

STUDY

Requested by the ECON Committee

Monetary Dialogue, November 2022



# Inflation as a global challenge

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Compilation of papers





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Monetary Dialogue  
November 2022

## **Abstract**

The inflation challenge today is a global phenomenon and because of the integrated global economy, domestic monetary policy can have spillover effects to other economies. In response to widespread inflation, we are now seeing a synchronised monetary tightening by many central banks. The simultaneous and mutually-compounding tightening of financing conditions might exceed what is necessary to contain inflation and exacerbate the global recession risk. While monetary policy coordination between central banks has occurred in the past, it remains to be seen whether it is desirable and feasible in the current context.

Four papers were prepared by the ECON Committee's Monetary Expert Panel, describing global factors affecting inflation, the consequences of synchronised tightening and the prospects of monetary policy coordination.

This publication is provided by Policy Department A for the Committee on Economic and Monetary Affairs (ECON), ahead of the Monetary Dialogue with ECB President Christine Lagarde on 28 November 2022.

This document was requested by the European Parliament's Committee on Economic and Monetary Affairs.

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# Tackling global inflation at a time of radical uncertainty

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## **Abstract**

The ongoing escalation of inflation challenges policymakers with radical uncertainty. First, inflation is boosted by the interplay of global and domestic factors. Second, such factors involve both aggregate demand and supply with different intensity in different countries. Third, global factors such as energy prices are also driven by unpredictable geopolitical forces. Risks of both under- and over-reaction are present. All this makes a good case for coordination of monetary and fiscal policies within countries and among countries. Yet, serious impediments should also be considered.

This paper was provided by the Policy Department for Economic, Scientific and Quality of Life Policies at the request of the Committee on Economic and Monetary Affairs (ECON) ahead of the Monetary Dialogue with the ECB President on 28 November 2022.



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## LIST OF ABBREVIATIONS

<b>AD</b>	Aggregate demand
<b>AS</b>	Aggregate supply
<b>ECB</b>	European Central Bank
<b>GC</b>	Governing Council
<b>GDP</b>	Gross domestic product
<b>HICP</b>	Harmonised index of consumer prices
<b>IMF</b>	International Monetary Fund
<b>UK</b>	United Kingdom
<b>US</b>	United States

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## EXECUTIVE SUMMARY

- Since 2021, inflation has increased rapidly all over the world due to a **strong post-pandemic recovery** (driven by accommodative fiscal and monetary policy), the presence of **supply side restrictions** (e.g., global value chain bottlenecks) and the emergence of **extraordinary cost-push** shocks linked with the energy crisis.
- To **address the risk that inflation remains persistently high and that inflation expectations become de-anchored**, policy interest rates have been raised forcefully by most central banks in 2022, after a prolonged period of highly accommodative monetary stance.
- The synchronised upward trends in inflation and interest rates around the world hide a **fairly differentiated environment across the areas**, in particular between the euro area and the US. The inflation surge in the US owes much to excess demand, supply bottlenecks and labour market tightness, whereas inflation in the euro area has mainly to do with a large cost-push shock. In both areas, though, wage inflation pressures have been mounting recently.
- The rapid surge in policy rates and long-term market rates in the US has exerted pressure on the **exchange rate of the dollar**, thus contributing to the depreciation of the euro and many emerging market currencies, as well as to the increase of imported inflation in those areas.
- Against this background, **central banks face risks of both under- and over-tightening**. Too soft a reaction could lead inflation expectations to de-anchor, thereby feeding second-round effects that could entrench a high level of inflation. Over-tightening, instead, could lead the global economy into a severe recession, weighing on those parts of the population who already suffer most of real income losses due to high inflation.
- These circumstances call for **greater efforts to coordinate the policy mix within and across countries**: where high inflation stems from excessive demand and tight labour markets, monetary policy and fiscal policies should play their part in moderating aggregate demand; where inflation reflects sectoral imbalances associated with the energy shock, monetary policy could benefit from fiscal and structural policies that dampen inflation pressures on wages.
- Given the dollar's centrality in the global financial system, **the current US monetary tightening is causing serious spillovers on other countries**, that the US authorities have incentives to internalise only to the extent that financial instability arising in the latter may have negative consequences for the US itself. Hence, a symmetric coordinating effort is unlikely, since the US can act as leader and decides its moves on the basis of the state of the US economy, while the other countries cannot but adapt their policies to what the US is doing.
- **Some coordination among domestic policymakers would be warranted, too, but it does not appear easy**. Central banks are highly concerned that high inflation records could undermine the credibility gained over the last decades and they risk putting reputational concerns above short-term output stabilisation goals. Fiscal authorities, conversely, could worry too much for the deceleration of the economy and implement accommodative policies that risk worsening excess demand (in the US) and sectoral imbalances (in the euro area). Although the necessary adjustments entail trade-offs between output and price stabilisation, coordination could help to avoid excesses and exploit, rather than suffer from, spillovers.

# 1. INTRODUCTION\*

In a famous passage, John M. Keynes wrote:

*"By uncertain knowledge, let me explain, I do not mean merely to distinguish what is known for certain from what is only probable. The game of roulette is not subject, in this sense, to uncertainty [...]. The sense in which I am using the term is that in which the prospect of a European war is uncertain, or the price of copper and the rate of interest twenty years hence [...] We simply do not know."*

(Keynes, 1937, p.113-114)

This sentence echoes the distinction between risk and uncertainty that another great thinker, Frank Knight, had drawn in his book of 1921, and sounds strikingly in step with the times we are living. As all most credited scholars and public policy officials are warning with the due dose of humility, we are in totally uncharted waters, and quite a hard work is needed in order to figure out what the best policy strategies may be.

It is almost fifteen years now that the world economy has been shaken by successive global shocks that abruptly put an end to the so-called Great Moderation which characterised the previous three decades. While many countries were still convalescent after the global financial crisis of 2007-08 and the subsequent deep, and often long, recession, the COVID-19 pandemic broke out in winter 2019-20 spreading around the world the worst slump ever seen except in war times. Then again, on the way to the recovery from the pandemic, the Russian invasion of Ukraine on 24 February this year has disarticulated the world network of energy sources and unleashed a steep escalation of their prices bringing inflation rates back to the heights of the 1970s.

Each of these three events has brought with itself both severe challenges on the ground of macroeconomic stabilisation over the short-to-medium term as well as deeper changes in the way our economies are structured and work. Understanding the latter is key to our capacity to deliver effective policies.

To start, it is worth addressing the global dimension of the observed phenomena. The recent surge in global inflation, for instance, most likely owes to remarkable global factors, such as escalating energy prices, supply bottlenecks in global value chains, and past accommodative economic policies aimed at boosting the post-pandemic recovery. The widespread increases in policy and market interest rates, on the contrary, represent a common policy trend, whereby central banks withdraw monetary accommodation without coordinating actions among them. Moreover, the synchronised upward trends in inflation rates and interest rates around the world hide a fairly differentiated environment across the areas, in particular between the euro area and the United States (US). Uncertainty about the nature and relative importance of global and local factors is high, and many elements are still unclear (recent valuable readings are Lane, 2022; Schnabel, 2022a, 2022b; Gopinath, 2022).

In Section 2, we will provide an orientation map of macroeconomic shocks that we use to interpret the observed resurgence of inflation in parallel with the post-pandemic rebound. We shall maintain that higher inflation can be considered a symptom of excess aggregate demand (AD) over aggregate supply (AS) in almost all circumstances, but such excess can be traced back to very different shocks to AD and to AS across countries and over time.

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\* Research assistance by Giacomo Annibaletti is gratefully acknowledged by the authors.

Thus, clarifying the nature of the shocks affecting the world economy, and more specifically the euro area and the US, is of fundamental importance to distinguish truly global phenomena (that cannot be offset individually by a given country) from synchronised changes in local economic variables stemming from differentiated local forces at play (against which individual domestic policy measures are effective).

The analysis of the mechanisms behind the resurgence of inflation bears on two important dimensions of policy coordination. The first one regards the international dimension which is the possibility that monetary and fiscal authorities worldwide cooperate and coordinate in setting their domestic measures with a view to reducing the risks of under- and over-doing. The call for coordinating monetary policy is indeed recurrent in history, but only few are the occasions in which countries did explicitly agree on a plan of action (and respected it).

Section 3 will discuss the two most recent episodes in which a forceful call for policy coordination has emerged: the first one after the global financial crisis (2012-2013); the second one is the post-pandemic period (2021-2022). Given the dollar's centrality in the global financial system, the US authorities have typically played the role of leader in a Stackelberg game, although they internalised how the international spillovers of their actions could impact on the risk of financial instability in the US. On this basis, we conclude that international policy coordination will be unlikely, at least short of financial turmoil affecting the US.

The analysis of the forces behind inflation dynamics also informs the second dimension of policy coordination, that is the choice of the policy mix within each country. Where high inflation stems from excessive demand and tight labour markets, for instance, monetary policy and fiscal policies can play together to moderate aggregate demand and to tame inflation. Where inflation reflects sectoral imbalances, associated for instance with a prolonged energy shock, the coordination of monetary, fiscal and structural policies is necessary to make ensure that inflation pressures do not start a wage-price spiral and to protect the most vulnerable from the impact of high inflation and economic recession.

In Section 4 we explore the risks of missing out the opportunity of coordinating monetary and fiscal policy, as well as structural reforms. We draw the attention on the risk that inflation expectations management, a very useful means to prevent that observed inflation quickly passes through to wages, may turn into a goal of policy action per se. As central banks, and in particular the European Central Bank (ECB), are concerned with preserving the credibility gained over the last decades, they could put reputational concerns above short-term output stabilisation goals. This could be more likely if fiscal authorities worry too much for the deceleration of the economy and react by implementing too accommodative policies that risk worsening excess demand and sectoral imbalances.

On this basis, we claim that domestic and international policy coordination could help to reduce the risk of under- and over-tightening. In addition, coordination could help to create an environment where structural and sectoral reforms, welfare state provisions and macroeconomic stabilisation measures may help to secure a path towards lower inflation, lower excesses and structural adjustment.

## 2. A TIME OF RADICAL UNCERTAINTY

### 2.1. Lost amid demand and supply

As long as monetary policy is operated by the central bank setting the interest rates which banks pay on loans and receive on reserves, to achieve price stability the central bank sets and pursues a given target in terms of the annual rate of change of the consumer prices index (inflation targeting). Thus, the central bank's inflation target is now integral part of the notion of macroeconomic equilibrium. As we shall see, one of the key purposes of this inflation target is that of "anchoring" the expectations about future inflation.

A sound monetary policy strategy in the first place needs a clear conceptual and analytical framework in order to understand how the continuous flow of events and data impinge on macroeconomic equilibrium, whether they may produce significant deviations from the policy target(s), and what is the best policy response (Lane, 2020). This is particularly true when, as in 2021-2022, the global economic environment is characterised by a widespread inflation-regime change stemming from a series of contemporaneous shocks and policy reactions.

To this end, it may be useful to go back to basics, that is the forces behind aggregate supply (AS) and aggregate demand (AD), the amount of goods and services that the economy can, respectively, produce and buy at the prevailing wages and prices. A state of macroeconomic equilibrium is such that all markets for goods and services clear, prices and wages are stable, and unemployment is at a level consistent with wage-price stability.

#### 2.1.1. An orientation map of macroeconomic shocks

Our economies are the theatre of continuous changes in the conditions underlying myriad of decisions of producers and consumers. There are circumstances when such changes are wide enough as to spread across (almost) all sectors of the economy and hence they are dubbed as "aggregate" shocks. Table 1 summarises the map of macroeconomic shocks that can cast the economy away from a state of equilibrium.

Table 1. Map of macroeconomic shocks

	<b>Real shocks</b>	<b>Monetary shocks</b>	<b>Nominal shocks</b>
AD	Consumption, investment, fiscal policy	Money market, money demand, monetary policy	Consumer price index, expected inflation
AS	Capital stock, production factor markets, technology		Nominal costs (wages, raw materials, etc.), expected inflation

Source: Authors' elaboration.

Shocks that determine imbalances in supply capacity *vis-à-vis* demand capacity across most sectors are regarded as the main driver of changes in final prices of goods and services, and hence possible deviations from the inflation target. This basic conceptual framework can be applied at the level of a single country, but also in order to have a hunch about phenomena that originate and unfold at the global level.

For instance, it was understood that the pandemic determined a parallel contraction of AS and AD worldwide, mostly in the form of real shocks (e.g. lockdowns stop production as well as consumption at the same time; e.g. Baldwin and Weder di Mauro, 2020). A parallel shift of AS and AD is expected to



leave the trend of inflation unaffected, as was indeed the case throughout 2020-21 when inflation remained at the very low level of the previous decade (see also Figure 1).

The resurgence of inflation in parallel with the post-pandemic rebound of the world economy appears quite complex to explain. Our scheme implies that higher inflation is a symptom of excess AD over AS, but excess may be due to a **positive shock to AD** as well as to a **negative shock to AS** or **both**. In turn, AS shocks can be of two types. **Cost-push shocks**, typically due to higher prices of raw materials or energy inputs, are such that firms *can produce as much as before*, at the same level of margins, provided they can transfer higher costs to sale prices. **Shocks to production capacity** are such that firms *cannot produce as much as before* owing to restraints such as shortages of input supplies, disruption of production chains, breakdown of technological systems, other external constraints; hence, as long as AD remains in excess of AS capacity, prices tend to rise.

Let us now recall how monetary policy comes into play in this scheme. The fundamental transmission channel goes through the effect that changes in the policy interest rate controlled by the central bank affect AD, namely investment decisions by firms and consumption decisions by households. The central bank can brake (or spur) AD to the extent that it can induce an increase (or reduction) of the medium-long-term **real interest rates** that are supposed to influence investment and consumption decisions.<sup>1</sup> To this end, since a real interest rate is calculated as the difference between its nominal value and **expected inflation** at the same maturity, the central bank should be able to shift the nominal interest rates above (or below) expected inflation. Hence higher (or lower) expected inflation requires, other things equal, a larger manoeuvre of the policy rate (in either direction).

Here is the reason why the "management of inflation expectations" is now regarded as integral part of mission of central banks (Woodford, 2003), which explains why inflation forecasts/expectations of firms and households are constantly monitored (ECB, 2021). These are also the foundations of the so-called **Taylor rule** (Taylor, 1993) that prescribes how the policy rate should be geared in response to deviations of inflation from the target, while, possibly, taking into (some) account of deviations of GDP from supply capacity (flexible inflation targeting).

Before proceeding with monetary policy, it is also worth considering another element in the picture: how would AD react to an inflation shock – higher (lower) inflation (than the target) – in the absence of a policy intervention as described above? If one looks at the currently dominant, "New Keynesian" (NK), theoretical system adopted by central banks, the answer is that Taylor-ruled monetary policy is the single channel that relates AD to inflation shocks, in such a way that **AD results decreasing vis-à-vis inflation shocks**. The strong implication is that Taylor-ruled monetary policy is also the only guarantee that the system is "dynamically stable", i.e. it returns to equilibrium after the inflation shock. As we shall see later, this is a rather extreme view that does not consider that inflation shocks may result in a decreasing AD through other endogenous channels besides monetary policy.

Finally, the identification of the shock at the origin of inflation is key to the choice of the appropriate monetary policy response. Yet, it is a demanding task. Looking at the concomitant changes in the level of economic activity may help. Inflation originated by AD being pushed above current AS is associated with **some boost to cyclical GDP** (and possibly labour demand). In this case the policy prescription is univocal: raise (real) interest rates to brake AD and hold inflation back. Macroeconomists call this scenario "the divine coincidence" (Blanchard and Gali, 2007) because stabilisation of inflation (in either

<sup>1</sup> It should also be recalled that a strand of literature highlights the channels through which monetary policy affects also AS (a pioneer paper is Greenwald and Stiglitz, 1993). The concomitant two-sided effects of monetary policy may change substantially its effect on output and inflation (e.g. Tamborini, 2009; Passamani and Tamborini, 2013)

direction) goes hand in hand with the stabilisation of GDP. On the AS side we have seen two types of shocks. The differences between them are important, but in either case to the extent that **AD should fall as prices rise**, the AS shocks end up with **some contraction of GDP** (and possibly labour demand), the so-called **stagflation**. This is the worst scenario for central banks because stabilisation of inflation entails a loss of GDP below capacity, the so-called "sacrifice ratio" (Schnabel, 2022b).

Ongoing investigations find mixed evidence of the whole array of these phenomena in the last two years, with different timing and intensity in different countries. The governor of the Bank of England, Andrew Bailey, has aptly summarised today's consensus view in this way:

*"To characterise the situation, the United States is facing what looks like a demand shock, with a strong domestic labour market, strong domestic demand and relatively less exposure to the energy price shock given its position as a major gas producer. The euro area by contrast is facing a supply/cost shock, as it starts with a somewhat weaker domestic labour market, and is heavily exposed to the rise in gas prices. In the UK we are seeing elements of both. Like the euro area, we are experiencing a sharp terms of trade shock emanating from the rise in the price of tradable goods and energy. But our strong labour market is more akin to that in the US".*

(Bailey, 2022, p. 3).

Let us now try to enter into greater detail about this scenario and draw some considerations for monetary policy.

### 2.1.2. Inflation surprise and the ghost of stagflation

A first phenomenon to be considered is that, since late 2021, consumer prices have been rising almost everywhere much faster than anticipated by professional forecasters and official institutions on a long-, medium- and even short-term horizon (IMF, 2022, p. 2; Chahad et al., 2022). Table 2 reports the point value of inflation forecasts in the Survey of Professional Forecasters of the ECB, showing that inflation acceleration beyond the 2% target jump started in the fourth quarter of 2021 to a largely unanticipated extent even on a short-term horizon. We may well speak, in macroeconomic jargon, of an **"inflation surprise"**.

Table 2. Quarterly observations of annual inflation in the euro area and earlier forecasts (percent rate of change of HICP)

Quarters	Observed	Current calendar year SPF <sup>a</sup>	1-year earlier SPF	2-years earlier SPF
2021:1	1.0	0.9	1.3	1.7
2021:2	1.8	1.6	1.0	1.6
2021:3	2.9	1.9	1.1	1.5
2021:4	4.7	2.3	1.1	1.4
2022:1	6.1	3.0	1.3	1.4
2022:2	8.0	6.0	1.3	1.4
2022:3	9.3	7.3	1.4	1.3

<sup>a</sup>End-of-year forecast in the given quarter.

Source: ECB Statistical Data Warehouse.

At the global level, the sharp acceleration of inflation is now accompanied by a reversal of prospects of growth, reviving fears of stagflation that plagued the advanced economies in the 1970s (IMF, 2022;

World Bank, 2022). As an example, the October 2022 *World Economic Outlook* by the International Monetary Fund (IMF) foresaw a generalised slowdown of economic activity in 2022-2023, worse than in the previous *Outlook* of April 2022 (see Table 3).

*"More than a third of the global economy will contract this year or next, while the three largest economies—the United States, the European Union, and China—will continue to stall. In short, the worst is yet to come, and for many people 2023 will feel like a recession"*

(IMF 2022, p. xiii).

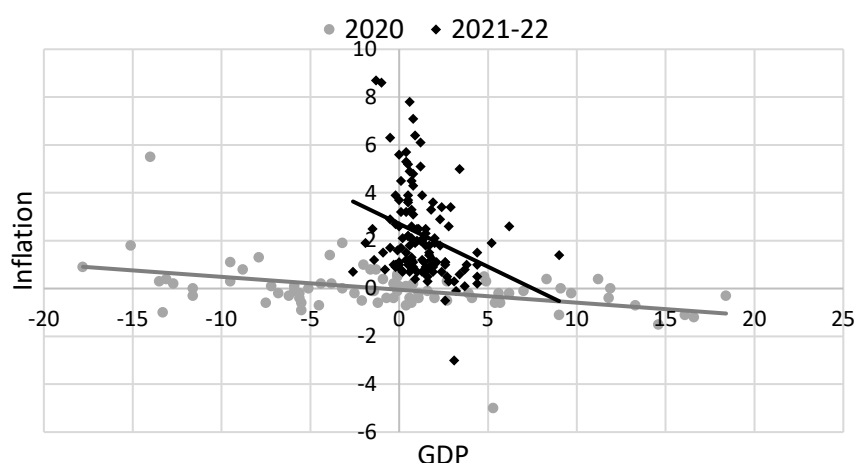
Table 3. Overview of the *World Economic Outlook* projections (percent changes)

	Projections			Difference from April 2022	
	2021	2022	2023	2022	2023
World	6.1	3.2	2.7	−0.4	−0.9
Advanced economies	5.2	2.4	1.1	−0.9	−1.3
United States	5.7	1.6	1.0	−2.1	−1.3
Euro area	5.4	3.1	0.5	−0.2	−1.8
Japan	1.7	1.7	1.6	−0.7	−0.7
United Kingdom	7.4	3.6	0.3	−0.1	−0.9
Canada	4.5	3.3	1.5	−0.5	−1.3
Others	5.1	2.8	2.3	−0.3	−0.7

Source: IMF (2022)

As far as the euro area is concerned, the comparison of the **output-inflation relationship** during the pandemic (2020) and in the subsequent two years in Figure 1 is remarkable. In 2020, the relationship **appeared quite flat**. Large GDP swings into negative territory (first and second quarter) and then into positive territory (third and fourth quarter) had almost no counterpart in the harmonised index of consumer prices (HICP). Since 2021-22, the relationship **has steepened dramatically**. As GDP recovery has retrenched, HICP inflation has been escalating three-four times above the official target of 2%. Furthermore, note that the **correlation slope is negative**, which is an indicator of incipient stagflation.

Figure 1. Annual percent changes of GDP and HICP inflation on a quarterly basis in the euro area (2020-22)



Source: Authors' elaboration based on Eurostat, quarterly statistics.

### 2.1.3. The slope of the Phillips Curve

Abundant effort is being deployed to understand the reasons of the "inflation surprise" or else of the forecast mistakes (Gopinath, 2022; Chahad et al., 2022). This is not only owed for professional ontology, but also as a means of better understanding the phenomenon itself. According to the ECB's staff calculations, "*errors in the conditioning assumptions<sup>2</sup>, particularly for energy prices, explain about three-quarters of the recent [...] projection errors for inflation, on average*" (Chahad et al., 2022, p. 53). This diagnosis is widely shared, pointing to the energy cost-push as the ignition of the inflation process.

Another source of forecast error that is drawing attention is how **global factors impact the output-inflation relationship** across different countries, i.e. the issue of the "slope of the Phillips Curve" (e.g. Gopinath, 2022; Schnabel, 2022). While the original study by A. W. Phillips, from which the name "Phillips Curve", concerned the labour market alone, finding the well-known inverse relationship between the unemployment rate and the rate of change of nominal wages, the name has now been extended to the relationship between output and inflation over the business cycle. It may be helpful to recall the now standard NK formulation:

$$(1) \quad \pi_t = \beta \pi^e + k (y_t - y_t^*) + u_{\pi t}$$

where  $\pi^e$  denotes expected inflation (to be specified),  $(y_t - y_t^*)$  measures the cyclical position of GDP (or "slack") with respect to trend or (estimated) potential output, and  $u_{\pi t}$  captures shocks that may affect inflation *ceteris paribus*.

Wide agreement was reached over the past decade that the globalisation's legacy was a **flat Phillips Curve** (small parameter  $k$ ) meaning that cyclical swings of domestic GDP (and employment) have little impact on inflation, which remains contained within a stable band.<sup>3</sup> Inflation projections of the post-pandemic recovery relying on a flat Phillips Curve were therefore moderate. As the case of the euro area in Figure 1 epitomises, the post-pandemic-plus-Ukrainian-war **output-inflation relationship looks much steeper**. Fitting the data has become even more challenging: the correlation also **looks negative**, whereas, according to the standard Phillips Curve, it should be positive.

To reconcile the standard Phillips Curve with the data in Figure 1, positive output gaps would be necessary  $(y_t - y_t^*) > 0$ , or, in other words, that in the euro area GDP **is slowing down too little** with respect to the contraction of its (estimated) potential  $y^*$ . This once again brings AS shocks to the forefront. However, inspection of the data reveals that in 2021 and 2022 output gaps in euro area countries have remained negative, i.e. with GDP below potential by 2% in 2021 and 0.6% in 2022.

A critical factor in today's formulations of the Phillips Curve is the expectations term, which may be driven by either past trend of inflation or forward-looking projections or both. In macroeconomic equilibrium, or "normal" fluctuations around the equilibrium, expected inflation should remain "anchored" to the central bank's target ( $\pi^e = \pi^*$ ). As inflation expectations "de-anchor" above or below the target, the Phillips Curve shifts and may *appear* steeper (higher inflation for the same output) or flatter (lower inflation for the same output) though the structural parameter  $k$  has not changed.

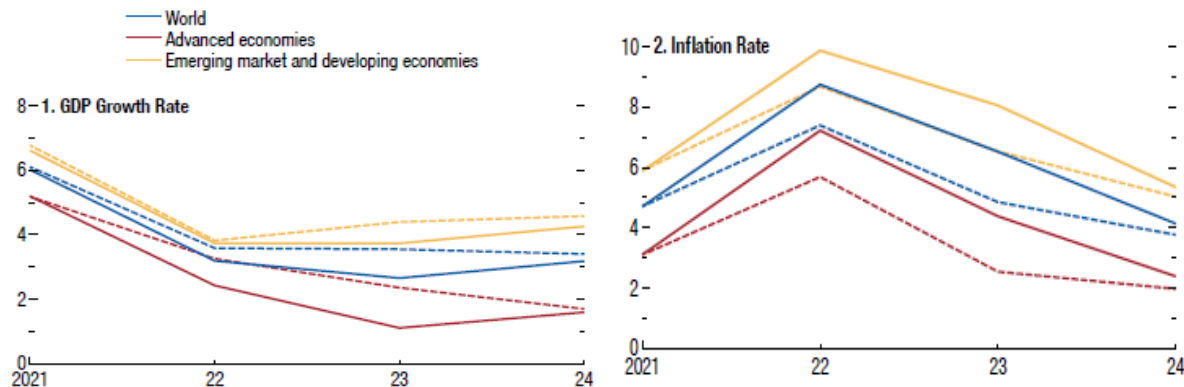
Monitoring of inflation expectations has so far been rather comforting in almost all major countries. As it can be seen in Figure 2, expectations across the world regions *vis-à-vis* growth forecasts show some sign of de-anchoring in short-run projections (corresponding to the current phase) but of re-

<sup>2</sup> Conditioning assumptions are those made regarding the evolution of the determinants of inflation.

<sup>3</sup> There was, however, some contrarian evidence that the euro-area's Phillips Curve became steeper in the aftermath of the Great Recession of 2008-09, showing a marked downward trend of inflation well below the 2% target (Riggi and Venditti, 2014, 2015; Passamani et al., 2022).

anchoring over the medium-long term. ECB's surveys for the euro area are in line with this global scenario (ECB, 2022c, n. 6).

Figure 2. Global growth and inflation forecasts



Source: IMF (2022), Figure 1.15. Solid lines = October 2022 *World Economic Outlook*; dashed lines = April 2022 *World Economic Outlook*.

Without entering into technicalities, it is worth pointing out that, as useful as the Phillips Curve may be as a conceptual framework, the widespread reliance on it as an independent "structural" relationship may be misleading. The point is that the relationship between cyclical GDP and consumer price inflation should better be understood as the "reduced form" resulting from the interaction of the AD and AS factors and shocks that we are considering here. As shown in Bonatti and Tamborini (2022), once the Phillips Curve is embedded into the whole standard NK model of inflation, output and interest rate, and all the reciprocal interdependencies have been worked out, the current inflation rate  $\pi_t$ , the current output  $y_t$ , and the policy interest rate  $i_t$ , result as follows:

$$(2) \quad \pi_t = \pi^* + a_1(\pi^e - \pi^*) + a_2 u_{\pi t}$$

$$(3) \quad y_t = y^* + b_1(\pi^e - \pi^*) + b_2 u_{\pi t}$$

$$(4) \quad i_t = r^* + \pi^* + c_1(\pi^e - \pi^*) + c_2 u_{\pi t}$$

where  $r^*$  is the equilibrium real interest rate. The coefficients  $a_n, b_n, c_n$  ( $n = 1, 2, 3$ ) are combinations of the parameters of the three equations. Other types of shock can be added. Therefore, the co-movements between  $\pi_t$  and  $y_t$  are the result of how the *whole system* reacts to shocks and possibly deviations of inflation expectations from target.

#### 2.1.4. Behind AD and AS

As said above, it is widely agreed that, among the advanced economies, the euro area presents clearer symptoms of inflation driven by prevalent supply-side factors due to the energy imported cost-push (ECB, 2022a; Lane, 2022; Schnabel, 2022a; Battistini et al., 2022). Inflation in the United Kingdom and the United States seems also fuelled by demand-side factors, possibly owing to overstimulation in the later phase of the pandemic – as famously warned by Lawrence Summers<sup>4</sup> after the Biden Administration's fiscal package (Powell, 2022; Bailey, 2022). According to Schnabel (2022b), "excess

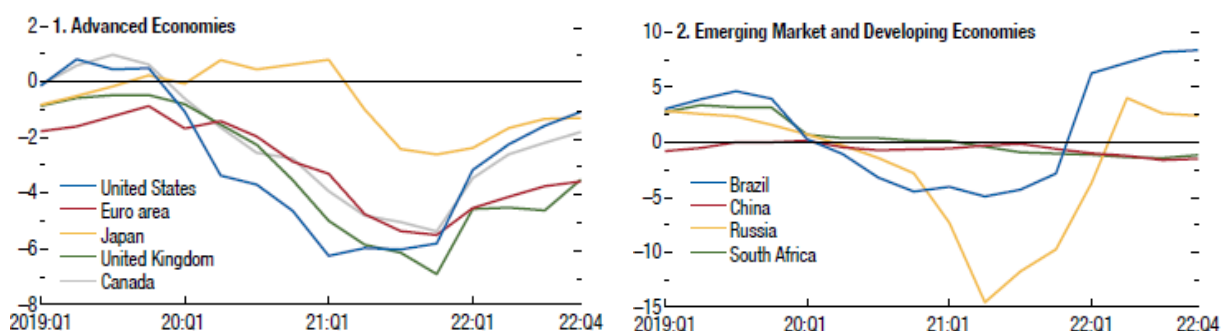
<sup>4</sup> Summers, H. L. (2020). "The Biden stimulus is admirably ambitious. But it brings some big risks, too." Opinion, The Washington Post, 4 February. <https://www.washingtonpost.com/opinions/2021/02/04/larry-summers-biden-covid-stimulus/>

global demand pushes up prices across the globe", and the differences between euro area and US inflation components (energy and primary commodities vs. consumption goods and services) are shrinking. However, if the output gap is still in positive territory and tight labour markets provide evidence of demand-driven inflation in the US, similar evidence is harder to find in the euro area and other areas. Overall, where does the **projected global slowdown** come from?

