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Tackling global inflation at a time of radical uncertainty

Policy Department for Economic, Scientific and Quality of Life Policies
Directorate-General for Internal Policies
Authors: Luigi BONATTI, Andrea FRACASSO, Roberto TAMBORINI
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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.

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AUTHORS
Luigi BONATTI, University of Trento
Andrea FRACASSO, University of Trento
Roberto TAMBORINI, University of Trento

ADMINISTRATOR RESPONSIBLE
Drazen RAKIC

EDITORIAL ASSISTANT
Catherine NAAS

LINGUISTIC VERSIONS
Original: EN

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To contact the Policy Department or to subscribe for email alert updates, please write to:
Policy Department for Economic, Scientific and Quality of Life Policies
European Parliament
L-2929 - Luxembourg
Email: Poldep-Economy-Science@ep.europa.eu

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CONTENTS

LIST OF ABBREVIATIONS

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

LIST OF FIGURES

LIST OF TABLES

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 unchartered 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.

* 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

	Real shocks	**Monetary shocks**	**Nominal shocks**
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.[1] 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 Galì, 2007) because stabilisation of inflation (in either

[1] 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[a]	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

[a]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).

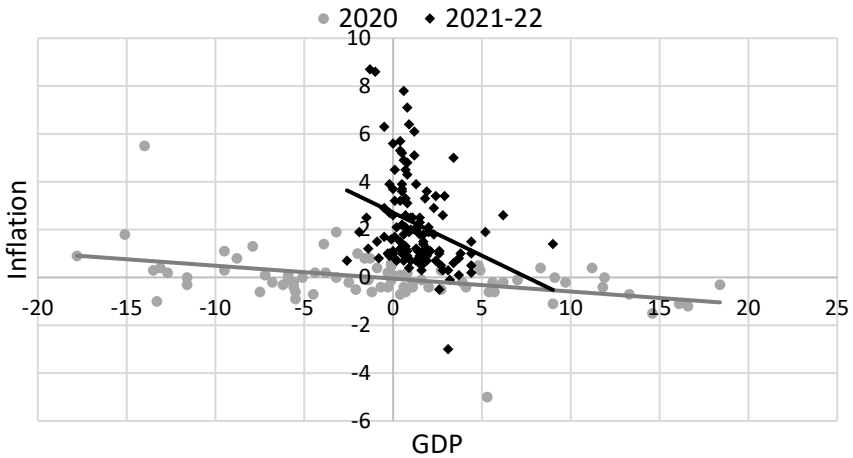
Table 3. Overview of the *World Economic Outlook* projections (percent changes)

		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*[2]*, 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) $$\pi_t = \beta\pi^e + k\,(y_t - y^*_t) + u_{\pi t}$$

where π^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.[3] 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.

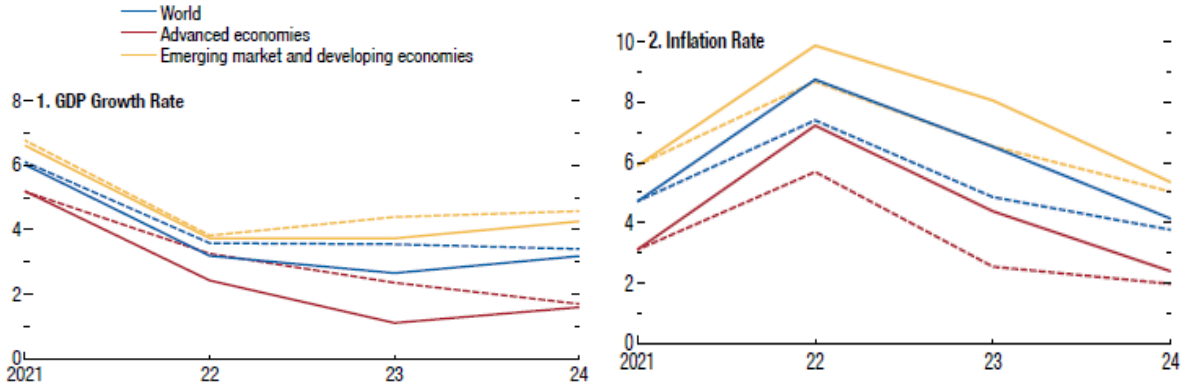
Monitoring of inflation expectations has so far been rather comforting in almost all major countries. As it can been seen in Figure 2, expectations across the world regions *vis-à-vis* growth forecasts show some sign of de-anchoring in short-run projections (corresponding to the current phase) but of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

[2] Conditioning assumptions are those made regarding the evolution of the determinants of inflation.

