

The rise and fall of inflation. New lessons for monetary policy?

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On the occasion of the Per Jacobsson Lecture in Basel on 30 June 2024

1. Introduction

It is a real honour for me to be invited to deliver the 2024 Per Jacobsson Foundation Lecture, and to deliver it here in Basel at the Bank for International Settlements (BIS), having attended the Board and Governors' meetings for so many years. Per Jacobsson was greatly admired at the Bank of Italy. Indeed, I would like to quote the words of Donato Menichella (Governor of the Bank of Italy, 1948–60, and founding member of the Per Jacobsson Foundation), when he recalled the analytical and advisory role played by Jacobsson in Italy's postwar stabilisation programme:

Our return to monetary equilibrium after an inflation which, as Per Jacobsson was later to write "had become an unmitigated evil" ... [a return that] was, in fact predominantly due – and this too, he solemnly affirmed – to the moral qualities of resolution, courage, and patriotism of the man who led the battle, namely Luigi Einaudi [Governor of the Bank of Italy, 1945–48].

...

Per Jacobsson held, as we did, the view that the problem was not only one of selecting the measures to be taken. It was also necessary to get ready for overcoming the serious difficulties which would arise during their implementation. Concerning which, he liked to quote Napoleon's dictum that economic strategy was a simple art, in which the one thing that mattered was its execution; he drew from it the conclusion that what was needed for the success of a stabilisation programme was, above all, "conviction, character, and courage".²

I would also like to recall the part-time secondment of Paolo Baffi from the Bank of Italy, where he was Economic Adviser, to take over Jacobsson's functions at the BIS when he was appointed Managing Director of the International Monetary Fund in 1956. This secondment lasted four years, with Baffi, and Friedrich Lutz as an Academic Adviser, following closely in the footsteps of Per Jacobsson. Baffi's secondment was to last until 1960, when he was appointed Director General of the Bank of Italy, with Guido Carli as the new Governor. Baffi, together with Einaudi³ and Menichella, had participated in the "courageous" and successful monetary stabilisation of 1946–47 that reigned over a bout of inflation of more than 100%.⁴

With Carli, whom he succeeded from 1975 to 1980, Baffi then had to deal with the high inflation of the 1970s, linked to the way in which the oil shock that followed the 1973 Yom Kippur War ultimately

¹ While I retain full responsibility for the views expressed in this paper, I would like to thank Alessandro Secchi for his very useful insights and discussion of the evidence considered here, and Pino Marotta for his relentless efforts to keep me up to date with a rapidly growing literature. I also thank Stefano Neri, Sergio Nicoletti-Altissimi and Massimo Sbracia for their useful comments.

² Menichella (1966, pp 6 and 11).

³ As a result of exceptional circumstances, Einaudi was also Deputy Prime Minister and Minister of the Budget from June 1947 to May 1948.

⁴ It is interesting to note that Einaudi considered that the postwar increase in the inflation rate of 100% and more had mainly fiscal roots. Menichella, together with Baffi, was instead convinced that a major factor was to be found on the monetary side, pointing out that this was also Per Jacobsson's view, since "he concentrated on our monetary affairs during the war and the two years or so afterward. His conclusion was that, apart from specific reasons of certain individual products, the basic cause of the rapid rise in Italian prices was the excessive liquidity remaining after the war – just as he had, in general terms, predicted" (Menichella (1966, p 9)). See also Omiccioli (2000) for a detailed analysis of these views and of the measures taken at the time, particularly on bank reserves, which made it possible to bring inflation under control in a short space of time.

affected the Italian economy. This shock was to be followed by a second one after the Iranian revolution in 1979. As in other countries, inflation was already on the rise before the first oil shock, as a result of both cost-push tensions in the labour market and fiscally originated demand pressures. Indeed, the particular feature of consumer price inflation in those years, apart from the peaks, was its persistence. Notwithstanding important differences in its manifestation, inflation remained high in several countries during the 1970s and 1980s, at times well above 20% in Italy and the United Kingdom, and around 15% in the United States.

There are several differences between the high inflation that we have just experienced and the factors behind that of the 1970s and 1980s. In the latter period, as now, the monetary policy response was aimed at containing excess aggregate demand while counteracting the second-round effects of supply shocks. However, it ended up being both more costly and less effective than what we have experienced since 2021. Contrary to what is often believed today, monetary policy was much more restrictive then, with interest rates reaching levels much higher than those that most central banks have pushed them to since 2021. In the United States, the “Volcker disinflation” brought inflation under control with a double-dip recession in 1982–83 and, as in the United Kingdom, a sharp rise in unemployment.⁵

These were, after all, the years of stagflation. In Germany, too, the very effective containment of possible propagation effects associated with the second oil shock was accompanied by a non-negligible rise in unemployment. The Deutsche Bundesbank’s monetary restriction led to short-term interest rates two to three times higher than current ones and real interest rates much higher than today. The much lower inflation than in any other industrialised country was certainly helped by “the German stability culture that developed over time after the Second World War”.⁶

In the countries where inflation persisted for longer, a number of factors contributed to its persistence: highly expansionary fiscal policies; high nominal wage increases, often driven by explicit or implicit indexation mechanisms; little attention paid to (the anchoring of) inflation expectations; and a lack of central bank independence. In Italy, it took about fifteen years to complete a process that began in the early 1980s, when Carlo Azeglio Ciampi, Baffi’s successor as Governor of the Bank of Italy, strongly advocated the combination of three conditions for the return to and maintenance of monetary stability:

The return to a stable currency requires a real change in the monetary constitution involving the functions of the central bank and the procedures for determining public expenditures and the distribution of income...Central bank autonomy, reinforcement of budgetary procedures and a code for collective bargaining are prerequisites for the return of monetary stability.⁷

We live in a very different world today. However, after at least three decades of moderate consumer price dynamics, especially but not only in advanced economies, inflation in 2022–23 reached levels that, while challenging the ability of central banks to maintain monetary and price stability, have undoubtedly had a significant impact on households’ purchasing power (Graph 1). Conditions did suddenly become more (radically) uncertain, with longer-term consequences for savings and investment decisions that are far from obvious and that pose new challenges for policymakers. Yet, despite criticism of their actions (and some apparent inaction), the response of central banks has been swift and decisive. In the end, inflation has come down substantially, albeit from a higher peak and perhaps not as quickly as some economists and commentators thought possible, and today we are discussing when and how to close the relatively small gap that still separates us from a reasonable degree of price stability, a challenge that may be more demanding for some countries than others.

