income generated by US nonfinancial corporations expressed as a share of the sector's gross value added



Source: Author's calculations based on data Table 1.14 of the National Income and Product Accounts published by the US Department of Commerce Bureau of Economic Analysis.

Figure 13: Quarterly data for shares of income generated by US non-financial corporations expressed as a share of the sector's gross value added



Source: Author's calculations based on data from the ECB's sectoral accounts obtained from the ECB Data Portal.

In a paper released earlier this year, Jonathan Haskel (2023) presented a useful way to summarise the mechanical forces contributing to inflation. Haskel notes that nominal GDP is the product of real GDP and the so-called GDP deflator price index. Nominal GDP can also be described as the sum of a number of different components showing where the income earned by the sector ended up.

For example, nominal GDP can be written as:

$$Nominal\ GDP = Compensation + Operating\ Surplus + Production\ Taxes \quad (1)$$

which means that all income earned is either paid to workers, or to the government in production taxes with the rest left to firms.

Haskel (2023) notes that if we divided all elements of this equation by real GDP, we end up with an identity explaining the GDP deflator. Taking percentage changes of both sides of this identity gives us a mechanical decomposition of the sources of changes in this measure of the price level. However, there is little reason to be interested in changes in the GDP deflator because it only measures the cost of good produced within an area. What the public care about is the cost of the full basket of consumer products, including imported goods. Haskel (2023) extends his decomposition to consumer prices, including the impact of terms of trade effects as well as some other items. He then presented his analysis decomposing inflation in 2022 for the US, the United Kingdom (UK) and the euro area. I have repeated a table from his paper as Table 2 below.

Table 2: Haskel's decomposition of 2022 consumer price inflation in the US, UK and euro area

Table B: Decomposition of consumer price inflation, 2022 Q4 and 2022
Percent and percentage points [a]

Component	Quarter 4 2022			2022 average		
	UK	US	Euro area	UK	US	Euro area
Consumer price inflation (%)	10.8	5.7	10.0	9.0	6.3	8.4
Nominal labour costs	3.1	2.7	2.1	1.9	2.8	1.6
Nominal capital costs	4.2	1.1	3.6	2.6	2.0	2.8
TFP	0.6	1.1	0.1	-1.2	0.7	-0.8
Unit taxes	1.1	0.2	0.2	1.2	0.3	0.5
Unit subsidies	-1.4	0.7	-0.3	1.7	1.6	0.5
Terms of trade	0.6	-0.2	2.5	1.9	-0.3	3.8
Other	2.5	0.0	1.7	1.0	-0.8	0.0

Sources: BEA, BLS, EU KLEMS, Eurostat, OECD, ONS, author's calculations.
(a) Nominal capital costs includes corporate consumption of fixed capital, corporate net operating surplus, mixed income, non-market consumption of fixed capital, and imputed rental on dwellings. At least for the UK, and to an unknown extent for the US and euro area, it also includes the quarterly alignment adjustment.

Source: Haskel (2023).

This table shows that labour costs contributed 1.6% to euro area annual inflation of 8.4% last year and that capital costs (as measured by gross operating surplus) contributed 2.8%. Since total capital costs are smaller than total labour costs (though not by much in the euro area), we would expect their contribution to this decomposition in normal times to be lower than the contribution of labour costs. This confirms that higher gross profit margins for firms has been an element of recent euro area

inflation, though Haskel notes that government energy subsidies likely played an important role in shielding firm profits in 2022.

The single most important item, however, directly accounting for almost half of euro area inflation has been the terms of trade effect due to higher food and energy costs. When we consider the likely impact of higher food and energy prices on wage costs, it seems likely that food and energy costs have accounted for most of the surge in inflation over the last year.

Of course, while some people worry about excessive profits, ECB officials are always concerned that wages could rise by more than they expect, triggering a wage-price spiral. Figure 14 reports measures of average hourly compensation for the US and the euro area. The figure shows that hourly wages in the euro area have grown at a slower rate than inflation but the recent readings are perhaps uncomfortably high. This will be an indicator the ECB will pay close attention to but it seems likely that with headline inflation receding, wage inflation will also decline.

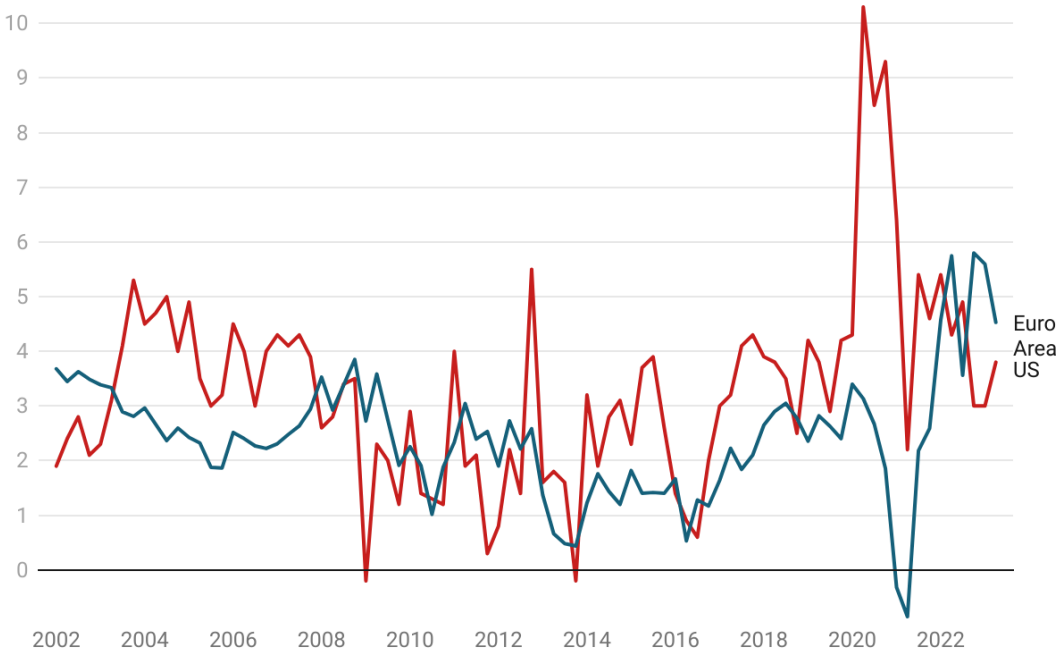
More reassuring is recent data from *Indeed*, a company that posts jobs on its website. Indeed publish a "wage tracker" for the euro area and also for several individual countries including the US. They calculate an average annual rate of change based on the salaries posted on their website, controlling for change in the composition of jobs posted.[20] Figure 15 shows data from this measure for the US and the euro area show that annualised salary increases in the euro area have been below the US since 2020 and appear to have peaked in late 2022.

Another re-assuring sign is that measures of near-term inflation expectations are declining. Figure 16 shows average inflation expectations for one year ahead, for two years ahead and for the longer-term from the ECB's Survey of Professional Forecasters.[21] The one-year and two-year forecasts are both converging towards the ECB's 2% inflation target while the long-term expectation has remained very close to 2%. The ECB will hope these restrained expectations about inflation will be reflected in upcoming wage deals, thus heading off a wage-price spiral.

[20] The methodology underlying these data is described in Adrjan and Lydon (2022).

[21] https://www.ecb.europa.eu/stats/ecb_surveys/survey_of_professional_forecasters/html/table_hist_hicp.en.html

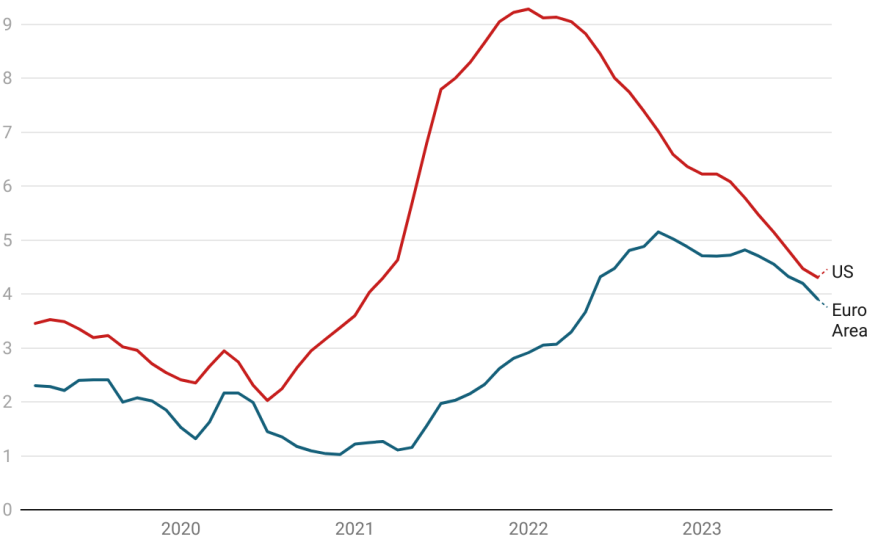
Figure 14: Annual growth rate of hourly wages in the US and the euro area, in %



Source: Eurostat and US Bureau of Labor Statistics.

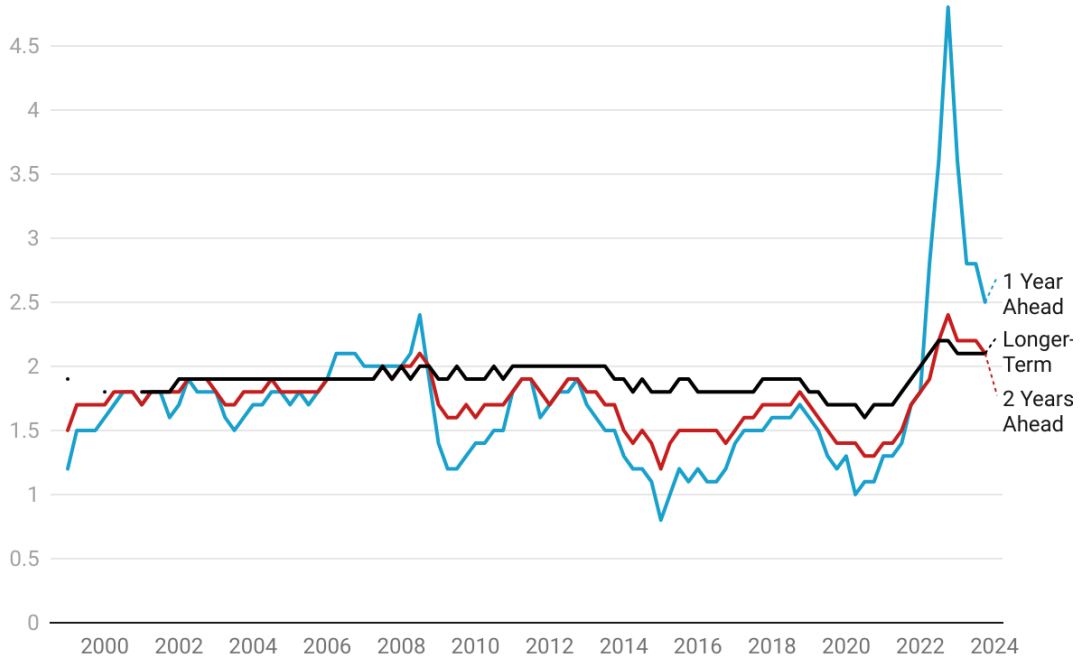
Notes: For the US, data is the annual percent change in nonfarm hourly compensation for all workers. For the euro area, data is the annual percent change in Eurostat's labour cost index.

Figure 15: Indeed wage tracker, measure of annual percentage salary increases (3-month average) for the US and euro area



Source: Indeed. https://github.com/hiring-lab/indeed-wage-tracker.

Figure 16: Average inflation expectations from the ECB's Survey of Professional Forecasters, in %



Source: ECB.

4. OUTLOOK FOR POLICY

As noted already, the monetary policies of the Fed and the ECB have been relatively similar over the past year and a half. Figure 17 shows that while the total increase in policy interest rates has been slightly higher for the Fed than for the ECB (recalling that the ECB deposit rate began at minus 50 basis points), the pattern of the increases have been relatively similar.

Beyond interest rates, Figure 18 shows that the ECB has reduced its balance sheet far more than the Fed which may mean the total impact of its monetary tightening on the economy may be closer to the Fed's actions than the interest rate chart suggests. That said, the Eurosystem's balance sheet reduction has been due to banks repaying their various TLTRO loans, partly because the ECB reneged on its policy of allowing banks to make "free money" from getting negative interest rate loans once this policy no longer suited its goals. TLTROs were designed to influence the economy by increasing the supply of credit to firms and households.[22] However, in an environment of tightening credit conditions due to higher interest rates, it is not clear that reduced TLTRO borrowing from banks is having an important additional effect on the supply of credit.

I have argued here that, despite the apparent similarities in the behaviour of inflation and in the response of central banks, the factors underlying high inflation in the euro area have been substantively different to those in the United States. Supply shocks have been more important in driving euro area inflation and excessive aggregate demand has played a smaller role. The classic New Keynesian recommendation is for central banks to raise interest rates more than one-for-one in response to changes in inflation driven by aggregate demand but it is less clear that temporary aggregate supply shocks require such an aggressive response.[23]

Do these difference mean the ECB has tightened policy by too much? On balance I think the answer is No.

The ECB had little choice other than to implement a substantial rise in policy rates. Failure to respond seriously to the first big spike in inflation since the introduction of the euro would have damaged the ECB's credibility. The containment of inflation expectations that I have just documented has likely been dependent on the strong message the ECB has sent with its policy response. In addition, a decision to not raise interest rates in line with the Fed's actions would have triggered a large depreciation of the euro against the dollar, which would have further worsened the already serious problem with import price inflation.

Where I think the difference in circumstances between the US and the euro area is more likely to matter is in what happens from here onwards. As noted above and displayed in Figure 17, the Fed's Survey of Market Participants in September showed an expectation that it would start cutting policy rates in the first quarter of next year and that it would ease rates by 150 basis points by the end of next year.[24] By contrast, the ECB's October Survey of Monetary Analysts showed its sample of experts predicting that

[22] For example, in a 2019 speech, ECB executive board member Philip Lane discussed the impact of TLTROs as follows "The upshot of cheaper bank funding is higher credit volumes and lower lending rates to the wider economy via the bank lending channel" https://www.ecb.europa.eu/press/key/date/2019/html/ecb.sp190701~0c1fa3c8fc.en.html.

[23] In a paper presented at the ECB's Forum on Central Banking in Sintra in June, Bandera et al (2023) discuss the various ways that supply shocks may produce a different response from central banks than supply shocks.

[24] https://www.newyorkfed.org/medialibrary/media/markets/survey/2023/sep-2023-smp-results.pdf

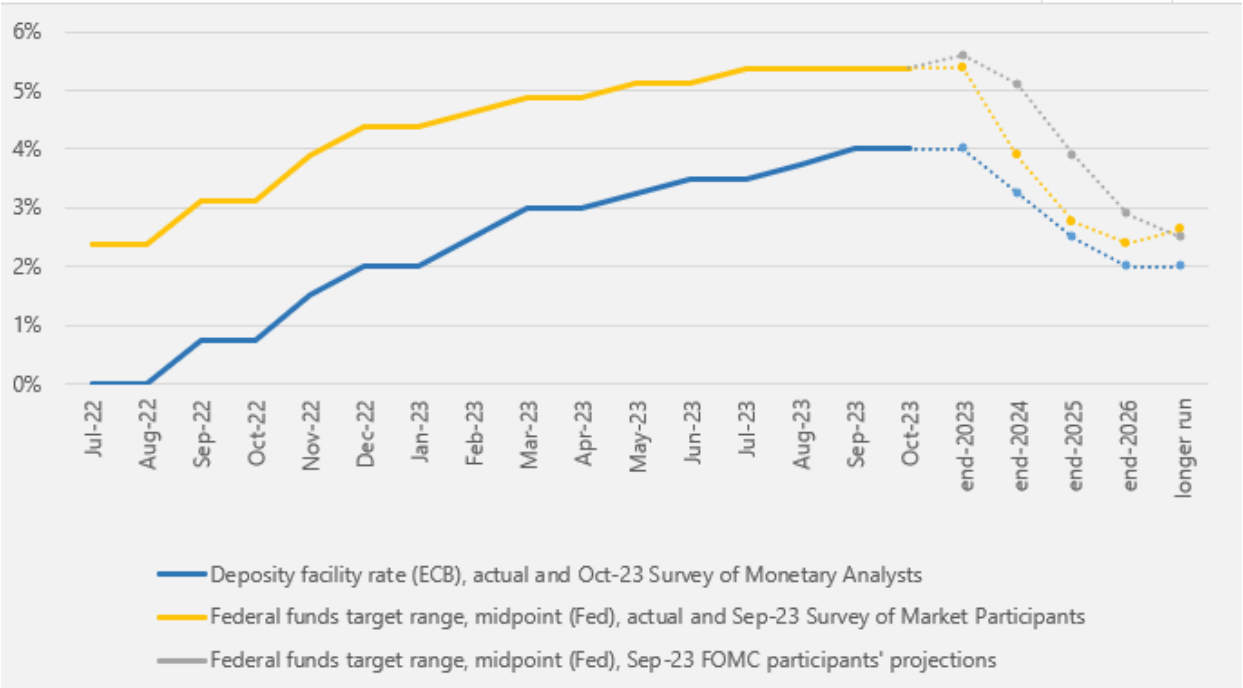
the ECB will not cut interest rates until the third quarter of next year and that the deposit facility rate will be 3.25% at the end of 2024, an easing of 75 basis points.[25]

I suspect the opposite pattern is more likely. The current strength of the US economy may make taming inflation more difficult than anticipated. For the euro area, the HICP for energy has moved up on average in recent months, so energy price declines will probably stop subtracting from headline inflation soon. There is also the risk that further supply shocks could trigger another surge in euro area inflation. However, the current situation is that inflation is now relatively close to the ECB's 2% target.

It may be that getting inflation from September's 2.9% to the 2% target rate will represent a difficult "last mile" as described in ECB Executive Board member Isabel Schnabel's recent speech.[26] However, our models for forecasting inflation are not generally good enough to allow us to make precise predictions about how long it will take for inflation to fall by 0.9 percentage points. The last mile might be slow or it might be fast.

What we can say now with some confidence is that the euro area economy appears to be heading for recession and the full effects of monetary tightening have not yet been felt. This is likely to impact inflation. Instead of euro area inflation remaining sluggishly high, there is a chance that it falls back to and below the 2% target over the coming months. It now seems likely the ECB's next policy move will be to cut interest rates and it may come sooner than many expect.

Figure 17: Key policy rates for the Federal Reserve and ECB

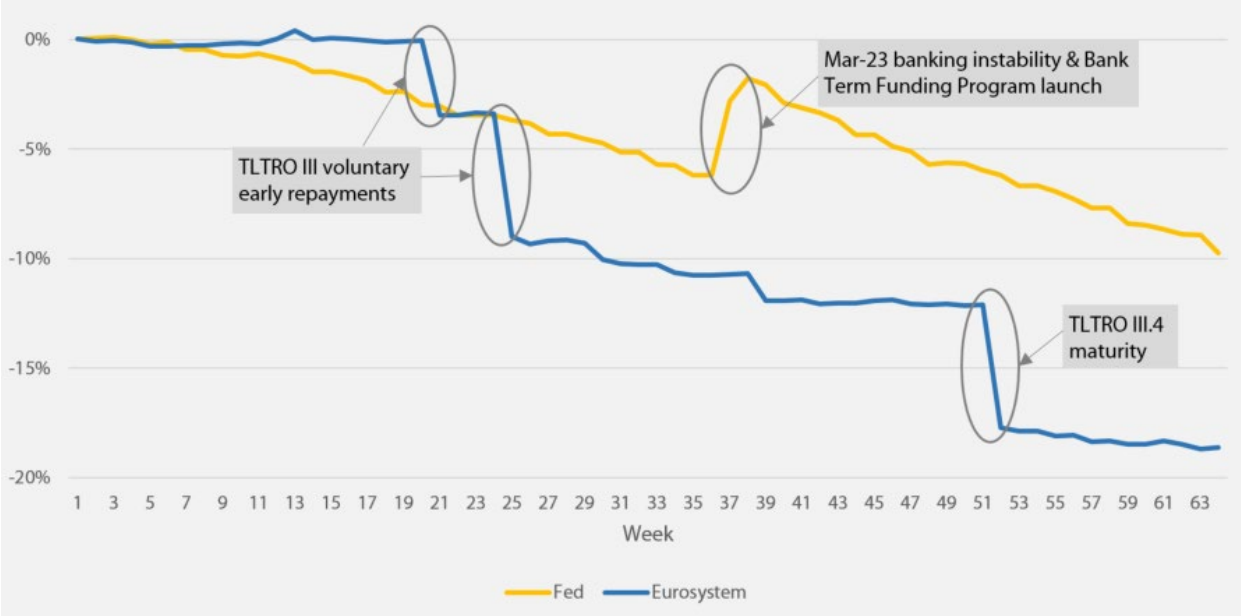


Source: European Parliament, EGOV elaboration based on data from ECB and Federal Reserve.

[25] https://www.ecb.europa.eu/stats/ecb_surveys/sma/shared/pdf/ecb.smar231030_october.en.pdf.

[26] Schnabel (2023).

Figure 18: Balance sheet reduction for the Federal Reserve and ECB



Source: European Parliament, EGOV elaboration based on data from ECB and Federal Reserve.

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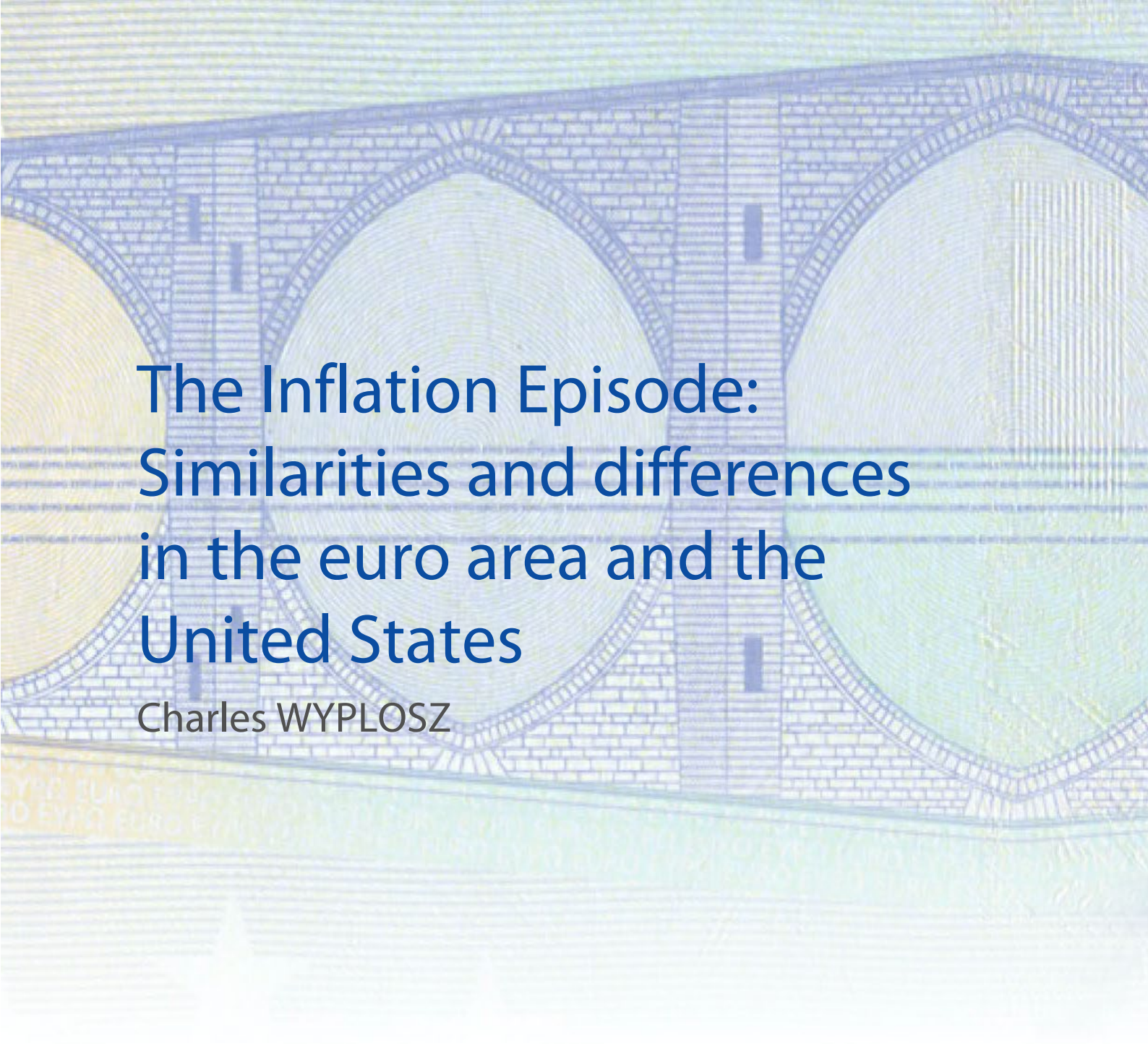

The Inflation Episode: Similarities and differences in the euro area and the United States

Charles WYPLOSZ

Abstract

Inflation has surged and then declined in broadly similar ways in the euro area and the United States, because it has been driven by the impact of the pandemic and its aftermath. Yet, specific differences reflect how monetary and fiscal policies responded as well as the impact of the Russian invasion of Ukraine. The central banks face whole new challenges as they prepare to navigate the next phase now that inflation has rapidly declined, but also further along.