[3] 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 π_t, the current output y_t, and the policy interest rate i_t, result as follows:

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

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

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

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 π_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[4] after the Biden Administration's fiscal package (Powell, 2022; Bailey, 2022). According to Schnabel (2022b), "*excess*

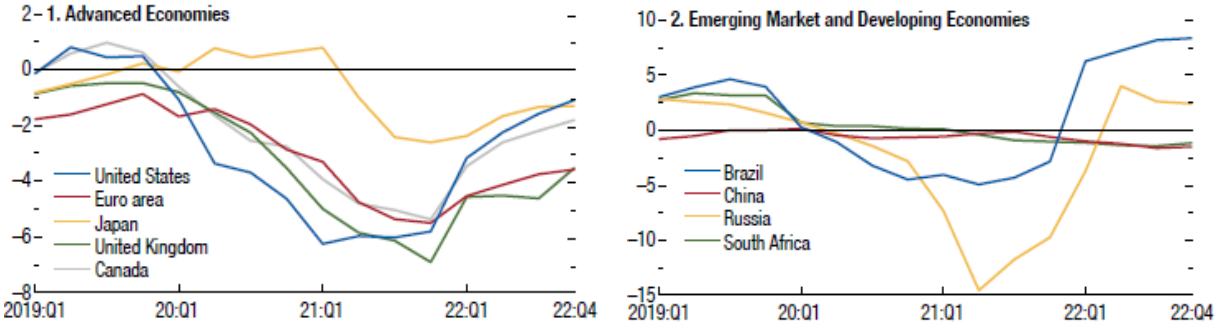
[4] Summers, H. L. (2020). "The Biden stimulus is admirably ambitious. But it brings some big risks, too." Opinion, The Washington Post, 4 February. https://www.washingtonpost.com/opinions/2021/02/04/larry-summers-biden-covid-stimulus/

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 were 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).[5] 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.[6] Figure 4 provides evidence of the braking of

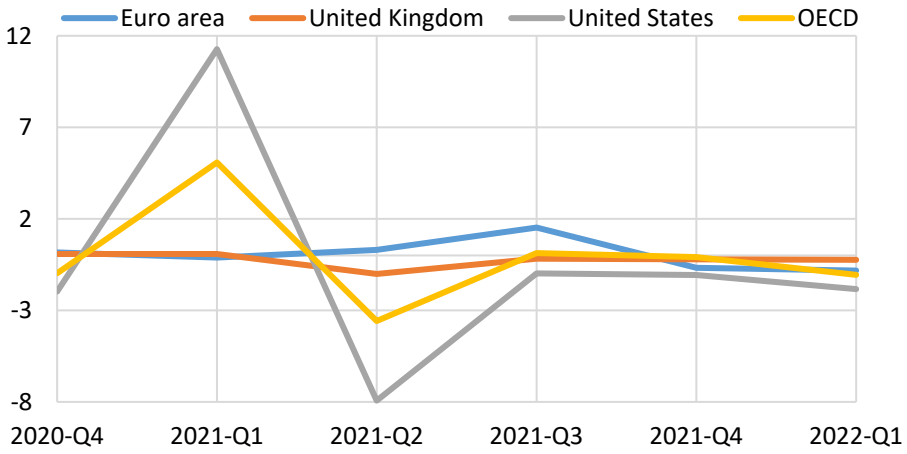
[5] Once again, nominal wage dynamics appears stronger in the US and the UK than in the euro area, but it does not seem sufficient to shield households' purchasing power at large (Krugman 2022, IMF 2022, and here). "The global economy continues to face steep challenges, shaped by the lingering effects 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).

[6] 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.[7]

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

[7] 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 go 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.[8] 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.[9]

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.

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[8] 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).

[9] 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.[10] 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.[11]

[10] The popular sentence is attributed to Milton Friedman.

[11] 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).