In what follows, I will first briefly highlight relevant differences between today’s world and that of the high inflation and oil shocks of the 1970s. Next, I will discuss what I consider to be the most important

⁵ For a detailed description of those years as well as of the following periods see Bernanke (2022) and the references therein.

⁶ Issing (2005, p 335).

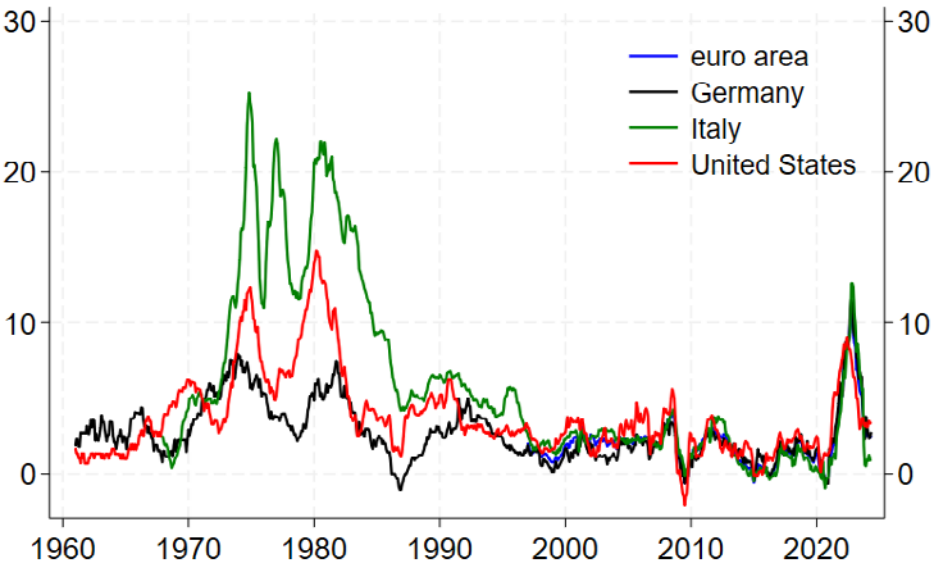
⁷ Ciampi (1981, p 183). See also Visco (2024) on the Italian disinflation.

stylised facts worth recalling, followed by an appraisal that focuses on the monetary policy response and that also draws on recent assessments by prominent academics and policymakers. I will then focus on some controversial issues, mostly related to transmission channels and the conduct of monetary policy. This will lead me to raise some questions about the challenges that may need to be addressed in the months and years ahead.

The return of inflation

Monthly data; annual percentage changes

Graph 1



Harmonised index of consumer prices (HICP) for the euro area; consumer price index (CPI) for Italy and for Germany up to 1996 (western Germany up to 1993) and HICP afterwards; CPI for the United States.

Sources: Deutsche Bundesbank; Eurostat; Istat; US Bureau of Labor Statistics.

2. Some most relevant economic and institutional changes

The sudden, widespread rise in inflation following the end of the most acute phase of the Covid-19 pandemic and the Russian invasion of Ukraine has led many to draw parallels with the demand and supply shocks that hit the world fifty or more years ago (from the financing of the Vietnam War and the improvements in social security to the oil shocks associated with the Yom Kippur War and the Iranian revolution). I do not deny that there are similarities, and the lessons learned from the successes and failures in responding to those shocks were certainly relevant. However, I believe that today's world is so far removed from that one that perhaps it would be better to briefly highlight some of the differences between the two, rather than emphasise what history seems to repeat (including, sadly, tragic wars). I will highlight just a few of them.

First, political, demographic and technological developments have significantly changed the structure of our economies. Not only do we now live in a global and much more interdependent world, but also in a more prosperous one. Services of various kinds, which were much less developed or non-existent fifty years ago, are of paramount importance in the information society of today. This is certainly true of the financial sector as financial deepening has been accompanied by the rapid growth of non-bank financial intermediation, which has increased the speed and perhaps also the amplitude of shocks. While much remains to be done, especially in today's digital world, to address the risks that are

emerging, attention to microprudential and macroprudential setups, and interactions and trade-offs between financial and price stability, including monetary policy, has never been greater.

Second, product and labour markets have also undergone significant changes. On the one hand, the extraordinary opening of the world economy, the dramatic changes in information and communication technology and transport, the spread of automation and developments in robotics have had multiple effects, including on the organisation and localisation of production and the extraordinary development of global supply chains. On the other hand, this has had a significant impact on labour markets and the distribution of income. This includes the impact on jobs, with the polarisation of occupations and the decline of routine work, and on wages, with the decline in the strength and attractiveness of trade unions and a widespread disappearance of automatic wage indexation mechanisms.

Third, central banks have undergone significant changes, mainly in advanced economies but increasingly also in the emerging market economies. They have gained de jure independence in their monetary policy decisions, often with clearly defined objectives enshrined in law, which has led, inter alia, to a redefinition of strategies, including various forms of inflation targeting.

Fourth, the state of the economy when the shocks hit was very different. Even before the oil shocks of the 1970s, social tensions were rising in many countries and the stability provided by the Bretton Woods system of fixed exchange rates had given way. Instead, over the past three decades or so, we first moved from the Great Moderation, characterised by low inflation and limited business cycle fluctuations, to the years of the Great Recession that accompanied and followed the Global Financial Crisis and, in Europe, of the recessionary effects of the sovereign debt crisis. This led to several years of very low inflation in many advanced economies, with risks of deflation, unanchored inflation expectations and, in a number of countries, dismal growth rates.

Finally, after policy rates had basically been brought to their effective lower bound (as we learned to call it), new tools – from quantitative easing (QE) to forward guidance – were envisaged and applied in an attempt to avoid deflation.⁸ In fact, monetary policy was “the only game in town”.⁹ But just as a return to “normal” conditions was in sight, the pandemic struck the world’s population and economies.