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 27 November 2023.

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LIST OF ABBREVIATIONS

CPI	Consumer price index
ECB	European Central Bank
GDP	Gross domestic product
HICP	Harmonised index of consumer prices
IMF	International Monetary Fund
OECD	Organisation for Economic Co-operation and Development
OPEC	Organisation of the petroleum exporting countries
QE	Quantitative easing
QT	Quantitative tightening
US	United States

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EXECUTIVE SUMMARY

- **The inflation surge and the recent declines have been broadly similar in the euro area and the United States (US)**. Both have faced the impact of the COVID-19 pandemic and its aftermath and responded with similar monetary and fiscal policies strategies
- **Behind this similarity, important differences have emerged.** Inflation surged earlier in the United States and peaked at a lower rate than in the euro area. While inflation has been very similar across the United States, it has been very different across euro area Member States.
- **Fiscal policy is a key reason for these differences.** In the United States, fiscal policy has been expansionary before the COVID-19 pandemic and massively expansionary in the first year of the pandemic. Most euro area governments reacted later and in a more measured way.
- **Fiscal policies also differed in their scope.** In the United States, the accent has been on cash transfers to households, in an effort to limit the hardships from unemployment. In the euro area, they were often aimed at firms in an effort to limit unemployment and sometimes to contain price increases.
- **Another reason is that the impact of the Russian invasion of Ukraine has been negligible in the United States while it has been strong in the euro area.** It has also been particularly powerful in the euro area Member States that were more dependent on trade with Russia.
- **An important consequence of fiscal transfers has been unusually large savings in both the United States and the euro area.** Subsequent dissaving has powered the recovery from the pandemic and remain a source of growth.
- **Due to the timing and effects of fiscal policy as inflation had surged earlier in the US, the Fed has moved faster than the European Central Bank (ECB).** In spite of a rapid rollback, the budget deficit remains significantly higher in the United States.
- **Labour markets remain very tight, even after both central banks raised their key policy rates.** This is a key source of concern since it may imply that the complete return of inflation its target may take more time. This is especially the case in the United States where the labour market remains tighter than before the COVID-19 pandemic but it also seems to be the case in the euro area.
- **Both central banks now face delicate decisions regarding the ending and reversal of their efforts to cut inflation.** Both the ECB and the Fed consider the end of interest rate hikes but envision to keep them high for some time. This stands in contradiction with the stated end – or suspension – of forward guidance.
- **In the longer run, central banks must deal with the combination of slow growth and durably high interest rates when public debts have reached historically high levels.** Given the poor growth performance of the euro area, the next monetary policy strategy should provide answers.

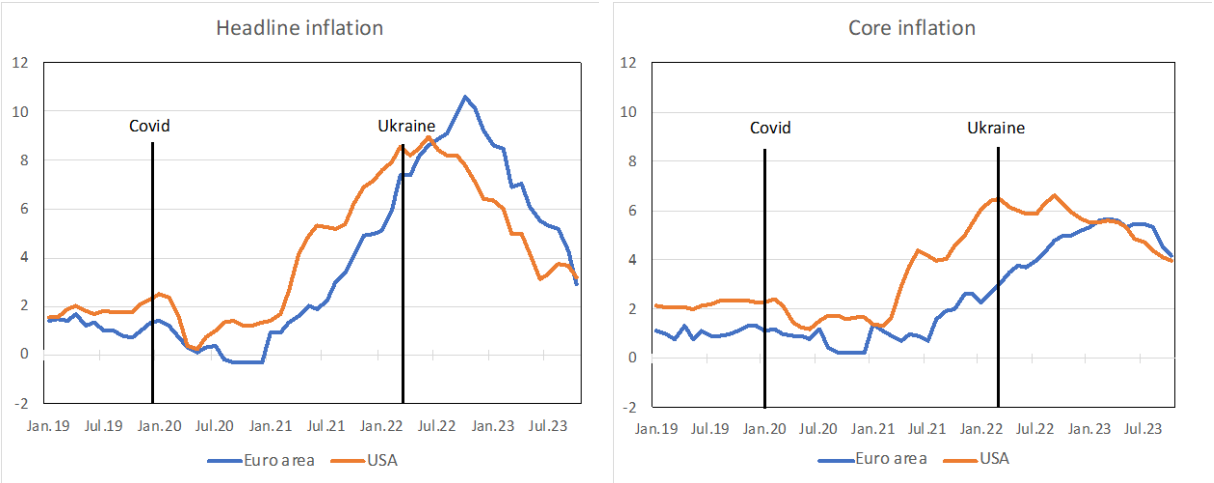
1. INTRODUCTION

Inflation rates in the euro area and in the United States (US) have followed paths both parallel and distinct paths, as can be seen from Figure 1. The left-hand side shows the evolution of both headline inflation, namely Harmonised index of consumer prices (HICP) in the euro area and Consumer price index (CPI) in the US. Inflation rates were almost the same in both countries at the start (January 2019) and at the end (September 2023) of the period under review. Initially, inflation was close to the target of 2%. In September 2023, it stood at about 4%, significantly above target. In-between, the evolution is broadly similar. Inflation declined after the onset of the COVID-19 pandemic and started to rise once the lockdowns were eased and vaccination alleviated fears of contagion during 2021. The inflation surge occurred long before the Russian invasion of Ukraine in late February 2022. Clearly, the causes of the inflation surge and its eventual decline are similar.

Beyond the similarities, however, a few differences stand out:

- Headline inflation started to rise and peaked earlier in the US (May 2020 and June 2022, respectively) than in the euro area (December 2020 and October 2022).
- Core inflation rate, which excludes energy and food prices, on the right-hand side chart in Figure 1, started to rise in the US at about the same time as headline inflation, and stabilized at about the time of the Russian invasion of Ukraine in February 2022. In the euro area, the rise of core inflation lagged headline inflation by several months. Clearly, the pass through of increases in energy and food prices accelerated headline inflation, but the surge was already well under way.
- Core inflation peaked soon after headline inflation in the US but much later in the euro area. More generally, the difference between headline and core inflation was larger in the euro area than in the US. This corresponds to the larger increases in energy and food prices in the euro area.

Figure 1: Inflation rates in the euro area and the US (% change over previous year), January 2019-October 2023



Source: ECB and FRED, Federal Reserve Bank of Saint Louis.

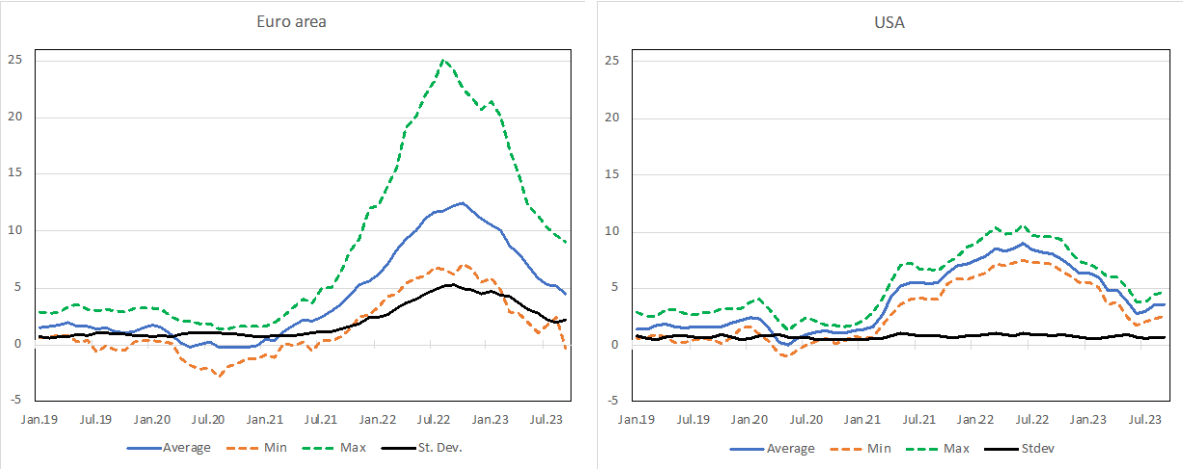
Note: Harmonized index of consumer prices (HICP) and Consumer price index for All Urban Consumers (CPI) are shown.

It is also interesting to examine inflation rates at a less aggregated level. Figure 2 displays the headline inflation rates in the euro area Member States and in the eight census regions of the US.[27] For each month, it displays the (unweighted) average inflation rates of countries or regions, along the maximum and

[27] New England, Middle Atlantic, East North Central, West North Central, South Atlantic, East South Central, West South Central, Mountain, Pacific.

minimum observed rates each month, as well as a measure of dispersion, the standard deviation. For proper comparison, the scale of the vertical axis is the same. In the US, regional inflation rates rose and declined in lockstep throughout the whole period from 2019-2023, with no change in dispersion. Within the euro area, the dispersion increased considerably and remained much larger in September 2023 relative to the start of the inflation surge. Indeed, at the peak, headline inflation exceeded 20% in the Baltic States, while it barely reached 7% in France and Spain. Clearly, the shock widely differed across Member States.[28]

Figure 2: Headline Inflation rates (% change over previous year), January 2019-September 2023



Source: ECB and Bureau of Labour Statistics.

Note: Average, minimum, maximum, and standard deviations of headline inflation rates among the euro area member countries and the eight census regions of the US.

The paper attempts to explain both the similarity and the differences in inflation rates in the euro area and in the US since 2020. The next section examines potential causes other than policies, while Section 3 looks at the role of monetary and fiscal policies. Section 4 briefly characterises the current situation and the policy options. The concluding section widens the scope by asking whether inflation and growth will recover their pre-COVID-19 pandemic levels.

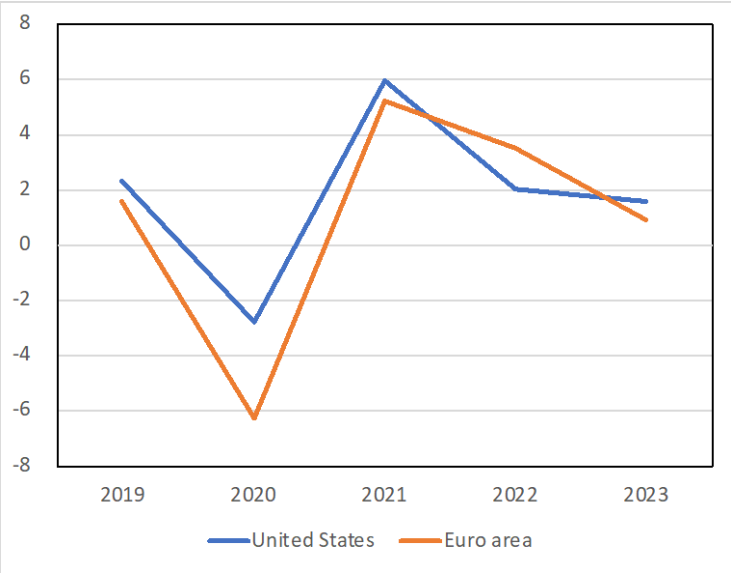
[28] The divergence of inflation rates across the euro area is described in more details in Wyplosz (2023), which argues that it has deeply disturbed price competitiveness inside the euro area. This issue is likely to emerge as a particularly difficult challenge.

2. NON-POLICY DRIVERS OF INFLATION

The inflation surge has been a global phenomenon driven by global shocks. Yet, while the impact has been qualitatively similar across developed economies, Section 1 makes the point that some significant differences have emerged. One reason is that monetary and fiscal policies have differed, as described in Section 3, but other causes have been at work. They are reviewed in this section.

The COVID-19 pandemic was bound to provoke a deep recession as demand and supply collapsed, as shown in Figure 3. The arrival of vaccines next led to a sharp rebound on both the demand and supply sides. In each phase of this seesaw movement, the relative responses of demand and supply shaped inflation. Briefly stated, inflation declined moderately during the recession phase as demand and supply declined broadly to the same extent, while demand sharply outpaced supply during the recovery. Figure 3 also shows that the 2020 recession was less deep in the US than in the euro area and that the recovery was stronger in 2021.

Figure 3: GDP growth (% per year)

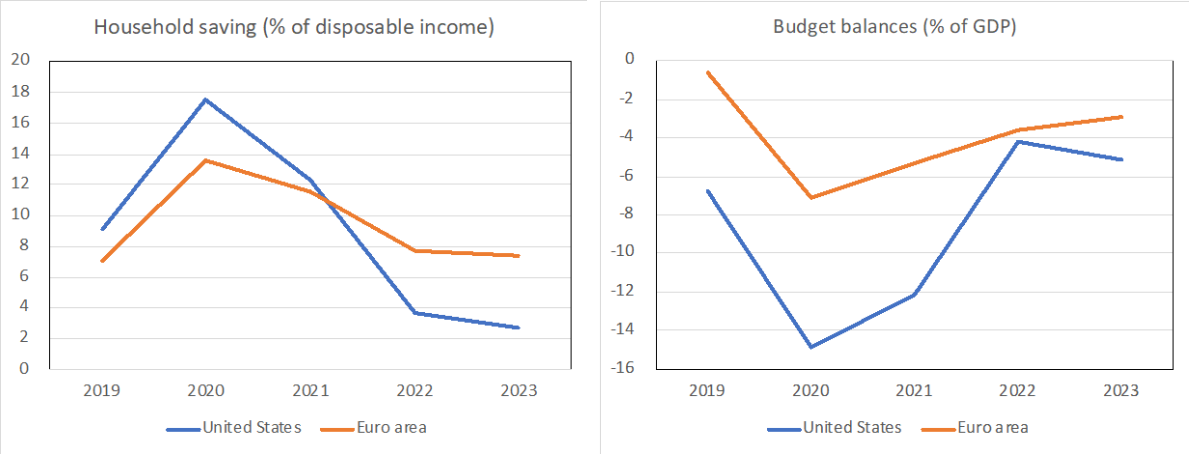


Source: *Economic Outlook*, OECD.

2.1. Post-Covid recovery: the demand side

On the demand side, the recovery was driven by two main factors: the spending of accumulated savings and fiscal policies. These factors are partly related since large fiscal transfers during the 2020-21 have contributed to saving accumulation, as Figure 4 shows (more on fiscal policies below). Stranded and worried households reduced their consumption in 2020 during the acute phase of the pandemic. Once vaccines started to be available in 2021 and the pandemic eased up in 2022, they started to spend their accumulated savings. Household saving is usually quite stable so it is easy to underestimate the importance of the swings visible in left-hand chart of Figure 4. The strength of the recovery is a direct consequence of the swing. Savings rose much more in the US than in the euro area, which partly explains the strength of the recovery.

Figure 4: Household saving and public budget balances



Source: *Economic Outlook*, OECD.

Fiscal policy also contributed to the evolution of economic growth. As the right-hand chart of Figure 4 indicates that fiscal policy was already expansionary in the US in 2019 as the Trump administration had cut taxes, and turned to extremely expansionary in 2020 with large transfers to households in 2021, with further steps taken later by the Biden administration. Fiscal actions were also strong in the euro area (as a whole, with important differences from country to country) but muted in comparison with the US as explained in Section 3.2.

Comparing Figure 1 and Figure 3, it is clear that the relative strength of the recoveries does not fully explain the subsequent evolution in inflation rates in the euro area and the US. The next two sections present additional explanations that are frequently invoked. They rely on the supply side.

2.1. Supply side

The key characteristic of supply side shocks is that they lead to more inflation, by increasing production shocks, and lower growth, by reducing production.

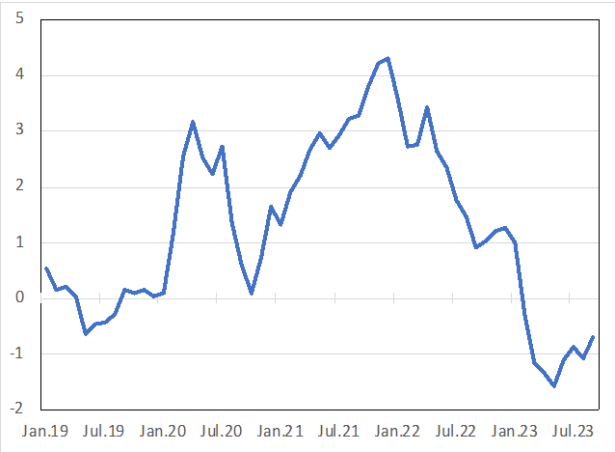
2.1.1. Supply chain disruptions

Unprecedented supply chain disruptions occurred when the developed countries emerged from the acute phase of the COVID-19 pandemic. In contrast with the saving/dissaving pattern that was – or should have been – widely anticipated, the clogging of transports and the slow restart of production came as a surprise. The difficulties of restarting production after a period of deep reduction were greatly underestimated. Getting people back to work proved to be nontrivial as many people had spent months rethinking their life patterns and their jobs, with some of them concluding that they wanted a change or, at least a break.

According to the Federal Reserve of Ney York's index of global supply chain pressure,[29] difficulties appeared at the onset of the COVID-19 pandemic but quickly declined, only to resume at the end of 2020 and to peak in December 2021 (Figure 5). The comparison with the evolution of inflation (Figure 1) suggests that supply chain disruptions contributed to price pressure in several sectors precisely when demand was rising vigorously in the euro area and in the US. Similarly, the easing of these disruptions must have contributed with some lag to the disinflation process.

[29] This index combines information about transport volumes and prices, and about manufacturing.

Figure 5: Global supply chain pressure index, January 2019-September 2022

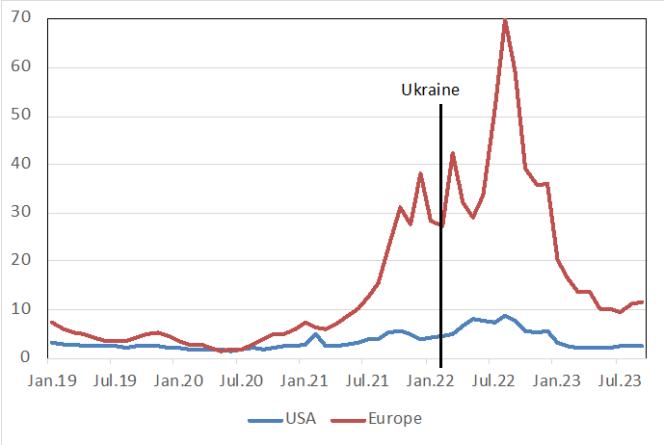


Source: Federal Reserve Bank of New York, Global Supply Chain Pressure Index.

2.1.2. The Ukraine shock

As Figure 1 shows, there is no indication that the Russian invasion of Ukraine significantly contributed to inflation in the US where it peaked shortly afterward. In contrast, in the euro area, headline CPI inflation continued to rise vigorously after the invasion and eventually overtook the US rate. This is also when core inflation accelerated in the euro area, an indication that the impact was broader than the substantial rise of energy and food prices. Obviously, the proximity of the euro area to the conflict zone implies that it was much more dependent in trade with Ukraine and Russia. The combination of sanctions and other market disturbances has had a much stronger impact in the euro area, especially on its Eastern members. This is confirmed by Figure 6, which shows that the price of natural gas barely increased in the US but exploded in Europe.[30]

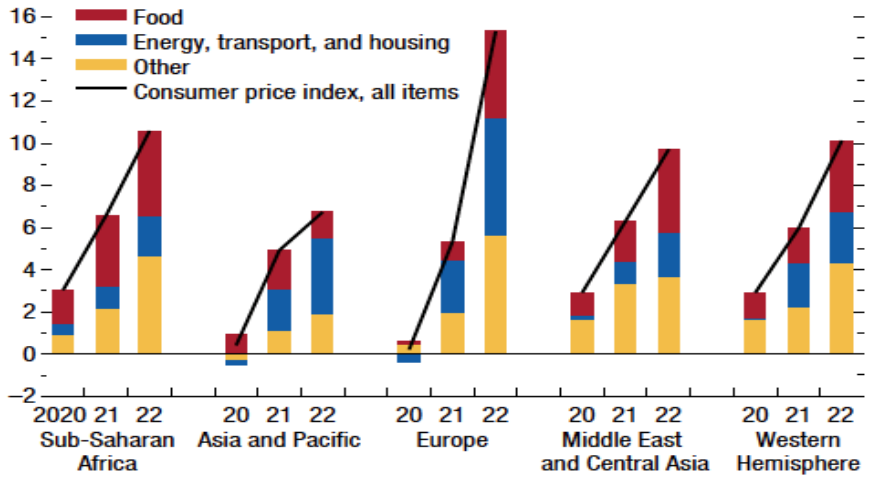
Figure 6: Price of natural gas ($/mmbtu), January 2019-September 2022



Source: World Bank Commodity Price Dataset. https://www.worldbank.org/en/research/commodity-markets.

Figure 7, which presents the evaluation by the IMF of the main drivers of inflation for regional groups, further confirms this effect. Europe stands out with a sharp acceleration of inflation driven by food and energy prices.

Figure 7: Decomposition of the sources of inflation



Source: *World Economic Outlook*, October 2022, IMF, p.4.

Note: Western hemisphere includes both North and South America.

[30] The European price of gas divorced from the price in the US more than a year before the Russian invasion, apparently before of cold weather and technical supply cuts from Norway and Russia. The increase in Europe occurred even before the inflation surge, to which it has contributed given that the price of electricity is indexed to the price of gas.

As a producer of oil and gas, the US is in a position quite unlike the euro area. Since the gas market tends to be local, as seen from Figure 6 the impact of the Ukraine shock is muted in the US, and it also applies to oil, albeit to a lesser extent. However, higher prices benefit US producers while it hurts European consumers. That means that impact of higher energy prices is much worse in the euro area as they act as a form of tax to be paid to foreign producers.

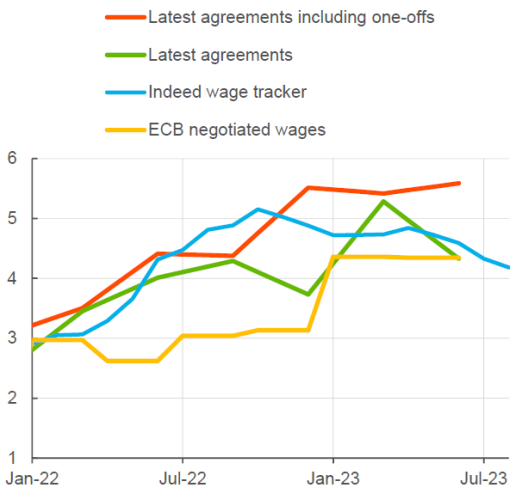
2.2. Wages and productivity

The usual concern about inflation is the wage-price spiral, whereby price increases feed into wage increases, which further leads to price increases. There is no agreement on whether this is a serious threat in the euro area and in the US. So far, wages have lagged behind prices, especially in the euro area (left-hand chart in Figure 8), leading to wider profit margins in firms. There are two paradoxes here. First, wage-earners have suffered a deep reduction in their incomes. Normally, they would want to catch up. Second, they are in a good position to do so since the labour markets are historically tight and yet, real wages remain depressed relative to what they used to be before the COVID-19 pandemic.

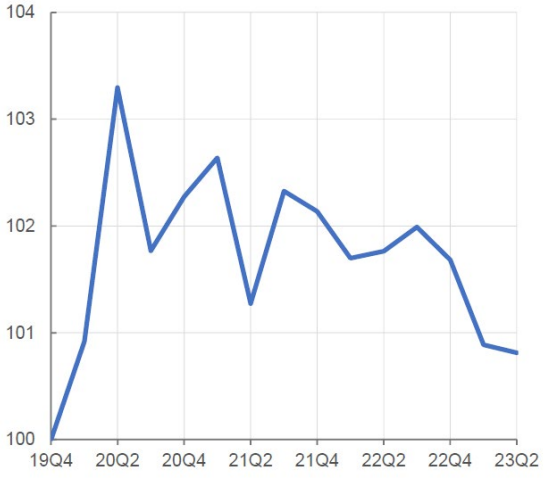
One possibility is that wages are lagging and that they will eventually catch up. When they do so, what will happen to profit margins? If firms let their margins decline back to historical levels, the wage-price spiral will stop there.[31] However, labour productivity has declined (right-hand chart in Figure 8), which indicates that the labour costs have risen faster than wages, which eats into profit margins. This raises the probability of a wage-price spiral.