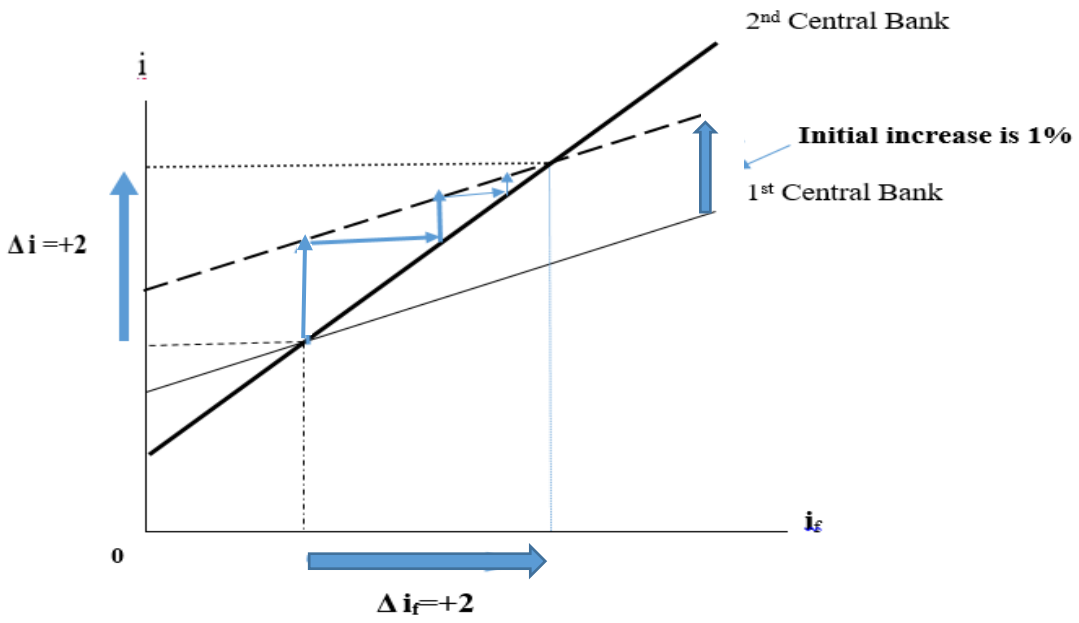
3.2. 2021-22

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

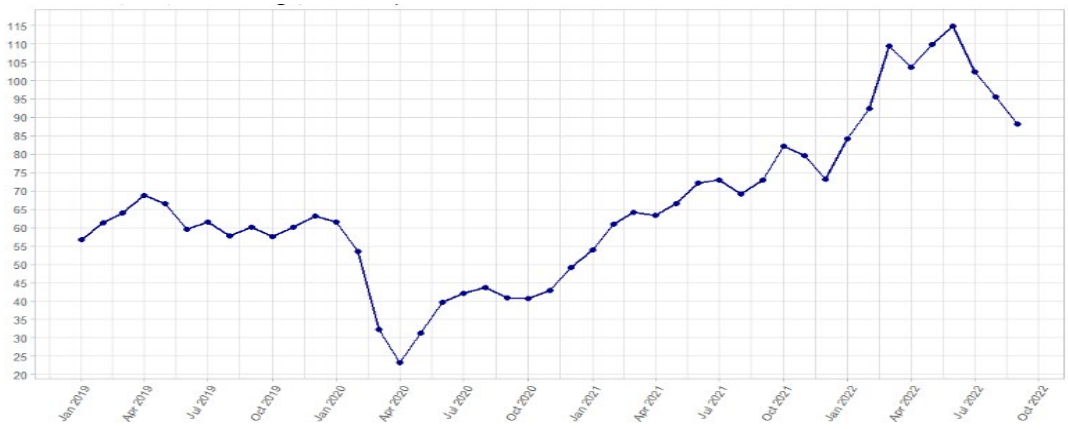


Source: Authors' elaboration based on Taylor (2013).

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**.

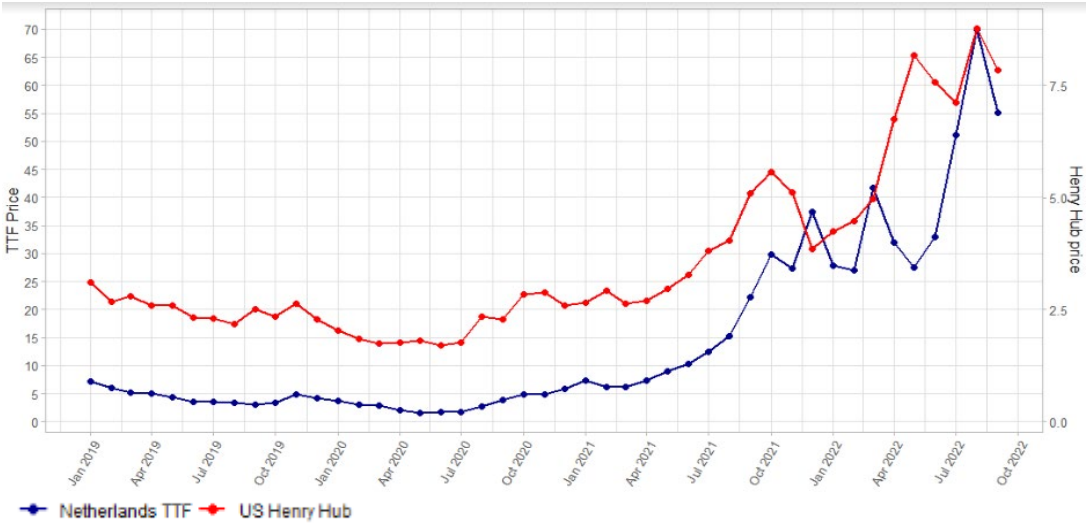
The significant increase in the price of food, and above all the spectacular increase in the price of energy that began many months before the Russian invasion of Ukraine (see Figures 6 and 7), have been the main drivers of the inflation hike that has occurred in 2021-22. As mentioned in Section 2, central 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.[12]

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.