While the next section discusses its consequences and those of the policies introduced to counter the most negative effects, it is worth concluding this section by pointing out the crucial difference with the supply shocks that hit our economies in the 1970s. At that time, oil prices first quadrupled in 1973 and then doubled again in 1979. The shocks were therefore extremely large, but they were also very persistent. It was not until 1986, with the so-called counter-shock, that oil prices in real terms more or less returned to the level from which they had started to rise.

The experience of recent years has instead been dramatically different. On the one hand, the resumption of economic activity after the most intense phase of the pandemic was, as is well known, accompanied by disruptions in supply chains and the creation of bottlenecks in goods markets. On the other hand, and in a nutshell, while the price of oil rose to levels close to those briefly experienced in the aftermath of the Global Financial Crisis, it was the price of natural gas in particular that skyrocketed, especially with the Russian invasion of Ukraine. This had a particularly negative impact on the European economy. However, unlike in the 1970s, these shocks were short-lived and proved to be, as some suggested at the time, truly temporary. It was the ensuing bout of inflation that was somewhat more persistent, but perhaps, as I will argue, that was somehow in the nature of things.

⁸ Actually, given the sharp increase in public and private debt, I would call it a risk of “debt deflation”.

⁹ See, among others, Rajan (2013), Bini Smaghi (2014) and El-Erian (2016).

3. Key stylised facts and the recent inflationary surge

There are now several comprehensive and authoritative accounts of the developments that led to the inflationary surge that occurred between one and two years after the outbreak of the Covid-19 pandemic, of the central bank responses and of the solid, progressive decline in inflation, both headline and core (ie excluding food and energy), that we have observed over the past year and a half. In particular, I found the introduction to the recent e-book titled *Monetary policy responses to the post-pandemic inflation*¹⁰ – published by the Centre for Economic Policy Research (CEPR) – to be an excellent, up-to-date summary of these developments. In general, the research presented there appears to be a very useful and timely contribution to our understanding of the main issues and challenges.

In the following, without going through all the arguments put forward by the authors of this e-book, I will briefly describe the main facts that have occurred in the last four years, along the lines that I have been following for some time.¹¹ But I would like to start with the editors' sharp conclusion, with which I basically agree, albeit with some limited nuances:

In short, the aggressive monetary policy response that central banks ultimately put in place may have been enough to ensure that the inflationary effects of the Covid-related disruptions were actually transitory in the end.¹²

I will limit the description of facts and policies to what has happened in the euro area and the United States, as they seem to me to provide a good frame for other advanced economies and perhaps emerging market economies as well. However, I will of course focus more on the area I know best.

The starting point is that, while the pattern of inflation has been similar in many economies, the underlying sources have operated with different weights. In short, while demand factors, combined with supply bottlenecks, were the decisive element behind the acceleration of prices in the United States over the course of 2021, as the more acute phase of the pandemic waned, the euro area was hit particularly hard by the rise in energy costs. The latter had already started before Russia's invasion of Ukraine but gained new momentum and exploded in the spring and summer of 2022.

We often discuss the specific demand and supply shocks behind the rise in inflation. In fact, both the pandemic and the energy crisis had the character of supply shocks – very hard, if not impossible, to predict. The former caused a deep, albeit ultimately rather short, recession with equally short-lived deflationary effects. The latter, through its terms-of-trade effects and the direct and indirect pass-through to final consumer prices, was particularly noticeable in Europe, mainly because of its then extremely high dependence on natural gas imports from Russia.

Having said that, it should be acknowledged that, in order to mitigate the economic and confidence effects of the pandemic on households and firms, fiscal policies became very expansionary everywhere during its most acute phase. Indeed, prior to the availability of vaccines, the risks of contagion were contained by strict control measures such as social distancing and community lockdowns, but also as a result of changes in people's behaviour. There was much discussion at the time about long-term "scarring" effects, with widespread uncertainty about what a "new normal" would be in a world where working practices, schooling conditions, consumer habits, travel patterns and so on had changed significantly and unpredictably for some time. The related financial implications were also clearly considered, with the looming risks of corporate bankruptcies and credit defaults leading to the maintenance of very easy monetary and financial conditions and the postponement of monetary normalisation, at least until the new deflationary effects of the pandemic dissipated.

¹⁰ English et al (2024).

¹¹ See Visco (2022, 2023a).

¹² English et al (2024, p 17).

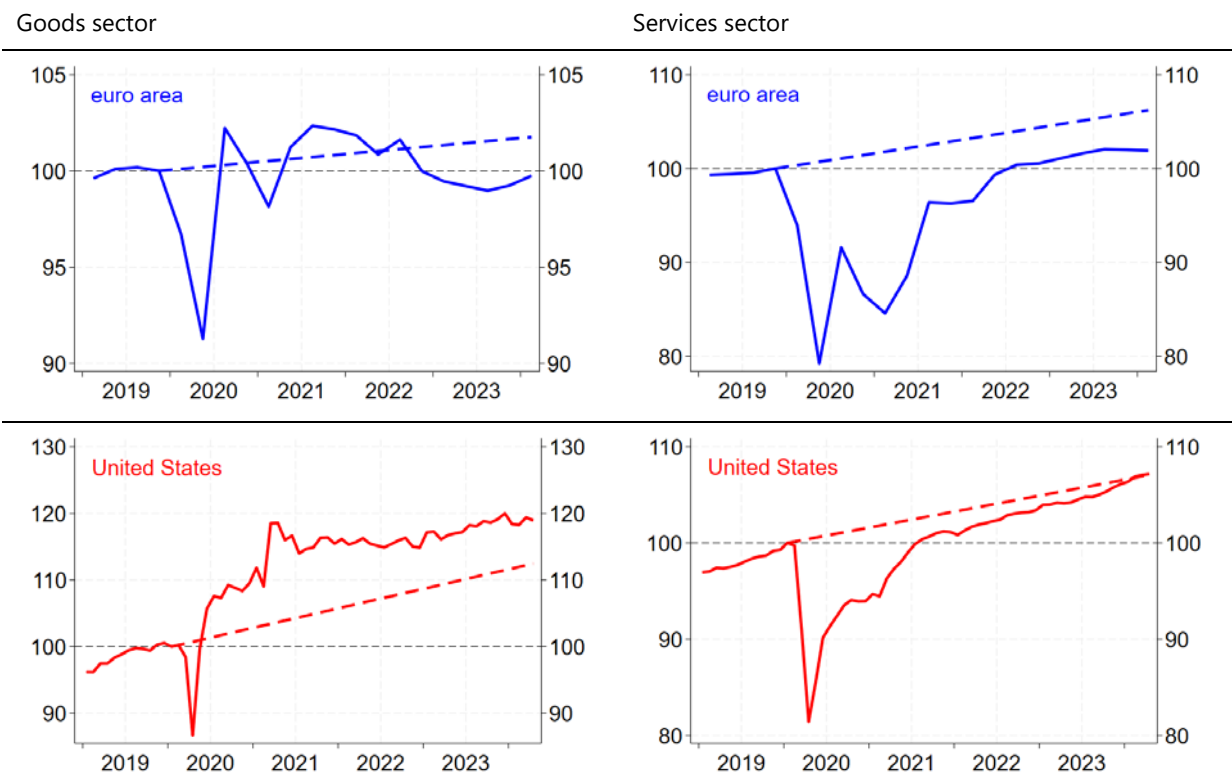
But fiscal policy in the United States turned out to be much bolder and less targeted than elsewhere: in 2020–21, the public debt-to-GDP ratio rose by a quarter to over 130%. In the euro area, the increase was limited to 15 percentage points, to just under 100%, despite a much deeper fall in nominal GDP in 2020 and a slower recovery in 2021. The support provided to US households through special relief programmes was particularly strong. In 2020, when real GDP fell by around 3%, the steepest decline in the postwar period, real disposable personal income grew by more than 6%, the largest increase since the mid-1980s. In the euro area, by contrast, in the face of a much larger fall in GDP, households' real disposable income did not increase.