Figure 8: Wages and productivity in the euro area

Wage growth (annual percentage change)



Labour productivity per hour (Index: 2019Q4 = 100)



Source: Schnabel (2023b).

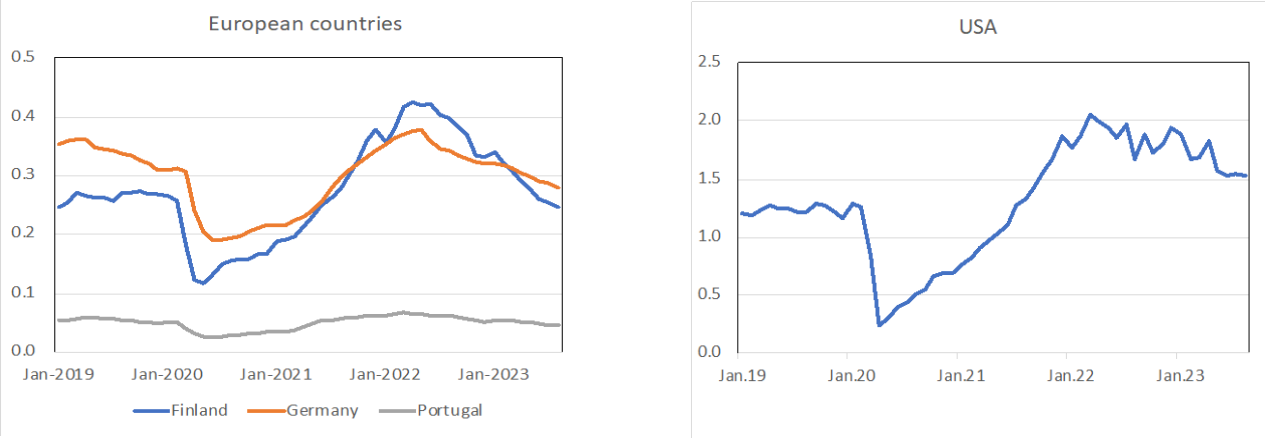
Since the aftermath of the COVID-19 pandemic, labour markets have tightened quite significantly. A good measure of tightness is the ratio of the number of job vacancies to the number of unemployed workers, which is presented in Figure 9. Unfortunately, there is no data for the euro area as a whole, only for a few countries, which are reported in the chart. Inasmuch as similar developments are taking place in other euro area countries, there appears to be an important difference between the US and Europe.[32] While the labour markets have tightened after the COVID-19 pandemic on both sides of the Atlantic, it remains

[31] This is the view of IMF (2023).

[32] One difference is that the ratio is traditionally much higher in the US. This reflects the larger fluidity of the US labour market where firings are much less regulated than in Europe.

historically tight in the US while, on this measure, it has returned to pre-pandemic levels in Europe. Looking forward, this difference may hint at stronger wage increases in the US than in Europe, raising the probability of a wage-price spiral in the US. On the other side, the power of trade unions is larger in Europe, as is the concern for "social justice".[33] All in all, it seems too early to rule out the emergence of wage-price spiral in the euro area, which would make the disinflation process protracted and painful.

Figure 9: Ratios of job vacancies to unemployed workers



Sources: OECD for Europe, Bureau of Labour Statistics for the US.

[33] There is large literature comparing the European and US labour markets, see e.g. Saint-Paul (1996).

3. THE ROLE OF MONETARY AND FISCAL POLICIES

3.1. Lags

A key principle of the fight against inflation is to start early, to quickly raise interest rates and to bring them down when the job is done. Both the ECB and the Federal Reserve missed the first step. By the time inflation started to rise, it took the Fed more than two years to start raising its policy rate and one year and a half for the ECB. From start to peak, US inflation rose by 8.7 percentage points while it went up by 10.9 percentage points in the euro area. This indicates that inflation rose faster in the euro area largely, but not only, because of the Ukraine shock, which barely affected the US (Figure 1). But it rose faster during 2021 in the US.

Once they started to raise their policy rates, both the ECB and the Fed proceeded quickly. So far, the Fed raised its rate by 5.25 percentage points since March 2022, somewhat more than the EBC's increase of 4.5 percentage points since July 2022. This is much less than the increases in the inflation rates so that the observed real interest rates – the interest rate less currently observed inflation – are even lower than before the inflation surge, when monetary policies were deemed expansionary. However, monetary policy operates through the real interest rate corrected for expected inflation, not for currently observed inflation which is changing fast, more recently downward.

Like other central banks, the ECB is keen to argue that inflation expectations are "well anchored", meaning that they remain close to the target inflation rate of 2%.[34] To buttress its arguments, it refers to the inflation expectations of financial markets as computed by looking at bond prices. These evaluations have repeatedly been disproved by subsequent evolutions of actual inflation. At any rate, what matters are the expectations of economic agents, households, and firms, who borrow and who sets prices. Schnabel (2023a) has recently shown the inflation expectations of Italian firms from surveyed by the Banca d'Italia at different points in time. They are displayed in Figure 10. The Figure shows that these expectations have never been of less 5%, and often exceeded this level by a substantial margin. The implication is that, measured in this way, the current policy rate (4%) implies a negative real interest rate. Of course, households and firms face interest rates above the policy rate so, for them, the real interest rate is now positive. But it is worth noting that, as late as January 2023, the policy rate just stood at 2%, which indicates that monetary policy was not tight while inflation was still high (headline at 5.3%, core at 5.5%).

[34] See, e.g. Lagarde (2023): "In this setting, it is paramount not only to take decisive action to bring inflation down, but also to communicate effectively to ensure that medium-term inflation expectations remain anchored during the process. More than ever, credibly conveying that inflation will return to our 2% target over the medium term has been vital to help prevent self-fulfilling inflationary dynamics from taking hold".

Figure 10: Expectations of consumer price inflation by Italian firms (percentage changes on year-earlier period)

Source: Schnabel (2023a).

Yet, inflation peaked in 2022, in June in the US, when the key policy rate was 1.75%, and in October in the euro area, when the key policy rate (deposit facility rate) was 0.75%. That disinflation started with such low policy interest rates and tight labour markets is surprising. Recent reviews of the history of previous disinflations (Blinder, 2023; Cecchetti et al, 2023) show that disinflations are usually achieved the hard way, with high real interest rates and substantial slack in the labour market. These precedents would suggest that we still are a long way from the end of above-target inflation, both in the euro area and the US. This is far from certain, however. Two interpretations are plausible.

- The rapid increase in interest rates after more than a decade of ultra-low rates took the financial markets by surprise. They had time to develop business models that rested on the presumption that interest rates would be "low for long". Now, with quickly rising interest rates, they had to adapt to a new situation. As a result, lending conditions have been toughened, so that monetary policy turned contractionary even with relatively low interest rates. Bank failures in the US and Switzerland in the first half of 2023 confirm that the adaptation can be challenging, as do increases in corporation bankruptcies.
- The second interpretation is puzzling. Until they changed their minds, the ECB and the Fed argued that the inflation surge would be temporary, because it was the outcome of a unique episode, the supply-side shock of the COVID-19 pandemic. They have changed their minds once inflation reached levels unseen since the 1980s, but that does not mean that inflation would not be temporary once the causes of the burst would disappear. Could it be then that, after all, the central banks were right about the temporary nature of the inflationary episode, simply that they did not realise how strong the surge would be?

Both interpretations imply that inflation would decline even with relatively low real interest rates in both the euro area and the US. An additional interpretation considers the role played by fiscal policies.

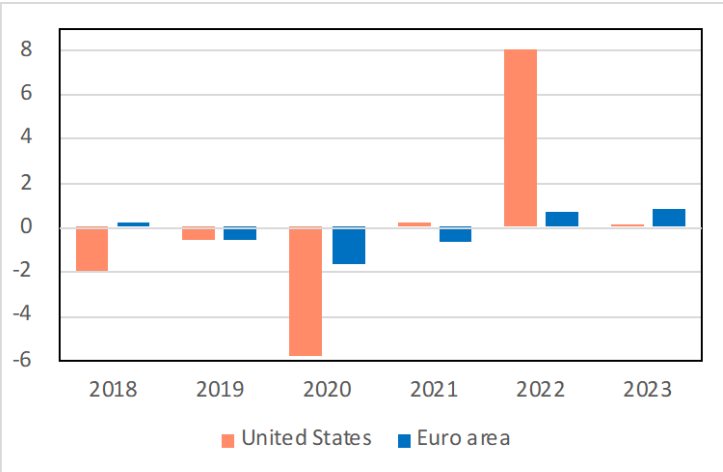
3.2. Fiscal policies

In order to examine the role of fiscal policies, Figure 11 displays a standard measure of fiscal policy actions, namely the change of the cyclically adjusted balance. This measure nets out interest service and the effects of the business cycle to reveal discretionary decisions by the authorities. Fiscal policies usually

deploy their effects on growth and inflation with a lag, from one to two years. Figure 11 shows that, in the US, fiscal policy turned expansionary in 2018, modestly so in 2019, and very much so in 2020. In the euro area, it was modestly expansionary in 2019 and more so in 2020 and in 2021, but far less than in the US.

The details of fiscal policies also mattered. In both the euro area and the US, the large expansion of 2020 aimed at protecting households and firms during the acute phase of the pandemic. They relied upon social transfers, much of which went into savings during the acute phase of the pandemic. These accumulated savings were spent over the next couple of years, once fear of COVID-19 receded. In the euro area, quite often, fiscal policies were also used to reduce energy and food price increases through subsidies to producers and/or retailers. This moderated inflation at the time, but contributed to the surge later on when the subsidies were removed (not all of them have been removed everywhere).

Figure 11: Fiscal policy actions (change in the cyclically adjusted budget balance, % of potential GDP)



Source: OECD.

In both the euro area and the US, the combination of large transfers and diminished consumption during the acute phase of the COVID-19 pandemic has led households to increase their savings. When the pandemic eased up, they have started to spend their accumulated excess savings. The result has been a strong recovery, a delayed effect of expansionary fiscal policies. This process is still under way but could soon reach end. This would slow growth down, accelerate disinflation and weaken the labour markets. It is one additional reason to doubt the "high for long" commitment of central banks.

3.3. QE and QT

A few months after they started to lift their policy interest rates, the ECB and the Fed began to reduce their balance sheets, a process called quantitative tightening (QT). The intention is to keep the power dry in the event of future financial turmoil. In fact, the Fed had to temporarily reverse the process when three medium-sized banks failed in March 2023. Neither quantitative easing (QE) nor QT have much of a macroeconomic effect – they are not substitutes for interest rate policies – but the abundance of liquidity contributes to stabilise the financial markets. QT is proceeding at a measured and predictable pace (in the case of the ECB) as central banks observe how the markets adapt to the new environment of higher interest rates.

Financial market stability is a very important issue when increases in the policy rate deeply affect the business model of all financial institutions. So far, bank profits have risen, in part because bank deposits at their central banks are remunerated, in part because higher rates allow them to raise the interest that they charge to borrowing customers by more than they increased the interest served on deposits, if at

all. However, higher interest rates have led to a decline in the value on the bonds that financial institutions hold for regulatory reasons, including those that are deemed safe. These losses affect the financial balance of financial institutions and can threaten their solvency, which has happened in a few cases.

Beyond the financial stability aspect, the risk from QT is that financial institutions respond by tightening their activities, in particular bank lending to firms and households. In that sense, QT may have a restraining effect on economic activity and on inflation, but this effect is likely to be modest at least relatively to the rise of interest rates. Anyway, both the ECB and Fed are following parallel QT paths, so it does not explain any difference in inflation outcomes.

4. THE NEXT STRATEGY

At the end of October 2023, headline inflation stood at 2.9% in the euro area and at 3.2% in the US. This is not very far from the target of 2%. The Fed and the ECB now face a new set of challenges to which they respond in similar ways for the time being.

4.1. Timing: the turnaround

Inflation has been declining fast since this summer. If confirmed, this would signal the end of the tightening period. Both central banks are committed to durably bring inflation rates to their 2% target. The problem is that monetary policy operates on inflation with long lags, of the order of one to two years. In principle, they should base today's actions on how inflation will evolve over that period. But, having failed to foresee the surge, both central banks have become prudent. They have shifted from forward guidance, announcing their intentions based on previsions, to data dependence: they now claim to rely on what they see, not what they foresee. This all but guarantees that they will stop the tightening cycle too late.

Most central banks seem to follow the same strategy. In order to mitigate the risk of excessive tightening, they officially started to "pause", suspending the tightening cycle but keeping policy interest rates where they currently are, even though inflation is still too high. At the same time, they state that they will keep the policy rate "high for long". Implicitly, they trade a strategy of further tightening soon followed by relaxation against less tightening but a delayed relaxation. This is not just a reminder of the previous forward guidance "low for long", thus mixing up forward guidance and data dependence, it is also risky, for three reasons.

- One lesson, which all central banks profess to have learned from the periods of very low inflation and of surging inflation, is that, no matter as desirable it might be, they should refrain from making commitments. Denying that forward guidance is not a commitment is not credible.
- The rapid fall of inflation is largely due to the decline in energy prices down from previous highs. These prices could rise again in the near future, for many reasons that include new geopolitical turbulence and supply cuts by OPEC.
- Conversely, should inflation soon return to target, monetary policy would be revealed as too tight. The last thing that central banks want is to return to the period of too low inflation. They would therefore promptly start a cycle of interest rate cuts, thus ditching the currently announced interim period of "high for long".

4.2. Next low rates

Once they start lowering their policy rates, central banks will have to determine the point of arrival. Assuming (unrealistically) that there is no further shock, this should be the neutral interest rate. As mentioned in a previous paper (Wyplosz 2021), the level of the neutral rate is highly contentious everywhere. At best, it is estimated with a high degree of imprecision. The debate will go on in parallel in the euro area and in the US. It is likely that the ECB and the Fed will follow similar approaches, testing where the neutral rate is.

4.3. Bank remuneration and size of balance sheets

As a result of QE, bank reserves held at central banks are now vastly excessive. This should drive the interbank market rate to zero. To keep the interbank market rate close to the policy rate, central banks have undertaken to remunerate deposits at the policy rate, which establishes a floor for the interbank market rate. As they raised the policy rate, the cost of reserve remuneration has grown, sometimes wiping

out central bank profits, including in the Eurosystem and at the Fed. Of course, central banks are not-for-profit institutions, so this is not a monetary policy issue. Yet remunerating banks is politically contentious. Eventually central banks will have to face the issue.

One solution would be to return to the previous regime of scarce reserves, which allowed central banks to control the interbank rate by managing the scarcity, without remunerating the bank deposits. Other solutions involve tiering, which means applying different rates of remunerations for parts of the reserves. Since September 2023, the ECB pays no interest on the required reserves. The saving is small but could be raised by increasing the requirement, for example by including the various prudential obligations to hold high quality assets as mandated by the Basel III agreements.

5. CONCLUSION: THE GENIE IS OUT OF BOTTLE

There are important differences in the evolution of inflation in the euro area and the US, and many similarities. The timing is striking. In both, inflation has been very low for more than a decade, despite largely unsuccessful efforts by the ECB and the Fed to bring it up to target, only to rapidly increase in the wake of the pandemic. The quasi simultaneity of these historical events points to similarity in causes and treatments by the central banks, especially as much the same occurred in many other developed countries. The low inflation period reflected the durable effects of the Global Financial Crisis and the ensuing efforts to adopt financial regulations. The 2021 inflation surge was triggered by the rapid recovery of spending on the demand side and, on the supply side, by the disruptions in labour markets and in global supply chains following a period of widespread restrictions of economic activities. The key difference is that the US has been ahead of the euro area in the timing of inflation and of the policy responses. Inflation surged earlier in the US in part due to a pre-COVID-19 pandemic fiscal expansion, in part because, in several euro area Member States, the fiscal reaction to the COVID-19 pandemic has been to use subsidies to limit price and wage subsidies.

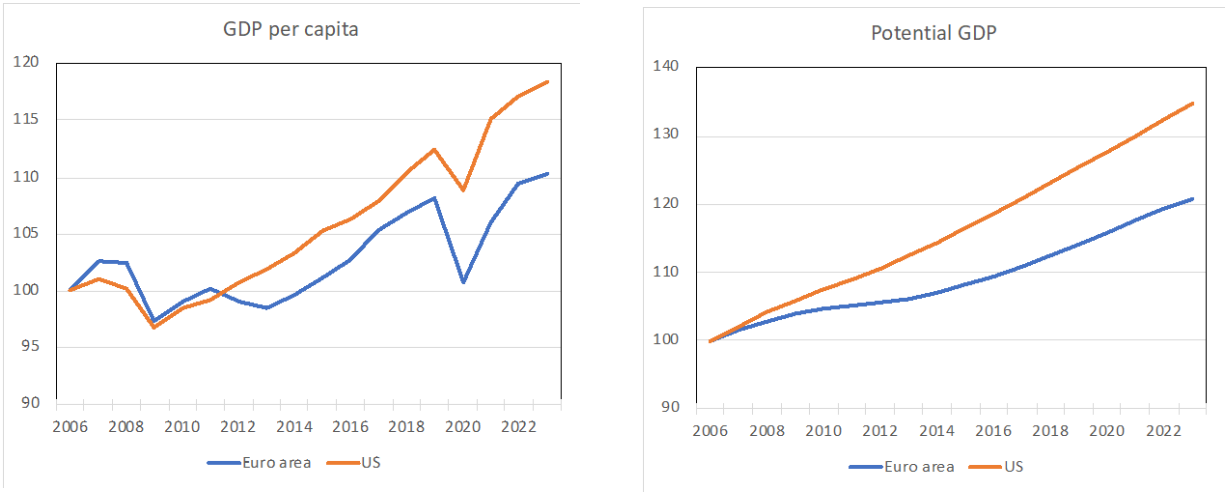
Once inflation rose, the genie was out of the bottle. For a while, the ECB and the Fed thought that it would return spontaneously back into the bottle so that inflation would revert to pre-COVID-19 pandemic levels. This could have been the case if the surge was entirely caused by a pure supply shock and with no policy reaction. The central banks did not factor in the expansionary fiscal expansions nor the dissaving by the private sector. Furthermore, they were convinced that keeping inflation expectations anchored would prevent any price-wage spiral, hence their initial choice to not react. Given the extent of losses in the purchasing power of wage-earners, this too was unlikely.

The ECB stuck with this gentle-genie view longer than the Fed, arguing that the euro area was not in the same situation as the US. It is true that the 2020 US fiscal expansion did not have an equivalent in the euro area, but the household dissaving after the pandemic was broadly similar and pressure for wages to catch up on prices would eventually invalidate the argument that Europe is different.

When the Fed finally moved, it reacted more forcefully than the ECB. Along with the fact that the subsequent Ukraine shock hit oil and gas-dependent Europe much more strongly than the oil and gas-producing US, this explains that eventually inflation peaked earlier and lower in the US than in euro area.

Much has been said about whether inflation will get back to target without countries having to undergo a recession – a hard landing. It could, but that is the wrong question. A quarter of two of negative growth is certainly painful, but such a temporary event pales in comparison with the consequences of prolonged weak economic growth. This is where the euro area stands to differ from the USA, as it has done in the past. The left-hand chart in Figure 12 shows the evolution of GDP per capita in the euro area and the US, with a forecast for 2023. The euro area was hit harder during the Global Financial Crisis and the sovereign debt crisis, and it has never recovered. It was again hit harder during the COVID-19 pandemic and its aftermath, further enlarging the gap. This is partly due to demand factors but the right-hand chart show that the euro area's supply side also lags since 2008, and increasingly so. Relative to the US, GDP per capita of the euro area has declined by some 8% and potential GDP by nearly 15%.

Figure 12: Real GDP in the euro area and the US (Index: 100 = 2006)



Source: Economic Outlook, OECD.

The relative loss of the euro area is not related to monetary policy but it is complicating the task of the ECB. In the shorter run, it raises the probability of a hard landing. In the longer run, it will make it harder for highly indebted governments to serve their debts. This difficulty will be magnified if interest rates remain high, below their current levels but above those seen before the COVID-19 pandemic. Similar concerns apply to the private sector, including banks, where indebtedness has generally risen markedly, raising fears of financial instability. The ECB released its latest strategy review just before the COVID-19 pandemic. Lower growth and higher rates make this strategy outdated. Hopefully, this will play an important role in the new strategy review expected in 2025.

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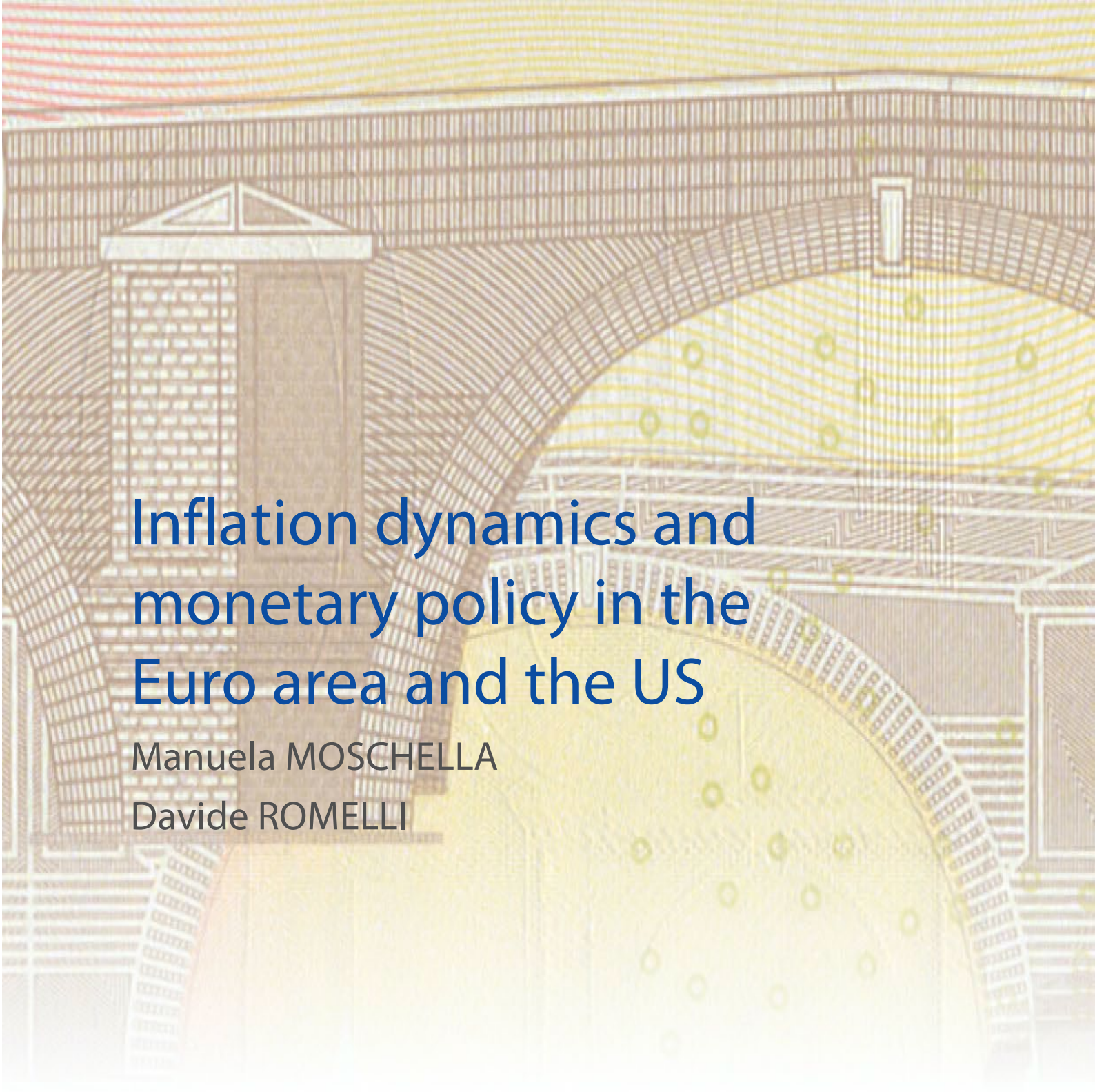

Inflation dynamics and monetary policy in the Euro area and the US

Manuela MOSCHELLA
Davide ROMELLI

Abstract

This paper compares the inflation dynamics and the monetary policy stance in the euro area and the United States. The paper also discusses the challenges that monetary authorities confront on the two sides of the Atlantic, also considering the uncertainties brought about by the ongoing crisis in the Middle East.