According to our interpretive guidelines, an answer may be that the demand-side rebound *relative to* worsening supply-side conditions has spurred inflation initially, while **AD is now expected to fall back in order to rebalance with AS**. This new phase may be triggered by central banks' anti-inflationary stance as well as other concomitant factors.

As a matter of fact, all major central banks are now quickly lifting their policy rates from the zero lower bound where they have been stuck for a decade. They, however, still remain in **negative territory in real terms** (IMF 2022, p. 6; see Figure 3), which, strictly speaking, is not yet a true restraint on AD.

Figure 3. Short-term real interest rates around the world



Source: IMF (2022), Figure 1-10

For more precision, the whole string of medium-to-long-term interest rates (the "yield curve") should be compared with expected inflation for the same maturity. In the October 2022 issue of the ECB *Economic Bulletin*, the data show that the yield curve at all maturities is systematically below the correspondent inflation forecast, with convergence taking place towards 2% at the very far end (10+ years), which actually means zero real interest rate (ECB, 2022c, n. 6, pp. 29-30).

In addition, long-lived scepticism, revived by the limited success of the unprecedented monetary stimuli over the past ten years, surrounds the responsiveness of AD to the relevant real interest rates (Schnabel, 2020, and the literature cited therein). This is to say that monetary tightening, in terms of both timing and intensity, cannot yet be regarded as the main, let alone exclusive, driving force of the downturn of growth prospects across the advanced economies.

By almost all accounts, a prominent role is played by the fall of households' purchasing power, and hence consumption, owing to the inflation shock *vis-à-vis* slow upgrading of nominal wages (Battistini et al., 2022; IMF, 2022; ECB, 2022a).<sup>5</sup> The same concern, especially where the incidence of imported energy inflation is stronger, spurs governments to implement fiscal measures apt to shield households' (and firms') budgets against unsustainable energy bills.<sup>6</sup> Figure 4 provides evidence of the braking of

<sup>5</sup> Once again, nominal wage dynamics appears stronger in the US and the UK than in the euro area, but it does not seem sufficient to shield households' purchasing power at large (Krugman 2022, IMF 2022, and here). "The global economy continues to face steep challenges, shaped by the lingering effects of three powerful forces: the Russian invasion of Ukraine, a cost-of-living crisis caused by persistent and broadening inflation pressures, and the slowdown in China" (IMF 2022, p. xiii).

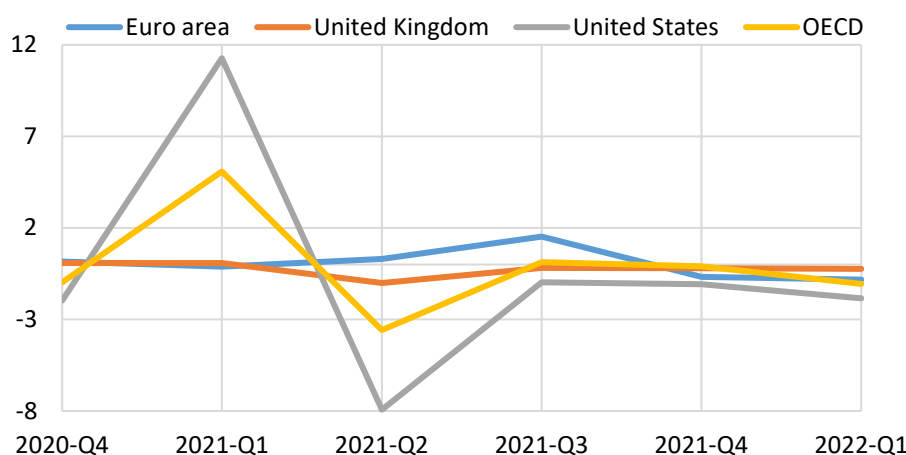
<sup>6</sup> For example, in September 2022, Germany launched a EUR 200 billion plan of government cheques to pay for energy bills of households and firms.



the post-pandemic recovery of households' real disposable income across advanced economies in parallel with the acceleration of inflation since the end of 2021, turning into negative growth in 2022.

Moreover, for countries especially exposed to imported energy costs, their ongoing push also has specific negative real effects related to the degree of energy absorption in production and the degree of energy foreign dependency (Battistini et al., 2022). In a comparison between the United States and the euro area, the former is more energy-absorbing whereas the latter is more dependent from foreign energy suppliers.<sup>7</sup>

Figure 4. Quarterly rate of change of households' real disposable income (2021-22)



Source: OECD, Quarterly National Accounts.

We can therefore conclude that a combination of forces is at play, forces that are driving most economies, and the euro area in particular, into stagflation. As aptly summarised by Lane (2022):

*"The toll of unexpectedly-high inflation on real incomes and the real value of accumulated savings, the significant deterioration in the terms of trade (especially since so much energy is imported), the high intrinsic uncertainty associated with the Russian war on Ukraine (both in relation to energy and food costs and geo-political stability), the slowdown in the world economy and the tightening in global and domestic financial conditions that has already occurred all constitute significant economic headwinds for the euro area" (p. 2).*

These forces deserve careful consideration in order to gauge the best monetary policy response.

## 2.2. The limits to monetary policy

The kind of inflation process that is currently under way creates a conflict between the objective of price stability and its cost in terms of jobs and loss of output – the "sacrifice ratio". According to Schnabel, "central banks are facing a higher sacrifice ratio" (2022b, p. 6). Moreover, the tangle of forces

<sup>7</sup> One stagflation channel is the real energy price (REP), or the real exchange rate effect. The REP is the ratio between the energy price in euros and the HCPI. The energy price is given by the price at origin, usually in dollars, times the euro-dollar exchange rate. The ECB price statistics show that the REP is now three times greater than at the outbreak of the pandemic. Since the demand for energy inputs is rigid, the real depreciation deteriorates the trade balance and the current account. According to the ECB calculations, the euro area current account has worsened since early 2021 by approximately one point of GDP, with the negative drag almost entirely due to an increase in the imported energy bill of about 3.5% of GDP. Another channel is the terms of trade effect (TOT) the ratio of the GDP deflator to the energy price. As the latter goes up the TOT goes down. This means that more of the domestic good has to be given in exchange for one unit of the imported energy. From this point of view, the fall of the TOT entails a transfer of purchasing power abroad, which, as of the end of 2021, for the euro area amounted to a loss in the order of 1.3 percentage points of GDP.

at play makes it hard to derive policy strategies from consolidated analytical frameworks. Consequently, the clear communication of motivations, scope, extent *and limits* of the resolute actions to curb inflation to which most central bankers are committing themselves in their official speeches plays an important role (Lane, 2022). Let us focus in particular on the euro area.

First, since, one way or another, the economy is unable to produce the same as before at the same prices, and more real resources should be transferred abroad in exchange for the energy inputs, the sacrifice is inevitable.

Second, to some extent some mitigation of inflationary pressures might be brought about by the real effects of the price shock itself as explained above. Yet, risks exist that disinflation would be too slow or would not be achieved at all. One motivation commonly offered for this choice is that **delay in the intervention makes the sacrifice ratio worse** in the future.

Current central banks' communications converge on two phenomena that may transform too slow disinflation into ever growing inflation. One is **de-anchoring of inflation expectations**, the other is the **wage-price spiral**. Persistent inflation, the reasoning goes, can destabilise the expectations formation mechanisms, which as seen above is regarded as one of the main determinants of the inflation process. Although recent research has questioned straightforward causal connections between expected and realised inflation (Rudd, 2021; Bonatti et al., 2022), if the observed shifts of expectations at short horizons feed into wage and price-setting decisions, the risk of spiralling inflation increases considerably.<sup>8</sup> It follows that, by convincing the public about their resolve to preserve price stability at all costs, central banks can keep expectations anchored to the target and preserve well-ordered wage negotiations and price setting.<sup>9</sup>

Indeed, **credibility** is now regarded as the pillar of modern central banking and the most precious asset in the human capital of a central banker. Yet, credibility has two meanings: one is doing what has been promised, the other is promising what can be done. We argue that clear understanding and communication of **the limits that monetary policy can encounter** are as important as the determination to tame inflation.

As recalled above, cost-push inflation, and specifically *imported energy* cost-push, is first and foremost a change in **relative prices** with both demand and supply-side real effects. If conditions occur, it may even translate into a **structural change** (Gopinath, 2022). Conventional wisdom asserts that monetary policy is ill suited, if not counterproductive, to correct real, structural shocks. First, monetary restrictions reduce demand across the board of all sectors, whereas the correct reallocation response would require a **shift of demand** away from higher-price imported goods towards lower-price domestic goods. Second, as interest rates rise, they rise for all borrowers including those who should instead be incentivised to invest in the production of alternative energy technologies. On this front, the short- and long-term necessities of the post-pandemic legacy, of the stagflation shock, of the economic and strategic implications of the new international stance of Russia and China, together with the EU Member States' commitments towards green transition, all **make it likely an increase in the borrowing requirements of governments**. In the euro area context, this fault line between monetary and fiscal sphere may become particularly acute.

<sup>8</sup> It has been shown that in a low-inflation regime, inflation depends on sector-specific price changes, and price- and wage-setting decisions play a limited role. In a high-inflation regime, price changes become more synchronised and they become more salient to workers and firms (De Fiore et al., 2022). At the same time, the risk of a de-anchoring cannot be based only on the current level of expectations at a given horizon, but should depend on their dynamics and their distribution along the entire time span of interest (Visco, 2022).

<sup>9</sup> It should also be noted that central banks could potentially affect expectations almost instantaneously, whereas in the euro area a rate hike impact entirely on inflation after one or two years and on GDP growth after about a year and a half (Visco, 2022).



Moreover, prices of energy and other raw materials are set on global markets. The more inflation is a global phenomenon, the lower is the grip of monetary policy in any country on its domestic inflation. We shall see in greater detail in the subsequent parts of the paper that two orders of problems arise. One may be called the **small country crux**. No matter how severe the domestic contraction and the cut of energy imports are, the impact on the global markets is negligible and imported inflation remains high. The second, and related, problem is the classic **free-ride temptation**: wait and let other (larger) global actors bear the burden of domestic contraction large enough to tame energy prices for all.

As we shall argue, ignoring these limits may lead either towards **over-reaction** as well as **under-reaction** to inflationary pressures. Careful consideration is needed of means and scope for **international coordination of monetary as well as fiscal policies**. Besides, policy authorities and the public opinion should not forget the second meaning of credibility, for central banks to be preserved from the **damnation of omnipotence**. Inflation is not always and everywhere only a monetary phenomenon.<sup>10</sup> We come from more than a decade over which achieving inflation targets against depressive forces by means of ordinary and extraordinary monetary means alone has proved utterly difficult. The public opinion should be prepared to face a future in which the same may happen in reverse.<sup>11</sup>

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<sup>10</sup> The popular sentence is attributed to Milton Friedman.

<sup>11</sup> As to the famous "Volcker disinflation" of the early 1980s in the US, "*The practical implementation of monetarism by the Federal Reserve was both a triumph and a failure. It was a triumph because it successfully and decisively reduced inflation*". Yet "*the result was a chaotic period for monetary policy and the economy [including] extreme volatility of the federal funds rate [...]. Despite Volcker's initial optimism that his new operational procedures would "change inflationary psychology", the fall in inflation was slow and was achieved at the expense of significant output losses. By November 1982, three years after the initial change in the monetary regime, high inflation had been conquered but tight monetary policy had triggered two recessions and the unemployment rate stood at 10.8 percent*" (Whelan, 2021, 4 and 9).

### 3. THE CALL FOR COORDINATION: 2012-13 VERSUS 2021-22

As pointed out by Obstfeld (2022), it is possible that the authorities do not fully (or correctly) internalise the spillovers stemming from a synchronised but uncoordinated wave of monetary tightening across the globe. This lack of coordination could lead to excessive sacrifices and could jeopardise financial stability via its impact on uncertainty and risk premia.

The importance of coordination to internalise demand-related and financial spillovers is not new, and most policymakers acknowledge the importance of avoiding the risk of over-tighten. The call for coordinating monetary policy is indeed recurrent in history and, in few occasions, countries did explicitly agree on, and commit to, a joint plan of action with differentiated responsibilities.

This Section discusses the two most recent episodes in which policy coordination has been advocated by many observers: the first one after the global financial crisis (2012-2013); the second one is the post-pandemic period (2021-2022).

#### 3.1. 2012-13

The closest antecedent to the current situation in which the advisability of some kind of **international monetary coordination** was discussed dates back to **the period following the global financial crisis**. In 2012-13, indeed, the issue was raised whether the easing of monetary policy undertaken by the major central banks was causing negative spillover effects on other countries, in particular on emerging economies such as Brazil. It was argued that the ultra-loose monetary measures of the developed countries were generating potentially destabilising inflows of hot money to their domestic economies and, thus, undesired appreciations of the exchange rate. This, they claimed, was putting their central banks in the dilemma of whether to let market forces run their course, or counter them by implementing expansive policies they would not otherwise have adopted. These policies were considered excessively accommodative with respect to the internal conditions of their economies.

The ensuing debate can be schematised by contrasting two interpretations of what was going on (see Taylor, 2013): one according to which the unconventional monetary policies of some central banks, by deviating from the optimal rule-like policies of the Great Moderation era (namely, by deviating from their Taylor rule), were forcing also other central banks to deviate from their optimal rule, and the other maintaining that what might be seen as central banks following each other because of exchange rate concerns was actually the simultaneous use by several countries of accommodative policy, which was mutually reinforcing to the benefit of all in a global economy dominated by deflationary forces (see, e.g., Bernanke, 2013).

In the context of this debate, the main transmission channels through which a monetary policy change in one country could spillover on another country were thought to be **the exchange rate** and **global demand**. In particular, a looser monetary policy in country 1 could affect the trade-off between output and inflation faced by country 2 by bringing about an appreciation of country 2 exchange rate (thus depressing its output and reducing its inflation) and additionally a rise of country 2 foreign demand (thus boosting its output and increasing its inflation). It is apparent that the two effects pushed in opposite directions, and, as far as they roughly offset each other, the gains from international coordination of monetary policy were negligible.

Even when these gains are not negligible, Rogoff (2013) rightly notes that coordination, *“in this literature, does not necessarily imply that every central bank does the same thing at the same time. Coordination (or cooperation) definitely does not necessarily mean stabilising the exchange rate. Exchange rate stabilisation is optimal only when countries are hit by a common shock. Even so, factors such as*

international investment positions or production differences can introduce asymmetries, implying that exchange rate stabilisation is no longer optimal" (Rogoff, 2013, p.2).

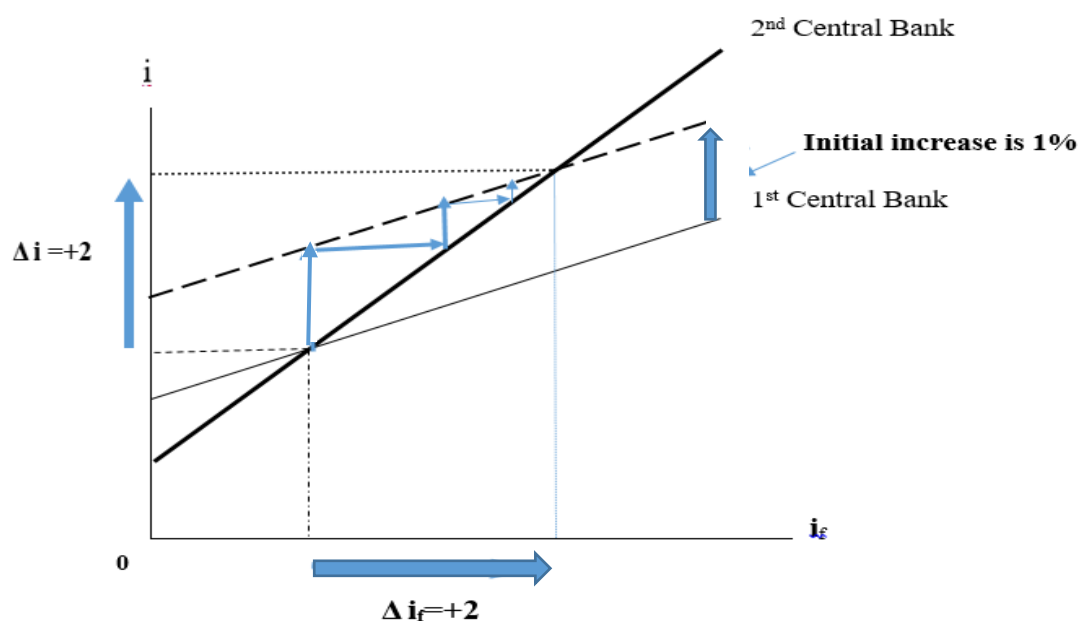
### 3.2. 2021-22

The 2021-22 surge in inflation has again sparked a debate on the need for some international monetary coordination. Indeed, after the delay with which the major central banks recognised that the post-COVID rise of the price level was not merely temporary and the acceleration of inflation brought about by the Russian invasion of Ukraine, the subsequent rush by the developed countries' central banks led by the Federal Reserve to raise their policy rates has created doubts as to whether central bankers are taking sufficient account of the international spillovers generated by their moves. Obstfeld (2022), for instance, is afraid that, by neglecting these spillovers *"in calibrating their own needs for higher interest rates, they will each overdo monetary tightening"*. This evidently would increase the likelihood that the ongoing restrictive monetary policy of the major central banks could cause a severe global recession.

This situation is somehow specular to what happened in 2012-13, with the possibility that an **amplifying process is triggered**, in which the spillovers originating from the restrictive measures undertaken by some central banks to check inflation induce other central banks to respond to these measures by more monetary tightening, in order to prevent their exchange rate from depreciating and, thus, their import prices from rising and feeding inflation.

This dynamic is stylised in Figure 5, which is adapted from Taylor (2013): it shows how central banks may react to each other's interest rate hikes, giving rise to an adjustment process that begins when central bank 1 shifts inflation stance and raises its policy rate  $i$ , to which central bank 2 reacts by raising its own policy rate  $i_f$ , and so on until a new equilibrium is reached with an interest rise much larger than the initial central bank 1's rise. To the extent that such amplification leads to excessive monetary tightening and therefore is undesirable, international monetary policy coordination could be advocated as a way to avoid it.

Figure 5. Amplification of monetary policy tightening



Source: Authors' elaboration based on Taylor (2013).

However, similarly to what Bernanke (2013) did in the face of a world economy that in the aftermath of the global financial crisis was dominated by deflationary forces, one could interpret the synchronised monetary policy tightening under way on the part of several central banks as a **mutually reinforcing effort** to the benefit of all in a world economy dominated by inflationary forces. To have more hints to unravel the matter, one should consider that, in addition to the channels that were deemed relevant in 2012-13 for the international transmission of monetary policy shocks (the exchange rate and global demand), there are other channels that are important in the current situation: **commodity prices** and **global credit and liquidity conditions**.

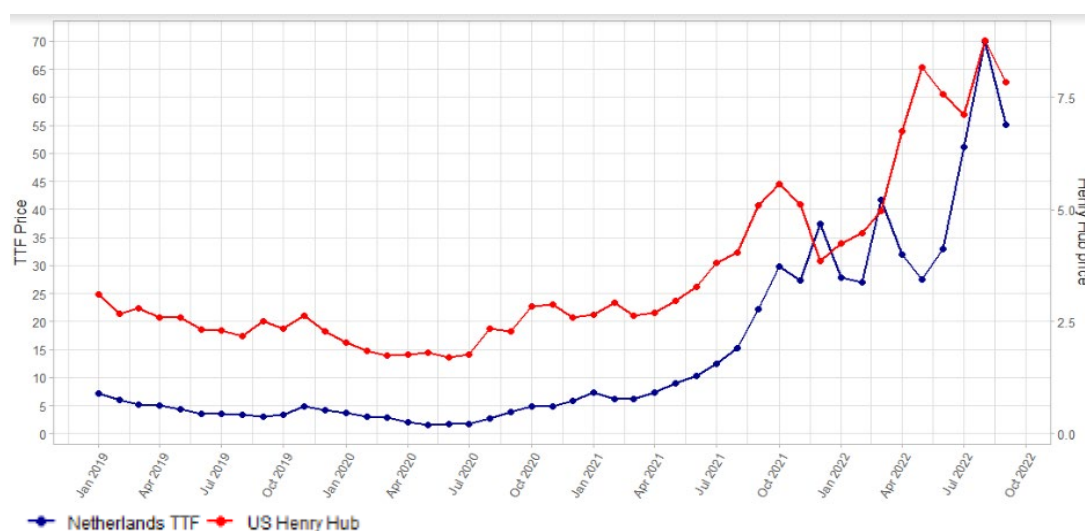
The significant increase in the price of food, and above all the spectacular increase in the price of energy that began many months before the Russian invasion of Ukraine (see Figures 6 and 7), have been the main drivers of the inflation hike that has occurred in 2021-22. As mentioned in Section 2, central banks' underestimation of how inflation would have been resilient and rising in the following months, which partially explains the delay whereby they reacted to the ongoing inflation surge, was mainly due to the underprediction of oil and gas prices.

Figure 6. Crude oil price: UK Brent, WTI, Dubai average (US\$ per barrel)



Source: IMF(2022)

Figure 7. Natural gas price: TTF and Henry Hub (US\$ per million British thermal units - MMBTU)



Source: IMF (2022)

Consistently with Filardo et al. (2018, 2020), one could argue that the major central banks, being focused on core inflation, largely ignored the **spillover effects of their collective actions on global demand**, and therefore on commodity prices, thus treating them as exogenously given. Hence, they maintained their ultra-loose policy stance even when a robust rebound of global demand was taking place in an environment still affected by the supply chains disruptions due to the COVID pandemic. In other words, the fact that commodity price movements were seen by each central bank as the result of shocks independent of its own actions could contribute to explain why monetary policy at the global level remained procyclical for too long, in accordance to the conventional wisdom prescribing that—when facing these movements—central banks *“should look through the first-round price effects and only respond to the second round effects on wage and inflation expectations”* (Filardo et al., 2018, p.2).

Similarly, nowadays there is a risk in the opposite direction, namely that the main central banks **neglect the impact that their restrictive actions have on commodity prices**, via the depressive effect that these correlated (but uncoordinated) actions are exerting on global demand. Also in this case, therefore, their joint behaviour could end up being excessively restrictive, supporting the case for greater central bank coordination.

The worldwide accumulation of private and public debt due to the COVID pandemic has added to stocks of debt that were already historically very high everywhere as a ratio of GDP at the eve of the pandemic. This has made many economies (mostly developing and emerging economies, but even some advanced economies) **financially fragile and quite exposed to global credit and liquidity cycles**. These cycles are typically driven by the macro-financial conditions prevailing in the US, thus giving to the Federal Reserve a **special influence on financial conditions around the world**, which derives from the unique role played by the dollar within the international monetary and financial system. In a phase like the current one, in which the Federal Reserve is committed to implement a rapid sequence of substantial increases in policy rates and to reduce its balance sheet, this means that, together with the depreciation of their exchange rate against the dollar, several countries—especially those that have net liabilities in dollars—are experiencing severe financial tightening, with outflow of funds and increase in their credit risk spreads for both private and sovereign borrowers.<sup>12</sup>

It is clear, therefore, that there is an asymmetry between the influence that the US exerts on the financial conditions of other countries thanks to the international role of the dollar, and the influence that each of these countries exerts on the financial conditions of the US. In this situation, the US has an incentive to internalise the spillovers that its current monetary tightening causes on other countries only to the extent that financial crisis or instability can arise in the latter with negative consequences for the United States itself. This kind of interaction can be stylised as a **Stackelberg game**, where the US policymakers play the role of the leader, deciding their moves on the basis of the state of the US economy and—at best—of an assessment of the repercussions on the US economy of the effects of their moves on other countries, and where the latter cannot but adapt their policies to what the US is doing. Thus, given today’s functioning of the international monetary and financial system, that is not bound to change soon, the most that is realistic to expect from some (informal) international policy coordination is that, in deciding their monetary actions, the US authorities take full account of their impact on the financial conditions of the rest of the world.

<sup>12</sup> Rey (2013, 2014) shows that monetary policy has international spillover effects on financial conditions even in a world of freely floating exchange rates. Also Plantin and Shin (2016) study world of floating currencies where in equilibrium there are two possible regimes in monetary conditions: one where currency appreciation goes hand in hand with lower domestic interest rates, capital inflows and higher credit growth, and the other where currency depreciation goes hand in hand with higher domestic interest rates, capital outflows and a contraction in credit. Hofmann et al. (2016) find that an appreciation of the bilateral exchange rate against the US dollar loosens financial conditions in emerging economies through a risk-taking channel, namely by lowering credit risk spreads.

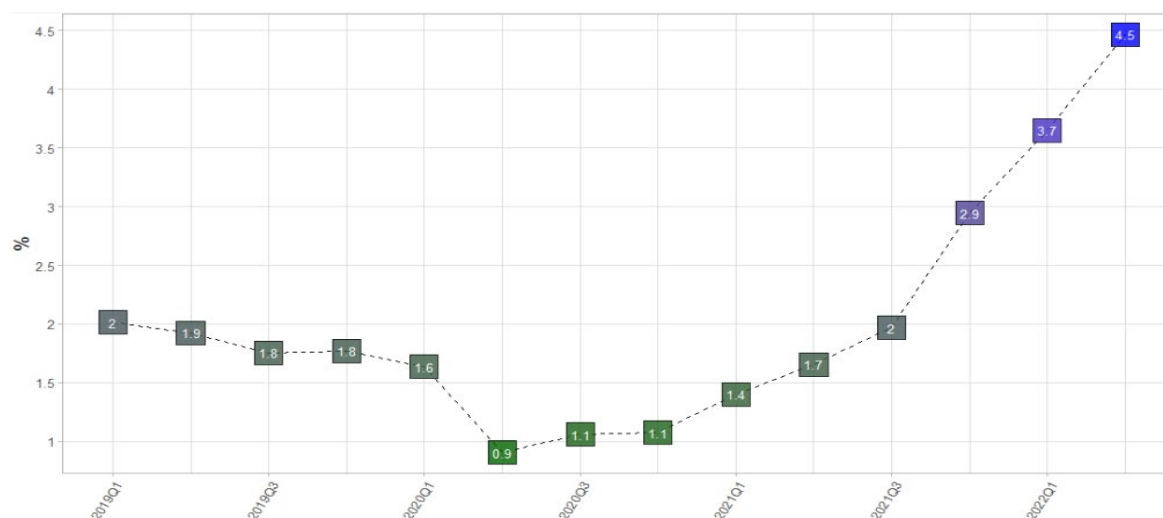
### 3.3. The transatlantic asymmetry and the ECB

Especially for Europe, the Ukraine war is a major source of that radical uncertainty that we refer to in the Introduction. The war is heavily conditioning the decision-making process of the ECB, since the evolution of the price of energy, which is the main driver of the inflation surge occurring in the euro area, strongly hinges on military and political developments connected to this conflict. Thus, Europe's current energy crisis can be deemed temporary, since it does not have structural causes but geopolitical ones, that can be removed and even give rise to an energy price counter-shock in case of a cease fire, or hopefully a settlement of the conflict. The point, however, is that at the moment nobody can predict with reasonable approximation the likelihood and timing of this positive geopolitical development. This has two consequences that derive from the prolongation of the Ukrainian crisis and radical uncertainty about how and when it will end:

1. The ECB can feel compelled to strongly signal its determination to bring inflation back close to its target, for fear of de-anchoring inflation expectations (more on this in Section 4) and of a second round of price and wage increases. **This may lead it to overdo**, without waiting for the monetary restrictions already undertaken and the measures decided at European level to calm the price of energy to fully unfold their effects.
2. The ECB has no choice except to **proceed on a "meeting-by-meeting" basis**, which makes quite problematic any attempt to coordinate its moves with other central banks.

In particular, the possibility **for the ECB to coordinate its actions with the Federal Reserve** is further complicated by the fact that the US is (from 2019) a net exporter of energy, while the euro area is a strong importer of energy (see Figure 8). This creates a further asymmetry between the two sides of the Atlantic.

Figure 8. Euro area: Net imports of energy (% of GDP)



Source: Own elaboration based on Eurostat data.