These different dynamics of household disposable income had very different effects on consumer demand. In the United States, where GDP returned to its pre-crisis trend at the end of 2021, the aggregate data hid a great deal of heterogeneity between sectors. While pandemic-related factors continued to dampen demand in the services sector, the goods sector increasingly showed signs of overheating, which was not the case in the euro area (Graph 2). As early as the spring of 2021, partly as a by-product of the pandemic that led to the substitution of goods for personal services, US consumer spending on durable goods was almost a third above its pre-crisis level. However, this rapid recovery in US consumer demand for goods took place while global supply was still constrained by waves of the pandemic. This led to bottlenecks in international value chains, pushing up intermediate goods prices everywhere. This was also felt in the euro area, although to a lesser extent, as the recovery in the demand for goods was much less pronounced.

Demand in the goods and services sectors

Monthly and quarterly data; indices: Q4 2019/Jan 2020 = 100

Graph 2



Dashed lines show pre-pandemic trends.

Sources: US Bureau of Economic Analysis; estimates based on Eurostat.

Partly because of the very generous transfers that households received from the government, labour supply remained subdued for some time after fears of the pandemic subsided. In fact, labour force

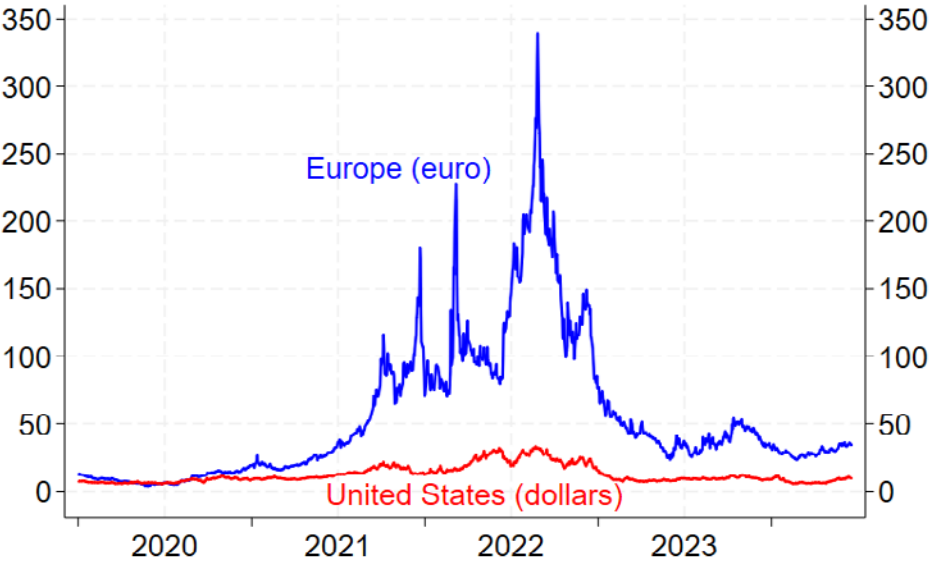
participation had fallen, and the number of job vacancies in the US non-farm sector far exceeded the number of unemployed people at the time. Unsurprisingly, nominal wages tended to rise sharply, with compensation costs rising by around 6% by the end of 2022 and continuing to grow at a pace of around 5% the following year, a level that at the time may have seemed difficult to reconcile in the short term with an inflation target of 2%. In the euro area, on the other hand, wage increases were rather limited overall, at around 2–3% throughout 2022, with demands to compensate for the exceptional rise in energy costs and its impact on the cost of living mostly concentrated in countries with tighter labour markets.

In particular, although the impact of shortages and supply chain disruptions may also have been felt in the euro area in 2021, the energy shock had different, and much more pronounced effects on the two economies. Towards the end of 2020, oil prices started to rise gradually in both the United States and the euro area. Natural gas prices rose much more sharply, but it was in Europe that we saw the most extraordinary dynamics (Graph 3), eclipsing even the quadrupling of oil prices in 1973. In the United States (which is not a net importer of energy, unlike European countries), it rose from around \$10 per megawatt hour (MWh) before the pandemic to a peak of \$30 in the summer of 2022, before falling back to below \$10. But it was in the euro area that it really shot up, from just over €10 per MWh in early 2020, to €180 before the start of the Ukraine conflict and to a peak of €350 in the summer of 2022. Since then it has fallen sharply, averaging around €40 in 2023 and fluctuating at around or below €30 since the end of last year.

Natural gas prices

Daily data

Graph 3



Title Transfer Facility (TTF) MWh quotations for European gas and Henry Hub for US gas.

Source: LSEG.