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LIST OF ABBREVIATIONS

APP	Asset purchase programme
CPI	Consumer Price Index
ECB	European Central Bank
EP	European Parliament
EU	European Union
GDP	Gross domestic product
HICP	Harmonised index of consumer prices
LTRO	Longer-term refinancing operations
PCE	Personal Consumption Expenditures
PEPP	Pandemic emergency purchase programme
TLTRO	Targeted longer-term refinancing operations
TPI	Transmission protection instrument
USD	US dollar

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EXECUTIVE SUMMARY

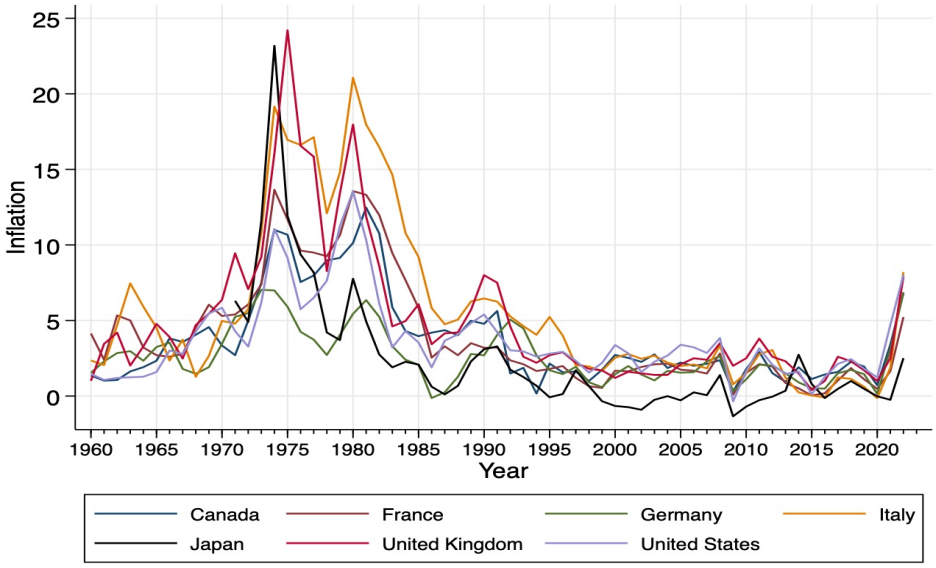
- **Inflation dynamics in the euro area and the United States present important similarities but also key differences.**
- **In both the euro area and the United States rising inflation since mid-2021 reflects global trends** that originated from the post-COVID pandemic recovery and the energy and food shocks, which were amplified by Russia's invasion of Ukraine.
- **Despite these commonalities, inflation dynamics have distinctive origins in the euro area and in the United States.** In the euro area, higher energy prices were the main driver of the inflationary surge. Energy prices continue to affect price developments in the euro area, directly and indirectly. In the United States, in contrast, rising prices are less supply- than demand-driven.
- **Similar to the inflation dynamics, the monetary policy stance in the euro area and the United States present important similarities but also key differences.**
- **Both the ECB and the US Fed have reacted strongly to the surge in inflation by raising interest rates and accelerating the normalisation of their large balance sheets.** In both economies, inflation expectations appear to be largely anchored.
- **However, the monetary policy stance in the euro area and the United States has translated into distinctive economic trajectories that raise different sets of challenges for the two central banks.** Financing conditions have tightened much more markedly in the euro area than in the United States. Furthermore, the ECB monetary policy has so far translated into high heterogeneity in inflation levels across euro area Member States.
- **The euro area and the US economies have also reacted differently to the restrictive monetary stance.** While the US economy has surprised observers to the upside, the growth prospects for the euro area are less rosy, and labour market conditions are weaker.
- **The different impact of a similarly restrictive monetary policy stance largely reflects the characteristics of the supply-driven inflation dynamics in the euro area as compared to the United States**, a scenario in which monetary policy has only imperfect tools to contain prices.
- **As a result, distinctive challenges lie ahead for monetary authorities on the two sides of the Atlantic.** In the United States, the challenge is to ensure that the restrictive monetary stance is sufficiently high to moderate aggregate demand while minimising damage to economic activity and financial stability. In the euro area, the challenge is to ensure that the restrictive monetary stance does not inflict too much damage on economic activity and financial stability in an environment where supply shocks continue to dominate inflation developments.
- **The tragic war between Israel and Hamas adds further uncertainties to the economic outlook but could also reinforce the challenges the euro area confronts.** An escalation of the war in the Middle East could have significant effects on energy prices, a further price shock that is likely to weigh on the euro area inflation dynamics much more strongly than it would be the case for the US.

1. INTRODUCTION

Since mid-2021, many high-income economies have experienced headline inflation rates not seen in decades. Although headline inflation is moderating slowly, core inflation has generally proved to be more resilient than expected (Pereira da Silva, 2023).

The resurgence of inflation has been a particularly noteworthy development because it comes after an extended period of price stability known as the Great Moderation, spanning from the mid-1980s to 2007, followed by a decade of low inflation and occasional deflation since the onset of the 2008 Global Financial Crisis (GFC) and continuing into 2020 (see Moschella, 2024). As Figure 1 shows, whereas inflation had been brought firmly under control during the Great Moderation period, the crises that started in 2008 and 2020 fundamentally challenged the achievement of price stability in high-income countries. In particular, the economic crisis that followed the collapse of the financial sector in 2008 and the confinement measures that governments around the world adopted to contain the spread of COVID-19 in 2020 unleashed recessionary and deflationary forces. For instance, ten years after the start of the 2008 GFC, output losses were still persistent in several countries, especially among those that also experienced banking crises, and inflation had declined in all major economies, including the United States (US), the euro area, the United Kingdom and Japan (IMF, 2018). Secular stagnation — a situation of sluggish economic growth, low interest rates and feeble inflation — so became a buzzword in policy circles (Summers, 2014). The COVID-19 pandemic deepened these ongoing trends, at least initially. The contraction in global output was far worse than the one experienced in the wake of the GFC of 2008 (Gopinath, 2020). Consequently, by the end of 2020, inflation was still well below the target in all high-income countries.

Figure 1: Inflation rates among G7 countries



Source: authors' calculations based on OECD data.

By mid-2021, however, there was a shift from a regime of low inflation to one of high inflation (BIS, 2022). In particular, inflation rates started to rise after the post-pandemic recovery, in a context characterised by severe disruptions in global supply chains. Price increases accelerated further in the wake of Russia's unjustified invasion of Ukraine, with food and energy prices driving inflation dynamics. These trends are clearly visible in the inflation developments in both the euro area and the United States: in both economies, headline and core inflation quickly accelerated and monetary authorities

embarked on a largely synchronised interest rate tightening cycle, accompanied by a shrinkage in their large balance sheets. Despite the similarities, however, the origins and the trajectory of inflation dynamics in the euro area and the United States display significant differences that pose distinctive challenges to their respective central banks.

This paper examines the inflation dynamics and monetary policy responses in the euro area and the United States. In particular, the analysis is organised as follows. In Section 2, we examine and compare the evolution of inflation in the two jurisdictions, focusing on the evolution of headline and core inflation as well as the trends in inflation expectations. In Section 3, the paper discusses the commonalities and differences in the factors driving inflation dynamics in the euro area and the United States. In particular, the paper delves into the debate on whether supply or demand factors caused the resurgence of inflation and continued influencing price dynamics. Third, the paper examines and compares the timing and conduct of monetary policy responses to rising inflation on the two sides of the Atlantic. Finally, we discuss the challenges that the European Central Bank (ECB) and the Federal Reserve (Fed) confront, also in light of the uncertainties brought about by the ongoing crisis in the Middle East.

2. INFLATION DYNAMICS IN THE EURO AREA AND IN THE UNITED STATES

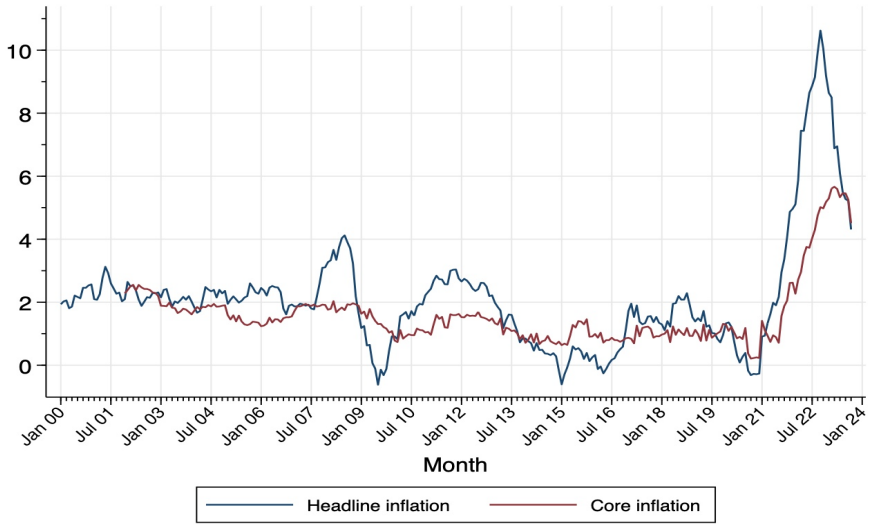
This section discusses the evolution of headline and core inflation dynamics as well as the trends of inflation expectations in the euro area and the United States. In the case of the euro area, we also discuss the heterogeneity of inflation across euro area countries.

2.1. Euro area

The latest Eurostat data on inflation, suggest that euro area annual headline inflation is expected to be 2.9% in October 2023, down from 4.3% in September, while core inflation, which excludes the direct effects of energy and food, is still running at 4.2% but lower than the all-time high of 5.8% reached in March 2023. Despite the slowdown in inflationary pressures, which brings headline inflation closer to the ECB's 2% target over the medium run, large differences across euro area countries persist. For instance, expected inflation for October 2023 is estimated to reach -1.7% and -1% in Belgium and the Netherlands, respectively, while in countries like Croatia, Slovenia and Slovakia it is expected to reach 6.7%, 6.6% and 7.8%, respectively.

In what follows, we first focus on the dynamic of aggregated euro area inflation. Then, we zoom in on the inflation heterogeneities among euro area countries.

Figure 2: Euro area headline and core inflation



Source: authors' calculations based on Eurostat data.

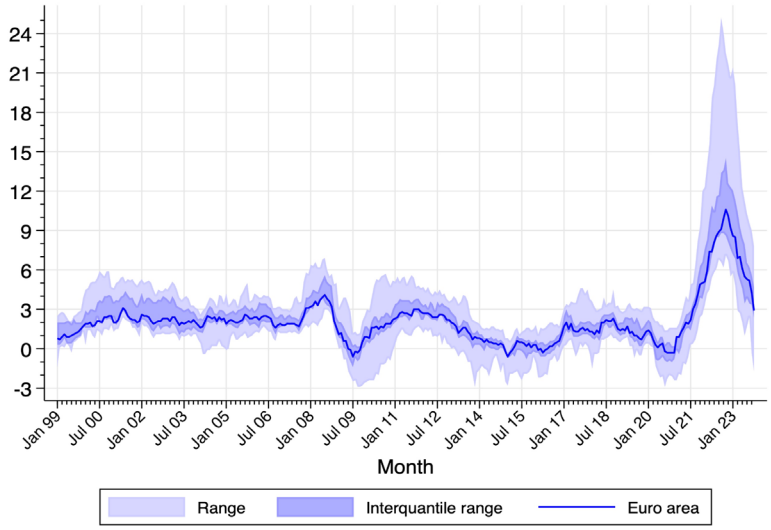
Since the introduction of the euro in 1999, the euro area has experienced varying inflation cycles (see Figure 2). Up until mid-2007, both headline and core inflation remained close to the 2% target, also reflecting the credibility the ECB has nurtured since its creation (Arnone and Romelli, 2013). Headline inflation faced upward pressures in the immediate aftermath of the 2008 GFC, mainly due to the recovery in oil prices, but it quickly turned to the downside. Indeed, the financial crisis ignited severe recessionary and deflationary pressures, which proved particularly prolonged. The 2008-2020 period was indeed characterised by a relatively muted recovery and a long stretch of modest growth and low inflation. In particular, a decade after the onset of the sovereign debt crisis and immediately before the COVID-19 shock, the real GDP stagnated in the euro area, especially in its periphery. The average annual growth in the 2010-2019 period was almost one percentage point below that of the US. Although in March 2020, the unemployment rate returned to that found in the pre-crisis period, the average

unemployment rate from 2008 and 2020 hovered at approximately 10%. Furthermore, from January 2013 onward, inflation continued to be well below the ECB's target of 2%, despite the large array of traditional and unconventional monetary policy easings that the ECB used, similar to what had been done by other central banks (Moschella, 2024). In December 2014, the euro area annual inflation rate fell into negative territory for the first time since the launch of the single currency. Deflationary pressures were not fully dispelled until the COVID-19 pandemic. Indeed, it was only in the wake of the post-pandemic recovery and the Russian invasion of Ukraine, which triggered a marked increase in energy prices, that headline inflation reached a historical peak of 10.6% in October 2022, while core inflation reached its historical record of 5.7% in March 2023.

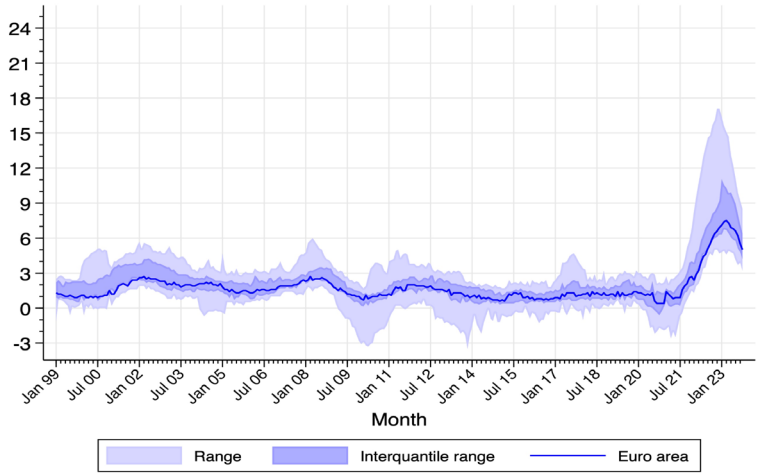
The events of the past three years, i.e., COVID-19 and the post-pandemic recovery as well as Russia's invasion of Ukraine, contributed to the increase in inflation across all euro area Member States. At the same time, however, the dispersion of inflation across member states has also increased (see Figure 3), thereby suggesting that the effects of the energy shocks, potentially due to differing energy production and consumption profiles, had differential impacts on national prices. For example, the maximum difference in inflation recorded among euro area countries before the recent spikes in inflation was reached in May 2010, when Ireland recorded an inflation rate of -1.9% and Greece a level of 5.3% (7.2 percentage-point difference). Between December 2021 and August 2022, this difference recorded a series of historical records, reaching a maximum divergence of 18.8 percentage points in August 2022, when France registered a 6.2% inflation, while Estonia reached a value of 24.1%. Thanks to the recent reductions in the inflation rate, these differences have been reduced by almost 50%, but the distance between the country experiencing the lowest level of inflation (Belgium, at -1.7%) and the one characterised by the highest one (Slovakia with an inflation of 7.8%) remains at 9.5 percentage points.

Figure 3: Headline and core inflation differences across euro area countries

a) Headline inflation



b) Core inflation

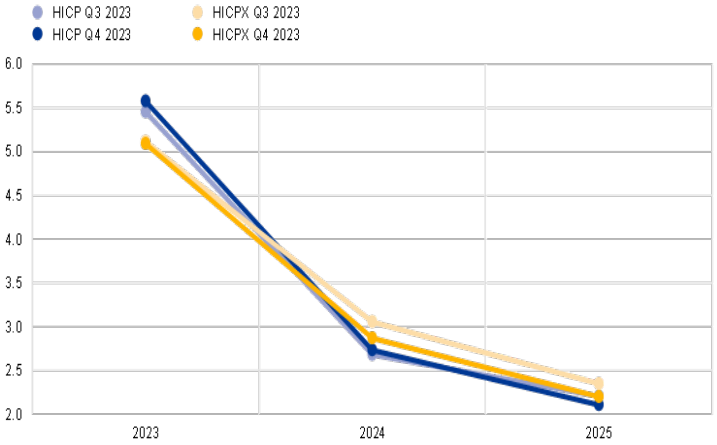


Source: authors' calculations based on Eurostat data.

The latest ECB's Survey of Professional Forecasters for Q4 2023, released on 27 October 2023, suggests that, despite the recent surges in inflation, market expectations are that the headline Harmonised Index of Consumer Prices (HICP) inflation will be close to the ECB target by 2024, with projections at 2.7% in 2024, and 2.1% in 2025 (see Figure 4, panel a). These figures are in line with those released by ECB staff in September 2023 and seem to suggest confidence in the ability of the ECB to bring inflation within its 2% target over the next 12 to 18 months (see Figure 4, panel b).

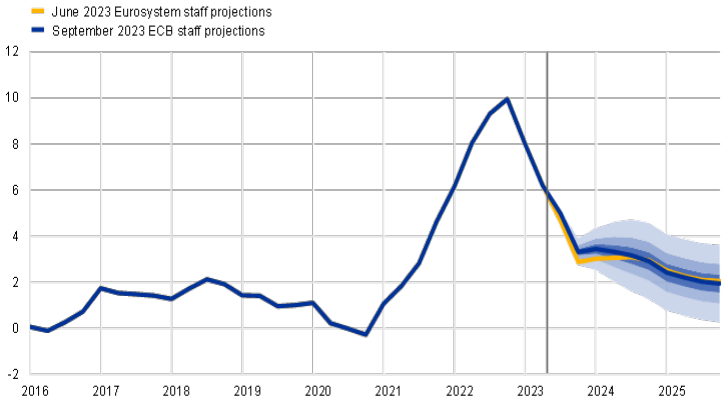
Figure 4: Headline and core inflation forecasts

a) ECB Survey of Professional Forecasters



Source: The ECB Survey of Professional Forecasters - Fourth quarter of 2023.

b) ECB staff macroeconomic projections



Source: ECB staff macroeconomic projections for the euro area, September 2023.

2.2. United States

Between the 1990s and the start of the global financial crisis, the US economy grew steadily and has been capable of navigating major economic and financial shocks. For instance, although the United States experienced two recessions, namely, one in 1990–1991 and the other in 2001, both lasted less than one year; furthermore, in both cases, the decline in output was negligible.[35] The economic success of this period, which is commonly referred to as the period of the Great Moderation, has been largely attributed to the conduct of monetary policy and, in particular, to the improved control of inflation. In particular, the hallmark of the Great Moderation was persistently stable core inflation levels.

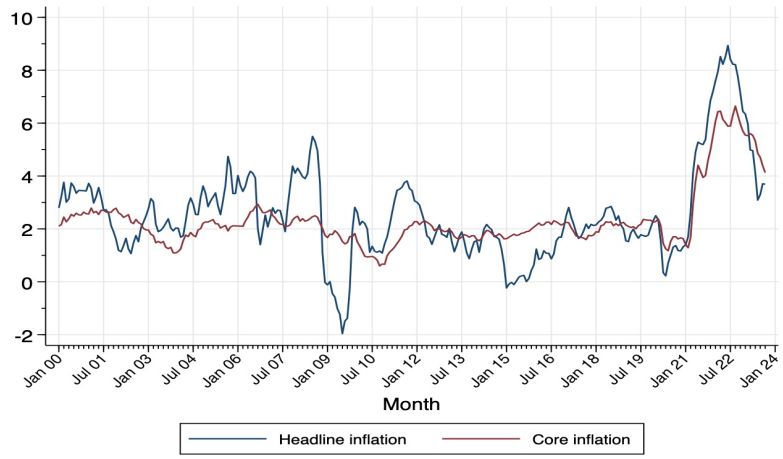
Similar to what has been noted for the euro area, the start of the global financial crisis was a critical turning point. In particular, the economic consequences of the financial crisis were not only severe but also quite persistent. For instance, six years after the start of the crisis, US output was still far short of where its potential was expected to be as of 2007. Importantly, unemployment was still higher than at

[35] US real GDP contracted by 0.91% in Q4 1990 and by 0.32% in Q1 2001. Source of data: U.S. Bureau of Economic Analysis, Real Gross Domestic Product [GDPC1], retrieved from FRED, Federal Reserve Bank of St. Louis; https://fred.stlouisfed.org/series/GDPC1, November 5, 2023.

the beginning of the crisis period, while inflation levels had not fully recovered even before the start of the COVID-19 pandemic.

Following the pandemic, however, US inflation began to increase around six months prior to the euro area, i.e., in early 2021. In particular, US headline Consumer Price Index (CPI) jumped from 1.7% to 4.1% between February and April 2021 and reached a peak of 8.9% in June 2022. The core inflation dynamic has been less abrupt, reaching a peak of 6.5% in September 2022. Despite the lowest peak, US core inflation looks more persistent than in the euro area: US core CPI inflation has been higher than headline inflation since March 2023. Since its peak in June 2022, headline inflation has now declined to 3.7% in September 2023, a value similar to the August 2023 figures, which was above economists' expectations.

Figure 5: United States headline and core inflation, in %



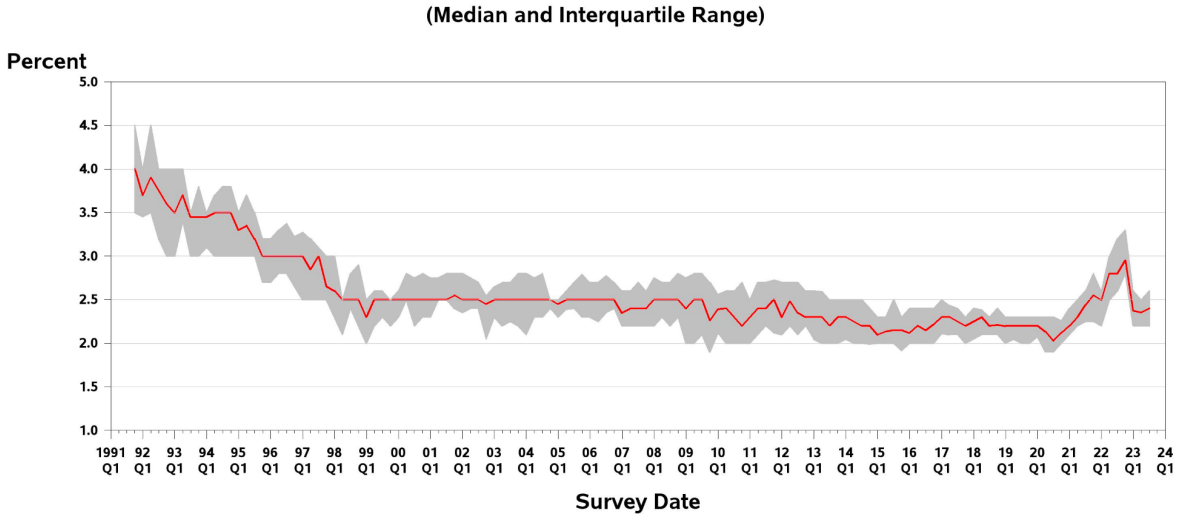
Source: authors' calculation on Fred - Federal Reserve Bank of St. Louis data.

The high levels of inflation recorded in the US could be associated with the resilience and growth of its economy from 2021 through October 2023. In the third quarter of 2023, GDP grew at an annual rate of 4.9%, up from 2.1% in the preceding quarter, partially thanks to higher wages from a tight labour market which spurred consumer spending.

The labour market's strength (unemployment rate was 3.9% in October 2023) and consumer spending played pivotal roles in helping the US economy grow at a pace that was not only robust but also faster than was expected, especially given the rise in interest rates adopted by the Fed earlier in the year (See discussion in section 4.2). In 2023 the US economy is prone to outperform expectations in terms of economic output growth, labour market resilience, and slowing inflation. However, the OECD (2023) projected a moderation in private consumption and investment growth for 2023, due to tightening in monetary and financial conditions and depletion of savings, which would lead to a decrease in demand and subsequent fall in employment.

Focusing on inflation expectations, short-run inflation expectations for the US tend to be higher than the euro area ones. For example, the September Survey of Consumer Expectations run by the Federal Reserve Bank of New York indicates that median inflation expectations rose slightly to 3.7% and to 3.0% for the one- and three-year-ahead horizons, respectively. Inflation expectations dipped marginally to 2.8% for the five-year-ahead horizon instead. Similarly, the results of the Third Quarter 2023 Survey of Professional Forecasters published in August 2023 indicate that forecasters expected headline CPI inflation at 3.1% in 2023, and at around 2.4% over the next 10 years, namely the period 2023-2032 (See Figure 6).