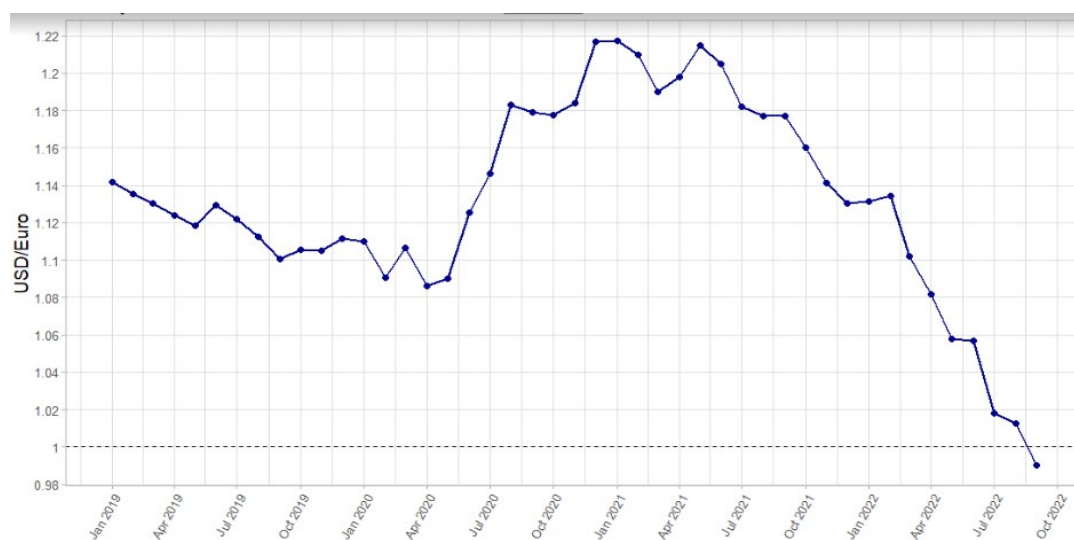
Although in fact—as discussed above—an increase in the international price of energy is not entirely an exogenous shock for major energy users such as the euro area and the US, nevertheless for the former this increase inevitably entails a net impoverishment due to the deterioration of its terms of trade and, therefore, a fall in real income (see the preceding Section), which is not the case for the latter. While monetary policy cannot avoid this fall in the euro area, it can, however, at least to a small extent, affect the extent of the fall by influencing the dollar/euro exchange rate, and above all it can determine how the consequent **loss of real income is divided between the loss of consumers' purchasing**



**power and the reduction of production.** In this way, the ECB policy has obvious repercussions on how the welfare loss due to the imported energy price hike is distributed among different social groups.

With regard to the dollar/euro exchange rate, the euro depreciated since the beginning of 2021 (see Figure 9), driven by the expectation that the ECB's policy stance would have been more accommodative than that of the Federal Reserve, thus adding its depreciation to the rise in the international price of oil and gas and contributing to the fall in the euro area's real income. However, what makes the task of the ECB extremely delicate in the face of an imported energy cost-push shock is that, in this situation, it has the discretionary power to choose how much of the loss in real income due to the shock is incurred by the euro area's consumers because of higher inflation, and how much by those who remain unemployed or have their profits reduced because of lower output.

Figure 9. US Dollar/euro exchange rate



Source: ECB.

As Isabel Schnabel said last August at Jackson Hole:

*"This discretion is particularly relevant in the case of supply-side shocks that tend to push prices and output in opposite directions. Stabilising inflation is then no longer equivalent to stabilising output – the divine coincidence of monetary policy disappears. Such shocks therefore imply a trade-off for monetary policy, between inflation and output"*

(Schnabel, 2022).

The exercise of this discretion is even more delicate in the euro area, since it can assume the form of support for those governments that, having less fiscal space, need that the ECB buys their bonds in order to subsidise their citizens and firms, so as to safeguard their purchasing power and level of activity in the face of higher energy costs. This is an example of how the central bank can affect governments' ability to spread the costs of a negative real shock over time by influencing the financial conditions at which they can resort to public debt.

## 4. INTERNATIONAL POLICY COORDINATION: EXPECTATIONS MANAGEMENT AND FISCAL POLICY

Problems associated with international policy coordination do not regard exclusively to what extent cross-border demand-related and financial spillovers are internalised. An important aspect of policy coordination is, in fact, the management of the entire policy mix within each country and across countries.

As there are several different forces behind the evolution of inflation across countries and over time, the specific role of monetary policy, fiscal policy and structural reforms in ensuring low inflation pressures need to be carefully determined.

This Section will discuss the risks that policymakers may fail to appreciate the benefits from domestic and international cooperation.

### 4.1. Expectations management and policy coordination

During the last few months, monetary authorities across the globe motivated their decision to speed up the normalisation of monetary policy on the basis of **growing concerns for a possible de-anchoring of inflation expectations**. As explained in Section 2, high levels of inflation are not only unpleasant *per se* but they can also destabilise the expectations formation mechanisms. If the observed shifts of expectations at short horizons feed into wage and price-setting decisions, the risk of de-anchoring may increase considerably (Gopinath, 2022).

By controlling the expectation formation mechanisms, central banks believe they can keep expectations anchored to the target and preserve well-ordered wage negotiations and price setting. Moreover, by convincing financial markets that they are committed to do whatever necessary to reduce inflation, the monetary authorities aim to improve the transmission of monetary policy along the yield curve. As pointed out by Gopinath (2022), the de-anchoring of inflation expectations would make addressing monetary policy trade-offs much more challenging. If shocks have more persistent effects on inflation when expectations are not well anchored, more forceful tightening is needed, resulting in a larger than necessary contraction in real activity. A weak or delayed response of the central banks to the first signs of inflation, in other words, could call for even stronger and more painful decisions later on.

While these motivations for reacting before the de-anchoring of expectations make sense, **there exist the risks that the authorities may be overdoing it**. Other risks for coordination may stem from **central banks altering their communication and decision-making to address expectations formation**, namely to convince the wider audience about their determination to fight inflation.

Indeed, given that the degree of anchoring of inflation expectations is often interpreted as a measure of the central bank's credibility, **the authorities may end up focusing on expectations *per se***, and not because of their impact on inflation dynamics.

To illustrate this possibility, we draw on two influential speeches given at the Jackson Hole annual Economic Policy Symposium held in August 2022. Isabel Schnabel (2022b), member of the Executive Board of the ECB, maintained that:

*"The second observation tilting the trade-off facing monetary policy towards more forceful action relates to **central banks' credibility**. ... For politically independent central banks, establishing and maintaining that trust is an important policy objective in and of itself."*



"We cannot say for certain what is behind these upward revisions to inflation expectations. ... All these factors may have created **perceptions of a higher tolerance** for inflation and a stronger desire to stabilise output."

*"Determined action is needed to **break these perceptions**. If uncertainty about our reaction function is undermining trust in our commitment to securing price stability, a cautious approach to policymaking will no longer be the appropriate course of action. Instead, a **politically independent central bank** needs to put less weight on stabilising output than it would when inflation expectations are well anchored."*

Schnabel strengthens her message by closing the speech as follows:

*"They need to lean with determination against the **risk of people starting to doubt** the long-term stability of our fiat currencies."*

*Regaining and preserving trust requires us to bring inflation back to target quickly. The longer inflation stays high, the greater the risk that the **public will lose confidence** in our determination and ability to preserve purchasing power."*

*Trust in our institutions is even more important at a time of major and disruptive structural change that brings about larger, more persistent and more frequent shocks. A reliable nominal anchor eases the transition towards the new equilibrium, and improves the **trade-off facing central banks in the future**." (our emphases).<sup>13</sup>*

These excerpts are just examples of the growing attention devoted by central bankers to communicating an extraordinary resolve to drive inflation down as soon as possible, notwithstanding the painful economic trade-offs it might entail, and despite the supply-side and global nature of the inflationary shocks.<sup>14</sup>

We refrain from discussing the pros and the cons of making the management of inflation expectations a goal of monetary policy in itself, as we acknowledge how delicate is the preservation of central bank credibility in adverse periods. If governments are always held responsible for hardship during economic crises irrespective of their actual responsibility (Hernandez and Kriesi, 2016), central banks are, in turn, viewed by many as responsible for prolonged deviations of inflation from the target.

Hence, we limit ourselves to address **the implications of reputational risk management on policy coordination**.

The first possible implication is that **central banks may "compete" among themselves** to show that they are equally determined to tame inflation pressures. This is particularly likely in a context where forward guidance is dismissed. This could complicate the efforts to coordinate monetary policy: if

<sup>13</sup> On the other side of the Atlantic, the reasoning is somehow similar. At the same meeting, the Chair of the Federal Reserve, Jerome H. Powell (2022), declared:

*"The first lesson is that central banks can and should take responsibility for delivering low and stable inflation. It may seem strange now that central bankers and others once needed convincing on these two fronts, but as former Chairman Ben Bernanke has shown, both propositions were widely questioned during the Great Inflation period. Today, we regard these questions as settled. Our responsibility to deliver price stability is unconditional."*

*It is true that the current high inflation is a global phenomenon, and that many economies around the world face inflation as high or higher than seen here in the United States. It is also true, in my view, that the current high inflation in the United States is the product of strong demand and constrained supply, and that the Fed's tools work principally on aggregate demand. None of this diminishes the Federal Reserve's responsibility to carry out our assigned task of achieving price stability. There is clearly a job to do in moderating demand to better align with supply. We are committed to doing that job."*

<sup>14</sup> Incidentally, this could be explained also as a reaction to the accusations of too an accommodative stance and too a delayed response of central banks to emerging inflationary pressures in spring/summer 2022.

central banks worry that any nuanced announcements may be perceived as signals of different degrees of determination to fight inflation, rather than as the needed differentiated reaction to asymmetric economic conditions, the incentives to follow the leader's move (as explained in previous Section) could grow further. Clearly, central banks always face a trade-off between detailed, technical and nuanced communication to expert public, on the one hand, and plain and accessible language to a wider audience, on the other hand (Assenmacher et al., 2022). In this case, however, this may have implications on international coordination (and lack thereof).

The second implication is that **such reputational competition could lead to a verbal stance that is stronger than the actual position**. This could be mirrored into controversial economic assessments. For instance, on the one hand, forward guidance has been widely dismissed in 2022 because "the outlook for inflation and economic activity is especially uncertain, with significant two-sided risks" (Bowman, 2022), but, on the other hand, determined and pre-emptive action has been considered as necessary to tame some evident inflationary pressures.

Thus, as noted by Villeroy de Galhau (2022), *"there can be market misperceptions of policy intentions or overshooting, and exchange rates can become fundamentally misaligned"*. This is a reminder of the risks associated with communication short-circuits and possible misunderstanding of the inevitably nuanced and country-specific interpretation of complicated global economic conditions. The solution to these risks of misalignments, according to Villeroy de Galhau (2022), is indeed policy coordination: *"Under such circumstances, there were G7 interventions in the past."*

## 4.2. Fiscal policy coordination

As explained above, although temporary shocks to commodities and energy markets tend to fade automatically over the medium term, workers may start a dangerous wage-price spiral in the attempt of recovering the loss in purchasing power due to price shock. This can be prevented in two ways: either through a restrictive economic policy (leading to a contraction of the GDP and lower pressures in labour markets) or through temporary measures aimed both at compensating workers of (part of) the incurred losses. **In both cases, fiscal policy can contribute greatly, even more than monetary policy alone**. In the US, where it is excess demand to determine inflation, monetary and fiscal policy could work together to bring back inflation. In the euro area, where inflation is due primarily to exogenous supply shocks, fiscal policy could instead help to redistribute income (so as to avoid excessive requests of wage increases), to incentivise behaviour conducive to lower consumption of energy, and to promote higher participation in the labour markets.<sup>15</sup>

This finds indirect support in the reasoning put forward by the ECB Governing Council (GC). During the meeting held on 20 and 21 July 2022, the ECB Governing Council recalled that monetary policy was not able to provide effective support when the economy was hit by a series of supply shocks. As during the pandemic, the GC's argument went, governments were better able to provide support to households and firms, leaving monetary policy to focus on inflation developments (ECB, 2022a).

It follows from this that international policy coordination in this situation should not be interpreted as an issue regarding exclusively monetary policy, along the normalisation path of higher interest rates, **but it should refer to the entire set of policy instruments within and across countries**. As well explained by Kahn and Meade (2016), all previous important episodes of policy coordination have included differentiated actions of fiscal authorities and monetary policymakers in the countries

<sup>15</sup> The ECB Governing Council acknowledged the existence of such distributional issues among workers and firms due to the terms-of-trade loss, but it aseptically noted that it would take time before the income losses shock were fully absorbed.

involved. On the contrary, the ongoing debate seems to neglect such differentiated roles of monetary and fiscal policies, notwithstanding the diverse conditions in the US and the euro area.

**As the euro area is a currency union, further considerations about the coordination of fiscal and monetary policy are in order.** Given that inflation in the euro area cannot be explained by excess demand, euro area countries may need additional fiscal space to prevent that price inflation worsens and wage inflation picks up. If properly designed, fiscal policy interventions can help to preserve price stability. In its meeting of 7-8 September 2022, the ECB GC revealed that fiscal support in 2022 lowered harmonised index of consumer prices (HICP) inflation by circa 0.6 percentage points; yet it also acknowledged that the unwinding of these temporary measures could push inflation up in 2023 and 2024.

It could be argued that the ECB could and should be interested in facilitating such kinds of interventions that contribute to wage moderation (and to lower second-round effects) and to structural transformation. Yet, at the GC's meeting in September, *"the concern was expressed that governments would find it difficult to keep measures targeted and to reverse them in a timely manner. The view was taken that, in the context of an adverse supply shock, governments were well advised to reduce their deficits and to put their finances on a structural consolidation path, especially in those countries where public debt sustainability might be called into question."* (ECB, 2022b).

The elephant in the room is the risk that the fiscal authorities in certain countries may exploit monetary-fiscal coordination to run inflationary policy interventions.

It could be argued that, short of country-specific discretionary interventions, euro area governments could still develop joint actions (e.g., joint commodities purchasing, joint investments in renewable technologies, etc.) and also facilitate redistribution across the euro area (e.g., temporary support to mitigate effects to low-wage and displaced workers). The removal of countries' moral hazard through the adoption of joint actions could allow the ECB to provide some targeted liquidity, as it did in the recent past with operations that will mature next year.<sup>16</sup> Even though the ECB has remained sensitive to growth risks, and the evolution of the real short-term rates still signals a highly accommodative policy, new sophisticated forms of coordination between fiscal and monetary policy (of the kind discussed before) could be considered.

### 4.3. Alternative scenarios

Before closing, we wish to consider the implications of alternative scenarios on our claim for greater international coordination of both monetary and fiscal policies.

First, it could be argued that the determinants of higher inflation in the euro area have been changing over time. While the asymmetry between the US and the euro area was clear up until the summer 2022, inflationary pressures in some countries are not entirely detached from demand-driven factors. While this could strengthen the case for a faster process of monetary normalisation in the euro area, it would make the coordination between the euro area and the US simpler. A more hawkish stance on both sides of the Atlantic would increase the case for coordinating fiscal and monetary policies as the risks of over-tightening would be larger, as argued by Maurice Obstfeld (2022).

Second, it could be considered a scenario where the temporary shocks affecting the European economy gradually transform into structural shocks and negatively affect potential output. As argued

<sup>16</sup> Notably, this is a completely different kind of the fiscal-monetary coordination than established with the Transmission Protection Instrument (TPI), that is meant to deal with temporary disorderly reactions in financial markets due to the necessary normalisation of monetary policy.

at the ECB's GC meeting of the in September: *"Over the medium term, inflation might turn out to be higher than expected because of a persistent worsening of the production capacity of the euro area economy"* (ECB, 2022b). Should potential output suffer more than demand from the war and the pandemic, this could fuel inflationary pressures even in the face of lower real incomes. Although this scenario does not currently appear as the most likely, it is worth considering here. And it fair to argue that it would represent another situation in which the euro area and the US could face more symmetric situations and benefit from coordination.

In sum, fiscal and monetary policy coordination would be needed both within countries/currency areas and across them. This has indeed been true in previous episodes of international policy coordination when finance ministers and central bankers discussed their respective roles in these joint undertakings. So far, instead, the debate about coordination revolves only around central banks and monetary policies.

## 5. CONCLUSIONS

Since 2021, inflation has increased rapidly all over the world due to a **strong post-pandemic recovery** (driven by accommodative fiscal and monetary policy), the presence of **supply side restrictions** (e.g., global value chain bottlenecks) and the emergence of **extraordinary cost-push** shocks linked with the energy crisis.

To **address the risk that inflation remains persistently high and that inflation expectations become de-anchored**, policy interest rates have been raised forcefully by most central banks in 2022, after a prolonged period of highly accommodative monetary stance. However, the synchronised upward trends in inflation and interest rates around the world hide a **fairly differentiated environment across the areas**, in particular between the euro area and the US. Inflation surge in the US owes much to excess demand, supply bottlenecks and labour market tightness, whereas inflation in the euro area has mainly to do with a large cost-push shock and the depreciation of the euro in 2022. In both countries, though, wage inflation pressures have been mounting recently. In this environment, the rapid surge in policy rates and long-term market rates in the US has exerted pressure on the **bilateral exchange rates of the US dollar**, thereby contributing to the depreciation of the euro and of many emerging market currencies, as well as to the increase of imported inflation in such areas.

Against this background, this paper discusses how **central banks face risks of both under- and over-tightening**. Too soft a reaction could lead inflation expectations to de-anchor, thereby feeding second round effects that could entrench a high level of inflation. Over-tightening, instead, could lead the global economy into a severe recession, weighing on those parts of the population who already suffer most of real income losses due to high inflation. These circumstances call for **greater efforts to coordinate the policy mix within and across countries**: where high inflation stems from excessive demand and tight labour markets, monetary policy could be aggressive and fiscal policy should play its part in moderating aggregate demand; where inflation reflects sectoral imbalances associated with the energy shock, monetary policy could benefit from fiscal and structural policies that dampen inflation pressures on wages.

Another important aspect of today's global environment considered in the paper is that, given the dollar's centrality in the world's monetary and financial system, **the current US monetary tightening is causing serious spillovers on other countries**, that the US authorities have incentives to internalise only to the extent that financial instability arising in the latter may have negative consequences for the US itself. Hence, a fully-fledged and symmetric coordinating effort is unlikely, since the US authorities can act as leader and decide their moves on the basis of the state of the US economy, while the other countries cannot but adapt their policies to what the US is doing.

Finally, the paper observes **how some coordination among domestic policymakers would be warranted, too, but it does not appear easy**. Central banks are highly concerned that high inflation records could undermine the credibility gained over the last decades, and they risk putting reputational concerns above short-term output stabilisation goals. Fiscal authorities, conversely, could worry too much for the deceleration of the economy and implement accommodative policies that risk worsening excess demand (in the US) and sectoral imbalances (in the euro area). Although the necessary adjustments will entail serious trade-offs between economic and price stabilisation, coordination could help to avoid excesses and exploit, rather than suffer from, spillovers.

## REFERENCES

- Assenmacher, K., Glöckler, G., Holton, S., Trautmann, P., Ioannou, D. and Mee, S. (2021). "Clear, Consistent and Engaging: ECB Monetary Policy Communication in a Changing World", Occasional Paper Series, No 274, European Central Bank.  
<https://www.ecb.europa.eu/pub/pdf/scpops/ecb.op274~9aca14e6f6.en.pdf>
- Baldwin, R. and Weder Di Mauro, B. (eds., 2020). *Economics in the Time of Covid-19*, London, CEPR Press, <https://cepr.org/publications/books-and-reports/economics-time-covid-19>
- Battistini, N., Di Nino, V., Dossche, M. and Kolndrekaj, A. (2022). "Energy Prices and Private Consumption: What are the Channels?", in ECB, *Economic Bulletin*, n. 3.  
[https://www.ecb.europa.eu/pub/economic-bulletin/articles/2022/html/ecb.ebart202203\\_01~f7466627b4.en.html](https://www.ecb.europa.eu/pub/economic-bulletin/articles/2022/html/ecb.ebart202203_01~f7466627b4.en.html)
- Bailey, A. (2022). "Bank of England Monetary Policy Report Press Conference. Opening Remarks", May 5. <https://www.bankofengland.co.uk/speech/2022/may/andrew-bailey-panellist-at-the-oesterreichische-national-bank-annual-economic-conference>
- Bernanke, B.S. (2013). "Monetary Policy and The Global Economy", Speech at the London School of Economics, London, 25 March.  
<https://www.federalreserve.gov/newsevents/speech/bernanke20130325a.htm>
- Blanchard, O. J. and Galí, J. (2007). "Real Wage Rigidities and the New Keynesian Model". *Journal of Money, Credit, and Banking*, 39, pp. 35-65.
- Bonatti, L. and Tamborini, R. (2022). "The ECB and the Ukraine War: Threats to Price, Economic and Financial Stability", publication for the committee on Economic and Monetary Affairs, Policy Department for Economic, Scientific and Quality of Life Policies, European Parliament, Luxembourg. [https://www.europarl.europa.eu/cmsdata/249488/Bonatti-Tamborini\\_CN.pdf](https://www.europarl.europa.eu/cmsdata/249488/Bonatti-Tamborini_CN.pdf)
- Bowman, M.W. (2022). Speech at the New York University, 12 October 2022.  
<https://www.bis.org/review/r221013a.htm>
- Chahad, M., Hofmann-Drahonsky, A., Meunier, B., Page, A. and Tirpák M. (2022). "What Explains Recent Errors in the Inflation Projections of Eurosystem and ECB Staff?", ECB, *Economic Bulletin*, n. 3. <https://www.ecb.europa.eu/pub/pdf/ecbu/eb202203.en.pdf>
- De Fiore, F., Lombardi, M. J. and Rees, D. (2022). "Inflation Indicators Amid High Uncertainty", BIS Bulletins 60, Bank for International Settlements. <https://www.bis.org/publ/bisbull60.htm>
- European Central Bank. (2021). "Inflation Expectations and Their Role in Eurosystem Forecasting", ECB Occasional Paper Series, n. 264.  
<https://www.ecb.europa.eu/pub/pdf/scpops/ecb.op264~c8a3ee35b5.en.pdf>
- European Central Bank. (2022a). "Account of the Monetary Policy Meeting of the Governing Council of the European Central Bank held in Frankfurt am Main on 20-21 July 2022".  
<https://www.ecb.europa.eu/press/accounts/2022/html/ecb.mg220825~162cfabae9.en.html>
- European Central Bank. (2022b). "Account of the Monetary Policy Meeting of the Governing Council of the European Central Bank held in Frankfurt am Main on 7-8 September 2022".  
<https://www.ecb.europa.eu/press/accounts/2022/html/ecb.mg221006~a5f7fb03f3.en.html>
- European Central Bank. (2022c). *Economic Bulletin*, Issue 6, October.  
<https://www.ecb.europa.eu/pub/pdf/ecbu/eb202206.en.pdf>



- Filardo, A.J., Lombardi, M.J., Montoro, C. and Ferrari, M. (2018). "Monetary Policy Spillovers, Global Commodity Prices and Cooperation", BIS Working Papers No 696.  
<https://www.bis.org/publ/work696.htm>
- Filardo, A.J., Lombardi, M.J., Montoro, C. and Ferrari, M. (2020). "Monetary Policy, Commodity Prices, and Misdiagnosis Risk", *International Journal of Central Banking*, 16(2): 45-79.
- Gopinath, G. (2022). "How Will the Pandemic and the War Shape Future Monetary Policy?", Jackson Hole Symposium, August 26 <https://www.imf.org/en/News/Articles/2022/08/26/sp-gita-gopinath-remarks-at-the-jackson-hole-symposium>
- Greenwald, B.C. and Stiglitz, J.E. (1993). "Financial Market Imperfections and Business Cycles", *Quarterly Journal of Economics*, 108, 77-113.
- Hernandez, E. and Kriesi, H. (2016). "The Electoral Consequences of the Financial and Economic Crisis in Europe", *European Journal of Political Research*, 55: 203-224
- Hofmann, B., Shim, I. and Shin, H.S. (2016). "Sovereign Yields and the risk-taking channel of Currency Appreciation", BIS Working Papers No 538.  
<https://www.bis.org/publ/work538.htm#:~:text=Sovereign%20yields%20and%20the%20risk%2Dtaking%20channel%20of%20currency%20appreciation,-Revised%20version%2C%20May&text=Currency%20appreciation%20goes%20hand%20in,in%20the%20credit%20risk%20premium>.
- International Monetary Fund. (2022). *World Economic Outlook*, October.  
<https://www.imf.org/en/Publications/WEO/Issues/2022/07/26/world-economic-outlook-update-october-2022>
- Kahn, R.B. and Meade, E. E. (2016). "International Aspects of Central Banking: Diplomacy and Coordination", Finance and Economics Discussion Series 2016-062, Board of Governors of the Federal Reserve System. <https://www.federalreserve.gov/econres/feds/international-aspects-of-central-banking-diplomacy-and-coordination.htm>
- Keynes, J. M. (1937). "General Theory of Employment", *Quarterly Journal of Economics*, 53, pp. 109-123
- Knight, F. (1921). *Risk, Uncertainty and Profit*, Chicago, Chicago University Press.
- Lane, P. R. (2020). "[The monetary policy toolbox: evidence from the euro area](#)", Keynote speech at the 2020 US Monetary Policy Forum, New York, 21 February.  
<https://www.ecb.europa.eu/press/key/date/2020/html/ecb.sp200221~d147a71a37.en.html>
- Lane, P. R. (2022). "Monetary Policy in the Euro Area: The Next Phase", High-level panel "High Inflation and Other Challenges for Monetary Policy", Annual Meeting 2022 of the Central Bank Research Association (CEBRA), Barcelona.  
<https://www.ecb.europa.eu/press/key/date/2022/html/ecb.sp220829~b9fac50217.en.html>
- Obstfeld, M. (2022). "Uncoordinated Monetary Policies Risk a Historic Global Slowdown", Peterson Institute for International Economics, Realtime Economic Issues Watch, September 12, 2022, <https://www.piie.com/blogs/realtime-economic-issues-watch/uncoordinated-monetary-policies-risk-historic-global-slowdown>
- Passamani, G. and Tamborini, R. (2013). "Monetary Policy Through the "Credit-Cost Channel". Italy and Germany pre- and post-EMU", *Applied Economics*, 45:29, pp. 4095-4113

- Passamani, G., Sardone, A. and Tamborini, R. (2022). "Inflation Puzzles, the Phillips Curve and Output Expectations: New Perspectives from the Euro Zone", *Empirica*, vol. 49, pp. 123-153.
- Plantin, G. and Shin, H.S. (2016). "Exchange Rates and Monetary Spillovers", BIS Working Papers No 537. <https://www.bis.org/publ/work537.htm>
- Rey, H. (2013). "Dilemma Not Trilemma: the global financial cycle and Monetary Policy Independence", Proceedings of the Federal Reserve Bank of Kansas City, Economic Symposium at Jackson Hole.
- Rey, H. (2014). "International Channels of Transmission of Monetary Policy and the Mundellian Trilemma", Mundell-Fleming Lecture at the fifteenth Jacques Polak Annual Research Conference on Cross-Border Spillovers.
- Riggi, M. and Venditti, F. (2014). "Surprise! Euro Area Inflation Has Fallen", Bank of Italy Occasional Papers n. 237. <https://www.bancaditalia.it/pubblicazioni/qef/2014-0237/index.html?com.dotmarketing.htmlpage.language=1>
- Riggi, M. and Venditti, F. (2015). "Failing to forecast low inflation and Phillips Curve Instability: a Euro-Area Perspective", *International Finance*, 18, pp.47–67.
- Rogoff, K.S. (2013). "Comment on 'International Policy Coordination: Present, Past and Future'" by John B. Taylor", BIS Papers No 74. [https://www.bis.org/events/conf130620/rogoff\\_comments.pdf](https://www.bis.org/events/conf130620/rogoff_comments.pdf)
- Rudd, J. B. (2021). "Why Do We Think That Inflation Expectations Matter for Inflation? (And Should We?)", Finance and Economics Discussion Series, Divisions of Research & Statistics and Monetary Affairs, Federal Reserve Board, Washington, D.C., n. 2021-062. <https://www.federalreserve.gov/econres/feds/files/2021062pap.pdf>
- Schnabel, I. (2020). "COVID-19 and Monetary Policy: Reinforcing Prevailing Challenges", Speech at the Bank of Finland Monetary Policy webinar, 24 November. <https://www.ecb.europa.eu/press/key/date/2020/html/ecb.sp201124~bcaebee7c0.en.html>
- Schnabel, I. (2022a). "The Globalisation of Inflation", Speech at a conference organised by the Österreichische Vereinigung für Finanzanalyse und Asset Management, Vienna, 11 May. [https://www.ecb.europa.eu/press/key/date/2022/html/ecb.sp220511\\_1~e9ba02e127.en.html#footnote.2](https://www.ecb.europa.eu/press/key/date/2022/html/ecb.sp220511_1~e9ba02e127.en.html#footnote.2)
- Schnabel, I. (2022b). "Monetary Policy and Great Volatility", Speech at the Jackson Hole Economic Policy Symposium organised by the Federal Reserve Bank of Kansas City, Jackson Hole, Wyoming. <https://www.ecb.europa.eu/press/key/date/2022/html/ecb.sp220827~93f7d07535.en.html>.
- Sims, C. (2010). "Rational Inattention and Monetary Economics," in B.M. Friedman and M.Woodford, eds., *Handbook of Monetary Economics*, vol. 3 (Amsterdam: North-Holland), pp. 155–81.
- Tamborini, R. (2009). "The "Credit–Cost Channel" of Monetary Policy. A Theoretical Assessment". *Economics E-Journal*, 3. <http://www.economics-ejournal.org/economics/journalarticles/2009-13>.
- Taylor, J.B. (1993). "Discretion Versus Policy Rules in Theory and Practice", *Carnegie-Rochester Conference Series on Public Policy*, 39, pp. 195-214.
- Taylor, J.B. (2013). "International Monetary Policy Coordination: Past, Present and Future", BIS Working Papers No 437. <https://www.bis.org/publ/work437.pdf>
- Villeroy de Galhau, F. (2022). Speech at the Columbia University, New York, 11 October 2022, available at <https://www.bis.org/review/r221012a.htm>



- 
- Visco, I. (2022). "Monetary policy and inflation: recent developments", Keynote address at the conference on "The multiple role of the central banks: new frontiers of the monetary policy", Florence, 30 September 2022, <https://www.bis.org/review/r221003j.htm>
  - Whelan, K. (2021). "Central Banks and Inflation: Where Do We Stand and How Did We Get Here?", CEPR Discussion Papers, n.16557.
  - Woodford, M. (2003). *Interest and Prices*, Princeton, Princeton University Press.
  - World Bank. (2022). "Risk of Global Recession in 2023 Rises Amid Simultaneous Rate Hikes", 15 September. <https://www.worldbank.org/en/news/press-release/2022/09/15/risk-of-global-recession-in-2023-rises-amid-simultaneous-rate-hikes>





# Managing global monetary spillovers

How the Fed's interest rate hikes and uncoordinated tightening affect the euro area

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## **Abstract**

Inflation pressures have triggered a largely synchronised tightening of monetary policy around the world. The sharp appreciation of the US dollar is adding to the challenges that policymakers confront. The paper sets out to identify the channels through which US tightening spills over to the rest of the world, with a particular focus on the euro area. It also examines the risks that stem from uncoordinated monetary tightening and discusses how different forms of global cooperation can help mitigate those risks.