To some extent, the extreme volatility of gas prices also reflected a “bullwhip” effect, with demand responding to a very uncertain supply by ordering more and earlier, and by fully replenishing gas stocks. Other intermediate and raw material prices, in particular food prices, also rose throughout 2022 and early 2023, following both the recovery in demand and, in particular, the continuation of the war in Ukraine, and started to fall rapidly only a few months after that of energy prices.

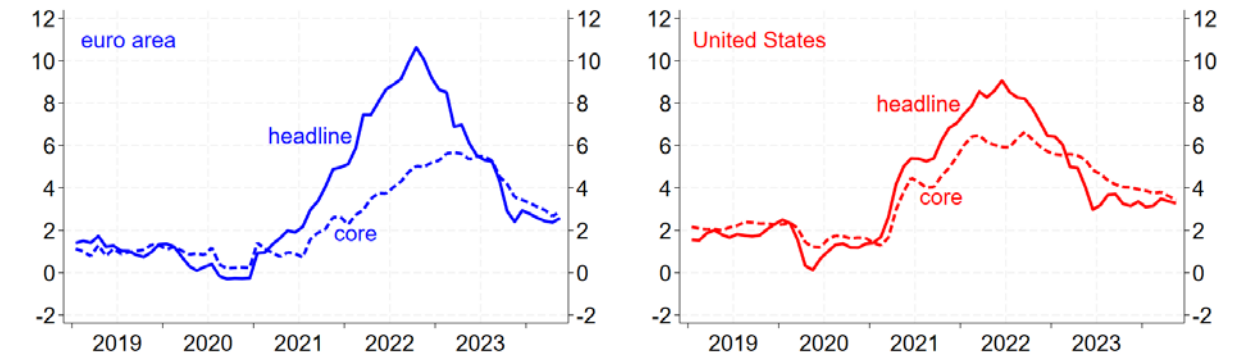
For the euro area countries, these supply shocks immediately implied a very substantial fall in their terms of trade: in effect, a tax imposed externally on the economy. As such, it would have been optimal if it had not been translated into an increase in nominal wages and profits, if the higher energy costs had simply been passed on in full to final output (and consumer) prices, and if the real income losses had gradually been made up over time through productivity improvements and structural changes in cost structures. For the most affected households and firms, timely, temporary and targeted relief through government transfers and tax cuts would certainly have been justified and useful, but overall the terms of trade tax should have been absorbed without giving rise to second-round effects.

Even if there is little evidence of substantial changes in markups on total costs in the months following the shock, a shift in the distribution of value added at the aggregate level was bound to occur, since relatively constant markups implied that final prices rose more than their weight as inputs in the production process would have required.¹³ In any case, the rise in final prices was certainly an important factor in the demand for substantial wage compensation, but, as I have noted, in 2022 and 2023 it was mostly concentrated in countries, such as Germany and the Netherlands, with some of the lowest unemployment rates in the euro area.

After peaking above 9% on a 12-month basis in the United States and above 10% in the euro area in the spring and autumn of 2022, respectively, headline inflation has been on a declining trend since then, although it has remained above 3% in the US economy since mid-2023.¹⁴ In the euro area, it has been below 3% since the end of last year but the deceleration in core prices has lagged behind that in headline inflation by several months (Graph 4). This reflects, on the one hand, the gradual pass-through of changes in production costs for energy, intermediate goods and other commodities, in particular food, along the price formation chain and, on the other hand, the continuation of rising demand for both goods and services in the United States and, limited to services, in the euro area (Graph 2). The latest graphs – 12-month consumer price changes of 3.3% in the United States and 2.6% in the euro area in May 2024 – seem to highlight a certain stickiness in the return of US inflation to the 2% target, a return that seems to be more consistently approached in the euro area, notwithstanding some wobbles.

Headline and core inflation

Monthly data; annual percentage changes Graph 4



Harmonised index of consumer prices for the euro area and consumer price index for the US.

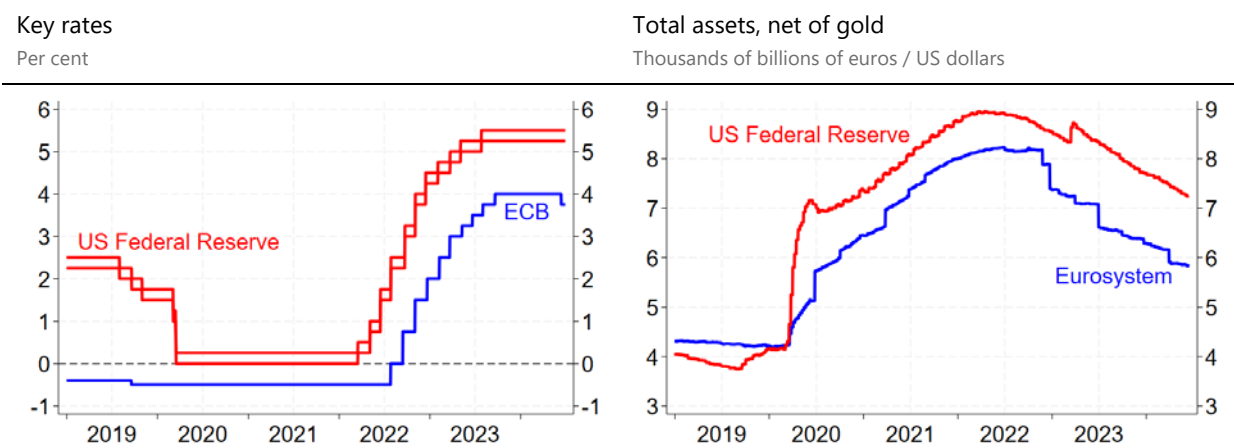
Sources: Eurostat; US Bureau of Labor Statistics.

¹³ For a discussion and preliminary evidence on markups and profit shares, see Colonna et al (2023).
¹⁴ For both the euro area and the United States, inflation is measured here on the basis of consumer price indices (CPIs). Some differences in dynamics (with the peak at about 7% and the April 2024 change at 2.7%) can be observed on the basis of the price index for personal consumption expenditures (PCE), which is the Federal Reserve’s preferred measure of inflation, in part because of its broader coverage of household spending.