Figure 6: Projections for the 10-year annual-average rate of CPI inflation

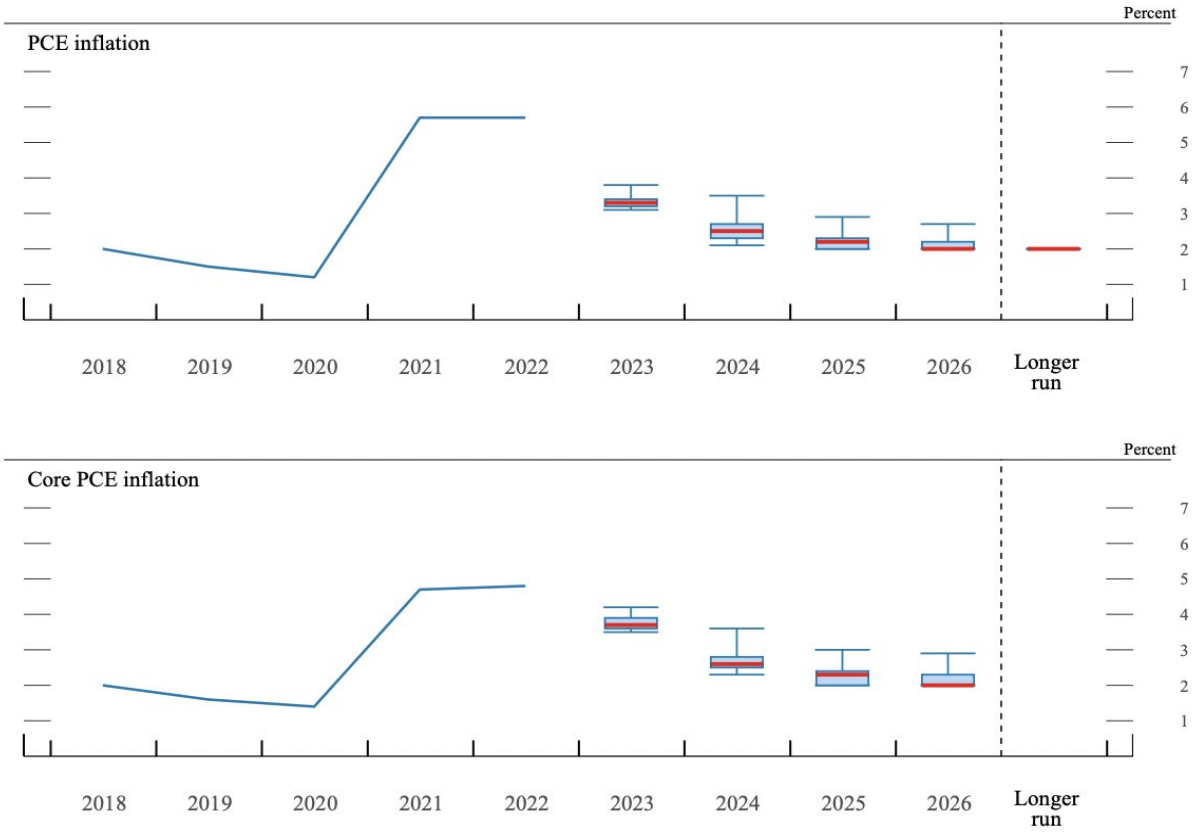


Source: Third Quarter 2023 Survey of Professional Forecasters.

Finally, the Summary of Economic Projections, which was released following the Federal Open Market Committee (FOMC) meeting held on 19-20 September 2023, seem to suggest that FOMC members are confident on their ability to bring down PCE inflation to the 2% target over the medium term by 2025 (see Figure 7).[36]

[36] The Summary of Economic Projections reports the projections of the most likely outcomes for PCE inflation and other macroeconomic variables for each year from 2023 to 2026 and over the longer run provided by each FOMC member during Federal Reserve Bank Federal Open Market Committee meetings. See U.S. Bureau of Labor Statistics (2011) for a discussion on the differences between the CPI and PCE price indices.

Figure 7: FOMC Summary of Economic Projections - Personal Consumption Expenditures (PCE) medians, central tendencies, and ranges of economic projections



Source: Summary of Economic Projections, 20 September 2023.

3. THE DRIVERS OF INFLATION

This section discusses the commonalities and differences in the factors driving inflation dynamics in the euro area and the United States. In particular, we discuss the relative importance of supply versus demand factors with the view to assessing the monetary policy stance across the two sides of the Atlantic.

3.1. Euro area

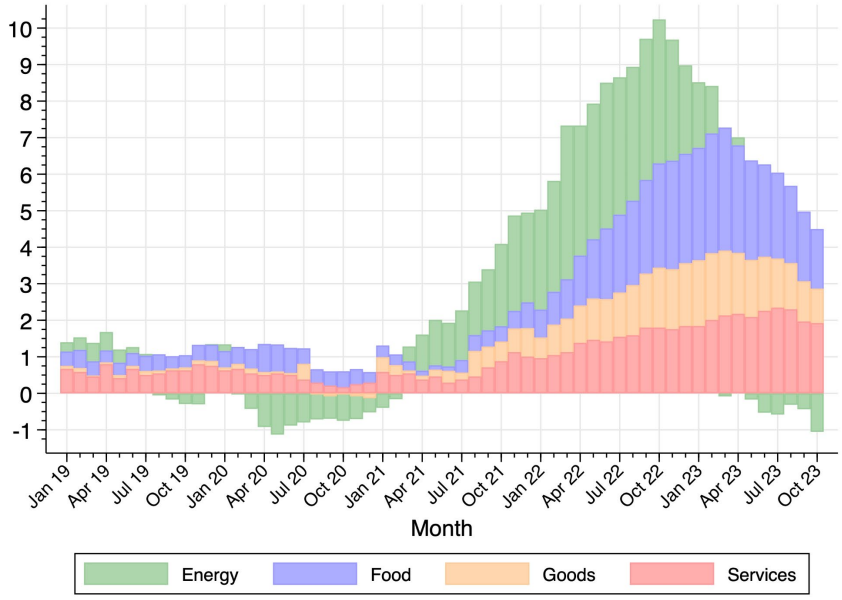
Figure 9 below shows the contribution of the four components of headline inflation, i.e., energy, food, goods and services. The Figure shows the key role played by energy prices in explaining the dynamics of headline inflation for the euro area, much more so than in the United States, as discussed below.

Indeed, both oil and gas prices shot up from the historical minimum reached during the pandemic, exposing the inflationary risks of euro area countries' dependencies on energy imports. As for oil prices, the increased oil demand that was boosted by the post-pandemic recovery in 2021 was not compensated by a symmetric increase in production, as oil suppliers had to drain inventories to meet renewed demand (Gaffen, 2022). At the same time, demand for gas increased substantially due to the re-opening of economies, adverse weather conditions and the acceleration of substitution of coal with gas in China. In 2022, Russia's invasion of Ukraine added further pressure on both oil and gas prices. After having reached a historical minimum of USD 9.12 per barrel on 21 April 2020, Brent prices peaked at USD 133.19 a barrel in less than a month after Russia's invasion, on 8 March 2022, a level which was only reached in 2008, i.e., at the onset of the global financial crisis. The surge in gas prices has been even more marked. After hovering around EUR 20 per megawatt hour in early 2021, gas prices peaked at EUR 350 in the summer of 2022, when all European countries were trying to fill their storage facilities in preparation for the winter season.

Neri et al. (2023) try to quantify the role of the surge in energy prices for inflation in the euro area. Their study suggests that energy-related shocks contributed to roughly 60% of headline inflation, on average, in 2022, with the highest impact reached in the final quarter of the year, where energy shocks indirectly accounted for nearly half of the 5.1% level reached by core inflation. Importantly, *"the increases in commodity prices have gradually passed through to the prices of other goods and services. More than three quarters of the growth in the overall consumer price index seems to be directly or indirectly attributable to the higher prices of energy and of food products"* (Visco, 2023).[37]

[37] In addition to the energy price shock, euro area inflation has also been driven, albeit to a lesser extent, by the disruptions in the global supply of intermediate goods, which have contributed to the increase in production costs.

Figure 8: Decomposition of headline inflation in the euro area, in %



Source: authors' calculations on Eurostat data.

The continuing importance of supply factors in explaining euro area inflation is also reflected in the overall price surges across euro area countries despite significant differences in output gaps and weak wage dynamics including in more peripheral countries (Baudchon, 2023).

To shed light on the role of wages as compared to the one played by energy prices in driving inflation in the euro area, ECB chief economist Philip Lane has recently suggested distinguishing between three types of core inflation: "energy-sensitive", "wage-sensitive", and "not energy-sensitive" (Lane, 2023a). The data shows that "energy-sensitive" core inflation continues remaining significantly higher than "wage-sensitive" core inflation (as of April 2023). At the same time, "not energy sensitive" core inflation is lower than both "energy-sensitive" and "wage-sensitive". In short, wage-price spiral risks, i.e., the risks of both price and nominal wage accelerations, appear very contained, also because of the limited presence of automatic wage indexation mechanisms across the euro area and the weakened bargaining power of trade unions as compared to past inflationary episodes, most notably the one that started in the 1970s.

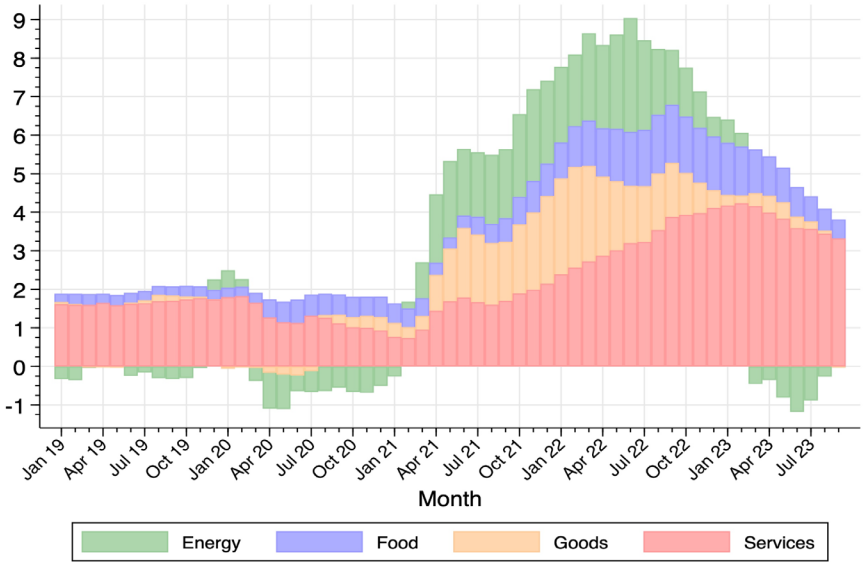
These conclusions are also in line with international experience. As the International Monetary Fund (IMF) recently observed, only a few historical episodes with dynamics similar to those recorded in advanced economies during the post-pandemic recovery were followed by wage-price spirals. In most cases, nominal wages caught up while inflation decelerated over several quarters, allowing inflation-adjusted wages to gradually recover (Alvarez et al., 2022).

3.2. United States

Both supply and demand factors have been identified as the key drivers of US inflation. On the one hand, some scholars have drawn attention to supply-centric factors like labour shortages (Barnichon and Shapiro, 2022) and distortions in product markets along with sectoral price increases (Bernanke and Blanchard, 2023). On the other hand, other scholars have emphasized the impact of increased aggregate demand resulting from the pandemic era fiscal and monetary boosts, especially in an already tight labour market (Summers, 2021; Blanchard, 2021; Barnichon et al., 2021; Jordà et al., 2022).

As compared to the euro area, however, the energy shock has been a far less important determinant of inflation developments in the United States. For example, comparing the differences between headline and core inflation, headline inflation has reached a higher peak in the euro area (10.6% vs 8.9%), while core inflation, which omits the volatile energy and food components and thus offers a better gauge of demand-driven inflation, reached higher values for the US (6.5% vs 5.8%). Figure 9 further helps highlight the differences in the drivers of inflation dynamics in the euro area and the United States: while in 2022 energy and food inflation made up around two-thirds of headline inflation in the euro area, energy and food prices accounted for around forty percent of headline inflation in the United States.

Figure 9: Decomposition of headline inflation in the United States



Source: authors' calculation on Fred - Federal Reserve Bank of St. Louis data.

Differences in headline inflation developments between the US and the euro area can be largely explained in light of the different trajectories with which the two economies recovered from the pandemic. According to an ECB study, for instance, *"[r]eal GDP in the United States returned to its pre-pandemic level about two quarters ahead of euro area real GDP, primarily as a result of stronger recoveries in US private consumption and investment. In particular, private consumption of both goods and services has only very recently returned to the level recorded in the fourth quarter of 2019 in the euro area, whereas it had already surpassed its pre-pandemic level in the United States in early 2021. Stronger consumer spending together with a faster easing of supply bottlenecks in the United States also supported a return of US private non-residential investment to its pre-pandemic level in the first half of 2021. By contrast, such investment in the euro area, adjusted for particularly volatile intangible investment, only surpassed its pre-pandemic level in late 2021"* (Koester et al., 2023). It is also interesting to note that the resilience of the US economy has continued despite the most aggressive campaign by the US Fed to tighten monetary policy in decades (see Section 4.2), defying expectations of a recession – at least, thus far.

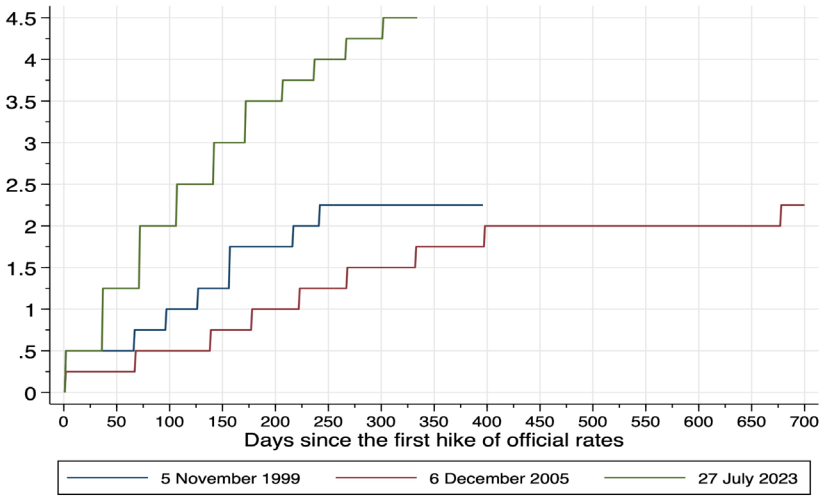
4. THE MONETARY POLICY STANCE

This section discusses the monetary policy responses adopted by the ECB and the US Federal Reserve following the recovery from the COVID-19 pandemic.

4.1. Euro area

The ECB reacted to the surge in inflation with an unprecedented cycle of interest rate hikes. Figure 10 shows that, as compared to previous policy rate tightening cycles, the one that started in July 2022 has been particularly steep. Specifically, in 10 months, the cumulative policy rate increase reached 450 bps.

Figure 10: Cumulative changes of ECB policy rate

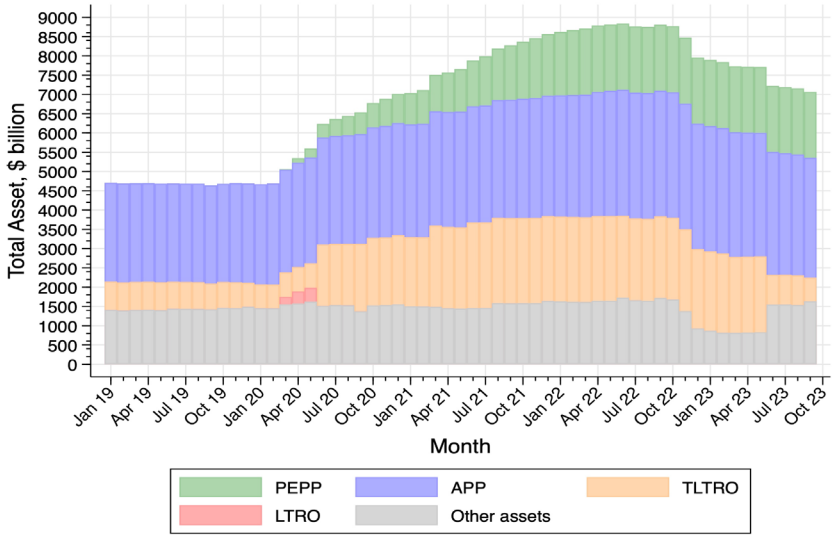


Source: authors' calculation on ECB data.

Following the latest Governing Council monetary decision (26 October 2023), which left interest rates unchanged, the interest rate on the deposit facility, the main refinancing operations and marginal lending facility now stand at 4.00%, 4.50% and 4.75%, respectively.

In addition to the interest rate increases, the ECB tightened its policy stance by shrinking its balance sheet. In December 2021, the ECB announced that it would start normalising monetary policy by reducing the pace of net asset purchases. In particular, the Governing Council decided to lower the pace of asset purchases under the Pandemic Emergency Purchase Program (PEPP) (see the Governing Council decision of 16 December 2021), followed by the announcement to discontinue these purchases (Governing Council decision of 10 March 2022). Furthermore, in order to support the monetary policy stance, the Governing Council decided to recalibrate the net monthly purchases under the Asset Purchase Program (APP) (Governing Council decision of 10 March 2022) and to discontinue these purchases entirely starting from July 2022 (Governing Council decision of 9 June 2022). The slowdown and subsequent discontinuation of asset purchases and, more importantly, the repayments under the Targeted Longer-Term Refinancing Operations (TLTRLO) III reduced the Eurosystem's balance sheet by EUR 1.8 trillion between June 2022 and October 2023. This corresponds to a reduction of the total assets of the ECB of around 20%, which has moved from a peak of EUR 8.8 trillion in June 2022 to EUR 7 trillion during the last week of October 2023 (See Figure 11).

Figure 11: Eurosystem balance sheet assets (Jan 2019 - Sept 2023)



Source: authors' calculation on ECB data.

Policy rate increases and the draining of liquidity associated with the slowdown and discontinuation of asset purchases, along with the phasing out of the TLTRO-III introduced during the pandemic, has increased banks' funding costs. As a result of the changed policy stance, financing conditions tightened markedly.[38]

Higher funding costs for banks, in turn, translated into significantly higher rates on new loans for households and firms. For instance, interest rates for business loans and mortgages have been rising steadily, reaching 5% and 3.9% respectively in August (ECB Monetary policy statement of 26 October 2023).

Against this background, credit dynamics have weakened significantly. Throughout 2023, loans to households remained subdued, with the growth rate slowing to 1% in August and 0.8% in September. Similarly, the annual growth rate of loans to firms has dropped sharply, from 2.2% in July to 0.7% in August and 0.2% in September (ECB, 2023). Overall, "the weakening in credit has been stronger than in past hiking cycles and, while this is partly driven by the unprecedented pace of policy tightening, [ECB simulations] confirms that loan volumes turned around faster than what would have been expected based on historical regularities, given the path of monetary policy hikes since December 2021" (Lane 2023b).

The results of the most recent euro area bank lending survey (Euro area Bank Lending Survey October 2023) reveal a continuation of these trends. In particular, the survey findings reveal that credit standards continued tightening for both households and firms. As for lending volumes, the net decrease in demand for housing loans remained strong in the third quarter of 2023 – albeit lower than the one recorded earlier this year. As for lending to firms, after having reached an all-time low in the second quarter of 2023, firms' net demand for loans continued to decrease substantially in the third quarter of 2023 (net percentage of -36%, after -42% in the second quarter of 2023).

[38] Initially announced and launched in 2019, TLTRO-III conditions were eased in April 2020 to ensure sufficient liquidity for the banking sector in the midst of the pandemic-induced crisis. See the ECB press release of 7 April 2020, in which the ECB announces a package of temporary collateral easing measures, and of 30 April 2020 on the recalibration of TLTRO III.

Since the post-pandemic period, the labour market in the euro area showed a pattern of recovery from the heights of the pandemic, with the seasonally adjusted unemployment rate falling from 7.7% in 2021 to a record low of 6.4% in August 2023, the lowest level recorded since the start of the euro, although it experienced a slight uptick to 6.5% by September 2023. Job creation within the euro area, however, started to slow down, with fewer new jobs being created by 2023, especially in the services sector, suggesting a gradual cooling of the economy (de Guindos, 2023).

The growth prospects of the euro area economy are quite cautious at the moment, with projections indicating sluggish growth for the remainder of 2023 due to tighter financing conditions and weak foreign demand. In this context, the ECB's monetary policy tightening could indeed dampen economic growth. The September 2023 ECB staff macroeconomic projections suggest a gradual recovery rather than a contraction, with growth rates slowly picking up in the following years. Even assuming that these predictions are correct, the slow economic expansion, albeit combined with the expected decline in inflation, is indicative of the difficult balancing act between curbing inflation and supporting economic growth that the ECB confronts.

4.2. United States

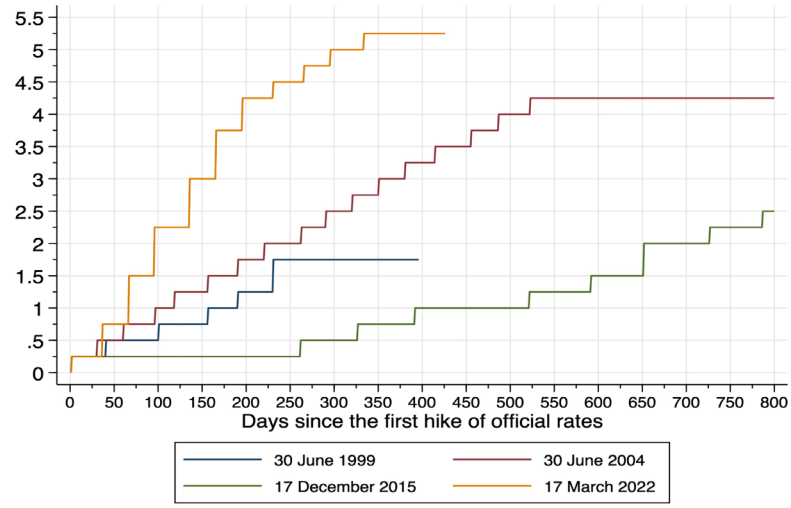
Similar to the ECB Governing Council, the Federal Open Market Committee (FOMC), the body responsible for setting the monetary policy stance in the United States, responded to the surge in inflation by increasing interest rates and reducing its securities holdings – i.e., normalising its balance sheet. In particular, the FOMC started raising the policy rate in March 2022, the first increase since December 2018. Since then, the Fed has raised the target range of the federal funds rate eleven times, from 0-0.25% in March 2022 to the range to 5.25 to 5.5% at the time of writing.

Reflecting the different inflation dynamics discussed above (Sections 3.1 and 3.2), the Fed started its policy rate tightening cycle earlier than the ECB. Similar to the ECB, the current tightening cycle in the US is one of the most aggressive on historical record. In particular, the magnitude of the current tightening cycle is larger than the cumulative increases in the other six tightening episodes since the 1980s (Kliesen, 2023). As Figure 12 shows, even by stripping away the tightening cycles of the 1980s, the current monetary restriction stands as the quickest and the largest by historical comparison.

In addition to raising interest rates, the Federal Reserve also continued to reduce its holdings of Treasury and agency mortgage-backed securities. In particular, the FOMC agreed on a faster pace of balance sheet runoff than the one envisaged over the 2017-2019 period.[39]

[39] For the details of how the reduction is taking place, see Plans for Reducing the Size of the Federal Reserve's Balance Sheet, 4 May 2022, available at https://www.federalreserve.gov/newsevents/pressreleases/monetary20220504b.htm.

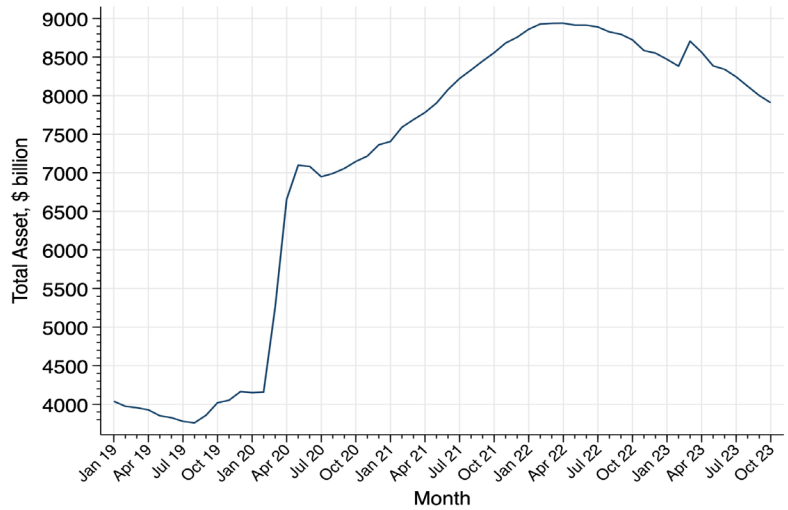
Figure 12: Cumulative changes of the Fed's policy rate



Source: authors' calculation on Fed data.