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## LIST OF ABBREVIATIONS

<b>BIS</b>	Bank for International Settlements
<b>CPI</b>	Consumer price index
<b>ECB</b>	European Central Bank
<b>Fed</b>	Federal Reserve
<b>IMF</b>	International Monetary Fund
<b>GDP</b>	Gross domestic product
<b>HICP</b>	Harmonised index of consumer prices
<b>US</b>	United States
<b>USD</b>	United States dollar

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## EXECUTIVE SUMMARY

- **Successive interest rate hikes by the United States Federal Reserve (Fed) since early 2022 have sizeable global spillover effects.** In the age of economic and financial globalisation, interdependent economies are affected by policy decisions of their partners, and the world's largest economy is in a prominent position from this respect.
- **The Fed's tightening exerts its spillover effects through multiple channels.** The tightening shock is transmitted both through global trade and the financial system. Existing macroeconomic literature shows that US tightening puts downward pressures on other countries' GDP growth, and a mix of upward and downward pressures on prices.
- **The euro area is exposed to a mix of inflationary and contractionary forces as a result of the Fed's tightening.** Imported inflation rises, as the weaker euro exchange rate pushes up energy and commodity prices. Meanwhile, aggregate demand drops due to two forces: US tightening reduces foreign demand for euro area exporters, and it also reverberates through a globally-integrated financial system, tightening monetary conditions in the euro area too.
- **The euro area is in a vulnerable position to absorb these spillovers.** The euro area has been hit by a severe recessionary energy price shock driven by Russia's invasion of Ukraine, and is set to suffer a slowdown in economic activity that is worse than other advanced economies. Dramatic spikes in energy and food prices gave rise to a cost-of-living crisis. Spillovers from US tightening pile on top these challenges.
- **An uncoordinated, simultaneous hike of interest rates around the world raised alarms about the risks of overtightening, and a global recession.** First, central banks can be pushed to engage in a mutually-damaging "race to the top", increasing interest rates aggressively to cut imported inflation at each other's expense. Second, they can fail to adequately take into account demand feedback loops as they calibrate their monetary policy. Third, a credit crunch can cascade into broader financial instability.
- **There have been calls for international coordination to help mitigate these overtightening risks.** But the exact meaning and content of this coordination can be manifold: institutionalised or ad hoc agreements on policy decisions, information exchanges between central banks, or cooperation in managing financial crises.
- **The historical record shows that a degree of coordination can indeed be beneficial.** However, institutionalised setups or multilateral interventions in foreign exchange markets like the famous Plaza Accord seem neither realistic nor effective in the current political and economic circumstances.
- **What policy makers could focus instead are three things: 1) avoid a "race to the top",** either by coordination, or simply by anticipating the risk of retaliation, and not engaging in overtightening spirals; **2) foster information exchanges** among central banks about their respective policy reaction functions, so that demand spillovers are correctly factored into monetary policy decisions; **3) cooperate in strengthening financial safety nets,** for instance by providing international liquidity. Given the outsized role of the dollar in the global economy, the Fed's role remains especially pronounced.

## 1. INTRODUCTION

Inflation is at a multi-decade high in several economies. According to the International Monetary Fund (IMF), global inflation is expected to peak at 9.5% this year before decelerating to 4.1% by 2024. In advanced economies, inflation reached its highest rate since 1982 but the disinflation dynamic for this group of countries is expected to be more pronounced than for other country groups over the next two years (IMF, 2022a). In the euro area, dramatic spikes in energy and food prices are giving rise to a cost-of-living crisis and the risks to economic activity are clearly on the downside.

Inflation pressures have triggered a largely synchronised tightening of monetary policy around the world. Since the start of 2022, central banks of Australia, Canada, the euro area, New Zealand, Norway, Sweden, Switzerland, the United Kingdom, and the United States, which together account for around half of global gross domestic product (GDP), have raised their policy rates by 200-300 basis points (bps). The generalised tightening of monetary conditions is widely expected to translate into a broad-based slowdown in economic activity. The World Bank recently warned that the simultaneous and mutually-compounding tightening of financing conditions that is currently undertaken by central banks around the world might exceed what is necessary to contain inflation and could exacerbate the risk of a global recession (World Bank, 2022). This can be particularly problematic for the euro area where the risks to economic activity are already markedly on the downside.

In this context, the sharp appreciation of the US dollar (USD) is adding to the challenges that economic policymakers confront, by increasing the costs of imported goods.

Some economists and policymakers have pointed out that uncoordinated, yet synchronised rate hikes bear the risk of overdoing monetary tightening, inducing a contraction of economic activity that is harsher than what is needed to achieve price stability mandates in their respective jurisdictions (e.g. Obstfeld, 2022; Panetta, 2022). These warnings do not imply that central banks should change the direction of monetary policy – given the severe social costs of inflation, it is crucial to avoid a de anchoring of expectations and ward off second-round effects. However, it is just as important that central banks properly take into account spillover effects and not engage in overtightening relative to their carefully calibrated monetary policy stance.<sup>1</sup>

The purpose of this paper is twofold. First, the paper sets out to identify the channels through which US tightening spills over to the rest of the world, with a particular focus on the euro area. Second, the paper examines the risks that stem from uncoordinated monetary tightening and discusses how different forms of global cooperation can help mitigate those risks.

The paper argues and illustrates that the euro area is exposed to a mix of severe inflationary and recessionary forces as a result of the Federal Reserve's tightening. It also illustrates how uncoordinated monetary policy decisions indeed carry overtightening risks of overdoing monetary tightening. Finally, this paper argues that institutionalised setups or multilateral interventions in foreign exchange markets like the famous Plaza Accord do not seem realistic in current circumstances, where neither the US nor its trading partners have political interest in addressing the misalignments. However, there are multiple other avenues for coordination: agreements to avoid competitive appreciation risks, information exchanges to properly account for demand feedback loops, or financial crisis cooperation.

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<sup>1</sup> It is important to emphasise that assessing the appropriate monetary policy stance is outside the scope of this paper. The analysis focuses on spillovers from US monetary tightening, and concludes that the lack of international coordination mainly entails overtightening risks. Throughout the text, overtightening is understood as relative to the optimal policy stance.

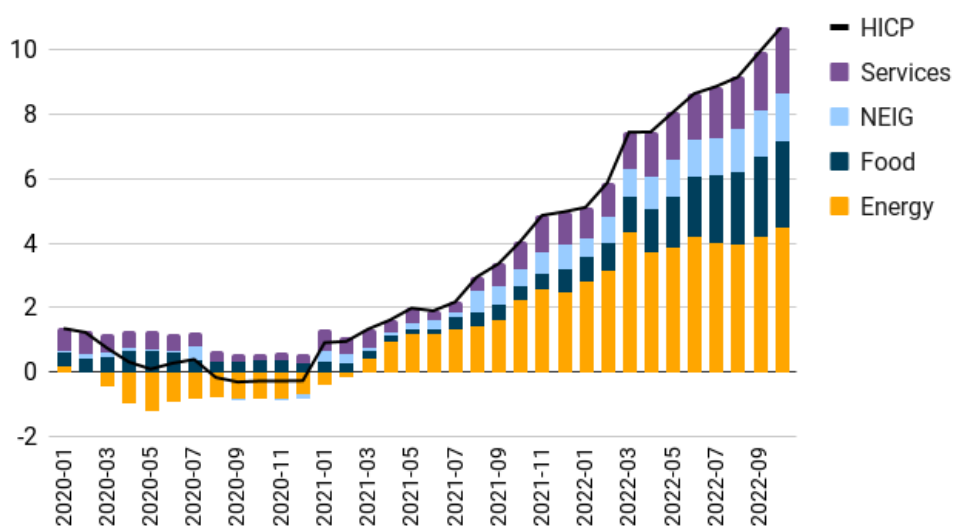
The paper is organised into three parts. In section 2, we examine the current inflation dynamics in the euro area. In Section 3, we discuss the global spillovers of US tightening through the trade and financial channels and their implications for the euro area economy. Finally, in Section 4 we review the risks of continued, uncoordinated monetary tightening in the United States and the potential benefits of global cooperation to address the negative spillover effects of US tightening. In doing so, the paper also provides a brief review of the historical development of macroeconomic policy coordination and financial crisis management cooperation among advanced economies.

## 2. INFLATION DYNAMICS IN THE EURO AREA

Euro area inflation has reached double-digit levels, the highest since the inauguration of the common currency. In October 2022, headline inflation reached 10.7%, while core inflation rose to 5%.<sup>2</sup> Inflation is driven by a series of severe supply shocks. These include global supply chain disruptions in the wake of the COVID-19 pandemic and, especially, the Russian invasion of Ukraine with the resulting dramatic spike in energy prices. As shown by Figure 1, energy prices' contribution to the headline harmonised index of consumer prices (HICP) number was negative throughout 2020, and rose to over 4% by the last quarter of 2022. Food price inflation also accelerated, strongly linked to surging prices of energy inputs, but also exacerbated by extreme weather events (Bodnár and Schuler, 2022). According to the latest monetary policy statement by the European Central Bank (ECB), the risks to the inflation outlook continue to be on the upside, while the risks to the economic outlook are clearly on the downside (European Central Bank, 2022). In particular, high inflation is dampening spending and production in the euro area, while financial conditions for firms, households and banks have tightened in response to the rise in interest rates.

The inflation and economic outlook in the euro area also need to be understood against the global background and, in particular, against the monetary tightening that has taken place across high-income countries. As anticipated, since the start of 2022, in addition to the ECB, the central banks of the United States, the United Kingdom, Canada, Australia, New Zealand, Norway, Sweden, and Switzerland have raised their policy rates by 200-300 bps (see Figure 2).

Figure 1: Contributions to euro area headline HICP inflation

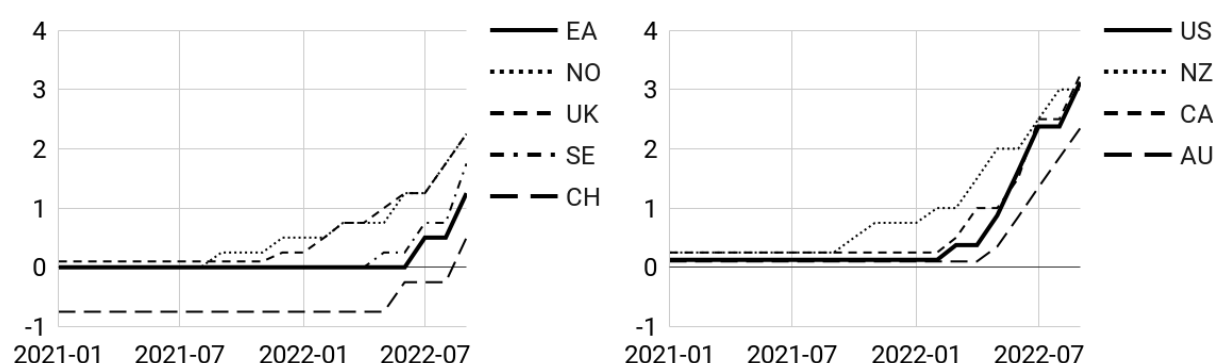


Source: Eurostat.

Notes: Monthly data. NEIG: non-energy industrial goods. Latest observation: 2022-10.

<sup>2</sup> Because of scope limitations, the paper views the euro area as a whole, and does not delve into heterogeneity among members. However, there is significant variation, also in inflation rates: worst-hit members are the Baltic countries, with over 20% inflation, compared to 6.2% in France. The second set of papers prepared for this Monetary Dialogue deals with this issue in more detail.

Figure 2: Policy rates of the ECB, Fed and select advanced economies



Source: Bank for International Settlements.

Notes: Latest observation: 2022-09.

Given the centrality of the dollar in global trade and finance, the monetary policy decisions taken in the United States deserve particular attention. Since the start of the year, the US Federal Reserve (Fed) has increased the federal funds effective rate from 0.08% to 3.08% in October.<sup>3</sup> In its latest interest rate decision in November, the Federal Open Market Committee decided to increase the federal funds rate further to a target range to 3.75-4%. In addition to the interest rate tightening, the Fed accelerated the shrinkage of its balance sheet (Federal Reserve, 2022). Financial conditions have tightened accordingly. The 10-year Treasury yield has risen more than 200 bps since the beginning of the year and is near its highest level in over a decade (Brainard, 2022).

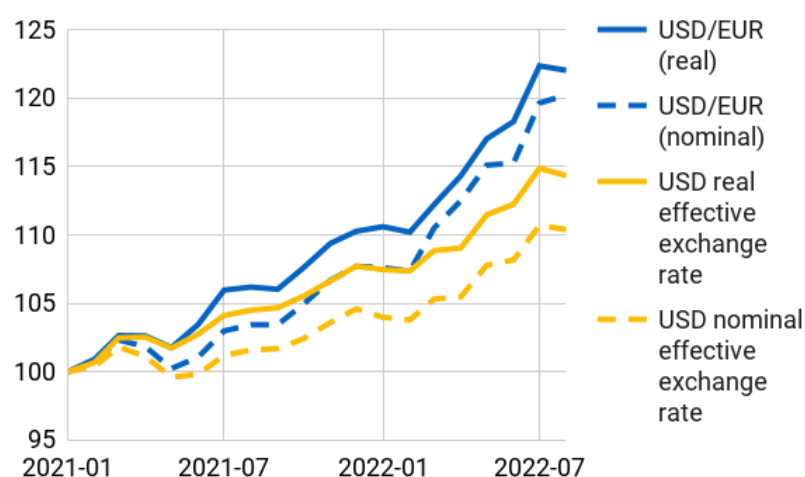
In addition to the domestic effects, the monetary decisions taken by the US Fed have international effects via the impact on exchange rates. The USD is now at its strongest level since the early 2000s and its appreciation is particularly marked against the currencies of other advanced economies (Gourinchas, 2022). The euro is below parity with the dollar for the first time since 2002.

Figure 3 demonstrates the steep appreciation of the US currency. Both in nominal and real terms, it has appreciated by over 20% relative to the euro since the beginning of 2021. The dollar's effective exchange rates (against the 42 biggest trading partners of the US) show similar dynamics, although appreciation relative to the euro is significantly stronger.

The dollar surge is mostly driven by economic fundamentals thus far, that is mainly tight monetary policy and the global terms-of-trade shock associated with high energy prices that has hit some countries, especially the euro area, more severely compared to the US (Gopinath and Gourinchas, 2022). Even if justified by economic fundamentals, the dollar surge is a potential source of global instability.

<sup>3</sup> Board of Governors of the Federal Reserve System (US), Federal Funds Effective Rate [FEDFUNDS], retrieved from FRED, Federal Reserve Bank of St. Louis; <https://fred.stlouisfed.org/series/FEDFUNDS>, 9 November 2022.

Figure 3: USD/EUR exchange rates and USD effective exchange rates (real and nominal)



Source: Authors' calculations based on Eurostat.

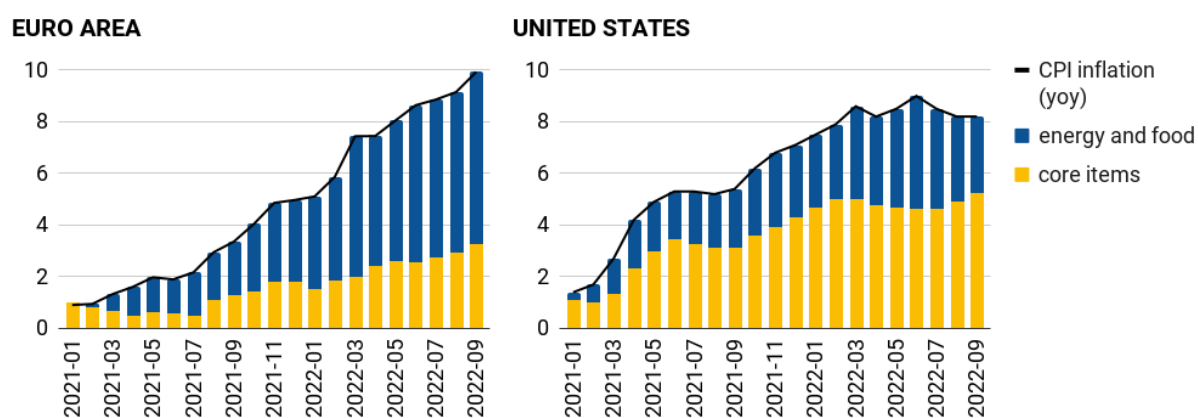
Notes: 2021-01=100. Monthly data. Latest observation: 2022-08. Effective exchange rates are trade-weighted averages of bilateral exchange rates against the 42 biggest trading partners of the United States.

Amidst the synchronised tightening, there has been some policy divergence across advanced economies, in particular the Fed and the ECB. The Fed moved sooner and more aggressively with rate hikes, raising the Fed-ECB interest rate differential to 1.875 percentage points in September 2022, from 0.125 in the previous year. The reason for this is that the two central banks needed to respond to quite dissimilar shocks: inflation was more demand-driven in the US, more supply-driven in Europe. As shown in Figure 4, the United States saw a surge in inflation much earlier,<sup>4</sup> and driven by core items, Europe suffered a recessionary terms-of-trade shock (Gopinath and Gourinchas, 2022), confronting policymakers with very different and harsher trade-offs between curbing inflation and hurting employment/output (see also: Ricarte et al., 2022).

The policy divergence between the US and the euro area, with the attendant surge of the dollar against the euro, may act as a strong driver of imported inflation, primarily through higher energy and commodity prices. At the same time, the strong dollar may export recessionary pressures by dampening domestic demand in the US and thus amplifying the impact of the ECB monetary tightening on euro area economic activity. In order to disentangle these inflationary and contractionary effects, the paper focuses on the cross-border effects of US monetary policy and, in particular, on the general transmission channels and the specific ones for the euro area.

<sup>4</sup> This difference between US and euro area inflation is also visible in the larger gap between real and nominal USD/EUR exchange rates in Figure 3.

Figure 4: Contributions to headline inflation in the euro area and United States



Source: Authors' calculations based on Eurostat, U.S. Bureau of Labor Statistics.

Notes: Monthly data. Latest observation: 2022-09.



### 3. GLOBAL TIGHTENING AND THE EURO AREA

#### 3.1. Spillover channels of US tightening

US monetary tightening has spillover effects, transmitted via global trade and the financial system, through multiple channels. It is difficult to view these channels in isolation, since they interact with domestic conditions and policy responses, and they can be offset by other shocks, while also interacting with one another. Yet it is useful to disentangle a few important ones. Channels 1 and 2 work through trade (or the real economy), while channel 3 works through the financial system.

1. The most direct spillover effect is exerted through **imported inflation**. Relative monetary tightening in the US strengthens the nominal dollar exchange rate, and this (mechanically) increases consumer price inflation (CPI) of trading partners. It works through the rise in the prices of (final) import products and imported intermediate inputs. It has an *immediate* impact, while others are expected to occur with time lags. The effect is **inflationary** and **contractionary**. The strength of this transmission channel depends on each country's trade openness, imports' share in consumption and imported inputs' share in production.
2. US monetary conditions also affect each partners' **trade balance** (net exports), with an impact on inflation. This effect is both more indirect and ambiguous. It is useful to further differentiate between two components of this effect, since they point to different directions. There are two ways to adjust the trade balance. *Expenditure switching* is a change in relative prices, shifting spending towards more competitive (i.e. cheaper) goods and services of the depreciating country. *Expenditure changing* is a change in the overall level of spending, moving the trade balance by depressing or boosting demand for both imported and domestically produced goods and services.
  - a) Through expenditure switching, US monetary tightening appreciates the real dollar exchange rate, boosting trading partners' competitiveness and exports (hence, aggregate demand). The effect is inflationary and expansionary (in fact, the only expansionary channel among those listed). The strength of this transmission channel depends on the price elasticity of exports.
  - b) Through expenditure changing, US monetary tightening depresses US aggregate demand, including import demand. Trading partners experience a drop in foreign demand for their goods and services. The effect is deflationary and contractionary. The strength of this transmission channel depends on trade openness towards the US market.
3. A separate channel is linked to the dollar's outsized role in global finance, and economies' **financial (dollar) exposure**. The tightening of monetary conditions by the Fed leads to the tightening of monetary conditions elsewhere, also in countries where additional monetary tightening is not necessary. The effect is **deflationary** and **contractionary**. The strength of this transmission channel depends on the economy's exposure to dollar funding and integration with US financial markets.

The financial channel, too, has multiple components, as Ca' Zorzi et al. (2020, pp. 19-21) explain in detail. First, US tightening pushes trading partners' price levels up by raising imported inflation (channel 1). This triggers an interest rate policy response, ultimately *raising the yield curve* in the rest of the world. Second, countries outside of the US have assets and liabilities denominated in US dollars. This can give rise to *currency mismatch* problems, and a strengthening dollar can lead to valuation losses, and severe

contractionary effects. Third, in a financially-integrated world, monetary tightening in the US squeezes the entire global financial system through the so-called *balance sheet* channel. Higher interest rates tighten the balance sheets of overly-leveraged investors in the US (who do not have enough equity to absorb shocks), and financial stress spreads across borders. Globally shrinking dollar liquidity creates problems, because of widespread reliance on dollar funding. If funding dries up, borrowers are unable to refinance and roll over debt, and events can cascade into funding crises and more widespread financial turmoil.

To sum up, US monetary tightening exerts spillover effects on other countries' economic aggregates through multiple channels. On economic output, all transmission channels apart from 2a (expenditure switching) point towards contractionary effects, predicting a net negative impact. On inflation, the picture is more mixed: two channels imply inflationary, two others deflationary pressures.

Table 1: Overview of transmission channels

	Spillover channel	Effect on other countries' GDP	Effect on other countries' inflation
1	Imported inflation	–	+
2a	Expenditure switching	+	+
2b	Expenditure changing	–	–
3	Financial exposure	–	–

Source: Authors' own conception.

### 3.2. Impact on the euro area

As the overview of the transmission channels has shown, US tightening affects the euro area with mainly downward pressures on GDP, and a mix of upward and downward pressures on prices. The net effect depends on the significance and relative strength of these channels. This question has been addressed extensively by the empirical macroeconomic literature, and a short overview of some relevant findings is presented.

A result that is robust across multiple studies is that a US monetary tightening shock has a negative impact on foreign countries' GDP, employment and industrial production (Georgiadis, 2016; Dedola et al., 2017; Dieppe et al., 2017; Iacoviello and Navarro, 2019; Ca' Zorzi et al., 2020). This is in line with theoretical expectations mapped out above. External demand drops, and subsequent tightening by domestic authorities depresses domestic demand too. The effect of financial channels is especially pronounced. Positive impacts of trade competitiveness through expenditure switching are dominated by contractionary forces. It is quite remarkable that some studies estimate these effects on output to be even larger than impacts within the United States of a Fed tightening (Ca' Zorzi et al., 2020, p. 30; Jarocinski, 2021).

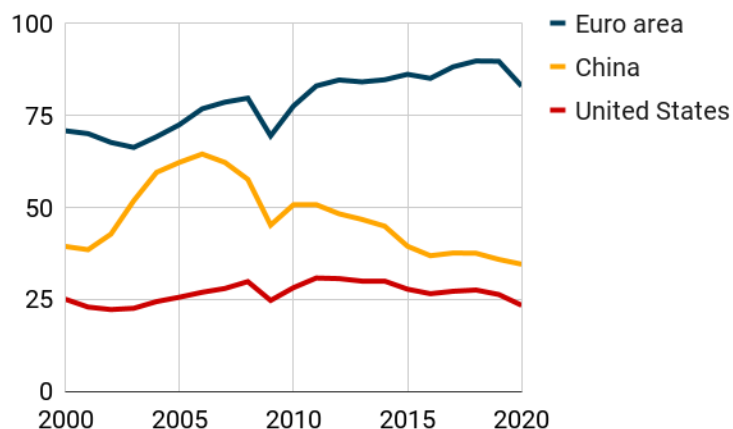
Effects on other countries' inflation are more ambiguous, probably linked to the multiple offsetting impacts mapped out above. Ca' Zorzi et al. (2020, p. 29) find a short-lived rise in euro area inflation, as a depreciating exchange rate raises commodity prices and imported inflation – but the effect fades away after one quarter due to offsetting recessionary forces pushing prices down. Dedola et al. (2017) estimate a fall in euro area CPI inflation (a magnitude of  $-0.1\%$  in response to a one standard deviation monetary tightening shock).

Are there any distinct vulnerabilities of the euro area in the present period, along the abovementioned channels? Some descriptive statistical insights below provide some hints.

Firstly, the euro area is highly vulnerable through the imported inflation channel. Relative to economies of comparable size, trade openness in the euro area is high (see Figure 5). So is integration to global value chains. Given the context of an energy crisis, a particularly painful aspect of a weak euro exchange rate is the euro area's dependency on energy imports. Overwhelmingly, commodities are traded in dollars in world markets, which drives up their cost in euro terms, for a given dollar price of those commodities.<sup>5</sup> The euro area relies on imports for over 62% of its energy consumption (to compare, this figure is around 15% for China, and under 10% for the United States).<sup>6</sup> Imported energy supplies such as US liquefied natural gas (ramped up as an avenue to curb Russian dependence), become costlier, further exacerbating energy price inflation. All this together points to a large inflationary shock.

Effects through the trade balance channel are much more ambiguous, since there are two opposite forces at play. On the one hand, US monetary tightening is an indirect inflationary shock. This is the expenditure switching channel at work: euro area goods and services become more competitive (cheaper) through a depreciating euro exchange rate. This shifts demand towards euro area producers, boosts aggregate demand, and raises inflation. This channel is the only expansionary one. However, as discussed above, the literature finds robust evidence that Fed tightening has a negative impact on foreign countries' GDP, which suggests that this sole expansionary channel is dominated by the other, contractionary ones. One relevant factor explaining this could be the role of dollar invoicing in international trade, which dampens competitiveness gains from a depreciating currency (Gopinath, 2015).

Figure 5: Trade openness: exports and imports as a percent of GDP



Source: OECD.

Notes: Imports and exports of goods and services as a percent of GDP.

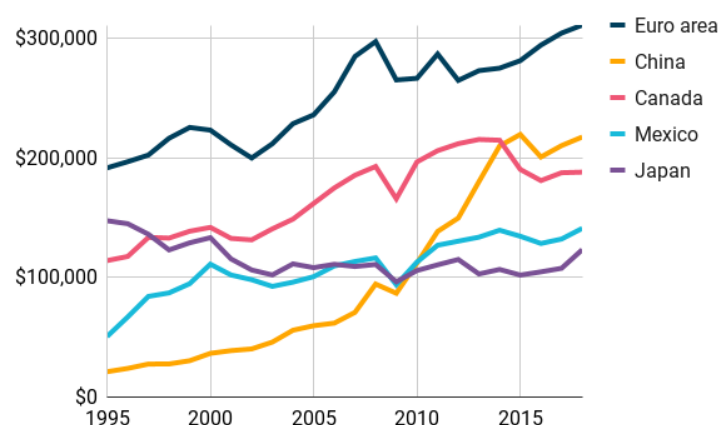
On the other hand, there is a simultaneous deflationary effect, through expenditure changing: euro area exporters confront a demand collapse in an important market absorbing their products and services. This latter channel is not negligible at all, given the euro area's dependence on US demand

<sup>5</sup> This does not yet include the effect of an increase in the dollar price of these commodities, which is also happening, but not due to US monetary policy tightening, but due to the energy and food supply crisis triggered by the Russian invasion of Ukraine.

<sup>6</sup> Data: Eurostat, OECD IEA Statistics.

(Polyak, 2022). As shown by Figure 6, the euro area accounts for more US imports than China, or any other partner.

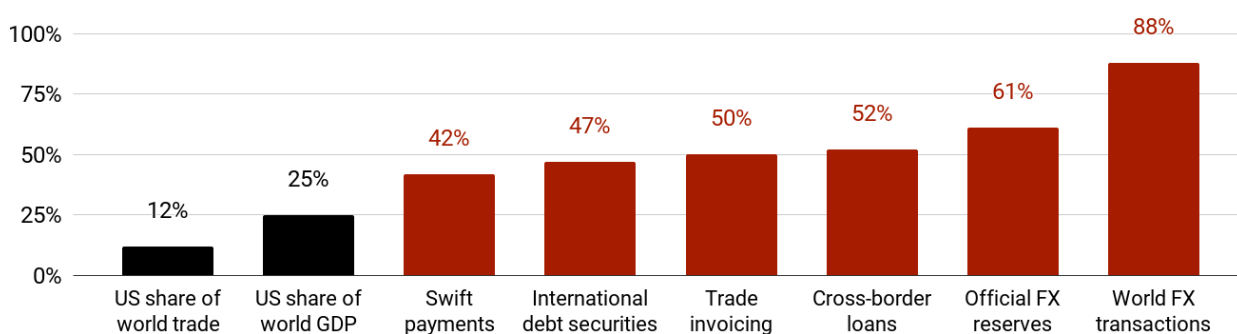
Figure 6: United States, import volumes by partners



Source: OECD TiVA.

Notes: million dollars (constant, 2015 prices), imports in a value added perspective (foreign value added embodied in domestic final demand), top 5 partners.

Figure 7: The international role of the dollar



Source: Bank for International Settlements.

Notes: Data refer to 2019-2020, for details, see: BIS (2020, p. 3).

As for the financial dollar exposure channel, the euro area is much less vulnerable, compared to emerging market economies, for instance. First, debt dollarisation is more widespread in emerging market economies than advanced euro area economies. Second, although European banks were heavily involved in USD funding in the run-up to the global financial crisis (Tooze, 2018), they have significantly decreased their activity, while emerging market economies increased it (BIS, 2020). This does not mean that these financial impacts leave the euro area unscathed, however. The empirical literature, such as recent analysis by Furceri et al. (2022) stresses that the relative strength of the financial transmission channel is higher than that of trade. So, even a smaller exposure can move the needle significantly.