A discussion of the role of monetary policy is left to the next section. Here it will suffice to recall that, unlike in emerging markets, where earlier signs of higher inflation and exchange rate risks led to more rapid action, the response of central banks in advanced countries did not become clearly significant until 2022 and became firmly restrictive in 2023. Both the Federal Reserve and the ECB maintained their initial commitment to enter the normalisation phase, first by ending their QE programmes and then by raising policy rates significantly, while beginning to unwind their balance sheets through a gradual and orderly reduction of assets – a controlled “passive” quantitative tightening (QT), including the accelerated run-off of targeted long-term refinancing operations by the ECB (Graph 5). Forward guidance, which had been maintained to signal the continuation of a monetary policy stance aimed at returning to the 2% target from excessively low rates of price change, was thus abandoned.

Central banks’ key rates and balance sheets

Daily data Graph 5



Deposit facility rate for the ECB and target range for the federal funds rate for the US Federal Reserve System.

Sources: Board of Governors of the Federal Reserve System; ECB.

To conclude this section, it seems useful to provide some evidence related to the monetary policy response. I will confine myself to the ECB decisions, referring to two relevant issues: the delay of the response and its effectiveness.

Much has been said about the projection errors, common to most, if not all, central banks and other public and private forecasters, albeit sometimes for different reasons, and to which I will return in the following sections. Indeed, the errors in the ECB/Eurosystem staff inflation projections, especially in 2022, were not negligible (Graph 6). They related to two main omissions, which may also have contributed to the delay with which central banks reacted to the pickup in inflation.

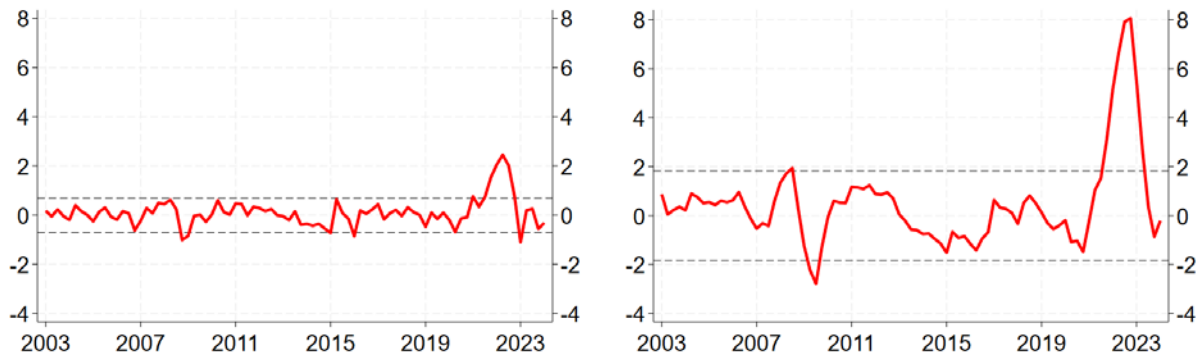
ECB/Eurosystem projection errors for euro area headline inflation

Quarterly data; percentage points

Graph 6

One quarter ahead projection errors

Four quarters ahead projection errors



Dashed lines denote an interval around zero of plus/minus two standard deviations of projection errors realised in 2003–20.

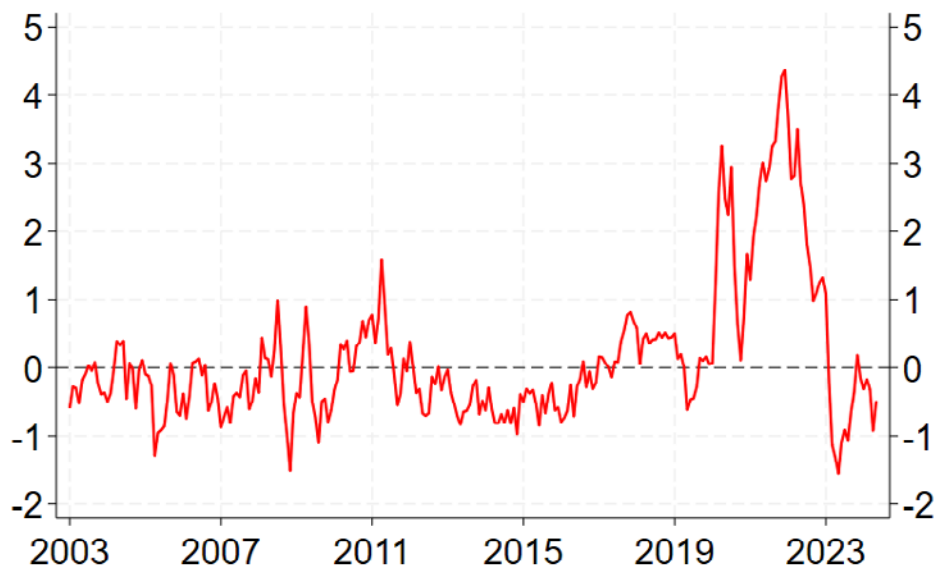
Sources: Bank of Italy; ECB.

On the one hand, the upward pressures on goods (both final and intermediate) and commodities registered from the early months of 2021 were essentially not taken into account. With the benefit of hindsight, it is clear that these pressures were due to the much faster than expected post-pandemic recovery in demand for goods globally, and particularly in the United States, against a backdrop of supply still constrained in global value chains by the bottlenecks associated with the restrictions put in place to deal with the most acute phase of the pandemic's outbreak (Graph 7). In all likelihood, however, even if noticed, these disruptions were considered to be short-lived and without a significant impact on nominal prices and wages.