As a result of these decisions, the Federal Reserve has reduced its assets by around USD 1.1 trillion between April 2022 and the first week of November 2023 (See Figure 13). The restrictive effect of the Fed's quantitative tightening on the liquidity in the US banking sector was partially offset by the liquidity support the Fed extended in March 2023, following the collapse of Silicon Valley Bank (SVB) and the attendant shockwaves through the banking sector.

Figure 13: Fed balance sheet assets (Jan 2019 - Oct 2023)



Source: authors' calculation on Fed data.

Similar to what has been happening in the euro area, rising interest rates, coupled with uncertainty about the economic outlook, have increased borrowing costs and tightened bank credit conditions in the United States since the second quarter of 2022. According to the latest Monetary Policy Report (Federal Open Market Committee of 16 June 2023): "Tighter credit standards and terms at banks are a normal part of the monetary policy tightening cycle, but the recent stress in the banking sector has reportedly led to additional tightening in credit conditions at some banks."

In addition to tighter standards, bank surveys such as the Senior Loan Officer Opinion Survey on Bank Lending Practices (SLOOS), indicate weaker demand for most loan categories, a slowdown trend that has been reported since the middle of 2022. Furthermore, in 2023, interest rates on bank loans

continued to increase, reflecting higher short-term rates. In early 2023, the average 30-year fixed-rate mortgage cooled from its 7.1% peak in 2022, but homebuyers were still priced out due to the limited supply and high home prices. This resulted in mortgage applications continuing to decline, reaching the lowest level since 1996 (Rothstein, 2023). At the same time, there was a soft demand for credit cards, automobile loans, and other credit forms, with banks showing a reduced willingness to offer consumer instalment loans. In the early months of 2023, credit conditions for US businesses and households continued to tighten, a trend captured by the SLOOS. The survey indicated that a net 46% of banks had tightened credit terms for business loans for medium and large businesses, with a slightly higher 46.7% for small firms (Schneider and Saphir, 2023).

As already anticipated (see Section 3.2), although the Fed's restrictive monetary stance is starting to bite, the US economy has proved remarkably resilient thus far, thereby adding to the uncertainties that the US central bank confronts in deciding the next steps in its monetary decisions. For instance, in his opening remarks to the announcement of the latest Fed monetary policy decision (1 November 2023), Fed Chair Jerome Powell said that the US activity had expanded at a "strong pace, and well above earlier expectations". The Fed also acknowledged that the job market remained healthy despite some moderation in job creation while nominal wage growth showed signs of easing. Overall, the unemployment rate remains low at 3.8%.

5. CONCLUSION

Inflation dynamics in the euro area and the United States present important similarities but also key differences.

In both the euro area and the United States rising inflation since mid-2021 reflects global trends that originated from the post-COVID pandemic recovery and associated global supply chain disruptions. The energy and food shocks, which were amplified by Russia's invasion of Ukraine, have further contributed to the generalised increase in the price level across the two sides of the Atlantic.

Despite these commonalities, inflation dynamics have distinctive origins in the euro area and in the United States. In the euro area, higher energy prices, especially natural gas prices, were the main driver of the inflationary surge. Energy prices continue to affect price developments in the euro area, directly and indirectly. In the United States, in contrast, rising prices are less supply than demand-driven, with the energy shock being a far less important determinant of US inflation developments than in the euro area.

Similar to the inflation dynamics, the monetary policy stance in the euro area and the United States present important similarities but also key differences.

Both the ECB and the US Fed have reacted strongly to the surge in inflation by raising interest rates and accelerating the normalisation of their large balance sheets. Even if the two economies started restricting the monetary stance at different times, with the US Federal Reserve starting a few months earlier also in reflection of the underlying characteristics of the US inflation, both the ECB and the US Fed have started one of the most aggressive tightening cycles on the historical record in their respective jurisdictions. In both economies, inflation expectations appear to be largely anchored. Finally, both central banks have recently decided to press the 'pause' button in their interest rate decisions, while keeping open the possibility for further monetary tightening in the future.

Despite these commonalities, the monetary policy stance in the euro area and the United States has translated into distinctive economic trajectories that raise different sets of challenges for the two central banks. Financing conditions have tightened much more markedly in the euro area than in the United States, where part of the quantitative tightening has also been offset by the liquidity support the Fed extended to the banking sector following the market stresses in March 2023. Furthermore, the ECB monetary policy has so far translated into high heterogeneity in inflation levels across euro area Member States.

The euro area and the US economies have also reacted differently to the restrictive monetary stance. While the US economy has proved quite strong and the job market resilient, the growth prospects for the euro area are less rosy, and labour market conditions are less favourable with unemployment hovering around 6.5% as compared to the 3.8% level recorded in the United States.

The different impact of a similarly restrictive monetary policy stance largely reflects the characteristics of the supply-driven inflation dynamics in the euro area as compared to the United States, a scenario in which monetary policy has only imperfect tools to contain prices.

These differences point to distinctive challenges and balancing acts for monetary authorities on the two sides of the Atlantic. In particular, in the United States, the challenge is to ensure that the restrictive monetary stance is sufficiently high to moderate aggregate demand while minimising damage to economic activity and financial stability, which is the traditional balancing act that central banks confront in the conduct of monetary policy (BIS, 2023). In the euro area, the challenge is to ensure that the restrictive monetary stance does not inflict too much damage on economic activity and financial stability in an environment where supply shocks continue to dominate inflation developments.

The tragic war between Israel and Hamas adds further uncertainties to the economic outlook and could also reinforce the challenges the euro area confronts. An escalation of the war in the Middle East could have significant effects on energy prices, a further price shock that is likely to weigh on the euro area inflation dynamics much more strongly than it would be the case for the US.

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Are inflation dynamics different in the euro area and the United States?

Christophe BLOT

François GEEROLF

Abstract

The euro area and the United States have both experienced an episode of strong inflation post COVID-19 pandemic and after the Russian invasion of Ukraine. We highlight commonalities as well as differences in these episodes, in terms of headline and core inflation, inflation differentials and causes, and monetary policy between the euro area and the United States. We propose different scenarios for inflation and 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 27 November 2023.

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LIST OF ABBREVIATIONS

BLS	Bureau of Labor Statistics
CPI	Consumer Price Index
ECB	European Central Bank
Fed	(US) Federal Reserve
GSCPI	Global Supply Chain Pressure Index
HICP	Harmonised index of consumer prices
IMF	International Monetary Fund
OOHPI	Owner-occupied housing price index
PCE	Personal Consumption Expenditures
TTF	Title Transfer Facility
US	United States
WTI	West Texas Intermediate

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EXECUTIVE SUMMARY

- **Using a common definition of inflation corresponding to the euro area Harmonised Index of Consumer Prices (HICP), the dynamics of inflation rates in the euro area have lagged those in the United States (US) (by about 4 months),** but so far, the magnitude of the overall increase in the price level has been very similar since the start of the inflationary episode.
- **One significant difference between the euro area and the US is a more substantial role for energy in inflation in the euro area in 2022, as well as a still much stronger increase in food prices, and a much stronger role for rents in the US.** Rents have been much more dynamic in the US than in Europe, so according to a more comprehensive definition of inflation including owner-occupied housing, the cumulated increase in inflation in the US is actually larger than in Europe.
- **The one key factor driving inflation dynamics has been energy, both in the US as well as the euro area.** However, energy inflation is probably overestimated because of methodological difficulties in the measurement of natural gas/electricity prices: in some countries, the flow of new contracts is taken into account rather than the stock (because of a lack of statistical information), so that movements in energy prices are exaggerated and only apply to those who renew their contracts. This implies that headline inflation heterogeneity is also overestimated.
- **Many indicators point towards stronger aggregate demand in the US than in the euro area.** Fiscal policy, GDP growth and consumption growth, as well as the level of unemployment all concur towards thinking that aggregate demand in the US economy is stronger than in the euro area. This may also explain why core inflation in the US is stronger than in the euro area, and in particular rent inflation.
- **Disentangling the role of energy prices and other supply factors from demand matters for the implementation of monetary policy**. Both inflation rates have been showing similar dynamics/path. However, in 2021-2021, the contribution of energy prices to inflation in the euro area was higher whereas, core inflation has played a more important role for the US inflation dynamics.
- **Euro area / US macroeconomic divergence is a potential risk going forward, as it may lead to diverging monetary policy across the Atlantic.** A weakening euro area economy might make it difficult to keep interest rates unchanged in the euro area. At the same time, a much stronger US economy might require keeping policy interest rates higher for longer, and might be more capable of withstanding such higher rates.
- **However, the fact that inflation is so far coming down faster in the US than in the euro area is an encouraging sign**. It may allow the Federal Reserve (Fed) to lower interest rates sooner rather than later and allow the European Central Bank (ECB) to do the same without risking a stronger divergence in the euro/dollar exchange rate, thus exacerbating inflationary pressures in Europe from a weaker euro.

1. INTRODUCTION

Inflation has risen substantially in both the euro area and in the US since the reopening of economies across the world after the COVID-19 pandemic, with a significant acceleration in prices following Russia's invasion of Ukraine. In the US, inflation started to rise about 4 months before Europe, around March 2021. In March 2022, the Federal Reserve started to increase interest rates for the first time; and so, did the ECB in July 2022. For a bit more than a year, both the Fed and the ECB have been increasing interest rates at almost every monetary policy meeting, with one last increase in July 2023 for the Fed and in September 2023 for the ECB. Both central banks have stopped increasing interest rates at their last monetary policy meetings (last two for the Fed), and so the question has become: how much longer both central banks should keep interest rates at these elevated levels? Their further decisions will be surely conditioned on the inflation dynamics but may also depend on the nature of inflation in both currency areas.

At the current juncture, it might be useful to compare inflation dynamics in the euro area and in the US, how comparable they are (were), both at the aggregate and when examining HICP sub-components. It might also be useful to compare which sub-components contributed the most to inflation in both regions. Moreover, it might also be informative to investigate the causes and consequences of inflation differentials, and examine wage, profit, and unit labour cost developments in the euro area and in the US. Finally, we also take a closer look what the likely causes of high inflation might be. As monetary policy is mainly transmitted to prices through its effect on aggregate demand, it may also be relevant to assess whether inflation in the US and in the euro area has been mainly demand- or supply-driven. We end with a discussion on possible scenarios for monetary policy going forward, although much remains uncertain at this stage.

2. INFLATION RATES IN THE EURO AREA AND IN THE US

Aggregate inflation has followed strikingly similar patterns in the euro area and in the US, only with a 4-month lag. However, when one looks a bit more in detail, there are differences between inflation sub-components, and so the source of this aggregate inflation in the two currency areas. In this section, we first describe the data without trying to disentangle causality in any way. The latter more speculative, but also potentially more interesting exercise is undertaken in Section 3.

2.1. Post-COVID-19 inflation: similar patterns with a 4-month lag

The first difficulty is that there are many different possible measures of US inflation (see Box 1). But regardless of these differences, inflation started to rise earlier in the US than in the euro area, going beyond the 2% annual threshold around March 2021, while that level was reached in July 2021 in the euro area 4 months later, as shown on Figure 1. In the US, inflation has peaked at 8.9% annually in June 2022 according to the Consumer Price Index (CPI). In the euro area, inflation has peaked at 10.6% (measured by HICP) in October 2022, again 4 months later.

Such levels of inflation had not been observed since the early 1980s in the US and in European countries.[40] It was a historical record in the euro area since 1999 where the previous highest peak established at 4.1% in July 2008. This high level of inflation was also persistent since it remained above 5% from June 2021 until April 2023 in the US and from December 2021 to September 2023 in the euro area.

One year and a half after the first Fed tightening, the US and the euro area still appear to be moving in tandem. At present, the ECB has announced that interest rates "have reached levels that, maintained for a sufficiently long duration, will make a substantial contribution to the timely return of inflation to the target" and that "ECB interest rates will be set at sufficiently restrictive levels for as long as necessary". In the meantime, headline inflation appears to be coming down almost as fast as it went up (at about 0.5 percentage points (p.p.)/month, or 6 p.p./year). In October 2023, US annual inflation according to the CPI was at 3.2%, while according to the Eurostat flash estimate it was at 2.9% in the euro area. Markets now anticipate a 0% chance of further Fed tightening at their next meeting on December 13, 2023, although Jerome Powell has said at the last International Monetary Fund (IMF) Research conference (on November 9) that "If it becomes appropriate to tighten policy further, we will not hesitate to do so."

40 For example, in the US, inflation exceeded 14% between February and June 1980 according to the CPI calculated by the BLS. It has decreased regularly since then. According to the CPI, the previous peak of inflation above 5% was observed in February 1991.

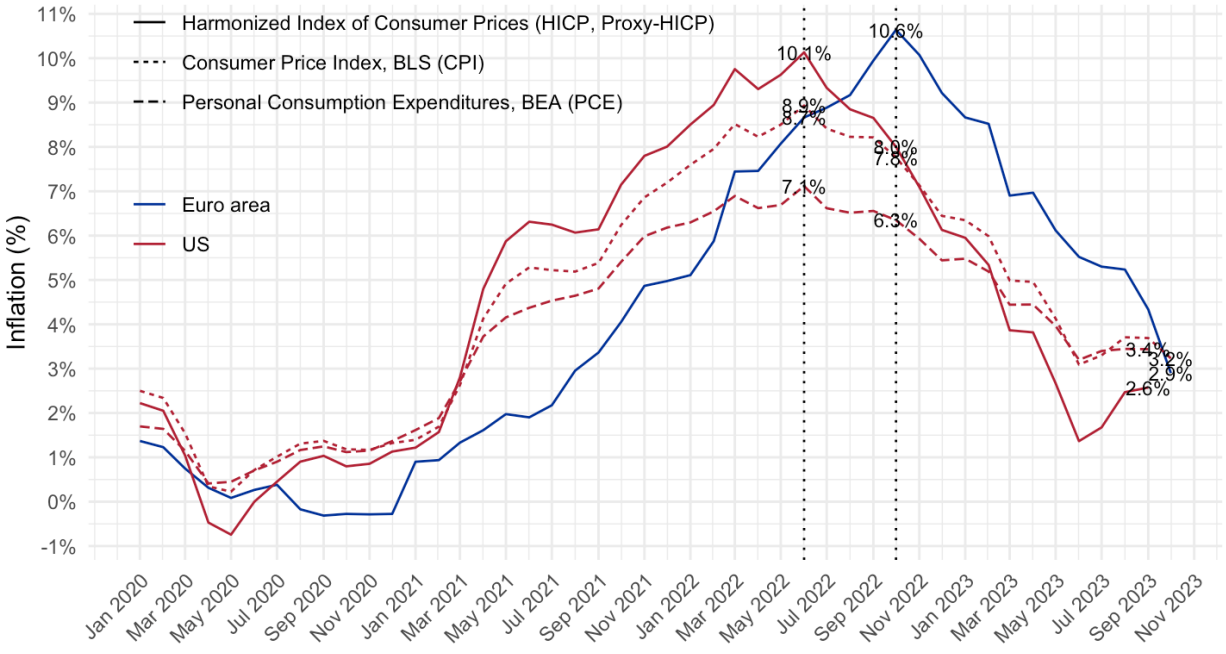
Box 1: Different measures of inflation: CPI, PCE, HICP, proxy-HICP[41]

Different measures of inflation can be used to measure inflation in the US, all of which are official. The CPI published by the Bureau of Labor Statistics (BLS) is the probably one of the most used measures, for example for indexation purposes, but also cost-of-living adjustments.

The Personal Consumption Expenditure (PCE) measure is computed by the Bureau of Economic Analysis (BEA) and is preferred by the US Federal Reserve to decide on monetary policy matters. There are many differences between the CPI and the PCE (see here for example), but the CPI is generally greater than the PCE, because it is based on a Laspeyres-type index rather than a Fischer-type index.

Finally, to ease comparison with the euro area, the US also calculates a so-called proxy-Harmonized Index of Consumer Prices (HICP) which is meant to be comparable to Eurostat's HICP. Whenever possible, we therefore make comparisons with the HICP and the proxy-HICP. Unfortunately, the HICP is, however, not perfect either (for example, the exclusion of owner-occupied housing from this index can be a problem). Moreover, the proxy-HICP is only published at the two-digit classification of individual consumption by purpose (COICOP) level.

Figure 1: Inflation rate in the US and the euro area, according to different official measures of inflation

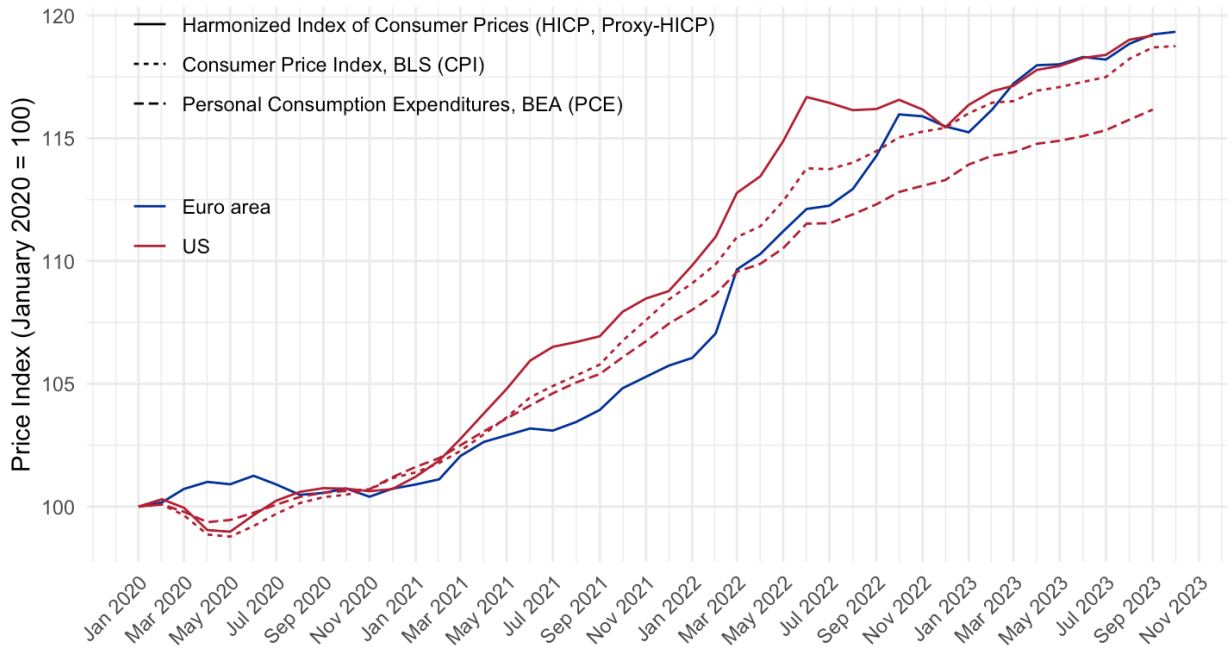


Source: BLS and Eurostat, authors' own elaboration.

Note: Vertical dashed lines represent the peak of inflation in the US (June 2022) and in the euro area (October 2022).

[41] BLS, BEA, authors' own elaboration.

Figure 2: Cumulative price increases, according to different official measures of aggregate price indices



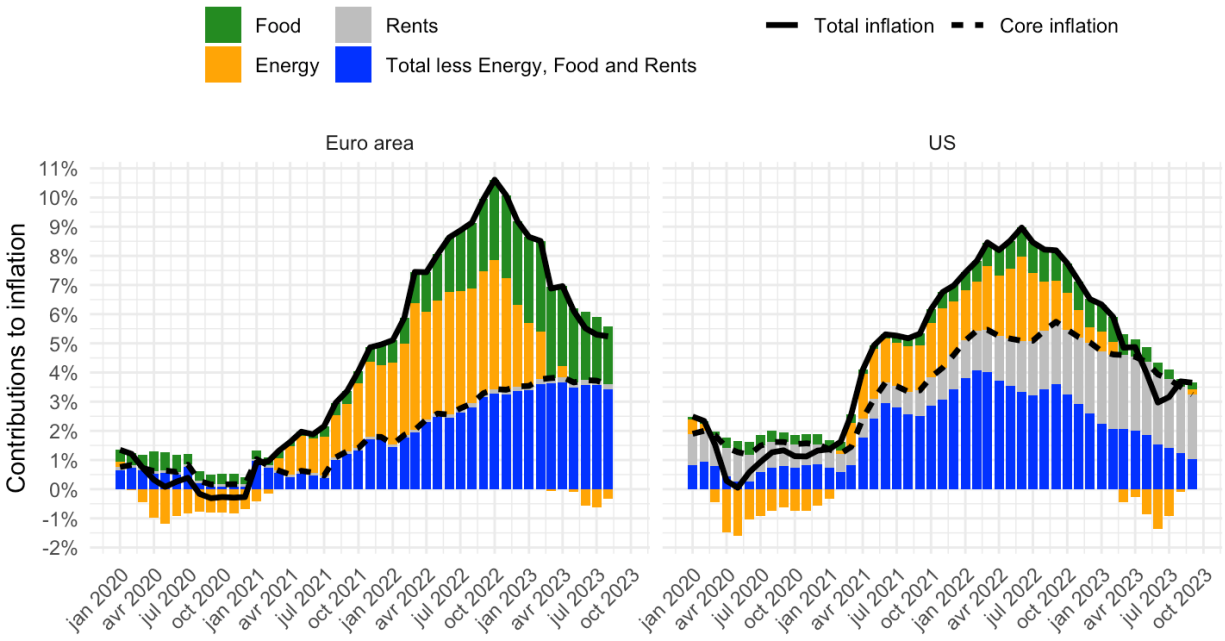
Source: BLS and Eurostat, authors' own elaboration.

Despite these differences in the dynamics of inflation rates, the overall increase is similar when looking at price levels, as shown in Figure 2. Comparing the US equivalent of Eurostat's HICP (so-called proxy HICP), the level of prices was very similar in the euro area and in the US (again, see Box 1).

2.2. Decomposing inflation across sub-components

When one takes a closer look, decomposing the aggregate price level into its subcomponents, one starts to see substantial differences between the euro area and the US, as shown in Figure 3. First, during this inflationary episode starting end 2021, energy has had more impact on inflation in the euro area than the US. The breakdown of this difference in energy inflation can be understood by looking at Figure 4, where it is shown that natural gas and electricity prices seem to have been much more volatile in the euro area. However, one must be careful of substantial measurement issues clouding the measures of energy inflation, as explained in Box 2. At present, the full extent and quantification of this problem remains elusive.

Figure 3: Contributions to inflation



Source: OECD, authors' own elaboration.