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Moreover, the US dollar is the dominant currency in the international financial system, meaning the shockwaves it sends are hardly limited to dollarised emerging markets. As Figure 7 shows, according to BIS statistics, while the US accounts for 12% of world trade and 25% of world GDP, almost 90% of all foreign exchange transactions involve the dollar, and almost half of all outstanding international debt securities in 2019-2020 were denominated in dollars.

Also, an important difference between the 2008 financial crisis and the current situation is that then, the major sources of risk stemmed from overly-leveraged big banks, while now, balance sheet vulnerabilities are particularly elevated in the “shadow”, nonbanks financial sector (IMF, 2022b, p. 9).

## 4. THE NEED FOR INTERNATIONAL COORDINATION

### 4.1. The risks of uncoordinated monetary tightening and potential benefits of a coordinated approach

The risks of uncoordinated monetary decisions in advanced economies had already occupied policymakers' attention over the past decade. With the onset of the global financial crisis in 2008, most central banks in these countries cut policy rates to historical lows – this included a joint announcement of rate cuts in October 2008. They also set-up large-scale asset purchase programs to lower long-term interest rates and support economic activity. While these policies were necessary to address the prolonged deflationary shock in crisis-hit countries, they also generated serious macroeconomic challenges for countries whose monetary policy was not aligned with the overly accommodative stance in advanced economies. Indeed, lower interest rates and security purchases induced large capital flows to countries offering higher returns, raising serious macroeconomic and financial stability problems for the recipient countries.

In particular, several emerging market countries found themselves in the difficult position to cope with rising credit growth and currency appreciation harming domestic export sectors. In September 2010, Brazilian Finance Minister Guido Mantega even lashed out against US “currency wars”, after the first wave of quantitative easing in the United States led to what he regarded as a protectionist devaluation of the US dollar against other currencies caused by the Fed accommodative policy. This situation is reminiscent of the competitive devaluation dynamics of the 1930s, when countries set in motion a severe deflationary spiral by devaluing the currencies to gain export advantages over their trading partners. In the post-2008 deflationary context, global cooperation was thus advocated as a way to prevent the risk of competitive devaluations and the attendant risk to global macroeconomic and financial stability (Moschella 2015).

In the post-2021 inflationary context, the situation has reversed. In an environment of globally elevated inflation, uncoordinated monetary policies raise the spectre of so-called ‘reverse currency wars’ or competitive exchange rate appreciation (Frankel, 2016, 2022). As countries strive to bring down inflation by raising interest rates and strengthening their exchange rates, the race to the bottom known as devaluation spirals becomes a race to the top. One’s tightening raises the other one’s imported inflation (channel 1), triggering further monetary tightening to offset the imported inflationary pressures. This creates a beggar-thy-neighbour dynamic analogous to competitive devaluations and threatens with an overtightening spiral, playing out through the following steps: 1) the Fed tightens, and the dollar appreciates against the euro. 2) This raises imported inflation in the euro area. 3) As a response, the ECB tightens too, and the euro appreciates against the dollar. 4) This raises imported inflation in the US. The Fed is prompted to tighten again (and the sequence starts anew).

As a result of this race to the top, countries end up in a suboptimal equilibrium: at the end of multiple rounds of this sequence, they reach the same interest rate differential (and amount of imported inflation), but with much higher interest rates, hurting aggregate demand in the process. In game theory terms, payoffs resemble those in a Prisoner’s Dilemma. It would be a Pareto-improvement to coordinate policies, and move out of the non-cooperative Nash-equilibrium.

The same overtightening spiral may play out in case of expenditure switching (channel 2a), although here, the inflationary effect is more indirect. A stronger dollar exchange rate makes other countries’ goods and services more competitive, shifting spending towards them, and creating indirect inflationary pressures through an overheating economy. This may prompt central banks to engage in

similar competitive rate hikes. This risk is negligible: the empirical literature finds this effect to be drowned out by other, contractionary forces (e.g. Dedola, et al., 2017; Ca' Zorzi et al., 2020).

As the previous sections explained, the Fed's tightening transmits not only inflationary, but also deflationary spillovers – propagated through the expenditure changing channel, a dampening effect of trading partners' foreign demand (2b). These type of spillovers have different implications for the risks of uncoordinated policies.

In case of the competitive appreciation race described above, there is a conflict of interest, giving rise to a beggar-thy-neighbour logic: countries can cut their imported inflation at each other's expense (tightening more, relative to their trading partners, puts them at an advantage). Here, an overtightening risk arises, because the two central banks are tempted to engage in a race to the top.

In case of deflationary spillovers, this conflict disappears, and the risks are of a different nature. A central bank can overshoot its own need for tightening, if it cannot accurately forecast a feedback loop: the drop in demand in its partner economy, triggered by its policy move.

For example, if the Fed tightens, and the ECB tightens in response, the ECB reduces aggregate demand in the Euro area, effectively squeezing foreign demand available for US exporters. The Fed needs to have a correct forecast about the reaction function of the ECB, and the size of the demand drop in the Euro area, because it reduces the need for its own tightening in the first place – the tightening itself aims to create domestic economic slack (a demand gap), and some of that slack is "imported" from abroad (Obstfeld, 2022). Here, overtightening does not emerge out of an inherent interest of each central bank – but because of a mistake, incorrectly accounting for demand feedback-loops, also referred to as "spillbacks" (Brainard, 2022).

Spillovers through the financial channel are similarly deflationary and contractionary in their effect. The risks of uncoordinated tightening are in part, similar to the expenditure changing channel: US tightening tightens monetary conditions globally, and thus squeezes demand abroad. However, the financial channel also carries larger, more systemic risks. Because of the outsized role of the dollar in the global financial system, and widespread reliance on dollar funding, a crunch in dollar liquidity can cascade into a more widespread funding crisis. Here, the lack of coordination can even morph into a full-scale financial crisis.

In sum, uncoordinated monetary policy decisions largely carry overtightening risks: the risk that central banks, in the pursuit of their price stability objective in their respective jurisdictions, overdo monetary tightening.

These risks are particularly worrisome from the euro area's perspective. To start with, the expected slowdown in economic activity in 2023 is more marked than the one expected for the United States, especially as a result of surging energy prices (IMF, 2022a). Furthermore, an overtightening scenario is worrisome for the Euro area because tightened monetary conditions contribute to higher debt financing costs, hitting more indebted euro members asymmetrically.

The following table summarises the transmission channels, their effects on economic activity, and what they imply for the potential benefits of a more coordinated approach. There are three distinct types of risks identified, with different implications:

- The risk of competitive appreciation or an overtightening spiral points to the need for policy coordination. There is an incentive for an either explicit or implicit agreement on interest rate differentials, since a tit-for-tat cycle of subsequent rate hikes hurts the interests of both sides. What is also important, however, is that given the mutually destructive nature of these spirals,



simply correctly anticipating the retaliation from the other side should be enough to persuade authorities not to engage in competitive appreciation.

- The risk of demand feedback loops (or spillbacks) necessitates information exchanges between central banks, so that they can correctly forecast the reaction functions of each other, and factor in demand feedbacks when they define their monetary policy stance. This is less of a "coordinative" exercise, and more focused on consultation and dialogue to better calibrate one's own policies.
- The risk of systemic instability of financial markets as a result of a Fed tightening necessitates yet another kind of cooperation – financial crisis cooperation, for instance through international liquidity provision and provision of swap lines, or synchronised policy moves supported by joint communication to quickly resolve market uncertainty (Ca' Zorzi et al., 2020, p. 49). Because of the central role of the dollar in global finance, the Fed bears a central responsibility in this regard.

Table 2: Overview of spillover channels and their implications for coordination

	Spillover channel	Effect of spillover channel on economic activity	Risk of no coordination	Type of coordination needed
1	Imported inflation	inflationary and contractionary	competitive appreciation	macroeconomic policy coordination
2a	Expenditure switching	inflationary and expansionary	competitive appreciation	macroeconomic policy coordination
2b	Expenditure changing	deflationary and contractionary	demand feedback loops (unaccounted for)	information sharing
3	Financial exposure	deflationary and contractionary	systemic financial instability	financial crisis cooperation (e.g. liquidity provision)

Source: Authors' conception.

## 4.2. Historical experience

Given the risks that stem from uncoordinated monetary tightening, in principle, a more cooperative approach could help mitigate them or, at least, manage them if they materialise. The historical record of coordination among major economies shows that such coordination can indeed be beneficial. It also shows that different forms of coordination have been experimented with over time. This last section thereby expands on the historical experience with macroeconomic policy coordination and cooperative arrangements in financial crises.

### 4.2.1. Macroeconomic policy coordination

The most commonly mentioned historical episode that speaks to the importance of international macroeconomic cooperation revolves around the agreement reached among the G5 countries in 1985: the so-called Plaza agreement. This episode is also particularly relevant for the purposes of this analysis

because the economic conditions that led to the Plaza agreement show several similarities with present economic conditions.

The agreement reached in Plaza was primarily motivated by the strong appreciation of the US dollar against the other major currencies. To fight domestic inflation, the US Fed led by Chairman Paul Volcker set in motion a decisive tightening cycle. Monetary tightening broke the back of inflation: core consumer price index inflation, which had surpassed 11% in 1979, fell to under 5% by 1982. However, the success at taming inflation was not without consequences. First, inflation-fighting came at the cost of domestic recession and high unemployment that reached 10.8% in November 1982. Second, the Fed tightening unleashed serious global spillovers via the appreciation of the dollar. In particular, from 1980 to 1985, the value of the dollar climbed around 44% against other major currencies (Frankel, 2015, p. 2, also Bordo, 2021, p. 599).

By 1985, the global implications of the strong dollar had become a highly politicised issue. In Europe, Germany and France were particularly vocal in complaining about the imbalances which had led the Bundesbank to intervene to offset the depreciating mark and the French to advocate for coordinated intervention in the foreign exchange market (Frankel, 2015; Bordo, 2021). US economic authorities initially shrug off the complaints arguing that the strong dollar reflected a global vote of confidence in the US economy (Frankel, 2015). However, as the strong dollar started to become a drag on the US economic activity, the background was ready for the agreement negotiated at the Plaza Hotel in New York City. The agreement revolved around coordinated exchange market interventions to bring down the value of the dollar and paved the way for the attempts at intensive coordination of major economies' macroeconomic policies that extended into 1987, with the Tokyo summit and the Louvre accord (Bergsten and Green, 2016).

The Plaza accord is often referred to as a watershed episode of economic cooperation among major advanced economies. What are the lessons that can be drawn from this notable episode for the prospect of global macroeconomic cooperation in general and under current circumstances in particular?

First, the conditions that favoured Plaza are deeply connected to developments in US politics and economic conditions in other major economies. To start with, despite the international pressures and complaints in the US, what ultimately led the US to accept a devaluation of the dollar were the risks for the US export sector and the mounting protectionist threats in the US Congress (Frankel, 2015). Furthermore, economic conditions in key US trading partners at the time were also crucial to pave the way for the Plaza accord. In 1985, both Germany and Japan were experiencing a positive expansionary cycle. This means that these countries "could afford to take a longer view, accepting that some near-term currency correction would stave off larger protectionist and other problems in the future" (Bergsten and Green, 2016, p. 8). These conditions are hardly on display in current circumstances, notably neither in the US nor in the euro area.

Second, the evidence of the success of the Plaza accord is mixed. In particular, there are mixed views about the effectiveness of coordinated exchange market interventions in bringing down the dollar value. While some scholars argue that these interventions and the discussion that led to the agreement are key to understanding market reaction (Frankel, 2015), others argue that the exchange rate policy is only a limited factor to explain the dollar decline, particularly because the dollar had peaked well before Plaza (Feldstein, 1988, 1994, see also: Taylor, 2016). Furthermore, the effect of foreign exchange market intervention proved short-lived. The dollar depreciated significantly after the Plaza accord leading to later interventions to stabilise its value.

The mixed evidence on the effectiveness of Plaza also helps explain the evolution of the thinking of global macroeconomic cooperation. As Frankel (2015, p. 12) writes tellingly, “In 1985, G7 coordination meant joint intervention in the foreign exchange market. Today G7 coordination means refraining from intervention, which is called currency manipulation.” Furthermore, by the end of the 1980s, major economies came to embrace the view according to which the best mechanism to ensure global macroeconomic stability does not lie in foreign exchange market interventions and coordinated macroeconomic policies. Achieving global macroeconomic stability came to be associated instead with the domestic monetary policy actions carried out by independent central banks acting in their own countries’ interests (Bordo, 2021). This thinking has weakened the case for global macroeconomic coordination of the like that had taken place in the 1980s. Global cooperation was instead re-conceived largely in terms of financial crisis management.

## Box 1: Dollar strength episodes and multilateral adjustment

Each time the dollar surges against other currencies, calls for a “new Plaza Accord” usually intensify in media and policy discourse. What follows is a quick comparative overview of three episodes of outsized dollar strength, to assess similarities, differences, and conditions for multilateral adjustment – and to show why a “new Plaza” is politically improbable.

1985: Plaza Accord. The agreement to weaken the dollar through a multilateral intervention was rooted in domestic interests within the United States, manufacturers and farmers were seeking competitiveness gains from devaluation. The “twin deficits” problem got politicised, and Congress threatened G5 partners with tariffs if they did not move to correct their “undervalued” exchange rates (Ito 2009). There was also an element of coinciding interests: trading partners with persistent surpluses, like Germany and Japan, had a reason to agree to revaluation (beyond their interests in avoiding tariffs): to push down domestic inflation. Average inflation in the 5 years preceding Plaza was over 6% in Germany, just below 5% in Japan.

2016: Trade war, no adjustment. The dollar appreciation cycle from the 2010s onwards reached a boiling point around 2016, with demands for protectionist policies in the US growing louder. Some of the factors that facilitated the Plaza Accord were there. The US had a vested interest in propping up the ailing manufacturing sector, who were especially sore because of widespread claims of Chinese “currency manipulation.” Trade deficits were politicised. After the February G20 meeting, there were even speculations about a “secret” Shanghai Accord, an agreement to weaken the dollar, which was denied by all parties. This time, multilateral adjustment did not materialise, not even after the US actually levied tariffs. Why not? First, managing interests in a G5 setting was probably easier than in a G20, with China (a systemic rival) among the players. Second, while the 1980s was an inflationary period in Europe and Japan, the world had the opposite problem in the 2010s: deflationary pressures. Finally, between the 1980s and the 2010s, attitudes towards exchange rate interventions changed too, towards a more market-driven logic.

2022: Adjustment unlikely. What sets the current case apart is that this time, there is no appetite from the US side to weaken the dollar, until the Fed can bring down inflation (Wolf, 2022). This would be a necessary condition for any coordinated intervention. Other factors hindering agreement in 2016 are also still relevant: it is difficult to coordinate interests on the G20 level, and there are doubts about the effectiveness of exchange rate interventions.

The following table summarises these factors, suggesting that political conditions for a ‘new Plaza Accord’ are not present in 2022.

	<u>Participants</u>	<u>Domestic pressure</u>	<u>Partners’ inflation</u>	<u>Multilateral adjustment</u>
1985	G5	high	high	yes
2016	G20	high	low	no
2022	G20	low	high	<i>unlikely</i>

Source: Authors’ own conception.

#### 4.2.2. Financial crisis management cooperation

By the 1990s, high-income countries definitely moved away from the use of foreign exchange market interventions as a way to address the international spillovers of currencies misalignments (Bordo and Schwartz, 1991; Bordo et al., 2012). As anticipated, two factors underpinned this development. First,

the evidence on the effectiveness of foreign exchange market interventions was not straightforward (Truman, 2003). Second, developments in macroeconomic theory and practice came to prioritise low inflation as the goal for independent central banks to pursue with the attendant expected benefit of reducing instability in nominal exchange rates (Bordo, 2021, p. 597). This intellectual context combined with the achievement of low inflation in the era of Great Moderation led global cooperation to address the spillovers of monetary and currency misalignments to take the form of crisis management. In the 1990s, crisis management cooperation was mostly meant to address the macroeconomic and financial stability risks stemming from the crises in emerging market countries (Moschella, 2010). With the onset of the global financial crisis, however, cooperation returned to address problems, also among high-income countries.

The 2008 global financial instability triggered the usual search for dollar assets safety among investors, leading to the appreciation of the US dollar. In addition to the global flight to safety under conditions of market volatility, a significant source of pressure for dollar appreciation was the unwinding of carry trades, with the dollar rising as a key funding currency (McCauley and McGuire, 2009). The subsequent scramble for the US currency made it hard to borrow contributing to the global dollar shortage. European banks faced some of the most acute difficulties in raising dollars. Indeed, as Baba, McCauley, and Ramaswamy (2009) show, European banks had increased their dollar asset positions from about USD 2 trillion in 1999 to more than USD 8 trillion by mid-2007.

Central banks responded to the dollar funding strains in the global financial system by creating swap lines agreements (McCauley and Schenk, 2020). Given the importance of the US dollar to the global banking system, the swap lines the Fed extended were crucial to alleviate the dollar funding problems and restore market confidence. In particular, since 2008, the Fed established swap lines with selected advanced and emerging market economies. The Fed swap line to the ECB was initially extended in 2007 and expanded in size in 2008. In addition to the emergency and ad hoc Fed swap lines, the central banks of major advanced economies established a network of permanent swap lines among themselves. In particular, since 2013, the Bank of Canada, Bank of England, European Central Bank, Bank of Japan, Federal Reserve, and Swiss National Bank have standing swap arrangements in place.

With the re-emergence of stress in the US dollar funding market in the wake of the 2020 COVID crisis, international swap lines were once again activated to alleviate pressures on domestic banks. For instance, most of the Fed's counterparty central banks—all but those of Canada, New Zealand, and Sweden—drew upon their US dollar swap lines in 2020. In contrast, the ECB's swap lines with other advanced economies went largely unused, reflecting the limited turmoil in the euros market (Steil et al., 2021).

Recent experience suggests that central banks' swap line agreements, particularly the Fed's swaps, were important tools to alleviate funding stress and restore market confidence during the 2008 and 2020 crises (Allen and Moessner, 2010; Aizenman et al., 2021). Similar beneficial effects can be expected in future crises, including one that could be triggered by the surge in US dollar. As discussed above, the dollar's dominance in the global financial system has not disappeared after the 2008 and 2020 crises (see Section 3.2 above). This creates benefits but also vulnerabilities, especially for borrowers in foreign (US dollar) currency. Cooperation among the Fed and other central banks is thus an important crisis management tool to address market turmoil triggered by tightened monetary and financial conditions in the US. Of course, this tool has limits. To start with, the Fed swap lines are with "selected" countries, meaning that the financial safety net they provide is circumscribed. Second, albeit important, swap lines are crisis management tools, that is to say, they are important in managing crises after they occur. However, they are only partially designed to prevent crises from happening in the first place.

## 5. CONCLUSIONS AND RECOMMENDATIONS

As the central bank of the world's reserve currency, the Fed's monetary policy decisions have effects well beyond the borders of the United States. The post-2021 Fed's decisive tightening of monetary policy has been no exception: following the US Fed's interest rate rises, the value of the dollar has surged, sending international shockwaves through the global trade and financial systems. The US is also not the only country grappling with inflationary pressures: by 2022, all major central banks in advanced economies have tightened monetary policy.

This cycle of uncoordinated monetary policy decisions carry the risk of inducing an excessively contractionary effect on economic activity, going beyond what is needed to bring inflation to the target. As discussed in this paper, central banks can get into competitive appreciation cycles, they can mismeasure the effect of demand feedback loops as they calibrate their monetary policy stance, and a generalised credit crunch can cascade into broader financial turmoil.

The historical record shows that a degree of coordination can be beneficial to address the overly contractionary risks. However, coordinated macroeconomic policy adjustments or multilateral interventions in foreign exchange markets like the ones marked by the 1985 Plaza Accord do not look realistic in current circumstances. Neither the US nor its major trading partners in advanced economies are in a political situation that favours the pursuit of international over domestic economic goals.

Policy makers, and especially monetary policymakers, could focus their cooperative efforts along three directions:

**1) Avoiding a “race to the top”** and a mutually damaging cycle of competitive appreciation. This can happen through an (even implicit) coordination of interest rate movements, or simply by taking into account the risk of retaliation, and not engaging in overtightening spirals. Forward-looking policymakers would see that after multiple rounds of tightening, the competing sides end up with the same interest rate differential and same amount of imported inflation they started with, but at higher levels of interest rates, unleashing unnecessarily harsh recessionary forces in the process;

**2) Fostering information exchanges** among central banks about their respective policy reaction functions, so that demand spillovers are properly taken into account. Monetary authorities have a long history of information-exchange cooperation and well-established fora for the exchange of analyses and data. This web of interactions can be easily utilised to help central banks calibrate their monetary decisions under current, uncertain circumstances, also by factoring in how they reinforce each other's policy impacts;

**3) Strengthening financial safety nets** to increase the resilience of the global financial system in the face of tightening shocks. Here, an avenue to explore could be formalising existing ad-hoc arrangements for international liquidity provision and swap lines, so that there are ex-ante blueprints for cooperation in crisis times. As shown by examples in previous episodes of financial stress, joint policy movements and coordinated public communication can also be helpful to raise market confidence in uncertain times.

An important overall message is that although some degree of coordination of monetary policies can alleviate risks from overtightening in the future, the euro area's painful inflationary and recessionary trends are not rooted in uncoordinated monetary policies. The policy measures necessary to counteract existing challenges need also to focus on supply side issues like the regulation of energy markets, rather only on demand management via central banks.

The toxic mix of high inflation and deepening economic contraction leaves policymakers with difficult choices, and this is not a crisis with easy ways out. Factoring in the complex effects of global spillovers

pile on top of these challenges. This calls for a cautiously calibrated policy stance, walking the tightrope between decisively fighting inflation, but avoiding that overly vigorous rate hikes spark off a global recession or financial volatility. A more coordinated approach to monetary policies is one tool to help walking that tightrope.




## REFERENCES

- Aizenman, J., Ito, H., and Pasricha, G.K. (2021). "Central Bank Swap Arrangements in the COVID-19 Crisis". *NBER Working Papers*, 28585. <https://www.nber.org/papers/w28585>
- Allen, W. and Moessler, R. (2010). "Central bank co-operation and international liquidity in the financial crisis of 2008-9". *BIS Working Papers*, 310. <https://www.bis.org/publ/work310.pdf>
- Almekinders, G.J. and Eijffinger, S. (1996). "A friction model of daily Bundesbank and Federal Reserve intervention". *Journal of Banking & Finance*, 20 (8), 1365–1380.
- Baba, N., McCauley, R., and Ramaswamy, S. (2009). "US dollar money market funds and non-US banks". *BIS Quarterly Review*. [https://www.bis.org/publ/qtrpdf/r\\_qt0903g.pdf](https://www.bis.org/publ/qtrpdf/r_qt0903g.pdf)
- Bergsten, C.F. and Green, R., eds. (2016). "*International Monetary Cooperation: Lessons from the Plaza Accord after Thirty Years*". Peterson Institute for International Economics.
- BIS. (2020). "US dollar funding an international perspective". *Committee on the Global Financial System, CGFS Papers (Bank for International Settlements)*, 65. <https://www.bis.org/publ/cgfs65.htm>
- Bodnár, K. and Schuler, T. (2022). "The surge in euro area food inflation and the impact of the Russia-Ukraine war". *ECB Economic Bulletin*, 4.
- Bordo, M. and Schwartz, A. (1991). "What has foreign exchange market intervention since the Plaza Agreement accomplished?", *Open Economies Review*, 2 (1), 39–64.
- Bordo, M.D. (2021). "Monetary Policy Cooperation/Coordination and Global Financial Crises in Historical Perspective". *Open Economies Review*, 32 (3), 587–611.
- Bordo, M.D., Humpage, O., and Schwartz, A. (2012). "Foreign-exchange intervention and the fundamental trilemma of international finance: notes for currency wars". *VOX.EU Center for Economic Policy Research*. <https://cepr.org/voxeu/columns/foreign-exchange-intervention-and-fundamental-trilemma-international-finance-notes>
- Borio, C.E.V. and Toniolo, G. (2006). "One hundred and thirty years of central bank cooperation: a BIS perspective". Bank for International Settlements, *BIS Working Papers* No. 197. <https://www.bis.org/publ/work197.htm>
- Brainard, L. (2022). Speech by Vice Chair Brainard on global financial stability considerations for monetary policy in a high-inflation environment. *Board of Governors of the Federal Reserve System*. <https://www.federalreserve.gov/newsevents/speech/brainard20220930a.htm>
- Ca' Zorzi, M., Dedola, L., Georgiadis, G., Jarocinski, M., Stracca, L., and Strasser, G.H. (2020). "Monetary Policy and its Transmission in a Globalised World". *European Central Bank Working Paper Series*, 2407.
- Dedola, L., Rivolta, G., and Stracca, L. (2017). "If the Fed sneezes, who catches a cold?", *Journal of International Economics*, 108, S23–S41.
- Dieppe, A., Georgiadis, G., Ricci, M., Robays, I.V., and van Rye, B. (2017). "ECB-Global: introducing ECB's global macroeconomic model for spillover analysis". *ECB Working Paper Series*, (2045), 1–26.
- Edison, H. (1993). "*The Effectiveness of Central-Bank Intervention: A Survey of the Literature after 1982*". International Economics Section, Department of Economics Princeton University, Princeton Studies in International Economics.

- European Central Bank. (2022). "Combined monetary policy decisions and statement". <https://www.ecb.europa.eu/press/pressconf/shared/pdf/ecb.ds221027~f185daf915.en.pdf>
- Federal Reserve. (2022). "Federal Reserve Board - Policy Normalization". *Board of Governors of the Federal Reserve System*. <https://www.federalreserve.gov/monetarypolicy/policy-normalization.htm>
- Feldstein, M. (1994). "American Economic Policy in the 1980s: A Personal View". In: American Economic Policy in the 1980s. National Bureau of Economic Research, Inc, 1–80. <https://www.nber.org/system/files/chapters/c7752/c7752.pdf>
- Feldstein, M.S. (1988). "Distinguished Lecture on Economics in Government: Thinking about International Economic Coordination". *Journal of Economic Perspectives*, 2 (2), 3–13.
- Frankel, J. (2015). "The Plaza Accord, 30 Years Later". *NBER Working Papers*, 21813. [https://www.nber.org/system/files/working\\_papers/w21813/w21813.pdf](https://www.nber.org/system/files/working_papers/w21813/w21813.pdf)
- Frankel, J.A. (2016). "International Coordination". *NBER Working Papers*, 21878. <https://www.nber.org/papers/w21878>
- Frankel, J.A. (2022). "Get Ready for Reverse Currency Wars". *Project Syndicate*. <https://www.project-syndicate.org/commentary/strong-dollar-high-inflation-reverse-currency-wars-by-jeffrey-frankel-2022-05>
- Furceri, D., Arbatli Saxegaard, E., Verrier, J., and Firat, M. (2022). "U.S. Monetary Policy Shock Spillovers: Evidence from Firm-Level Data". *IMF Working Papers*, 2022 (191), 1. <https://www.imf.org/en/Publications/WP/Issues/2022/09/16/U-S-523572>
- Georgiadis, G. (2016). "Determinants of global spillovers from US monetary policy". *Journal of International Money and Finance*, 67, 41–61.
- Gopinath, G. (2015). "The International Price System". *NBER Working Papers*, 21646. <https://www.nber.org/papers/w21646>
- Gopinath, G. and Gourinchas, P.-O. (2022). "How Countries Should Respond to the Strong Dollar. *IMF Blog*. <https://www.imf.org/en/Blogs/Articles/2022/10/14/how-countries-should-respond-to-the-strong-dollar>
- Gourinchas, P.-O. (2022). Policymakers Need Steady Hand as Storm Clouds Gather Over Global Economy [online]. *IMF Blog*. <https://www.imf.org/en/Blogs/Articles/2022/10/11/policymakers-need-steady-hand-as-storm-clouds-gather-over-global-economy>
- Iacoviello, M. and Navarro, G. (2019). "Foreign effects of higher U.S. interest rates". *Journal of International Money and Finance*, 95, 232–250.
- IMF. (2022a). "Countering the Cost-of-Living Crisis". International Monetary Fund, *World Economic Outlook*, October 2022. <https://www.imf.org/en/Publications/WEO/Issues/2022/10/11/world-economic-outlook-october-2022>
- IMF. (2022b). "Navigating the high-inflation environment". *Global Financial Stability Report*, October 2022. <https://www.imf.org/en/Publications/GFSR/Issues/2022/10/04/Global-Financial-Stability-Report-October-2022-Navigating-the-High-Inflation-Environment-523390>
- Ito, H. (2009). "U.S. current account debate with Japan then, with China now". *Journal of Asian Economics*, 20, 294–313.