[12] 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.

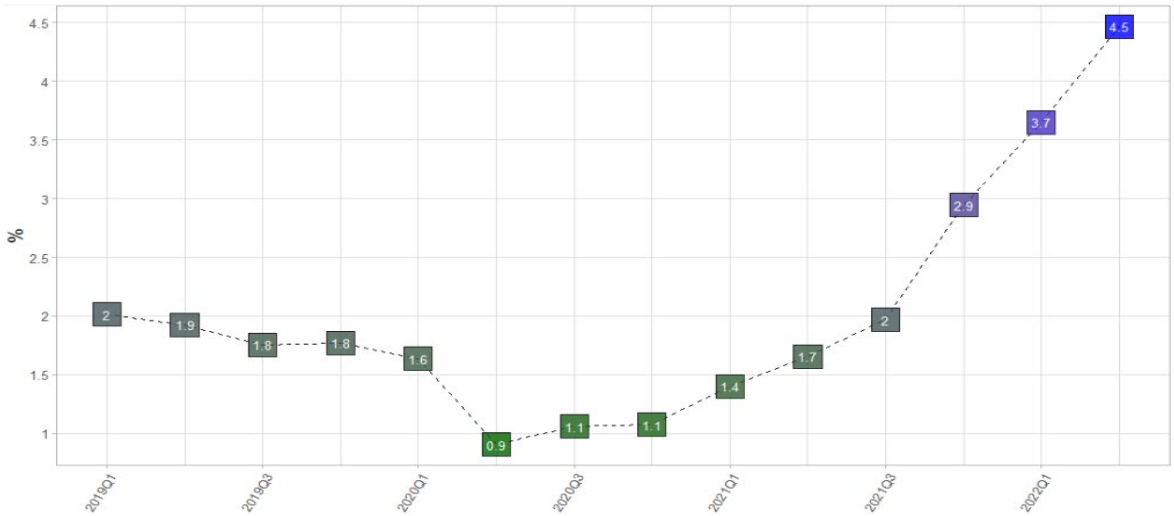
3.3. The transatlantic asymmetry and the ECB

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)



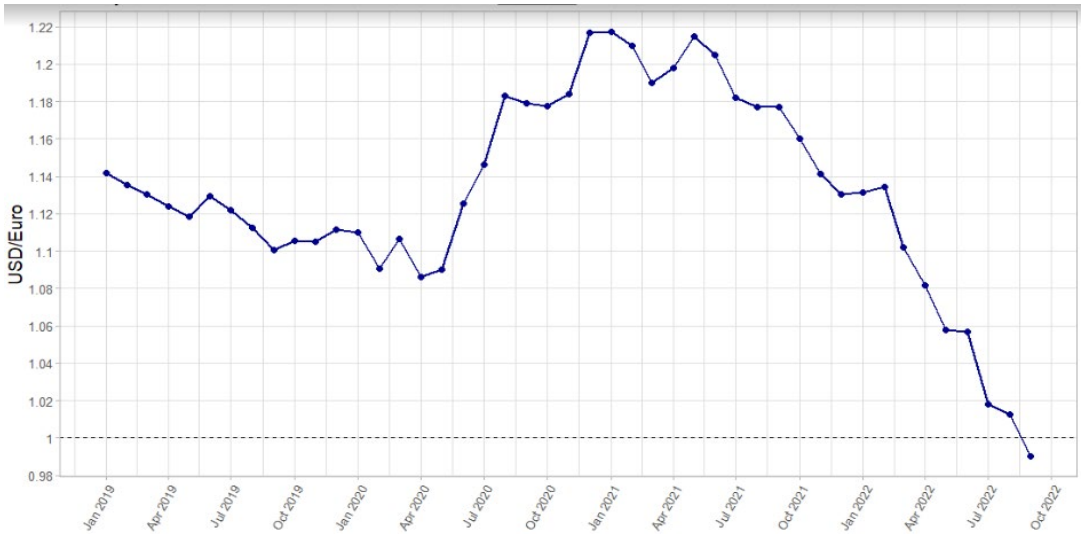
Source: Own elaboration based on Eurostat data.

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).*[13]

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.[14]

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

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[13] 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."

[14] 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.[15]

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

[15] 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.[16] 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

[16] 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.

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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.

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