Box 2: Natural gas and electricity prices: measurement issues[42]

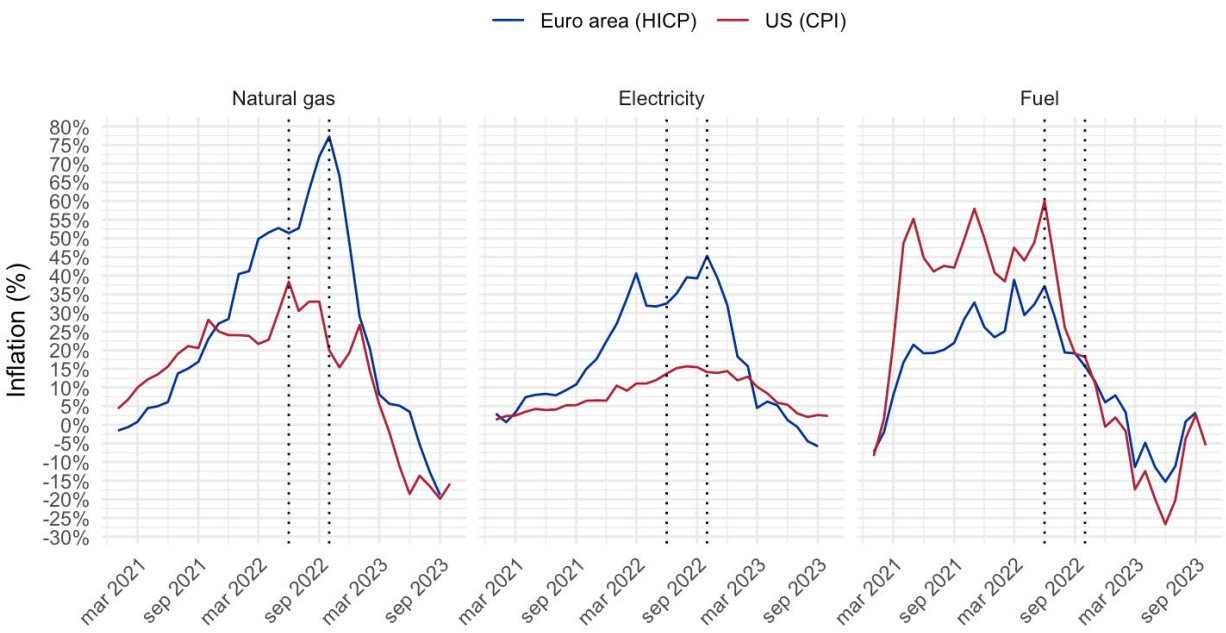
Inflation measurements normally follows international guidelines and procedures ensuring comparability across countries. However, this is not always the case. Recently, Statistics Netherlands (CBS) has recognised an issue concerning the measurement of electricity/natural gas prices: the flow of new contracts, rather than the stock, was taken into account so that measured price rises were exaggerating inflation rates for the average consumer. Statistics Netherlands has very transparently communicated about this problem, but the full extent of the problem for other European countries remains unknown. This problem implies that inflation might have been overestimated at the peak of the inflationary crisis in Europe, in a different way depending on how statistical institutes deal with this problem, and the share of market-based/renewing contracts in each country.

Note that these measurement issues are not always without consequences: indexations of wages, or goods and services (for example, rents) often occur based on headline inflation (which includes energy). Headline inflation also plays an important role in monetary policy decisions, so further harmonisation efforts should perhaps be undertaken.

However, one should note that on Figure 4 fuel prices follow the opposite pattern in the US, which have overall been more cyclical. This is probably since taxes are a much smaller component of fuel costs in the US than in the euro area.

[42] Statistics Netherlands, authors' own elaboration.

Figure 4: Energy inflation



Source: BLS, Eurostat, authors' own elaboration.

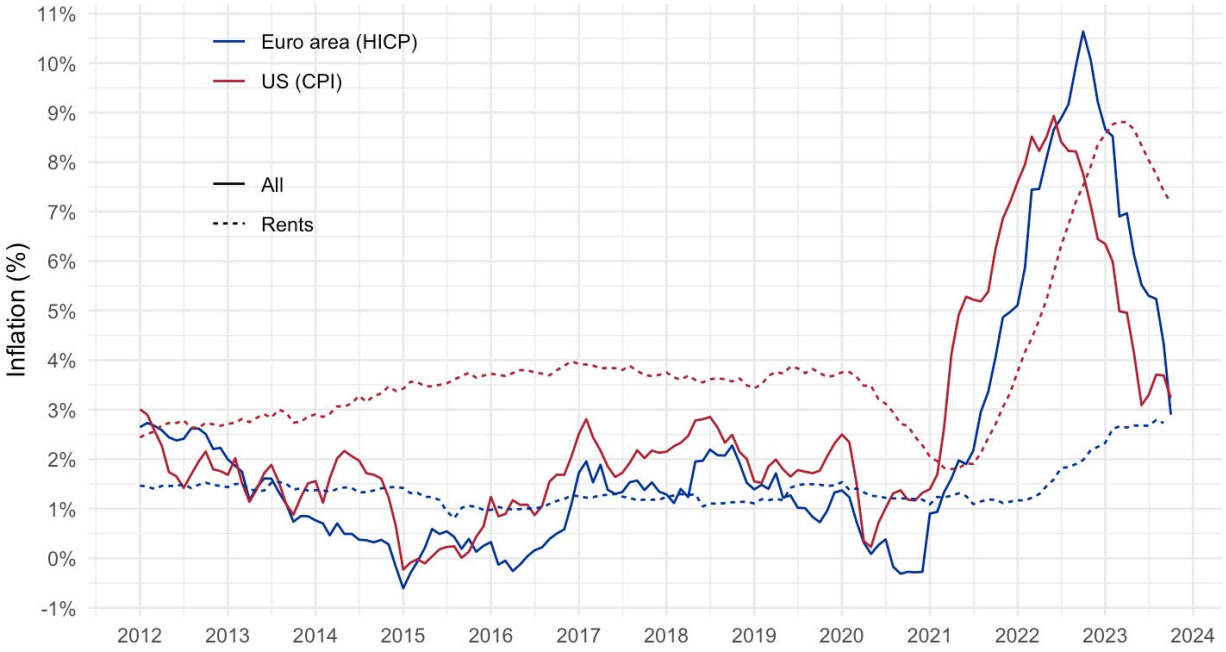
Note: Vertical dashed lines represent the peak of inflation in the US (June 2022) and in the euro area (October 2022).

Looking back at Figure 3, one can also note that food inflation has been, and still is, a more significant contributor to inflation in the euro area than in the US which is perhaps less often mentioned than the energy component which is well known.

Finally, it is very important to note the role of rent inflation, which is stronger in the US CPI than in the HICP. There are two reasons for this: one is that the HICP does not include owner-occupied housing costs, so the weight on rent is quite small: in the US, the shelter component accounts for 35% of the CPI, which is about six times the weight of rents in the euro area[43]. Moreover, rent inflation is much higher in the US (see Figure 5), which compounded with a higher weight on rent implies a very high contribution of the shelter sub-component to inflation in the US (Figure 3). It should be noted that inclusion of owner-occupied housing costs to the HICP would not make a big difference for the euro area for the latest inflation numbers: as shown on Figure 5, rent inflation is very close to overall inflation in the euro area. However, this would have led to much lower inflation numbers before: in contrast to the US, rent inflation was a dampening factor on overall inflation, so putting more weight on it would have made inflation lower. It should be noted that the inclusion of an owner-occupied housing price index (OOHPI) into the HICP is envisaged from 2025 onwards (using a different methodology from the BLS), and Eurostat is currently working on it.

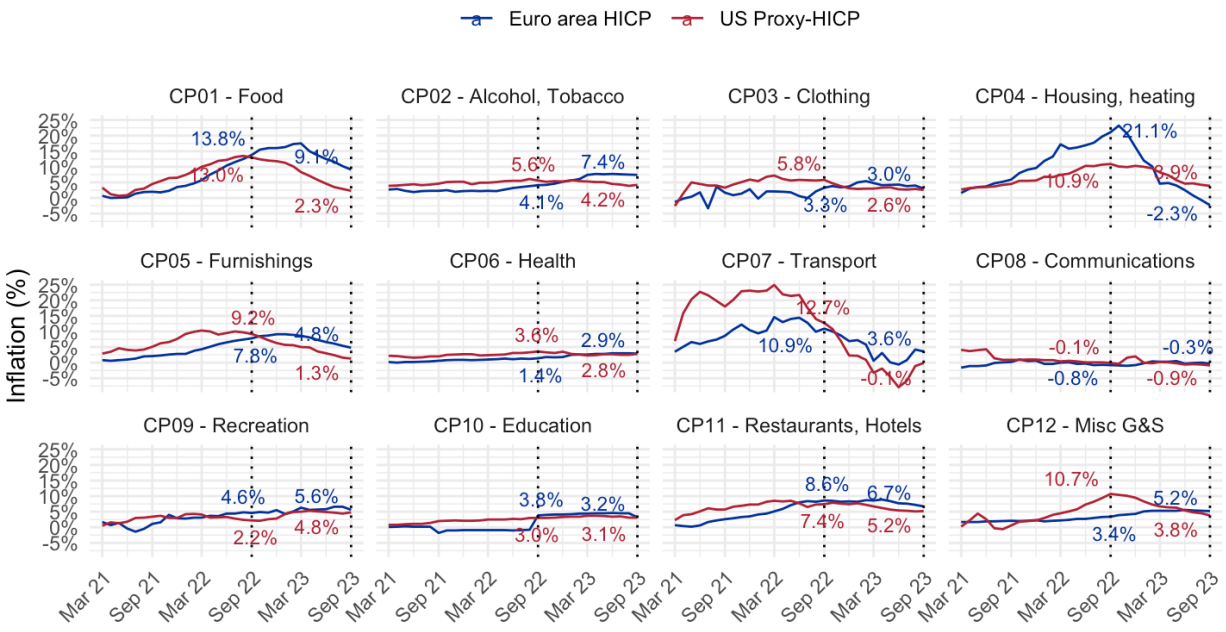
[43] For more information on this important issue, see for example "Rent inflation in the euro area", published as part of the ECB Economic Bulletin, Issue 7/2023. https://www.ecb.europa.eu/pub/economic-bulletin/focus/2023/html/ecb.ebbox202307_07~d55c0f2d23.en.html

Figure 5: Total and rents inflation, euro area vs. US



Source: BLS, Eurostat, authors' own elaboration.

Figure 6: Inflation by COICOP category, euro area vs. US



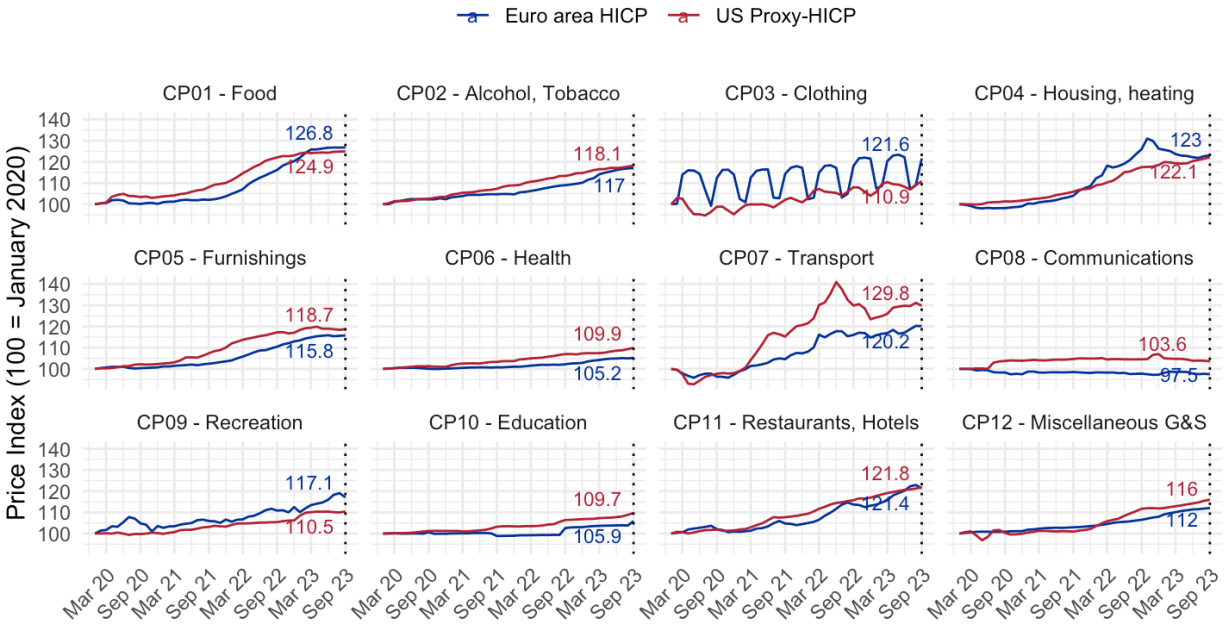
Source: Eurostat, authors' own elaboration.

Note: Vertical dashed lines correspond to September 2022 and September 2023, where percentage values are given.

Finally, one can compare more systematically the sources of divergences between inflation in the US and in the euro area using HICP and proxy-HICP data provided by Eurostat, in Figure 6 (again, see Box 1). For example, in September 2023, year-on-year food inflation was 9.1% in the Euro area, and 2.3% in the US according to the proxy-HICP. Figure 7 gives the cumulative price increase since January 2020 by COICOP category. So far, food inflation has been similar since January 2020 in the euro area and the

US, around 25%, because food inflation started earlier in the US. On the other hand, the cumulative price increase in transportation has been much greater in the US than in the Euro area.

Figure 7: Cumulative price increases by COICOP category, euro area vs. US



Source: Eurostat, authors' own elaboration.

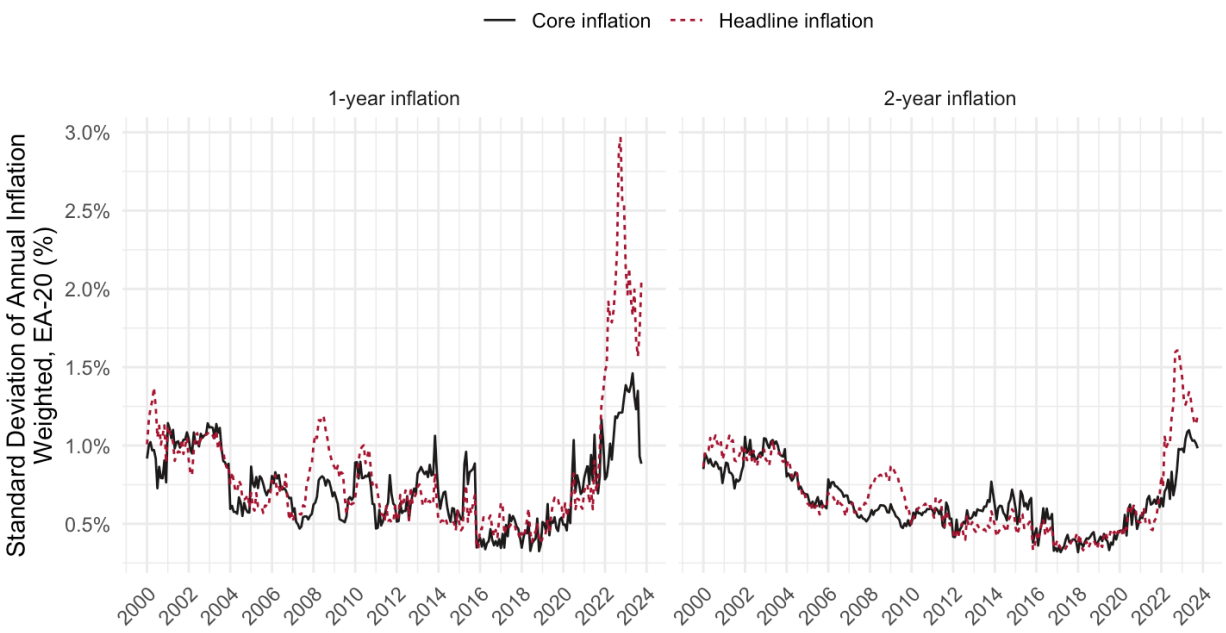
2.3. Inflation differentials

The euro area is often said to have a one-size-fits-all monetary policy, which cannot address inflation heterogeneity across euro area Member States. Blot et al. (2022) investigated this heterogeneity in some depth, looking at weighted and unweighted measures of heterogeneity, using different statistical measures.

Figure 7 updates these results using the weighted standard deviation. It shows that headline inflation heterogeneity is very high, which again may be explained (at least in part) by methodological difficulties (Box 2). Consistent with this, 2-year headline inflation is much less heterogeneous as shown in the right-hand panel of Figure 7, which suggests some mean reversion, again owing to methodological problems working in the opposite direction when energy prices go down. Core inflation heterogeneity has also risen less according to the 2-year measure, but it's also falling less rapidly, and is almost at a historical high. Services inflation heterogeneity behaves very much like core inflation heterogeneity.

There is unfortunately no official, national accounting data on the state-level inflation for the US coming from the BLS. The BLS does publish inflation rates for different regions, or cities, which are much less heterogeneous, but we have not really found anything worthy of reporting.

Figure 8: Inflation differentials in the euro area

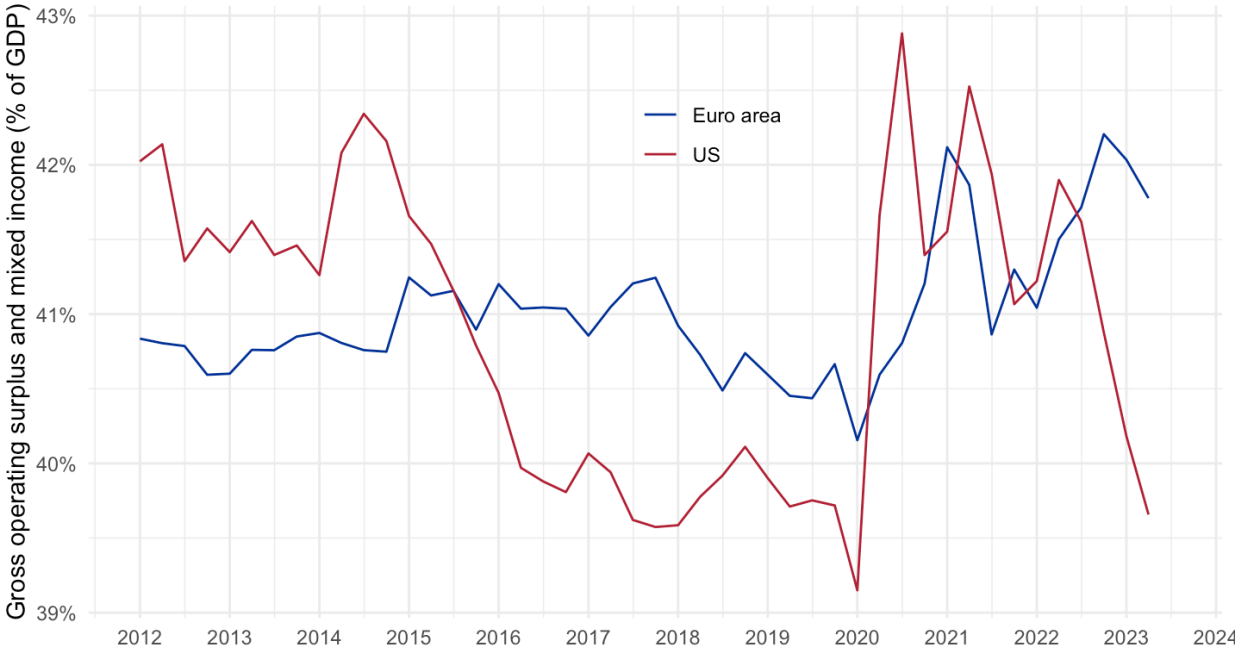


Source: Eurostat, authors' own elaboration.

2.4. Wages, profits and productivity

Wages have largely lagged behind inflation so far, in both the euro area and the US, and have not been a significant source of inflation. Of course, wage inflation has increased, but by less than price inflation. So, if anything, falling real wages means that wages have tended to work against inflationary pressures. This is quite different from what happened in the 1970s where wage indexation meant that wages were not contributing to easing inflationary pressures. Consistent with this, there has so far been no deterioration of the profit share: to the contrary, profits have been high after the onset of the Russian invasion of Ukraine, and seem to remain so in Europe, as shown on Figure 8. Given the absence of a wage-price spiral, at least so far, many have started to talk about a profit-price spiral instead, but again Figure 8 seems to point towards a relative stability of the profit share. It remains to be seen whether euro area profits remain at these elevated levels in the coming quarters.

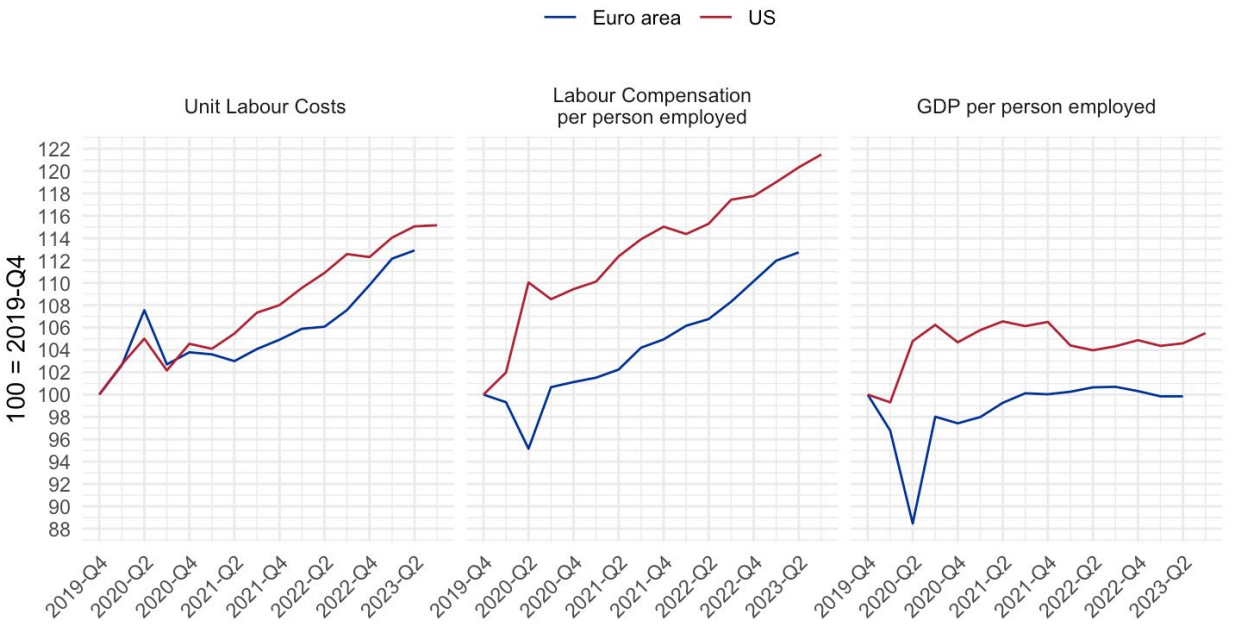
Figure 9: Gross operating surplus (% of GDP), euro area vs. US



Source: OECD, authors' own elaboration.

Finally, as shown in Figure 9, unit labour costs have increased slightly more in the US than in the euro area since before the COVID-19 pandemic (2019-Q4). However, this hides a strong stagnation in labour productivity in the euro area, while measured labour productivity appears much more volatile in the US. This explains in large part why labour compensation per person employed has been so much more volatile since the start of the COVID-19 pandemic.

Figure 10: Decomposition of unit labour costs, euro area vs. US



Source: OECD, authors' own elaboration.

3. SAME INFLATION BUT A DIFFERENT NATURE?

Which factors are behind the recent inflation surge is a crucial issue for policymakers and central banks that oversee price stability. Economists generally like to disentangle demand- and supply-driven inflation. Inflation may indeed either result from an excess of demand – in the good or labour markets – or from a lack of supply. Those factors may also be domestic or global.[44] As monetary policy is expected to influence domestic demand – through the transmission of a tightening of loosening of financial conditions – central banks may tame inflation by weighing down the domestic demand and increasing the unemployment rate, to the extent that the Phillips curve is not too flat. Consequently, monetary policy would be much less effective in stimulating supply – at least in the short run – or addressing inflation pressures stemming from global factors. Disentangling the role of energy prices and other supply factors from demand matters for the implementation of monetary policy. Interest rate increases are fully relevant if inflation is demand-driven but would not be effective if inflation is due to energy prices or supply shortages.[45]

3.1. A more significant role for energy prices in the euro area

The rise in inflation was concomitant to the surge of energy prices observed in 2021 and amplified after the Russian invasion of Ukraine. Not only is the share of energy goods and services in the consumption basket higher in the euro area, but the nature of the shock was also different.[46] While the prices of oil are quite similar, there is more heterogeneity in the prices of gas paid in Europe than in the US because of costs of transportation. In the US, the reference price of natural gas – Henry Hub – went from a trough at USD 1.6/megawatt hour (MWh) in June 2020 to a peak at USD 8.8/MWh in August 2022. In the euro area, the Dutch Title Transfer Facility (TTF) price has been multiplied by 48 from May 2020 to August 2022.

The decomposition of inflation between energy prices, food prices and core inflation may provide a first picture of the nature of inflation in the US in the euro area. The contribution of energy prices to the surge of inflation has been more important in the euro area (Figure 3). Even before the invasion of Ukraine, energy prices had significantly increased contributing for 2.4 and 1.9 points, respectively, in inflation in the euro area and in the US in the 2021-Q4. In 2022-Q2, this contribution reached 4.2 points in the euro area, representing more than 50% of the rise in the year-over-year, while it was 30% of inflation in the US for the same period. It may also be noticed that the increase of food prices has had a more pronounced effect in the euro area, contributing still significantly to the euro area inflation in 2023-Q3.