- James, H. (1996). *"International monetary cooperation since Bretton Woods"*. Washington, D.C. : New York: International Monetary Fund; Oxford University Press.
- Jarocinski, M. (2021). "Estimating the Fed's Unconventional Policy Shocks". *ECB Working Paper Series*.
- Kahn, R.B. and Meade, E.E. (2016). "International Aspects of Central Banking: Diplomacy and Coordination". *Finance and Economics Discussion Series*, 2016 (062), 1–42.
- McCauley, R.N. and McGuire, P. (2009). "Dollar appreciation in 2008: safe haven, carry trades, dollar shortage and overhedging". *BIS Quarterly Review*. [https://www.bis.org/publ/qtrpdf/r\\_qt0912i.htm](https://www.bis.org/publ/qtrpdf/r_qt0912i.htm)
- McCauley, R.N. and Schenk, C.R. (2020). "Central bank swaps then and now: swaps and dollar liquidity in the 1960s". Bank of International Settlements. *BIS Working Papers*, 851. <https://www.bis.org/publ/work851.htm>
- Moschella, M. (2010). "Governing Risk: The IMF and Global Financial Crises". Basingstoke, Palgrave Macmillan.
- Moschella, M. (2015). "Currency wars in the advanced world: Resisting appreciation at a time of change in central banking monetary consensus". *Review of International Political Economy* 22(1): 134-161.
- Obstfeld, M. (2022). "Uncoordinated monetary policies risk a historic global slowdown". *Peterson Institute for International Economics*. <https://www.piie.com/blogs/realtime-economic-issues-watch/uncoordinated-monetary-policies-risk-historic-global-slowdown>
- Panetta, F. (2022). "Mind the step: calibrating monetary policy in a volatile environment". *European Central Bank, Keynote Speech at the European Money Market Conference*. <https://www.ecb.europa.eu/press/key/date/2022/html/ecb.sp221103~881bc2c186.en.html>
- Polyak, P. (2022). "External enablers of Eurozone austerity: exploring the link between the ease of suppressing domestic spending and trading partners' demand". *New Political Economy*, 27 (5), 754–770.
- Ricarte, S.C., Koester, G., and Gomez-Salvador, R. (2022). "Recent inflation developments in the United States and the euro area – an update". *ECB Economic Bulletin*, 1.
- Schnabel, I. (2022). "Monetary policy in a cost-of-living crisis. European Central Bank", *Speech at a panel on the "Fight against inflation" at the IV Edition Foro La Toja*. <https://www.ecb.europa.eu/press/key/date/2022/html/ecb.sp220930~9dac17b1fe.en.html>
- Steil, B., Della Rocca, B., and Walker, D. (2021). "Central Bank Currency Swaps Tracker". *Council on Foreign Relations*. <https://www.cfr.org/article/central-bank-currency-swaps-tracker>
- Taylor, J.B. (2016). "A Rules-Based Cooperatively Managed International Monetary System for the Future". In: *International monetary cooperation. Lessons from the Plaza Accord after thirty years*. Washington D.C.: Peterson Institute for International Economics.
- Tooze, A. (2018). *"Crashed. How a decade of financial crises changed the world"*. New York: Viking.
- Truman, E.M. (2003). *"The Limits of Exchange Market Intervention"*. In: C.F. Bergsten and J. Williamson, eds. *Dollar Overvaluation and the World Economy*. Washington D.C.: Institute for International Economics, 247–265.

- Wolf, M. (2022). “Why the strength of the dollar matters”. *Financial Times*. <https://www.ft.com/content/daf5c774-fb7f-4ef3-a4ba-c92e3b373066>
- World Bank. (2022). “Risk of Global Recession in 2023 Rises Amid Simultaneous Rate Hikes”. *Press release*. <https://www.worldbank.org/en/news/press-release/2022/09/15/risk-of-global-recession-in-2023-rises-amid-simultaneous-rate-hikes>



# Global factors and ECB monetary policy

Karl WHELAN



## **Abstract**

The euro area's current high inflation rate is due to both internally generated demand pressures and external shocks that have raised food and energy prices. This paper argues that the latter element is more important than the former. Central banks need to tighten monetary policy to address high inflation but, with central banks around the world under pressure to restore their anti-inflationary credentials, it is possible that there is going to be too much tightening of global financial conditions.

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## EXECUTIVE SUMMARY

- **Inflation in the euro area is currently very high, with the HICP rising 10.7% over the year ending in October.** Core inflation, excluding food and energy prices, was 5% in October.
- **For central banks, it is important to understand how much of the euro area's current high inflation rate is due to internally generated pressures versus external shocks.** The former can be influenced by the domestic monetary policy while the latter can not.
- **While there has been a lot of focus on global economic factors as a determinant of recent inflation, global factors have long played a key role in inflation in individual countries or regions.** This paper presents evidence that inflation in Europe has not been more influenced by global factors over the past decade relative to previous decades going back to the 1970s.
- **There are signs that the euro area economy is overheating.** The unemployment rate is at its lowest level since the founding of the euro and there is evidence of labour shortages.
- **Combined with high inflation, this overheating is leading to higher rates of wage increases over the past year.** But the euro area is not going through a classic wage-price spiral in which wage increases play a key role in driving price inflation. Wage inflation is clearly responding with a lag to the high rates of price inflation that have been prevailing for some time.
- **The evidence suggests that the increase in food and energy prices due to the war in Ukraine is the main factor driving euro area inflation.** Beyond the direct effect of food and energy prices on the HICP, this paper describes how these price increases have induced increases in other prices. A simple procedure is presented which suggests that without the increase in food and energy prices, core inflation in the euro area would be about 2%.
- **The ECB needs to tighten monetary policy to address high inflation.** Whatever the sources of the current inflation, the ECB's mandate for price stability means it has no choice but to tighten monetary policy now.
- **But there are signs that the euro area economy is moving into recession.** Food and energy price increases are reducing real incomes and this will impact spending on many consumer items. Business sentiment is worsening and the housing market is likely to weaken once the ECB's monetary policy tightening starts to have its full impact.
- **And euro area inflation is likely to fall soon.** With most of the euro area's inflation due to once-off increases in food and energy prices and labour market over-heating likely to ease in the coming months, inflation is set to fall even without a significant additional tightening of ECB monetary policy.
- **It is possible that there is going to be too much tightening of global financial conditions.** Inflation-targeting central banks around the world are under pressure to restore their anti-inflationary credentials and their wish to demonstrate their commitment to low inflation could result in a collective over-tightening of global monetary policy.

# 1. INTRODUCTION

The globalised nature of modern economies makes implementing monetary policy more complicated for central banks than if they operated in the closed economies of elementary textbook macroeconomics. For example, when inflation is high, central banks need to evaluate how much of the inflation is generated by sources within their domestic economy (and is thus open to being directly influenced by monetary policy) versus how much is related to global factors. In assessing the latter, central banks must assess the likely future evolution of these global factors and the extent to which the actions of other central banks will influence them.

Inflation in the euro area is currently very high, with the harmonised index of consumer prices (HICP) rising 10.7% over the year ending in October according to Eurostat's current flash estimate. Global factors have played an important role in this inflation. The global pandemic produced a series of shocks that influenced all the major economies in a similar way. The initial phase led to many restrictions on business operations and there was a huge monetary and fiscal policy effort to stabilise the global economy and financial markets. There was then a common pattern across the world of increased demand for goods rather than services, combined with shortages of parts and shipping problems partly due to supply disruptions. In most parts of the world, the enforced period of reduced consumer spending meant that households emerged from the pandemic with stronger balance sheets which boosted post-pandemic spending. Finally, the war in Ukraine has had an impact on food and energy prices across the world.

This paper discusses the role of global factors in current euro area inflation and their implications for the European Central Bank's (ECB's) formulation of its monetary policy. The rest of the paper will be structured as follows. Section 2 describes how inflation has had a significant common global element long before the current period or indeed the period after the mid-2000s when discussions of the increased importance of global factors for inflation became a common theme in research and central banking circles.

Section 3 discusses the sources of euro area's current inflation problem. There are signs the euro area economy is overheating due to strong demand but the evidence points to supply shocks as the key factor underlying the current inflation. The war-related energy shock has had a far greater impact on Europe than the United States (US). Energy price inflation for euro area consumers in October was 42%, compared with a latest reading of 20% for the US. Core inflation in the euro area (excluding energy food, alcohol and tobacco) was 5% in October, well above the ECB's target. However, higher food and energy prices have clearly played an important role in driving up other prices. I present some simple evidence indicating that food and energy prices have played a key role in determining the current high rate of core inflation.

Section 4 focuses on how monetary policy has responded around the world to high inflation and whether national central banks each pursuing their own domestic inflation targets could lead to overly tight financial conditions and a more serious global recession than necessary.

## 2. GLOBAL FACTORS IN INFLATION: NOT A NEW THING

Rising globalisation in international trade and the simultaneous impacts of the pandemic and its aftermath have produced a highly globalised set of inflationary forces in the world economy. However, common forces affecting inflation across the world are not a new thing. For example, research by Ciccarelli and Mojon (2010) demonstrated that 70% of fluctuations in inflation across Organisation for Economic Co-operation and Development (OECD) countries going back to the 1970s could be explained by a common global component.

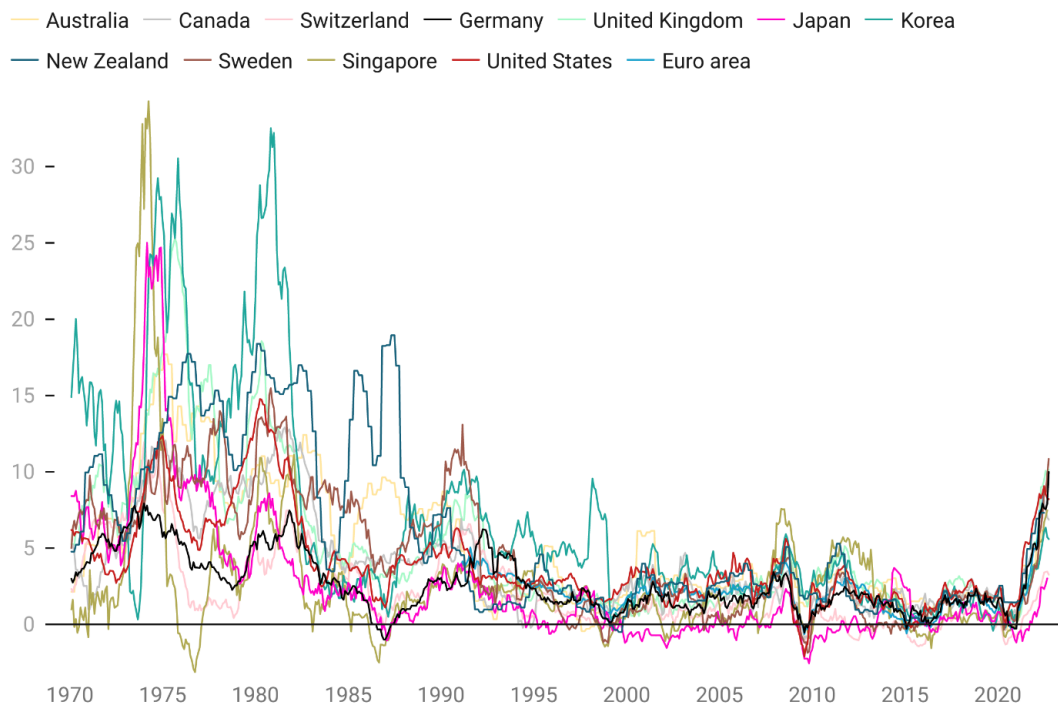
To give an updated (but simplified) assessment of the importance of co-movements in inflation, I obtained monthly series on year-over-year inflation rates for 11 advanced national economies and the euro area from the Bank for International Settlements (BIS). Figure 1 displays the data. The common element across the world in the current surge in inflation is clear. Explanations that focus only on conditions within one country or area will clearly not explain what has been happening. However, the figure also shows there has been a lot of co-movement in the inflation rates of major economies going well back in time. Advanced economies all had jumps and declines in inflation associated with the two Organization of the Petroleum Exporting Countries (OPEC) shocks in the 1970s. While the pace of disinflation in the 1980s differed across economies, the overall pattern was of lower inflation and the period from 1990 onwards saw most advanced economies experiencing low average inflation rates with limited ranges of fluctuations.

To give an example of how much global factors have influenced European inflation over time, I examined how much of the variation in Germany's inflation rate could be predicted by the other ten national inflation series using a set of moving windows each with ten years of data.<sup>1</sup> Figure 2 shows the results, displaying a measure of fit known as the R-squared statistic. If the R-squared is zero, the other inflation rates do not predict movements in Germany's inflation rate at all and if it is one, they fully explain them. The figure shows the predictive power of the various international inflation rates has moved up and down over time but has not changed much over the past 50 years, with a typical R-squared being about 0.8. This is a simple way to illustrate that there has long been a common international element to the determination of inflation rates.

This is not to say that the increased globalisation associated with higher trade and financial flows since the early 1980s has had no impact on inflation. It seems very likely that the increasing supply capacity of the world economy as China implemented its business reforms and opened to international trade exerted downward pressure on global inflation from the mid-1990s onwards. Researchers such as Forbes (2019) have argued the "Phillips curve" models in which the amount of extra capacity or "slack" in domestic economies was a key driver of inflation were no longer as relevant in the modern era, with the level of slack in the global economy being more relevant. At the same time, research by ECB economists Attinasi and Balatti (2021) suggests that increased globalisation did not play an important role in the steady reduction in inflation during the decades prior to the pandemic.

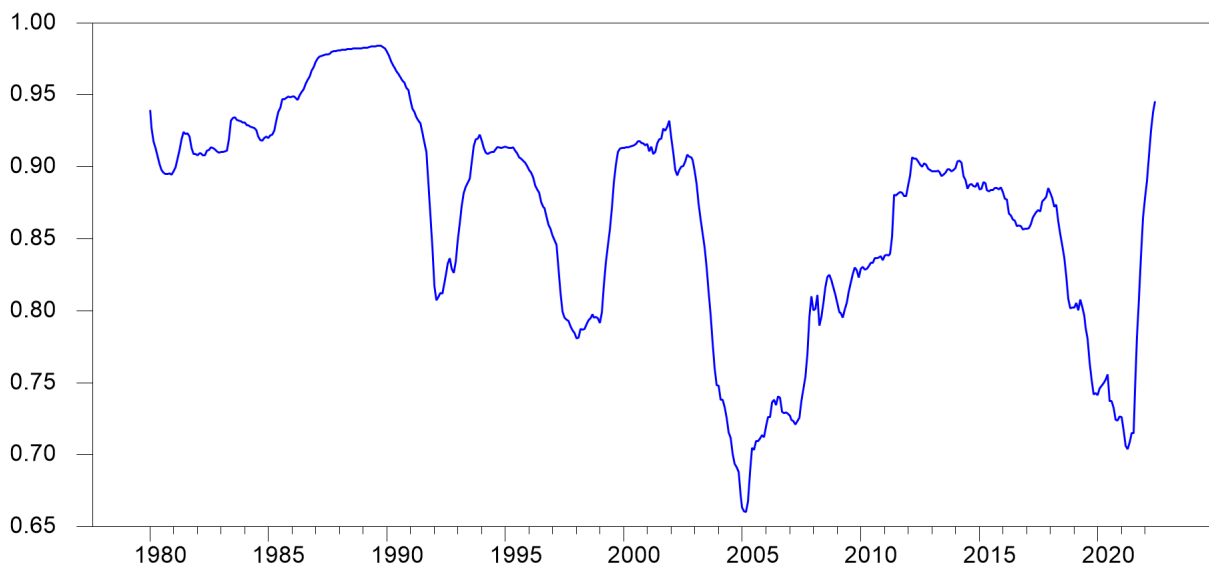
<sup>1</sup> To give an example, the number in the graph for 2020:Q4 shows the R-squared for the model using data from 2011:Q1 to 2020:Q4, while the number on the graph for 2021:Q1 shows the fit for data from 2011:Q2 to 2021:Q1.

Figure 1: Inflation rates in selected advanced economies



Source: Authors calculations based on data from the Bank for International Settlements  
<https://www.bis.org/statistics/cp.htm>

Figure 2: Measure of fit from ten-year moving window regressions of German inflation on selected other advanced economy inflation rates



Source: Author's calculations based on data from the Bank for International Settlements.  
<https://www.bis.org/statistics/cp.htm>

Notes: The measure of fit is the R-squared statistics. Each datapoint here shows the R-squared associated with the regression using the data for the ten-year period ending with the date for that datapoint.

### 3. AGGREGATE DEMAND, ENERGY PRICES AND INFLATION

The simultaneous rise in inflation around the world over the past year clearly suggests that common global factors are playing an important role but this doesn't necessarily imply that the determinants of inflation are exactly the same in each economy. For central banks, understanding the extent to which external factors are influencing inflation rather than excess domestic demand is important. Central banks have the tools to influence excess domestic demand but have no control over external events, so it is important in designing the correct policy to understand how important each element is in determining a high rate of inflation.

My interpretation of the evidence is that current inflation in the euro area is somewhat less driven by excess domestic demand than in the US and somewhat more driven by food and energy prices. This difference reflects the lingering impacts of the different macroeconomic policy responses to the pandemic and the differential exposure to the war-related energy shock.

The US response to the pandemic focused more on discretionary fiscal stimulus based on large tax rebates, while Europe was able to use its better-functioning welfare state and more targeted job protection programmes to protect people from much of the negative impact of restrictions on business. This difference in policy response has left US households with a lot more spending power and this has continued to fuel US aggregate demand. The difference in the exposure to the war-related energy shock reflects both the large direct reliance prior to the war of some European countries on Russian gas supplies and the fact that Europe differs from the US in being a large net energy importer.

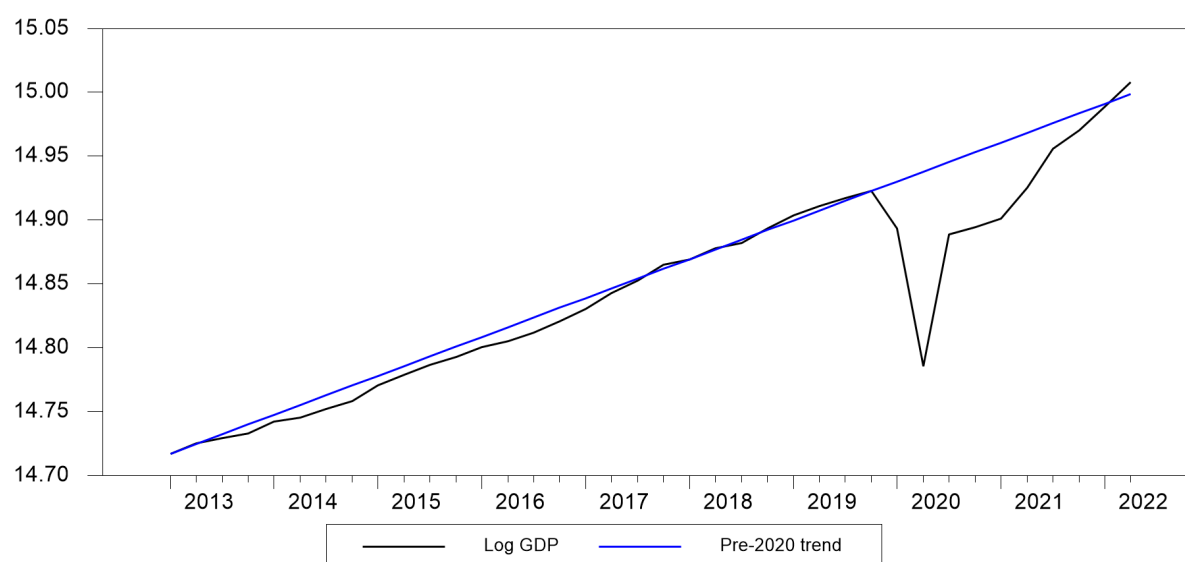
One measure that indicates how aggregate demand has been much stronger in the US than in Europe is nominal GDP, which measures exactly how many dollars or euros are being spent in the economy. Figures 3 and 4 show nominal GDP for both the US and the euro area compared with a trend based on the pre-pandemic growth rates.<sup>2</sup> As of the second quarter of this year, US nominal GDP was 5.2% above its pre-pandemic trend level while in the euro area it was only 0.9% above.<sup>3</sup> This suggests a more significant "overheating" in the US economy than in Europe.

This said, internally generated demand is clearly playing a role in the inflation in the euro area. The euro area unemployment rate is at its lowest level ever (see Figure 5) and there are increasing reports of labour shortages. The European Commission has been running a manufacturing business sentiment quarterly survey since the mid-1980s and it contains a question on the factors that are limiting production. Figure 6 shows that in this year's surveys, about one quarter of firms have reported a shortage of labour as a factor limiting production, the first time in the survey's history that this issue has been reported by more firms than a shortage of demand for their product.

<sup>2</sup> I use the period 2013:Q1 to 2019:Q4 to estimating this trend, starting the estimation at the point where the euro area economy began to recover from its euro-crisis-related recession.

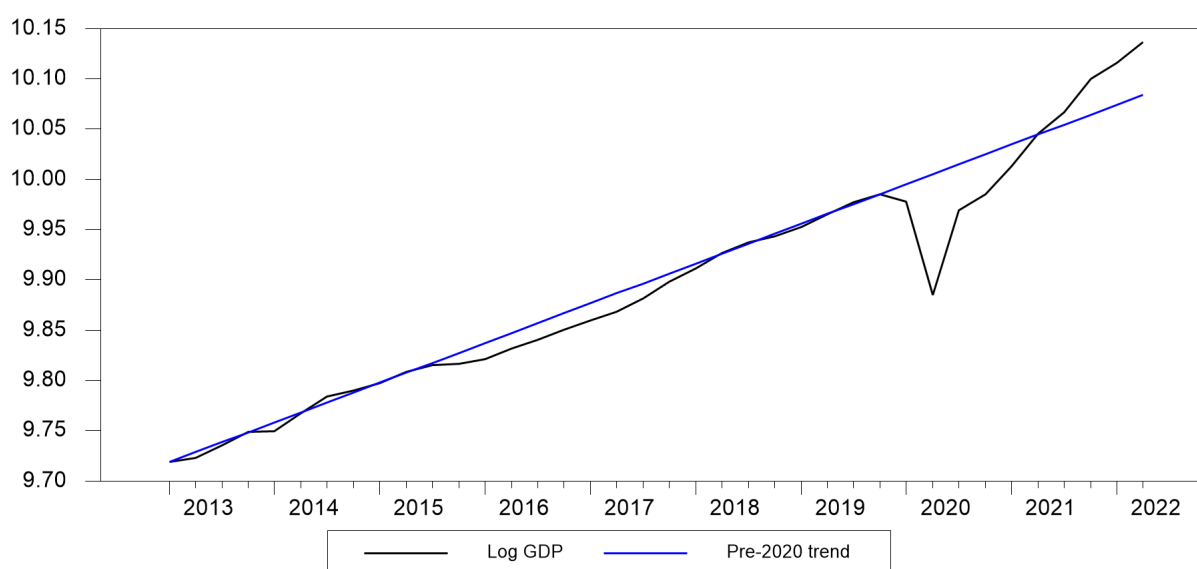
<sup>3</sup> See Beckworth (2022) for more discussion of using nominal GDP gaps to assess inflationary pressures.

Figure 3: Log of euro area nominal GDP and its pre-2020:Q1 trend



Source: Author's calculations based on data from Eurostat.

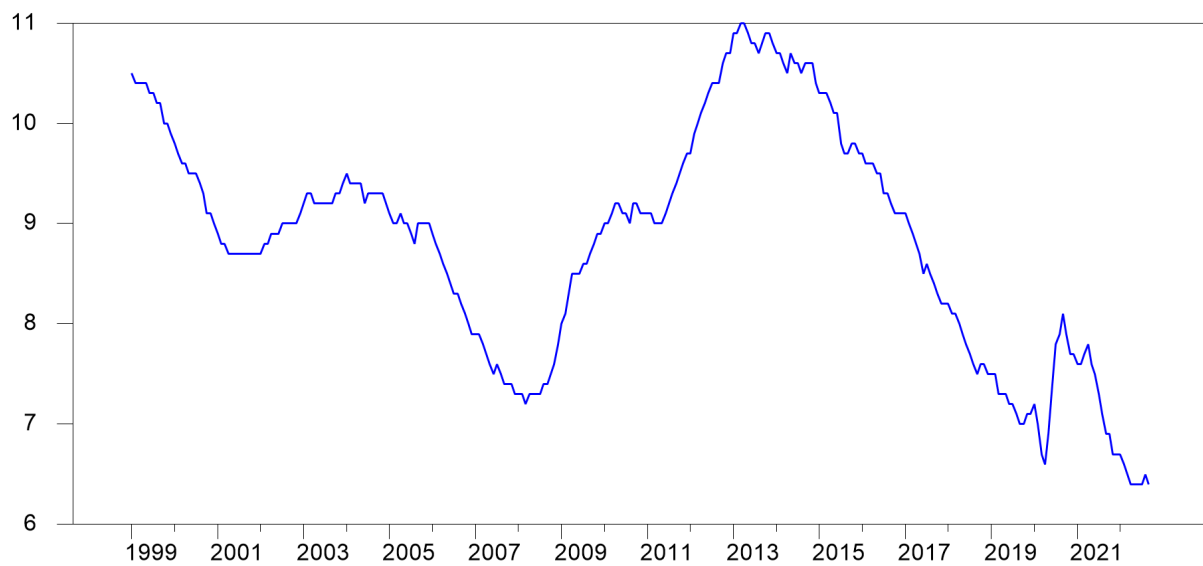
Figure 4: Log of US nominal GDP and its pre-2020:Q1 trend



Source: Author's calculations based on data from Eurostat.

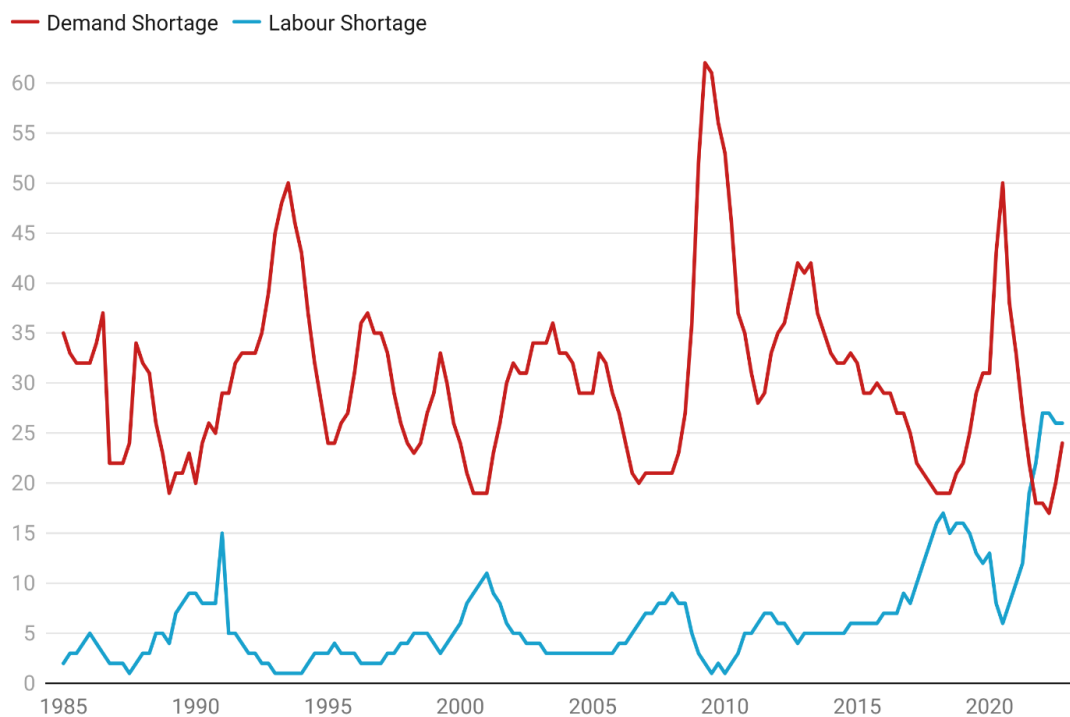


Figure 5: Euro area harmonised unemployment rate



Source: Author's calculations based on data from Eurostat.

Figure 6: Fraction of euro area manufacturing businesses reporting demand shortages or labour shortages as limiting production



Source: Author's calculations based on data from the European Commission

[https://economy-finance.ec.europa.eu/economic-forecast-and-surveys/business-and-consumer-surveys/download-business-and-consumer-survey-data/time-series\\_en](https://economy-finance.ec.europa.eu/economic-forecast-and-surveys/business-and-consumer-surveys/download-business-and-consumer-survey-data/time-series_en)

Unsurprisingly, the high inflation rate and a tight labour market has meant that the growth rate of wages has been increasing. Figure 7 shows an estimate of the annual growth rate of wages in the euro area from a joint project between recruitment advertising firm Indeed and the Central Bank of Ireland (Adrian and Lydon, 2022). The estimate is derived from salaries listed in job postings on Indeed's website. It is a more timely estimate than other measures based on national accounts data or negotiated job settlements. This series has shown increased wage growth since early 2021 and is now running at about 5% at an annual rate.

This evidence points to excessive domestic demand as source of inflation and the ECB's current approach of deliberately trying to slow the economy is justified by these developments. Still, it should be clear that the euro area is not going through a classic wage-price spiral in which wage increases play a key role in driving price inflation. Wage inflation is clearly responding with a lag to the high rates of price inflation that have been prevailing for some time. Indeed, wage growth has been well behind price inflation over the past year, so workers are experiencing declines in real wages. Given the high rate of inflation and the tight labour market, the current pace of wage growth is lower than might have been expected. This likely reflects expectations on the part of workers that inflation is going to fall over the next year.

The key additional factors beyond excess demand that have been driving euro area inflation are food and energy prices, which have been driven upwards by the war in Ukraine. As noted above, October HICP inflation is estimated to have been 10.7% while HICP inflation excluding energy, food, alcohol and tobacco (the traditional "core inflation" measure used by the ECB) was 5%. So, in a mechanical sense, these non-core factors accounted for a majority of the euro area's inflation over the past year. But rising food and energy prices have also had an impact on non-core prices by increasing costs for direct inputs and raising wage pressures.