Global Supply Chain Pressure Index

Monthly data; standard deviations from average value

Graph 7



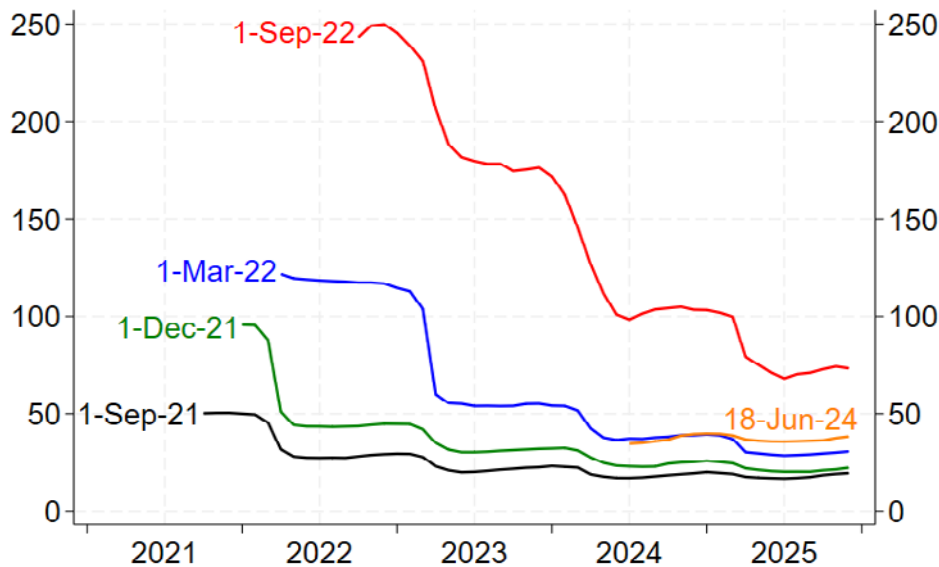
The index integrates transportation cost data and manufacturing indicators to provide a gauge of global supply chain conditions.

Source: Federal Reserve Bank of New York.

Market expectations of natural gas prices in Europe

In euros

Graph 8



Profiles of Title Transfer Facility (TTF) futures MWh at the dates reported in the graph.

Source: LSEG.

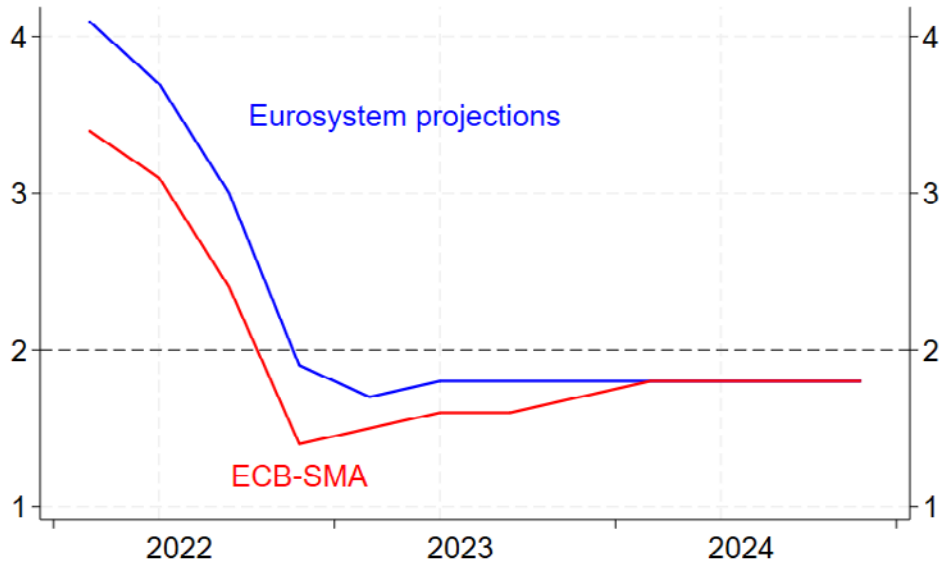
On the other hand, while the rise in energy prices recorded in 2021 could also be partly due to the strong recovery in global demand, as I have already noted, the energy shock that hit European countries in particular, which are heavily dependent on imported natural gas, was certainly linked to the Russian invasion of Ukraine on 24 February 2022 and its tragic consequences. Natural gas prices had already doubled to around €100 per MWh in the last quarter of 2021. At the time, however, futures prices predicted that they would remain at around this level during the winter season and then fall very sharply to well below €50 by the summer of 2022. Indeed, a look at the sequence of market expectations before and after the start of the conflict in Ukraine is particularly telling (Graph 8). With such a sharp drop in gas prices in sight, inflation was projected to return to 2% (and below) rather quickly, in line with the results of the ECB's Survey of Monetary Analysts (Graph 9).

As regards the way in which monetary policy affects the real economy and inflation, while its actions and communications tend to be quickly reflected in financial markets, their transmission to financing conditions and the reactions of households and firms (and thus their effects on producer and consumer prices) are more gradual. Indeed, the impact of the ECB's policy measures on long-term market interest rates was already discernible at the beginning of the announcement of the withdrawal of monetary accommodation at end-2021. Thereafter, one-year risk-free rates (as measured by overnight index swaps) swiftly followed the rise in policy rates from still negative levels at end-2021. At the 10-year horizon, they moved from barely positive levels in late 2021 to around 2% in mid-2022 and to 3% in spring 2023, when the entire term structure signalled a return to positive values in real terms (Graph 10).

Inflation in the euro area: Eurosystem projections and analysts' expectations in December 2021

Quarterly data; per cent

Graph 9



Median expectations in ECB-SMA and central values in Eurosystem staff macroeconomic projections for the euro area headline inflation.

Sources: ECB; ECB Survey of Monetary Analysts (ECB-SMA).

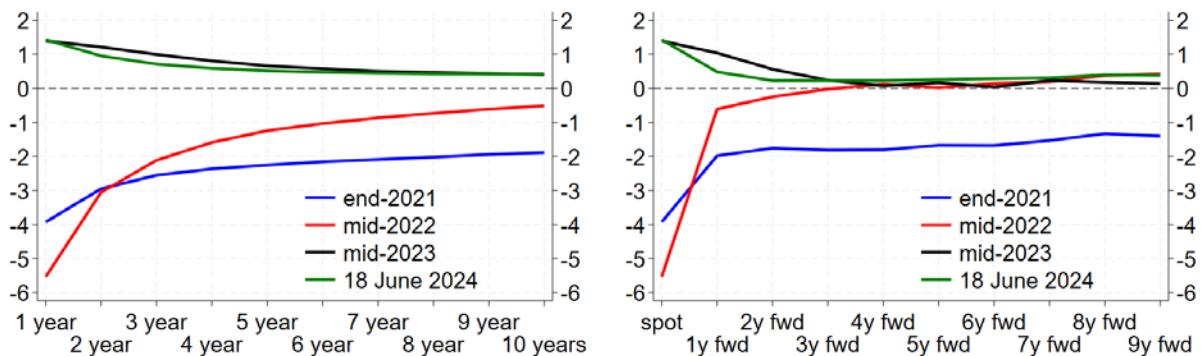
Real interest rates in the euro area

In per cent

Graph 10

Term structure, spot rates

Term structure, one-year forward rates



Nominal OIS interest rates deflated by the corresponding inflation-linked swap rates.