As inflation rates in both areas were close, the higher role of energy prices in the inflation dynamics in the euro area entails a stronger contribution of the core inflation in the US.[47] It may also be stressed that the contribution to inflation only captures the direct effect of energy prices to headline inflation. There may also be indirect effects if the rise of oil and gas prices increases the price of intermediated goods and the costs of firms which are then passed through by firms to the price of final goods and services. Finally, the recent period has been characterised by a negative contribution of energy prices first in the US and then, again with a few months lag, in the euro area. Thus, conversely to what has been observed in 2021 and until 2023-Q2, core inflation is now higher in the euro area.

[44] Commodities are much more homogeneous across the world than other goods and services. Their prices are thus generally determined on financial markets by the world demand and global supply. There is for instance marginal differences between the Brent price – crude oil from the North Sea – and the West Texas Intermediate (WTI) extracted from wells in the US.

[45] During the press conference held on 8 September 2022, Christine Lagarde stated that she could not "reduce the price of energy".

[46] The price of energy goods and services represent 7,1% of the CPI in the United States and 10.2% of the HICP in the euro area.

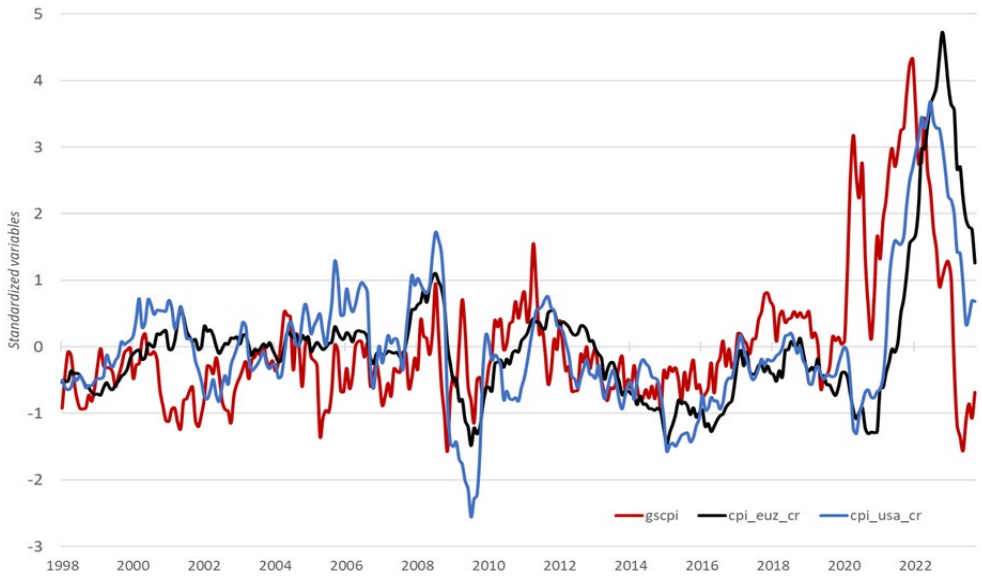
[47] Core inflation has also been on average higher in the United States since the beginning of 2021.

3.2. The role of supply factors beyond energy prices

Beyond the role of energy prices, the post-COVID-19 inflation has also been fuelled by supply shortages. The lockdown measures taken in 2020, which remained in place in some places (notably in China) up until 2022, entailed labour shortages and supply chain bottlenecks and resulted in order backlogs for many raw and intermediate goods. Delivery times have been extended and shipping costs have soared. These pandemic-related global supply chain disruptions have reached a peak in November 2021 as illustrated by the Global Supply Chain Pressure Index (GSCPI) provided by economists from the New York Federal Reserve.[48]

Liu and Nguyen (2023) have recently proposed to assess the transmission of shocks to the GSCPI on US inflation measured by the PCE. We conduct a similar analysis to compare the impact of those supply shocks on inflation in the euro area and in the US.[49] At first sight, the spike in the GSCPI in December 2021 has led the peak of inflation for a few months (Figure 10). Over the full sample, the correlation is 0.29 between the GSCPI and euro area inflation and 0.45 with the inflation in the US. A simple regression of the inflation rate explained by the GSCPI may fail to account for the relationship between the two variables as their dynamics may result from confounding factors. Impulse response functions are then estimated using local projections where we explain the year-over-year inflation by a GSCPI shocks after controlling for the lag of inflation, the lag of the GSCPI and the current yearly growth rate of the oil price.[50] Compared to Liu and Nguyen (2023), the estimation of GSCPI shocks controls for aggregate demand and monetary policy stance in the euro area since we aim to assess the effect of global supply factors on the inflation rate in both areas.[51]

Figure 11: Global supply chain pressure index and inflation



Source: FRB New York, BLS and Eurostat.

Notes: To facilitate the comparison with the GSCPI, which is a standardized indicator, the inflation rates are also standardized. To that end, for each month, we compute the difference between the inflation rate and the average inflation over the whole sample divided by the standard-deviation.

[48] The index is a based on several indictors of transportation costs and PMI (Purchasing Managers' Index) surveys. See https://www.newyorkfed.org/research/policy/gscpi#/overview and Abbai et al. (2022) for details.

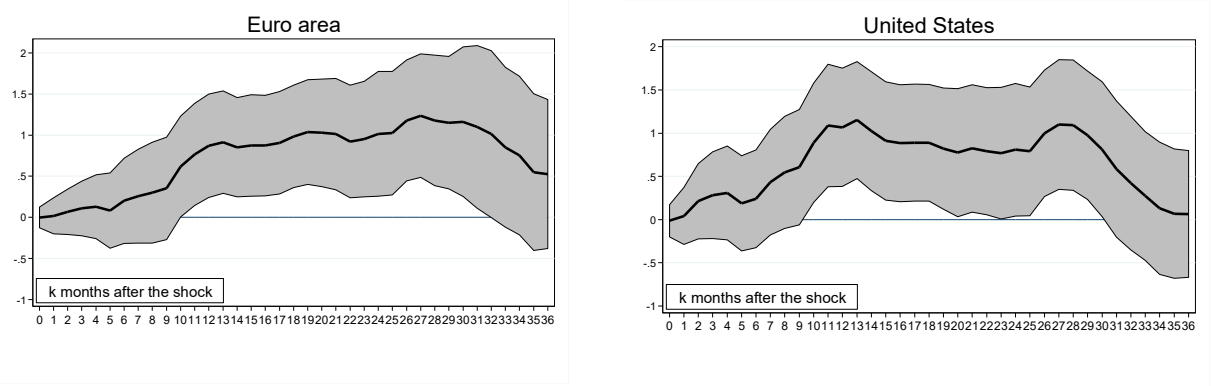
[49] The estimation for the United States is realised for the CPI instead of the PCE.

[50] The estimated equation is: $\pi_{i,t+k} = \rho.\pi_{i,t-1} + \beta_k.shock_{GSCPI} + \alpha.GSCPI_{t-1} + \theta.goil_{t-1}$, with $\pi_{i,t}$ the inflation rate in the euro area or in the US at time (t). The impulse response function is provided by the estimation of β_k for k=0,…,36 months.

[51] The $shock_{GSCPI}$ is estimated by regressing the GSCPI by six-month lags of the unemployment gap and two-year U.S. and euro area Treasury yields.

Our analysis emphasizes that supply shocks, captured by global supply chain disruptions, have had a significant impact on inflation in the euro area and the US with similar magnitudes in both regions (Figure 11). The peak effect is close to one indicating that a one standard deviation of the GSCPI increases the inflation rate by one percentage point. Considering that the deviation of the GSCPI to its average value has exceeded 4 standard-deviations in December 2021, these results suggest that inflation in the US and in the euro area would increase by 6 percentage points. This effect would be long-lasting as it becomes significant 10 months after the shock and up to 30 months. Therefore, the effect of past global supply chain disruptions would materialise until the beginning of 2024.[52] While one should be cautious in interpreting the magnitude of these effects, the results suggest that supply factors other than energy have certainly strongly contributed to the inflation in the US in the euro area.

Figure 12: Headline inflation response to GSCPI shock in the euro area and the US



Source: Authors estimations.

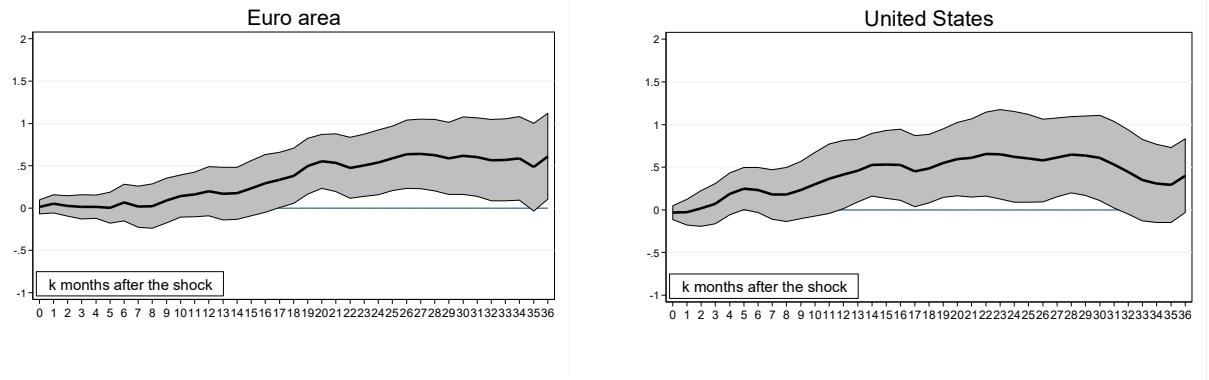
Notes: the solid black line represents the response of headline inflation after a shock to GSCPI. The grey shading area shows the 95% confidence band.

Indeed, we cannot exclude that the rise of the GSCPI has been correlated with the energy prices. Beyond extended delays in deliveries, the shipping costs included in the GSCPI may have increased because of higher oil prices. Thus, the impact of shocks measured on headline inflation might reflect an increase of the energy sub-indices. The effect on core inflation may better represent the role of global supply factors in the increase of prices in intermediate goods, which has been then transmitted to consumption goods and services excluding food and energy. The estimations show that it is indeed the case, as the response of core inflation is closer to 0.5 point in both regions (Figure 12). The effects are also transmitted with delays and would then still influence core inflation. The contribution would be close to 2 points, amounting to approximatively 50% of core inflation in September 2023.[53] It should be stressed that global supply chain disruptions may have affected goods and services differently playing a more important role for goods. This is confirmed by Abbai et al. (2022) who find that the volatility of CPI Goods' inflation in 2021 was tracked by the GSCPI and the price of energy in the US and in the euro area.

[52] Note that Liu and Nguyen (2023) focus on the PCE and find smaller and short-lived effects of global supply chain disruptions.

[53] In the United States and in the Euro area, core inflation established at 4.1% and 4.5% respectively in September 2023.

Figure 13: Core inflation response to GSCPI shock in the euro area and in the US



Source: Authors estimations.

Notes: the solid black line represents the response of headline inflation after a shock to GSCPI. The grey shading area shows the 95% confidence band.

3.3. Demand factors and inflation

The previous analyses suggest that energy prices have directly contributed to the inflation surge in the euro area and, to a lesser extent, in the US. The role of this factor has, however, declined as contributions of energy to headline inflation have recently become negative. Beyond energy, our estimates suggest a significant role of supply factors and notably post-COVID-19 disruptions in global supply chains. Is there still some role for demand factors? Economic policies have been expansionary during the COVID-19 crisis aiming to boost demand. Central banks maintained very low interest rates until 2022.

As emphasized by Barnichon et al. (2021), the fiscal stance in the US had not been so expansionary since the New Deal of the 1930s, feeding a vivid debate on the risk of an overheating of the US economy. Fiscal support in the euro area has not been as strong, suggesting that demand factors would play a smaller role. In both regions the unemployment rates have reached low levels in 2022 which might fuel wage inflation according to the Phillips curve analysis. It should, however, be stressed that up to now, wage growth has mainly been lower than price inflation. Real wages remain subdued, notably in the euro area. Additional labour market indicators also suggest tight conditions. Firms report higher recruitment difficulties and the ratio of vacancies on unemployment went to high levels. Thus, it is hard to dismiss a potential role of demand factors but disentangling them from supply factors remains a tricky issue.

Shapiro (2022) proposed an approach to assess the relative contribution demand and supply factors by resorting to a sectoral analysis. The economy is supposed to be hit by sectoral demand and supply shocks. For a given good or service, a positive demand shock is expected to push up the price and the quantity whereas a positive supply shock would increase the quantity but reduce the price. Inflation is demand-driven if there are more sectors characterised by demand shocks. According to a recent update, demand-driven headline inflation has become dominant in the US since August 2023, whereas it was mainly supply-driven in 2022. On average, supply factors contributed to 49% of inflation measured by the PCE against 37% for demand factors in 2022.[54] In September 2023, demand-driven and supply-driven inflation amounted to 1.5% and 1.4%, respectively. Still, demand factors have played a more important role in driving core inflation and became dominant from June 2022 to June 2023 and contribute equally to inflation since then.

[54] The rest is found to be ambiguous. See https://www.frbsf.org/economic-research/indicators-data/supply-and-demand-driven-pce-inflation/.

Using Shapiro's (2022) approach, Gonçalves and Koester (2022) report that the contribution of supply and demand factors to core inflation in the euro area has been roughly equivalent. A recent analysis comparing demand-driven and supply driven inflation in advanced economies show that supply factors and supply factors were equivalent for the US but inflation in Europe would be mostly supply-driven.[55]

Despite uncertainty on the relative contribution of demand and supply factors, these analyses suggest that both would have contributed to inflation since 2021 and that inflation would be on average more supply-driven in the euro area than in the US from 2021Q2 to 2023-Q3.

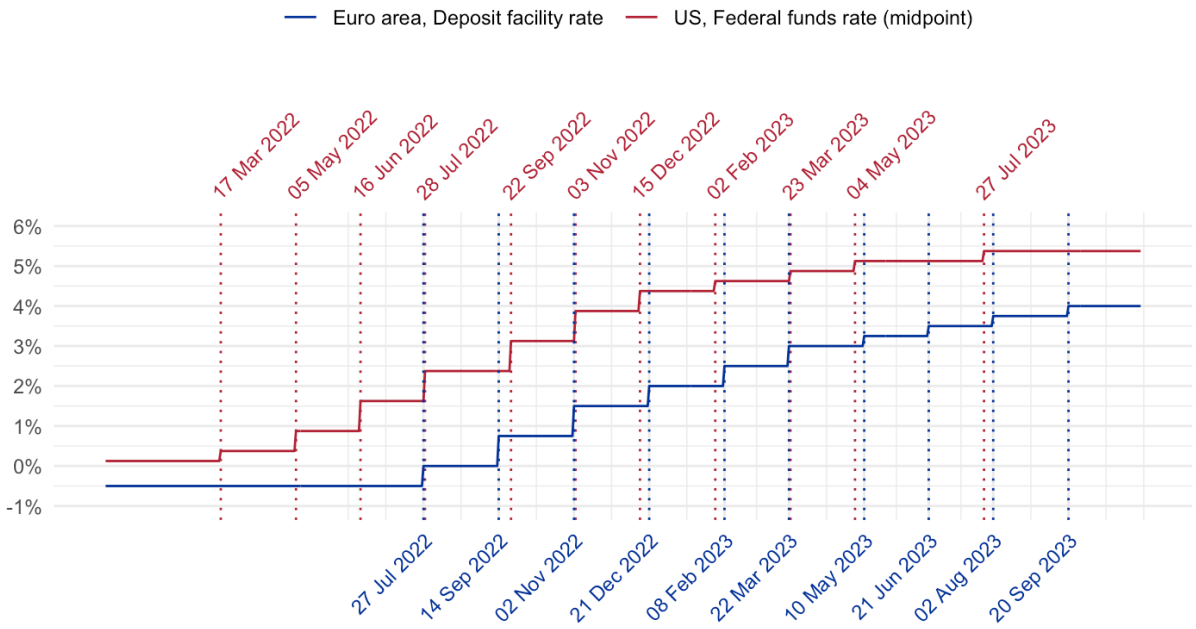
[55] See Fira and Hao (2023).

4. MONETARY POLICY

4.1. Current monetary policy

Regardless of the reason, the Fed and the ECB have taken strong measures to try to soften inflationary pressures that were arising since March 2021 in the US, and July 2021 in the euro area. These measures continue about 12 months after the start of this inflationary episode in both regions, as shown in Figure 13 (it is useful to compare the timing to that of inflation developments in Figure 1).

Figure 14: Monetary policy rates (benchmark), euro area vs. US



Source: BIS, authors' own elaboration.

Given the outcomes of the latest monetary policy meetings by both the Fed and the ECB, it looks like both central banks are willing to pause at least for now. Of course, how long they should pause, whether they should raise some more, or when they should start their descent remain questions open for debate.

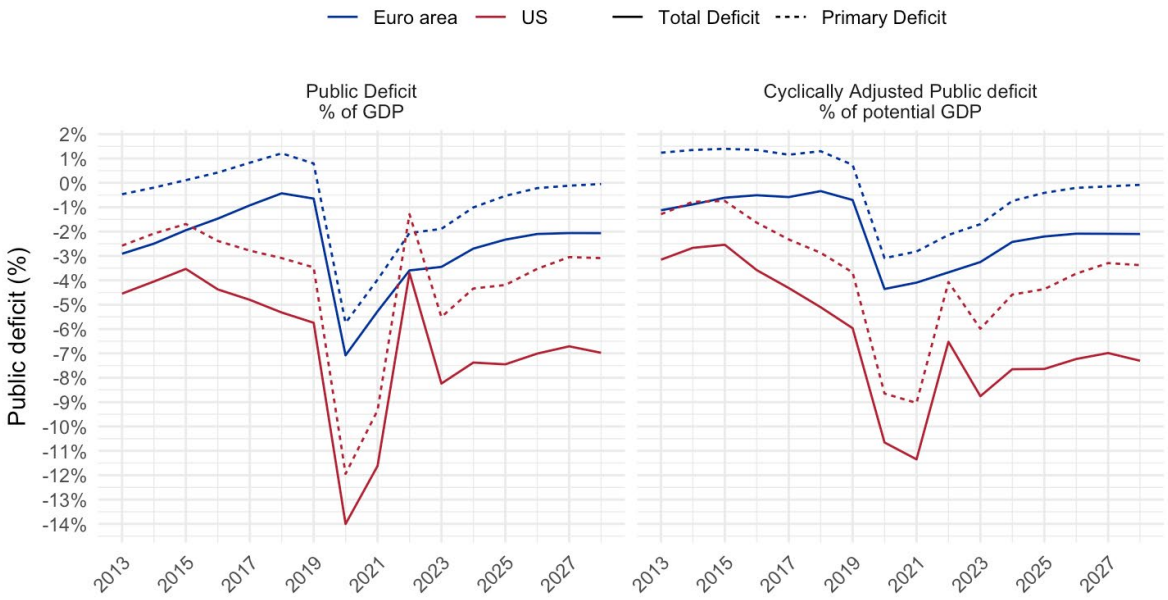
4.2. Possible scenarios

Monetary policy probably works through long and variable lags (see Romer and Romer, 2023 for the most recent evidence). Therefore, it is likely that past tightening is still working its way to aggregate demand. In that regard, the situation appears quite different in the US versus in the euro area: in the US, fiscal policy is currently much more expansionary than in Europe, with public deficits expected to reach around -8% of GDP in the US against -3.5% of GDP in the euro area according to the IMF. It should remain so in the next few years, with US public deficits remaining around -7% of GDP in the US while euro area public deficits are projected at -2% of GDP (see Figure 14). The US economy is also much stronger than the euro area economy with very high consumption, as well as GDP growth (see Figure 15).

Therefore, we view two possible opposite scenarios for the short term. In one scenario, expansionary fiscal policy would lead to continuing inflationary pressures in the US, forcing monetary policy to continue its restrictive stance. Since the euro area economy is slowing down, the question is how long the ECB could continue its restrictive stance in such a context, or rather start decreasing interest rates.

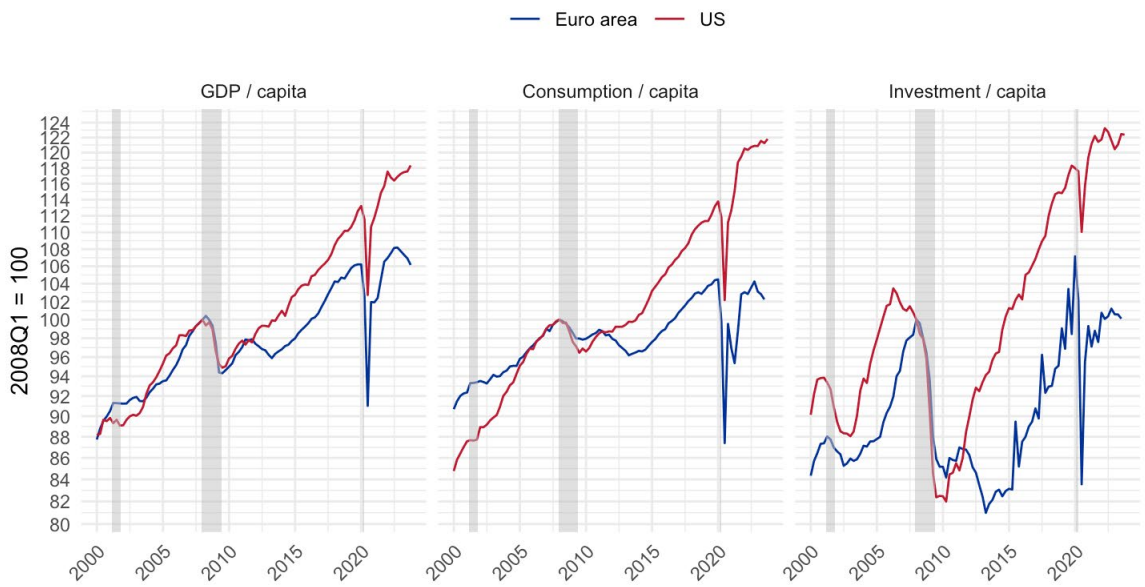
This could have negative consequences on the level of the exchange rate euro/dollar, and have a further effect on strengthening inflationary pressures in Europe. The good news is that this does not appear to be the most likely scenario, as inflationary pressures are easing in the US, without a substantial rise in the unemployment rate or slowing down of the economy ("soft landing"). In such a situation, the Fed could potentially lower interest rates, despite low unemployment and potentially slightly higher than target inflation, which would also give some room to the ECB to cut rates in tandem with the Fed. However, this does not appear to be the most likely scenario at least in the short run, given the statement by ECB president Lagarde from November 10, 2023: "ECB will not start cutting rates in the next couple of quarters".

Figure 15: Public deficits according to the IMF, euro area vs. US



Source: IMF, Fiscal Monitor.

Figure 16: GDP, consumption, investment in the euro area and in the US



Source: OECD, authors' own elaboration.

5. CONCLUSION

In this paper, we have sought to compare inflation developments in the euro area and the US. Although economic policies are very different across the Atlantic (for example regarding fiscal policy), the inflation dynamics have been remarkably similar, at least at the aggregate level, with a 4-month lag between the two. When one looks underneath the aggregates, however, one finds there are substantial differences: food inflation for example, is much more important in Europe than in the US, while imputed rents are much more important in the case of the US. In fact, if one ignores the shelter component of the CPI, then inflation is already on target in the US.

The notion that inflation was mainly explained by too high aggregate demand in the US becomes perhaps less certain now that inflation is falling without a substantial increase in unemployment or even a slowing down in the US economy, and a still very expansionary fiscal policy. On the contrary, a euro area economy that is slowing down has not meant that inflation has come down much faster.

Given this, we have outlined a few possible scenarios. We should hope for a "soft landing" scenario in both the euro area and the US. For instance, on mid-November Fed Watchers' expected a 25 bp decrease in the Federal Funds target for the March 2024 meeting with a 30% probability.[56] The most adverse scenario for the euro area would be one where the US still needs to maintain a substantially restrictive monetary policy to ease off inflationary pressures coming from a very resilient economy, while the euro area "breaks" because its economy is weaker, and the ECB faces a difficult choice between stagflation or an even greater recession together with a lower inflation. At this stage, we believe that the optimistic scenario is more likely. But to reduce the likelihood of the pessimistic scenario, euro area and US fiscal policies should perhaps work to be more in sync going forward.

[56] According to the CME FedWatch tool.

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After a series of unprecedented interest rate hikes on both sides of the Atlantic, inflation in the euro area and the United States is cooling down from a 40-year high. However, uncertainty about the inflation and growth outlook remains high, as the European Central Bank and the Federal Reserve are considering their next moves.

Five papers were prepared by the ECON Committee's Monetary Expert Panel, making a comparative assessment of inflation dynamics and monetary policy stances in the two monetary areas, as well as implications for the euro area of a possible divergence in the future.

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