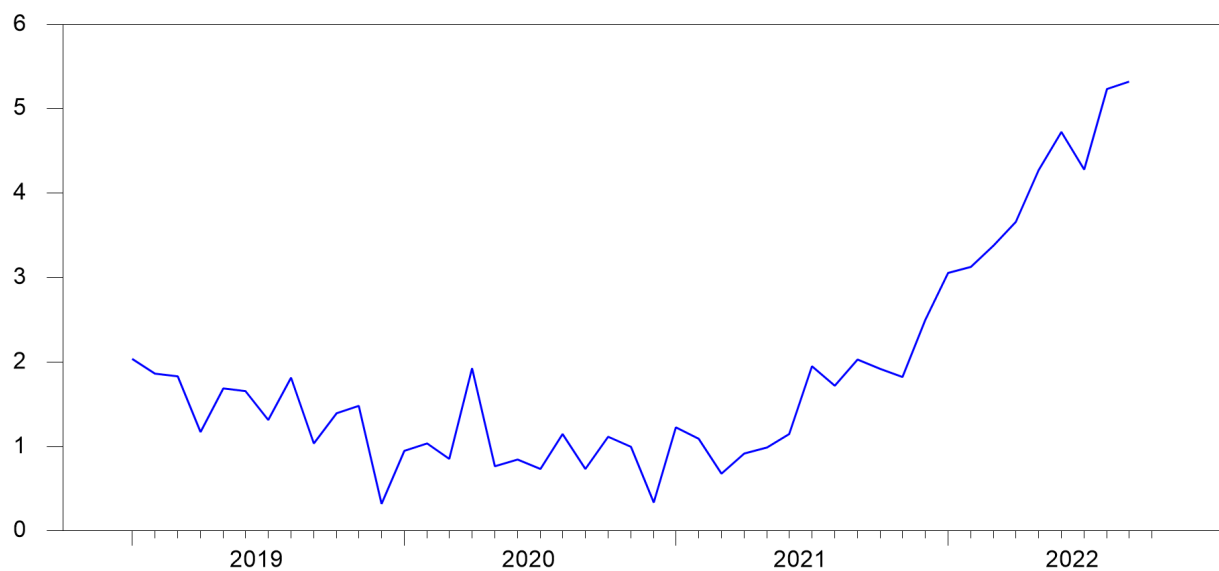
To evaluate the role that food and energy prices are playing in driving up core inflation, it is instructive to examine cross-country inflation patterns in Europe. The rise in food and energy prices has been unevenly distributed across the EU with some countries being much harder hit than others. Figure 8 shows how current non-core HICP inflation (meaning combined food and energy price inflation using the relevant HICP weights) ranges from a low of 12% in France to a high of almost 50% in Netherlands. Figure 9 shows a scatter plot where each EU Member State is represented by a dot showing both non-core inflation and total HICP inflation.<sup>4</sup> There is, of course, a high correlation between non-core inflation and total HICP inflation across EU states.

More importantly, however, Figure 10 shows a positive relationship between non-core inflation rates and core inflation rates, showing that food and energy prices have been affecting all other prices. The slope of a line fitted to the data in Figure 10 suggests that each additional 1% of non-core inflation adds 0.14% to core inflation. Applying this calculation to the euro area as a whole, which had non-core inflation of 23% in the year to October, this suggests non-core inflation has added 3.15% to core inflation over this period, meaning core inflation would have been below the 2% target without the rise in food and energy prices.

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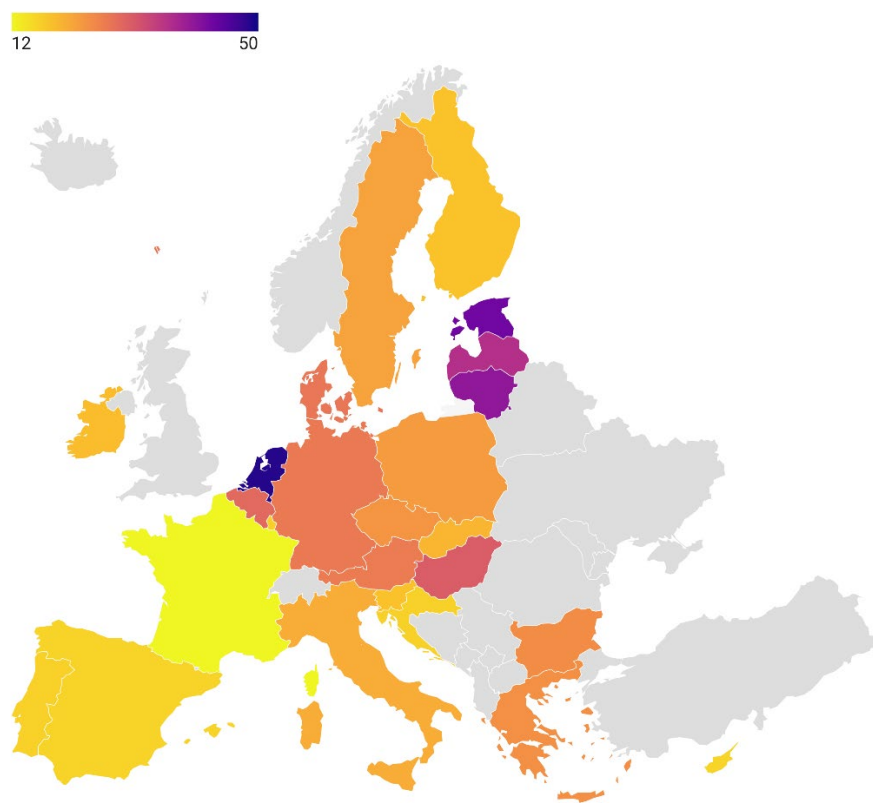
<sup>4</sup> Malta is excluded due to missing data.

Figure 7: Estimated year-over-year wage growth for the euro area



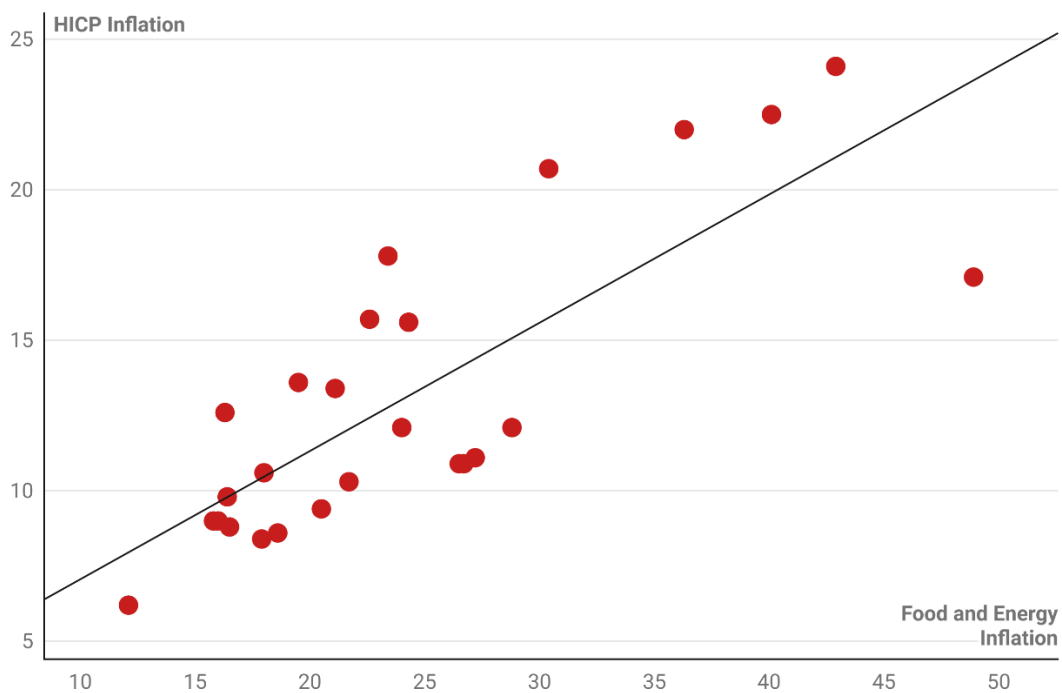
Source: Author's calculations based on data from the Indeed wage tracker  
<https://github.com/hiring-lab/indeed-wage-tracker/tree/main/data>

Figure 8: HICP food and energy price inflation in EU Member States



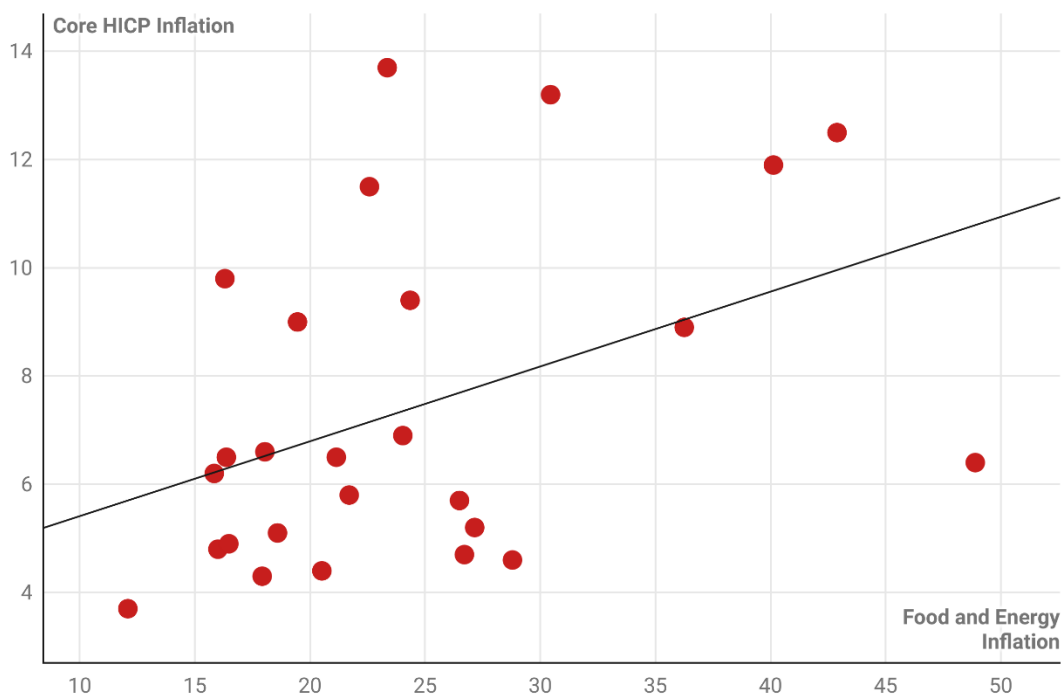
Source: Author's calculations based on data from Eurostat.

Figure 9: HICP inflation and food and energy price inflation in EU Member States



Source: Author's calculations based on data from Eurostat. Food and energy inflation is calculated as the combined inflation rate for energy, food, alcohol and tobacco using country-specific HICP weights.

Figure 10: Core HICP inflation (excluding energy, food, alcohol and tobacco) and food and energy price inflation in EU Member States



Source: Author's calculations based on data from Eurostat.

Notes: Food and energy inflation is calculated as the combined inflation rate for energy, food, alcohol and tobacco using country-specific HICP weights.

Why does it matter what the underlying sources of inflation are? The ECB's mandate for price stability relates to the total HICP, not just the component of it that excludes volatile prices. Given this, it is clear that with inflation so high now, the ECB has no choice but to do everything it can to slow the economy and get inflation down. However, this leaves open the question of how high interest rates need to go. Like all central banks, the ECB needs to be forward-looking when calibrating their monetary policy and for this reason the composition of current inflation determinants matters.

Food and energy prices are likely to remain high in Europe over the coming years but the ECB is explicitly an inflation-targeting central bank. It does not target the overall price level. If food and energy prices stabilise at something close to their current high levels, then the impetus from these factors to inflation will fall away and year-over-year inflation could fall quite quickly as soon as next spring, returning inflation towards its target levels.

There are also signs that conditions in the euro area economy are starting to deteriorate so the current over-heating is going to end. High food and energy prices are squeezing household incomes with, as noted, wage increases not keeping up with inflation. Moreover, as recent ECB research has acknowledged, the effective inflation rates for poorer households have been higher than average because of their heavier reliance on essential goods and services.<sup>5</sup> These households already do not have much ability to save and the higher cost of living will translate directly into reduced spending on other consumption items.

Business sentiment is also weakening with increasing pessimism about the months ahead showing up in purchasing manager surveys and the European Commission's business surveys. And these signs of slowing are visible prior the ECB's current tightening of financial conditions having yet had much effect. For example, we can expect to also see housing market conditions deteriorate soon as falling real incomes and higher financing costs combine to reduce house prices and slow residential construction.

Given this set of circumstances, the ECB will need to assess policy carefully so that it does not end up tightening more than is necessary to restore price stability.

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<sup>5</sup> See Charalampakis, Fagandini, Henkel and Osbat (2022).

## 4. GLOBAL MONETARY POLICY TIGHTENING

The global nature of the modern economy means central banks need to pay close attention to economic events elsewhere when formulating their own monetary policies. In particular, they need to monitor the monetary policy actions of other central banks. The monetary policies of other central banks affect euro area inflation through their influence on global demand and thus the demand for euro area exports. They also influence inflation in the rest of the world, some of which is passed through via higher import prices in Europe.

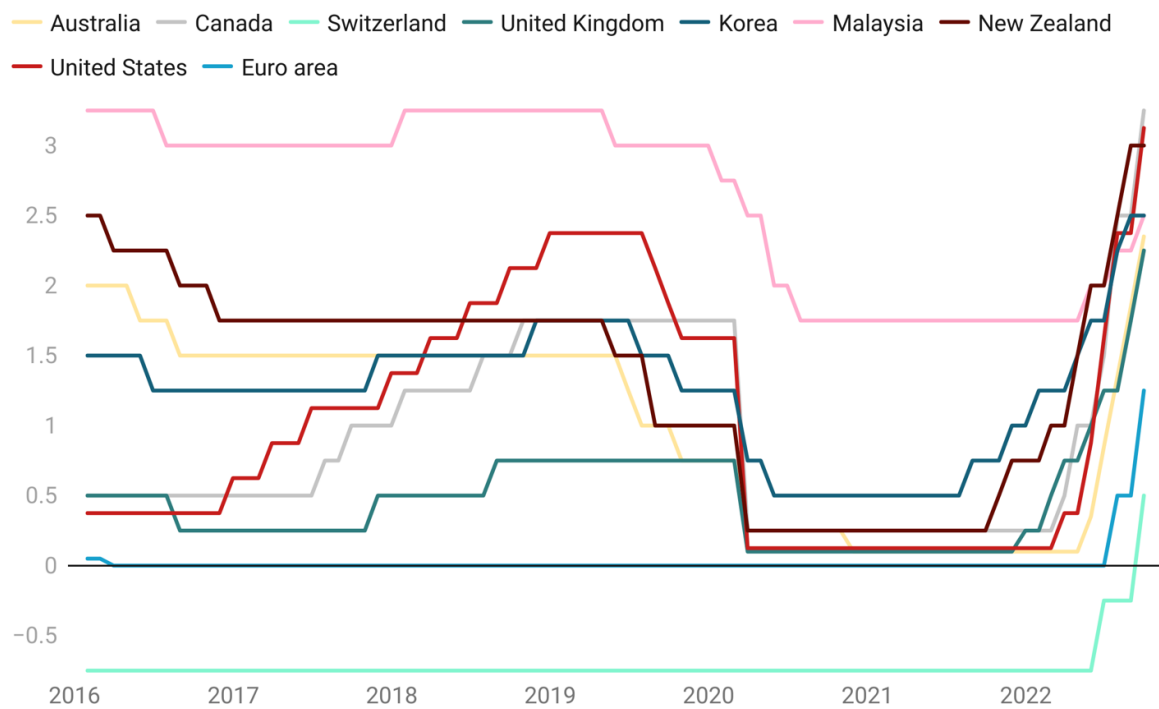
Another channel is the influence of foreign monetary policies on the euro exchange rate. As illustrated in Figure 11, while central banks around the world are now all tightening monetary policy, the Federal Reserve has raised interest rates faster than the ECB and by a larger amount. This has likely had an influence on the decline in the euro's exchange rate against the dollar from approximate USD 1.20 in summer 2021 to approximate parity now, as shown in Figure 12. With the US economy still expanding and adding jobs at a healthy rate while the euro area economy is apparently weakening, there may continue to be a gap between Federal Reserve and ECB policy rates for some time which could lead to further depreciation of the euro.

The decline in the euro has played a role in the high inflation of the last year but it is unlikely it played a major role. The official account of the July ECB Governing Council meeting reported that Executive Board member Isabel Schnabel told her colleagues that the ECB staff estimated that *"around half of the 10% depreciation of the euro vis-à-vis the US dollar since the start of the year could be attributed to the divergence in monetary policies."*<sup>6</sup> Research by Ortega and Osbat (2020) estimates that a 1% depreciation in the euro raises the HICP by around 0.04%. Assuming that differential monetary policies have accounted for half of the drop in the broad euro exchange rate since summer 2021, this estimate implies euro depreciation has added about one third of one percent to inflation this year. So this has not had a big impact. The ECB will have to factor in this effect if its monetary policy continues to diverge from the Federal Reserve's but it is unlikely that this effect will have an important influence on how the Governing Council sets monetary policy.

The simultaneous timing of interest rate hikes around the world illustrated in Figure 11 has raised concerns from former IMF chief economist, Maurice Obstfeld (2022), that the combined effect of simultaneous tightening of financial conditions across the world may be too severe. Obstfeld has said: *"The present danger, however, is not so much that current and planned moves will fail eventually to quell inflation. It is that they collectively go too far and drive the world economy into an unnecessarily harsh contraction."*

<sup>6</sup> See <https://www.ecb.europa.eu/press/accounts/2022/html/ecb.mg220825~162cfabae9.en.html>

Figure 11: Monetary policy rates from a selection of central banks



Source: Author's calculations based on data from the Bank for International Settlements.

<https://www.bis.org/statistics/cbpol.htm>

Notes: For the US, the chart shows the mid-point of the Federal Reserve's target range for the federal funds rate. For the euro area, it shows the deposit rate.

Figure 12: Euro-Dollar exchange rate



Source: ECB Statistical Data Warehouse



In theory, a solution to this potential problem is for the major central banks to co-ordinate their monetary policies but this is not likely to play a big role in practice. While there are regular meetings amongst central bankers at various forums, each central bank ultimately has its own mandate focused on inflation and the real economy in their own region. This places strict limits on the extent to which central bankers can announce that domestic conditions might call for one policy but global co-ordination calls for something else.

A more realistic expectation is just that central banks take full account in their forecasts of the effect of monetary policy tightening in other parts of the world. As Obstfeld has put it *"Now is the time for monetary policymakers to put their heads up and look around. They should take into account how the forceful actions of other central banks are likely to reduce the global inflationary forces they jointly face."*

Will this be sufficient to produce the right outcome? Will the usual processes by which central banks construct their forecasts contingent on expected monetary policies in the rest of the world be sufficient to avoid an unnecessarily strict tightening? I am not sure.

One factor that may play a role in producing an overly severe global recession is the concern that central banks have with establishing their inflation-fighting credentials. This is the ECB's first time having to cope with high inflation and thus the most serious test of its commitment to its primary objective of price stability. Similarly, for many of the central banks who adopted an inflation targeting strategy back in the 1990s, this is the first time since this strategy was adopted that they have faced a sustained period of above-target inflation. They will feel the success of their institutions is going to be judged on their ability to get inflation back to target and the perception that they played a key role in achieving this.

Central bankers and academic macroeconomists have long believed that establishing the credibility of a central bank's commitment to fight inflation is crucial to good macroeconomic performance. Central bankers will also have heard a lot of criticism of their failure to prevent the current high inflation. This has come from politicians and the general public but also from influential academics. A good example was the discussion at the Committee's previous Monetary Dialogue preparatory meeting from Ricardo Reis, academic from the London School of Economics (LSE)<sup>7</sup>. In his comments, Reis argued forcefully that ECB's monetary policy was far too loose and was fuelling high inflation. He recommended that the ECB implement an immediate large increase in policy rates rather than stick with its more gradualist approach.

Economists believe that people respond to incentives. Given their current legal and institutional structures, most major central banks are now heavily incentivised to focus on reducing inflation and to be seen to having done so effectively. A central bank that implements a severe tightening now and puts the economy into recession can claim to have "taken the tough but necessary decisions" and once inflation has fallen, it can argue that it played a key role in this successful outcome. In contrast, a central bank that concludes that an upcoming global recession will reduce inflation anyway and thus decides not to tighten further will find it more difficult to make such an ex post claim. On balance, I think there is a significant risk that we will get more global monetary tightening (and a more severe recession) than would be necessary to return inflation to its target levels.

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<sup>7</sup> See [https://multimedia.europarl.europa.eu/en/webstreaming/event\\_20220915-0900-COMMITTEE-ECON?start=20220915082700&end=20220915084935](https://multimedia.europarl.europa.eu/en/webstreaming/event_20220915-0900-COMMITTEE-ECON?start=20220915082700&end=20220915084935).

## REFERENCES

- Adrjan, P. and Lydon, R. (2022). "Wage Growth in Europe: Evidence From Job Ads". Central Bank of Ireland Economic Letter. <https://www.centralbank.ie/docs/default-source/publications/economic-letters/wage-growth-europe-evidence-job-ads.pdf>
- Attinasi, M. G. and Balatti, M. (2021). "Globalisation and its implications for inflation in advanced economies", ECB Economic Bulletin, Issue 4. [https://www.ecb.europa.eu/pub/economic-bulletin/articles/2021/html/ecb.ebart202104\\_01~ae13f7fe4c.en.html](https://www.ecb.europa.eu/pub/economic-bulletin/articles/2021/html/ecb.ebart202104_01~ae13f7fe4c.en.html)
- Beckworth, D. (2022). "The Causes and Cure of the 2021-2022 Inflation Surge". <https://www.discoursemagazine.com/economics/2022/10/31/the-causes-and-cure-of-the-2021-2022-inflation-surge/>
- Charalampakis, E., Fagandini, B., Henkel, L. and Osbat, C. (2022). "The impact of the recent rise in inflation on low-income households", *ECB Economic Bulletin Focus*. [https://www.ecb.europa.eu/pub/economic-bulletin/focus/2022/html/ecb.ebbox202207\\_04~a89ec1a6fe.en.html](https://www.ecb.europa.eu/pub/economic-bulletin/focus/2022/html/ecb.ebbox202207_04~a89ec1a6fe.en.html)
- Ciccarelli, M. and Mojon, B. (2010). "Global Inflation", *The Review of Economics and Statistics*, Volume 92, No 3, pages 524-535.
- Forbes, K. (2019). "Inflation Dynamics: Dead, Dormant, or Determined Abroad?", *Brookings Papers on Economic Activity*, Fall, pages 257-319. <https://www.brookings.edu/bpea-articles/inflation-dynamics-dead-dormant-or-determined-abroad/>
- Obstfeld, M. (2022). "Uncoordinated monetary policies risk a historic global slowdown". Peterson Institute for International Economics. <https://www.piie.com/blogs/realtime-economic-issues-watch/uncoordinated-monetary-policies-risk-historic-global-slowdown>
- Ortega, E. and Osbat, C. (2020). "Exchange rate pass-through in the euro area and EU countries". ECB Occasional Paper No. 241. <https://www.ecb.europa.eu/pub/pdf/scpops/ecb.op241~c7c3080d60.en.pdf>
- Schnabel, I. (2022). "Monetary policy and the Great Volatility", speech at the Jackson Hole Economic Policy Symposium organised by the Federal Reserve Bank of Kansas City, Jackson Hole, Wyoming. <https://www.ecb.europa.eu/press/key/date/2022/html/ecb.sp220827~93f7d07535.en.html>





# Global energy price inflation with a European twist

Daniel GROS, Farzaneh SHAMSFAKHR



## **Abstract**

Inflation has always had a strong global component, driven mostly by volatile energy prices. However, the unprecedented levels of inflation reached now cannot in all cases be explained by energy prices – except for the euro area, where gas prices have had a special impact. The international spill over effects of national monetary policy are uncertain. US tightening has negative repercussions abroad, especially on emerging economies, because of the dominant role of the US dollar in global financial markets. Euro area tightening might have a positive impact on the US economy because a stronger euro helps, even if only marginally, other exporters.

This paper was provided by the Policy Department for Economic, Scientific and Quality of Life Policies at the request of the Committee on Economic and Monetary Affairs (ECON) ahead of the Monetary Dialogue with the ECB President on 28 November 2022.

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## LIST OF ABBREVIATIONS

<b>CPI</b>	Consumer Price Index
<b>ECB</b>	European Central Bank
<b>EU</b>	European Union
<b>HICP</b>	Harmonised Index of Consumer Prices
<b>KWH</b>	Kilowatt-hour
<b>LNG</b>	Liquified natural gas
<b>PCE</b>	Personal Consumption Expenditures Price Index
<b>US</b>	United States
<b>USD</b>	United States dollar



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## EXECUTIVE SUMMARY

- **Inflation has been a global phenomenon for a long time.**
- **The global shock that now dominates inflation is evidently the increase in energy prices.**
- **During most of the last two decades the main source of energy price shocks has been the price of crude oil; however, ‘this time is different’ because of the extraordinary increase in the price of natural gas, which has had a differential and very strong impact on the euro area.**
- **The energy price surge is far more extreme in the euro area, compared with that in the US, due to the relative isolation of the US gas market and the electricity market design of the EU.**
- **A large part of the energy price component in the harmonised index of consumer prices, which is based on gas and electricity, is likely to stay elevated as high gas prices feed gradually through to utility rates.** This in turn is likely to introduce a transatlantic asymmetry that might last for some time.
- **The literature on the coordination of monetary policy concludes generally that the gains in terms of better macroeconomic outcomes are small.** The case for coordination is thus weak.
- **Synchronised (parallel) global tightening does not necessarily imply a stronger or excessive negative impact on economic activity, as the spill over effects of monetary policy are of uncertain sign.**
- **Empirical evidence suggests that US monetary tightening has a negative impact on demand and inflation abroad, especially on emerging markets.** But the opposite could be true for other countries and for the euro area. Tightening by the ECB might support other countries’ exports via a stronger euro.
- **This asymmetry does not prima facie constitute a case for global policy coordination given that policymakers are aware of these asymmetric mechanisms.**

## 1. INTRODUCTION

Inflation has been a global phenomenon for a long time. This applies to both the long-term trends and the short-term fluctuations around the long-term trends at the business cycle frequency. The latter phenomenon has been extensively studied.

The role of global factors, including oil and commodity prices, in driving short-term inflation dynamics in advanced economies have been confirmed by several empirical studies (Ciccarelli and Mojon, 2010). Although to a lesser extent, these factors are also found to have an impact on core inflation (Forbes, 2019).

While the impact of energy prices on inflation in the short run is well established, the impact of higher energy prices on core inflation is a priori difficult to determine. On the one hand, higher energy prices mean higher input prices for a range of goods that make up the core consumption basket, driving the core consumer price index (CPI) upwards. The direct effect of higher energy prices on core inflation could thus be positive.

On the other hand, one should expect an inflation-targeting central bank to stabilise overall CPI inflation, which implies that a higher energy contribution to inflation requires a lower contribution from core prices. This mechanism could only work indirectly via the central bank's policy reaction weakening demand and hence lowering price pressures overall. Yet that might take more time and not be immediately visible in the short-term, e.g. in quarterly data.

Putting aside energy prices and their potential direct and indirect impacts on core inflation, the New Keynesian Phillips Curve framework, which dominates central banks, implies that domestic factors such as the output gap and inflation expectations should be the main determinants of core inflation. But thanks to globalisation more goods are imported, which has led to research looking at the relative significance of the global versus the national output gaps in determining domestic inflation (usually in a Phillips curve framework). That research initially found global factors to play an important role (i.e. mainly the global output gap). But their importance has weakened over time. Forbes (2019) considers this pattern to be more evident for advanced economies outside the euro area.

A related, but somewhat different issue concerns the medium-term evolution of inflation. For example, an analysis of euro area inflation attributes the persistent low core inflation during 2014–2017 to spillovers of the second-round effects of falls in energy and oil prices, besides the economic slack (KOF, 2017).

If one takes a longer view, one can discern two distinct periods in the trends of inflation in advanced economies over the past four decades.

The first was a period of disinflation during the 1980s and 1990 when the common challenge was to bring inflation down. The second was a period of low inflation starting around the turn of this century. The low inflation period can be subdivided again, first into the 'peak great moderation' that lasted until the financial crisis, during which central banks were able to hit their inflation targets with notable precision. The Great Financial Crisis put an end at this. It was followed by more than a decade of "lowflation", during which the task for most advanced countries was to bring inflation back up to the target (mostly of 2%).

Demographic shifts, globalisation and digitalisation have been considered to be the main causes of subdued aggregate demand and inflation during the last two decades, underlining the prominent role of global factors, rather than domestic factors, in inflation dynamics. The global financial crisis

deepened the pre-existing weakness in domestic demand (and productivity), putting further downward pressure on prices and wages.

Inflation has thus been a common feature for a long time.

The data suggest that there are strong common trends in inflation across advanced economies. Correlation does not mean causation – especially in this case, where one just observes that advanced countries tend to show a similar trend. But this close correlation would be highly unlikely if inflation was driven mainly by idiosyncratic domestic shocks. Similar reactions to common shocks constitute a much more likely cause of these waves in inflation. However, the modern inflation-targeting framework makes sense only if one assumes that central banks have policy instruments which are strong enough to neutralise in the medium run any global factors affecting domestic inflation in the short run. This is the task of the European Central Bank (ECB) right now.

This paper deals with the challenge the ECB faces by providing a comparative framework for the present energy shock.

## 2. GLOBAL SHOCKS AND THE CO-MOVEMENT OF INFLATION AT BUSINESS CYCLE FREQUENCIES

This short discussion of how global factors influence inflation and what kinds of common elements one would expect shows that energy prices play a key role: when they move by a large amount they have a strong influence on headline inflation. When energy prices move to a lesser extent and when one looks at core inflation, business cycle indicators like the output gap become more important. The significance of global factors in influencing inflation is bound to vary over time.

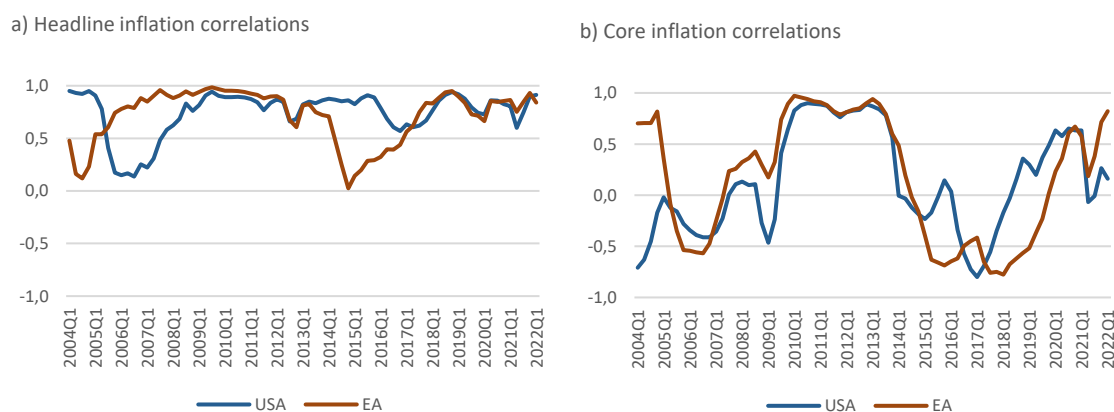
Figure 1 shows the changing nature of global co-movements over time for the United States (US) and the euro area. It illustrates the correlation of the domestic inflation rate with the average for developed countries (excluding the home country itself) for headline and core inflation respectively. The period taken into consideration is 2004Q1–2022Q1. The correlation coefficient is calculated for a rolling window of the previous 12 quarters (3 years), corresponding roughly to a business cycle.

The graphs show periods when inflation correlations were very high, interspersed with other periods of low or even negative correlation coefficients. For headline inflation, the correlation coefficient is always positive and often above 80%. The low values for the euro area in 2004 and 2015 are probably due to the impact of the largest swings in the exchange rate of the euro during the three preceding years. (That is, a weak euro in 2001 and a strong euro until 2015 coupled with the fallout from the euro sovereign debt crisis, which influenced the three preceding years.)

The correlations of core inflation rates, which reached similar peaks (close to 100% during 2011–2013), are on average much lower (16% compared with 70% for headline inflation) and even turned negative over extended periods. High correlations in core inflation seem to be the exception rather than the rule. These high correlations are observed during periods coinciding with major events in the global business cycle, such as the Great Financial Crisis and the Covid-19 crisis.

We concentrate here on the euro area and the US – two continental-size, diversified economies. Other countries, including large ones like Japan, would show a more divergent pattern with lower correlation coefficients.

Figure 1: Correlations with global inflation



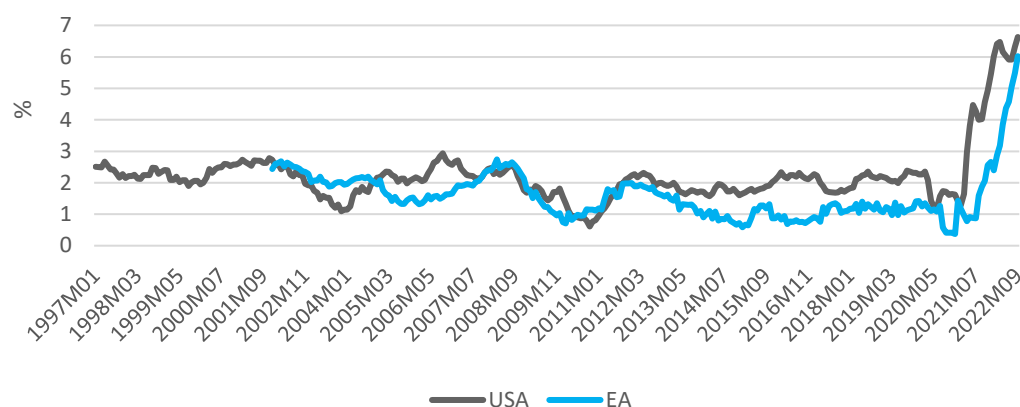
Source: Authors' calculations based on Eurostat, FRED and World Bank data.

Note: The correlations are computed on a rolling 3-year (12-quarter) basis.

The correlations in Figure 1 illustrate the changing pattern over the last two decades of low and stable inflation. That period has ended for now, with inflation (including core inflation) reaching unprecedented levels as shown in Figure 2, which depicts the level of core inflation for the US and the euro area.

Figure 2: Core consumer price index, the US and euro area

Annual rate of change



Source: Authors' calculations based on FRED and Eurostat.

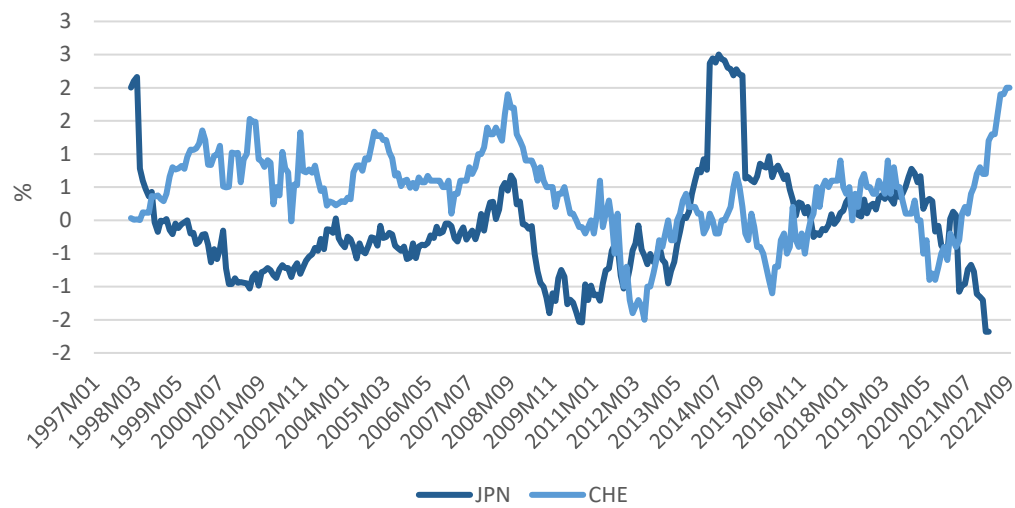
It is interesting to note that while the US and euro area show great similarity in recent data, which is several standard deviations outside the bounds observed during the past two decades, one finds a very different pattern in two traditionally low-inflation economies, Switzerland and Japan. In Switzerland, core inflation has increased rapidly. Even so, starting from negative values in 2020, it has only reached the level last seen in 2007 (the euro area is more than two times above the value of 2007). In Japan, core inflation has even gone negative, as it should do if the central bank is to keep overall inflation under control in the face of increasing energy prices (Figure 3).

Energy prices make up about a tenth of the harmonised index of consumer prices (HICP). This implies mechanically that an increase in energy prices of 40% translates into a contribution of 4 percentage points to the HICP. Non-energy (core) prices would have to fall by about 2.2% ( $-0.02 / 0.9$ ) in order to keep overall HICP inflation at 2%.

The ECB (and other central banks) argues convincingly that the cost of achieving such a fall in core prices would be prohibitive. That is why the ECB (and most other central banks around the world) did not immediately try to achieve their price stability target in the face of rapidly rising energy prices. Initially, they hoped that, provided core inflation remained stable, headline inflation would return on its own to 2% once energy prices stabilised. However, that hope was misplaced. Core inflation has shot up as well (except in Japan), leaving central banks little choice.

Figure 3: Core consumer price index, Switzerland and Japan

Annual rate of change



Source: Authors' calculations based on World Bank and Eurostat.



### 3. ENERGY PRICES AS THE MAIN DRIVER OF INFLATION

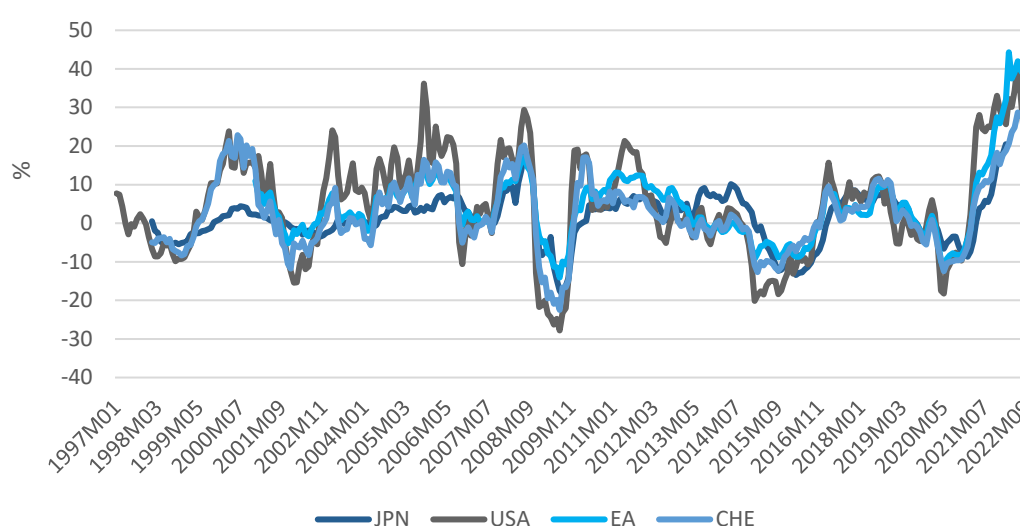
The global shock that now dominates inflation is of course the increase in energy prices. An initial question is whether today's energy price movements are unprecedented.

#### 3.1. Is today's situation special?

Figure 4 shows the energy component of inflation in the national CPI of the US, Japan, Switzerland and the euro area. It is apparent that energy prices have been highly correlated across countries for a long time. Furthermore, energy prices have varied far more than headline and core inflation. The scale in Figure 4 is about 10 times larger than that in Figure 3.

Figure 4: Energy price component of the national consumer price index

Annual rate of change



Source: Authors' calculations based on World Bank, FRED and Eurostat.

The scale of Figure 4 hides large differences that have recently arisen. By September 2022, in the euro area the energy price component was 40% higher than the year before, against about 20% in the US and a little more than that in Switzerland and Japan. Energy has clearly been a much stronger driver of inflation in the euro area than elsewhere<sup>1</sup>.

Table 1 shows that energy price inflation has usually been above the 2% inflation target. Over the last 20 years, prices have increased on average by over 3% in the euro area and 4.5% in the US.

The second row of the table also shows large differences in the variability of different inflation measures. Core inflation is, unsurprisingly, the most stable one, with a standard deviation of only 0.6% (per annum) in both the US and the euro area. Headline inflation has a variability that is about twice as high (1.3 and 1.0%). The variability of energy inflation, however, is an order of magnitude higher, at 12.4% in the US and 7.1% for the euro area.

The last row in Table 1 gives an indication of how large the latest observed value (Q32022) is from the previous pattern by dividing the difference between the latest observed value and the average by the

<sup>1</sup> These values constitute a clear break with the previous transatlantic proportions. As mentioned above, the energy component of the HICP had moved by only half the value of its US counterpart. Today the euro area value is double that of the US.

standard deviation. This procedure creates a standardised variable for which one can determine the likelihood of the occurrence of values much above 1. Assuming a normal distribution, any value above 2 indicates that it would be highly unlikely (only about a 5% chance) to find such a discrepancy.

The values of between 4.5% and over 6.9% observed for US headline and core inflation suggest that the recent values represent an extreme deviation from the pattern over the last 20 years. By contrast, US energy price inflation does not seem extreme (with a value below 2%). But for the euro area, one finds again an extreme value. For the US, a high but not totally unprecedented increase in energy prices is associated with an unprecedented surge in inflation. For the euro area, the energy price increase is much more extreme and hence a better candidate for explaining the behaviour of inflation. The reason for this difference will be explored below.

Table 1: Inflation volatility across the Atlantic

	Headline Inflation		Core Inflation		Energy Inflation	
	US	Euro area	US	Euro area	US	Euro area
Mean (2000–2021)%	2.2	1.7	2.1	1.5	4.5	3.2
St. dev. (2000–2021)%	1.3	1.0	0.6	0.6	12.4	7.1
Dispersion relative to long-term mean (2022Q3)%	4.5	7.6	6.9	7.3	1.7	5.1

Source: Authors' calculations based on FRED and Eurostat.

Note: Core inflation excludes the prices of unprocessed food and energy products.

Dispersion is calculated as inflation rate in Q32022 (on a year-on-year basis) minus the long-term mean (2000Q1–2021Q4) divided by standard deviation over the same period (2000Q1–2021Q4).

### 3.2. Transatlantic differences in energy price shocks (until 2021)

Over most of the last two decades the main source of energy price shocks has been the price of crude oil. During this period the variability of the energy component of the CPI (or personal consumption expenditures price index, PCE) has generally been higher in the US than in the euro area or most other advanced economies, because the price at the pump (which is the relevant price entering the CPI) is much lower in the US. In most other advanced economies, over half the price paid by consumers consists of taxes and other fees, which are fixed<sup>2</sup>. This implies that a 10% increase in crude oil translates into an approximately 10% increase in the price at the pump in the US, but much less elsewhere.

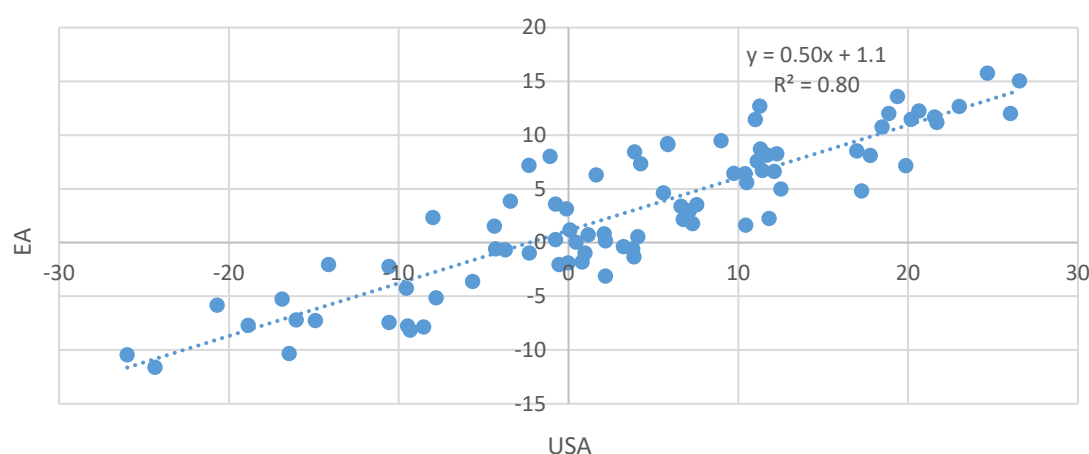
A crude calculation can illustrate the importance of this effect. A 10% increase in crude oil prices translates into only a 5% increase in the price at the pump if one assumes that in the euro area only half the price at the pump consists of the input price (i.e. the price of fuel oil). That is the reason why the

<sup>2</sup> Some taxes increase with the input price. But euro area governments have often lowered those taxes that are proportional to the price (like VAT) when the oil price spikes.

energy price component has been more variable in the US than in the euro area (or Japan and Switzerland).

Figure 5 shows the energy price component of the US CPI and the HICP in the euro area. There is a very tight correlation between the two over these 20 years (with a correlation coefficient close to 80%)<sup>3</sup>. Moreover, the line of best fit has a slope of only 0.5, which implies that, for the reasons explained above, euro area energy prices have on average increased by only half the US value.

Figure 5: Scatter plot of US and euro area energy price inflation, 2001–2021



Source: Authors' calculations based on FRED and Eurostat.

### 3.3. The special case of natural gas and its importance for Europe

However, “this time is different” because of the extraordinary increase in the price of natural gas, which has had a differential and very strong impact on the euro area. Over the past 20 years gas prices have been much more stable than oil prices, but this changed in the course of the second half of 2021 (Gros, 2022).

There are two reasons why natural gas prices have had a differential impact on the euro area compared with other advanced economies. First, (wholesale) natural gas prices have risen much less in the US than in the euro area as shown in Figure 6. That is because supply in the US has not been affected, thus keeping the domestic supply-demand equilibrium largely unchanged. Moreover, the export capacity of liquefied natural gas (LNG) by the US is limited in the short run (about 10% of total domestic supply), which explains why the huge price differential has not been narrowed by a boost in exports.

Second, in the euro area wholesale electricity prices are linked to the price of natural gas via the merit order system for the electric power market, under which the price of electrical power is determined by the most expensive source (i.e. its marginal cost)<sup>4</sup>. This is one of the reasons why electricity prices have escalated in Europe, while remaining constant in the US. Price increases in the wholesale market usually do not translate one-to-one into higher prices for consumers because electricity tariffs for households are regulated, but at the national level, which implies that even within the euro area there are considerable differences in the CPI component of electrical power. In some countries, consumer tariffs were indexed on wholesale prices. In these countries there was of course a much tighter link between

<sup>3</sup> Somewhat surprisingly for Japan the energy price component of the CPI is much less correlated with either the US or the EU, illustrating the considerable effect of national regulations on retail energy prices.

<sup>4</sup> <https://fsr.eui.eu/event/electricity-prices-and-market-design-2/>

wholesale and retail prices. The latest Eurostat survey of retail electricity prices shows several countries with prices in the first half of 2022 above 30 cents per kilowatt-hour (kWh) and some below 10 cents per kWh<sup>5</sup>.

Electric power is not in principle a good that is tradeable across continents. Yet via the price of gas (or coal), which is a tradeable commodity, power prices in Europe are much more influenced by global developments than those in the US (or most of Asia, where household prices for gas and electricity are highly regulated and decoupled from global prices).

The fact that utility rates for gas and electricity are only gradually adjusted in reaction to the higher purchase costs of the utilities themselves implies that the response of the energy component of the euro area HICP is likely to follow a moving average of wholesale gas prices.

It differs for motor fuel (petrol) prices, which tend to very quickly follow global spot prices. This is one reason why inflation in the euro area might continue to increase or at least stay at elevated levels for some time after wholesale gas prices have come down and stabilised.

In the US, the fuel component of energy has already turned negative (but not in Europe because of the depreciation of the euro). Even so, the two thirds of the energy price component in the HICP based on gas and electricity are likely to stay elevated, as high gas prices feed gradually through to utility rates (unless the government intervenes in utility rates, like in France). That is likely to introduce a transatlantic asymmetry that might last for some time. In the US, energy prices might soon become a deflationary contribution, with the opposite in Europe.

Figure 6 shows the contributions of the energy price component – including petrol (motor fuel), electricity and natural gas prices – to consumer price inflation in the US and the euro area. The contribution from higher oil prices is exactly the same (0.8%). But there are important differences in the other components.

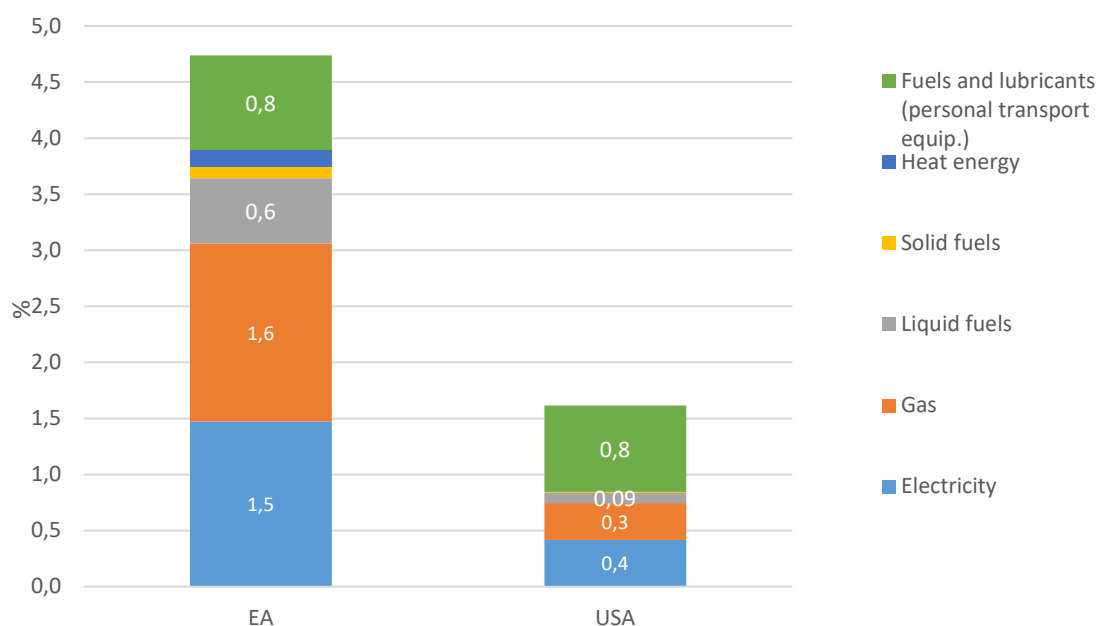
Two differences stand out: the total contribution of energy prices to inflation is much higher in the euro area (in September it was 4.5% for the euro area versus 1.5% for the US). What is more, the individual components are very dissimilar. In the US, natural gas for heating and electricity provide only a small contribution (much smaller than for motor fuels), whereas in the euro area these two factors contribute two thirds of the overall energy price index.

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<sup>5</sup> [https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Electricity\\_price\\_statistics](https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Electricity_price_statistics)

Figure 6: Contribution of energy prices to inflation, the US and the euro area

Annual rate of change, September 2022



Source: Authors' calculations based on FRED and Eurostat.

In the case of electric power and gas used by households, one needs again to take into account that the pure energy content makes up only a fraction of the price charged to consumers, not only because of taxes, but also because of other charges, including network fees. This explains why the gas price component of the HICP has increased much less than wholesale gas prices. Even after the recent fall from the peaks reached in the summer, wholesale gas prices still remain several times higher than the average of previous years, whereas natural gas prices charged to households have “only” doubled.

As an aside, we note that the fixed charges (especially for the network) are usually much higher in richer Member States. That underlies the higher percentage increase in household gas and electricity prices in poorer Member States, particularly in some countries of Central and Eastern Europe which have a tradition of subsidising household energy costs. For example, the reported annual increase in the gas price as of the first half of 2022 was 110% in Lithuania versus 40% in Italy, although in both countries the absolute increase in the price was 3 cents per kWh<sup>6</sup>.

The depreciation of the euro is another factor driving energy prices higher in Europe. But the extent of the depreciation of the euro against the US dollar (USD) (less than 20%) means that this factor is of secondary importance (at least compared to the huge increase in natural gas prices). The exchange rate of the euro usually has only a limited impact on HICP inflation because the prices of imported consumer goods tend to be sticky; they are not adjusted every time the exchange rate moves (Ortega and Osbat, 2020). The impact differs for imported commodities, including energy, where the exchange rate passes immediately through to wholesale prices (for gas, for example, and also for petrol).

<sup>6</sup> [https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Natural\\_gas\\_price\\_statistics#Natural\\_gas\\_prices\\_for\\_household\\_consumers](https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Natural_gas_price_statistics#Natural_gas_prices_for_household_consumers)

## 4. AN INTERNATIONALLY COORDINATED APPROACH TO MONETARY POLICY

Gains from the coordination of national monetary policies have been widely studied. Most research finds that among the larger developed economies these gains in terms of better macroeconomic outcomes (lower output losses for achieving inflation target) would be small (Obstfeld and Rogoff, 2002). Mohand and Kapur (2014) document once more that developed economies might gain more.

While the literature has concentrated on better macroeconomic outcomes, there are other reasons why coordination might be beneficial: *“Policy coordination may also produce welfare gains if the international financial markets are incomplete, if policymakers have imperfect information, and if domestic shocks are not perfectly correlated across countries.”* (Frieden and Broz, 2013).

Nevertheless, these conditions are unlikely to be satisfied today. Financial markets are working well and policymakers have good information on what their colleagues around the world are doing and planning to do. Furthermore, shocks are highly correlated in that some global shocks impinge on all advanced economies at the same time (e.g. high energy prices, supply chain disturbances).

### 4.1. The likely impact of global synchronised tightening

The size and sign of the spill over effects have been extensively researched. As summarised briefly in the previous section, the size has generally been found to be small.

Standard macroeconomic modelling suggests that monetary policy tightening in one country could lead to higher inflation abroad, as the national currency is likely to appreciate (implying that the rest of the world depreciates). An isolated case of tightening could thus be more effective (for any single country) than synchronised tightening, which has little impact on exchange rates.

There is also strong evidence of an asymmetry: US monetary policy is widely taken to have strong spill over effects on the rest of the world, in particular emerging economies and especially those with foreign debt denominated in USD. This effect operates via financial markets, not the aggregate demand effects prevalent in macroeconomic models. Research by the ECB itself has also documented that the euro area and the US influence each other, but the strength and the sign of the spill over effects differ markedly: US monetary policy has a strong influence on the euro area, but the effect is rather weak the other way round. The sign also diverges: US monetary tightening has a negative impact on output (and thus presumably also on inflation) in the euro area because higher US rates lead to more constrained financial conditions in the rest of the world. By contrast, tightening by the ECB does not have an impact on financial conditions in the US (or much of the rest of the world). Still, via an appreciation of the euro, it has a positive (albeit very small) impact on demand in the US (Ca’ Zorzi et al., 2020).

There are two reasons for these asymmetries. First, the fact that the impact of the US on the euro area is much stronger could already be guessed from the difference in size. The US economy is at present exchange rates almost 70% larger than that of the euro area (USD 24 trillion for the US and USD 14 trillion for the euro area). Second, the disparity in the nature of the cross-border impact (i.e. the opposite sign) is due to something else, namely the role of the US dollar as the dominant global currency. Tightening by the Federal Reserve usually increases the risk premium paid by borrowers in USD in general. This can put many emerging markets (which depend on dollar financing) in a difficult position, as their foreign debt service obligations increase and the rollover or refinancing of existing debt becomes harder (Danninger et al., 2022; Hoek et al., 2021).

Synchronised global tightening could thus have asymmetric effects as well. The US aspect of the tightening would tend to depress demand in the rest of the world, helping to keep inflation down. However, the tightening by the rest of the world (the euro area and most other advanced countries, except Japan so far) would limit the appreciation of the USD and sustain demand in the US.

This asymmetry does not *prima facie* make a case for global policy coordination given that policymakers are aware of these asymmetric mechanisms.



## 5. CONCLUSION

Several points emerge from this analysis.

Inflation has always been a global phenomenon, often driven in the short run by volatile energy prices and at times by closely synchronised business cycles (like during the Great Financial Crisis of 2008–2009 or the Covid-19 recession of 2020).

The current increase in energy prices at first sight fits a recurring pattern. Yet gas prices today play a special role in Europe, driving components of the HICP (mainly heating and electric power), which in the past had been little affected by gyrations of the oil price. This effect does not operate in the US, thus rendering the inflationary pressure much stronger in the euro area than in the US or other countries with regulated utility prices.

Explicit coordination of monetary policies is unlikely to bring large benefits because central banks are aware of one another's actions. Moreover, explicit coordination would have to rely on secure knowledge of the global spill overs of national monetary policy. These spill overs, however, are difficult to determine a priori. Also, the available models are probably not suitable to guide policymaking in the present environment, in which a number of supply and demand shocks interact in an unprecedented way. At any rate, central bankers are very aware of the actions of their counterparts abroad. They can act in the full knowledge of what is being done globally, but cannot be certain at this point how tightening abroad will impact their own economy.

## REFERENCES

- Ca' Zorzi, M., Dedola, L., Georgiadis, G., Jarociński, M., Stracca, L. and Strasser, G. (2020). "Monetary policy and its transmission in a globalised world", ECB Discussion Paper No 2407. <https://www.ecb.europa.eu/pub/pdf/scpwps/ecb.wp2407~586c50e03f.en.pdf>
- Ciccarelli, M. and Mojon, B. (2010). "Global Inflation", *Review of Economics and Statistics*, MIT Press, 92(3), August, pp. 524–535. <https://www.ecb.europa.eu/pub/pdf/scpwps/ecbwp537.pdf>
- Danninger, S., Kang, K. and Poirson, H. (2022). "Emerging Economies Must Prepare for Fed Policy Tightening", IMF Blog. <https://www.imf.org/en/Blogs/Articles/2022/01/10/blog-emerging-economies-must-prepare-for-fed-policy-tightening>
- Forbes, K. (2019). "Has globalization changed the inflation process?", BIS Working Papers 791, Bank for International Settlements. <https://www.bis.org/publ/work791.pdf>
- Frieden, J. and J. Broz (2013). "The Political Economy of International Monetary Policy Coordination", in *Handbook of Safeguarding Global Financial Stability*.
- Gros, D. (2022). "Is Putin's War Driving Up Commodity Prices?" Project Syndicate. <https://www.project-syndicate.org/commentary/ukraine-war-minor-effect-on-energy-and-commodity-prices-by-daniel-gros-2022-04>
- Hakkio, C.S. (2009). "Global Inflation Dynamics", Working Paper No 09-01, Federal Reserve Bank of Kansas City, 30 January. <http://dx.doi.org/10.2139/ssrn.1335348>
- Hoek, J., Yoldas, E. and Kamin, S. (2021). "Are Rising U.S. Interest Rates Destabilizing for Emerging Market Economies?", FEDS Notes, 23 June. <https://www.federalreserve.gov/econres/notes/feds-notes/are-rising-u-s-interest-rates-destabilizing-for-emerging-market-economies-20210623.html>
- KOF (2017). "Determinants of Inflation in the Eurozone", News, KOF Swiss Economic Institute. <https://kof.ethz.ch/en/news-and-events/kof-bulletin/kof-bulletin/2017/05/determinants-of-inflation-in-the-eurozone.html>
- Mohan, R. and Kapur, M. (2014). "Monetary Policy Coordination and the Role of Central Banks", IMF Working Paper, WP/14/70. <https://www.imf.org/external/pubs/ft/wp/2014/wp1470.pdf>
- Obstfeld, M. and Rogoff, K. (2002). "Global implications of self-oriented national monetary rules", *Quarterly journal of economics*, 117(2), pp. 503–535.
- Ortega, E. and Osbat, C. (eds) (2020). "Exchange rate pass-through in the euro area and EU countries", Occasional Paper No 241, ECB, April. <https://www.ecb.europa.eu/pub/pdf/scpops/ecb.op241~c7c3080d60.en.pdf>



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The inflation challenge today is a global phenomenon and because of the integrated global economy, domestic monetary policy can have spillover effects to other economies. In response to widespread inflation, we are now seeing a synchronised monetary tightening by many central banks. The simultaneous and mutually-compounding tightening of financing conditions might exceed what is necessary to contain inflation and exacerbate the global recession risk. While monetary policy coordination between central banks has occurred in the past, it remains to be seen whether it is desirable and feasible in the current context.

Four papers were prepared by the ECON Committee's Monetary Expert Panel, describing global factors affecting inflation, the consequences of synchronised tightening and the prospects of monetary policy coordination.

This publication is provided by Policy Department A for the Committee on Economic and Monetary Affairs (ECON), ahead of the Monetary Dialogue with ECB President Christine Lagarde on 28 November 2022.

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