Sources: Bloomberg; LSEG.

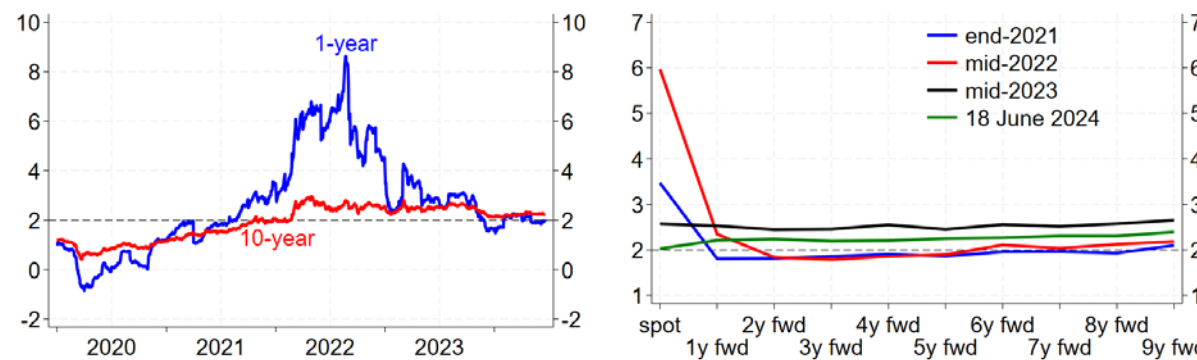
The effectiveness of monetary policy measures can be assessed by looking at the evolution of inflation expectations, the level of which is considered a relevant anchor for wage and price dynamics. From a peak of 9% in August 2022, inflation expectations 12 months ahead, as measured by inflation-linked swap rates, declined to 3.5% in the spring of 2023 and moved further towards 2% thereafter. Their decline was also broadly confirmed by surveys of firms and households, albeit within a more dispersed and less symmetric distribution of individual responses. At the same time, longer-term financial market

expectations, net of risk premia, remained at levels consistent with the 2% price stability objective (Graph 11), while tail risks of excessive inflation declined from their peaks in mid-2002. The anchoring of long-term inflation expectations was also signalled quarter after quarter by the ECB's Survey of Monetary Analysts.

Market-based inflation expectations in the euro area

In per cent Graph 11

Inflation-linked swaps, spot rates Inflation-linked swaps, one-year forward rates
 Daily data



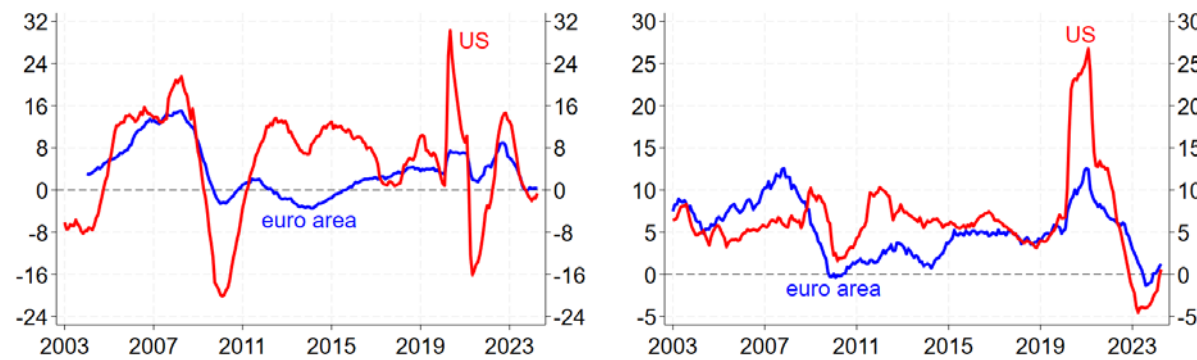
Source: Bloomberg.

The tightening of monetary policy is clearly visible in its effects on credit and broad money dynamics. The slowdown is particularly evident in the steady reversal of the monetary easing that followed the outbreak of the pandemic, which eventually affected the 12-month percentage change in loans to enterprises, and which became negligible for the euro area as a whole by the autumn of 2023. Comparing the evolution of these aggregates with that in the United States, it appears that, contrary to what some commentators have suggested, if there was an overhang in monetary aggregates in the euro area, it was rather limited and far from persistent (Graph 12).

Credit and money growth

Monthly data Graph 12

Credit to firms Money
 Twelve-month percentage change



M3 for the euro area and M2 for the United States.
 Sources: Board of Governors of the Federal Reserve System; ECB.

4. An appraisal on the rise and fall of inflation and the role of monetary policy

There have been a number of readings of the evidence presented in the previous section to assess: (i) the sources of the surge in inflation that we have experienced since the start of the recovery from the Covid-19 pandemic in the course of 2021; (ii) the determinants of the declining trends in headline inflation observed since the second half of 2022, but with a lag of several months in core and other underlying measures; and (iii) the quality and effectiveness of the monetary policy response since 2022.

I have benefited greatly from reading academic articles, independent reports, speeches and lectures by central bankers and the research conducted in their respective institutions. However, this is not the place to review them, or to summarise and assess in detail their findings and the views they put forward. I will therefore limit myself to repaying my very large debt with a minimal list of references.¹⁵ What follows is my personal assessment – influenced as it may be by these readings – of the sources of the rise in inflation and the response of central banks, including the role they have played in bringing inflation back to levels close to “price stability”.

Sources of inflation

In discussing the sources of the rise in inflation, I would like to start with two considerations. The first is that the years between the Global Financial Crisis (aggravated in the euro area by the sovereign debt crisis) and the outbreak of the Covid-19 pandemic were years of exceptionally low inflation. Indeed, there were visible deflationary risks and price expectations fell below price stability, as defined by most central banks’ inflation targets of 2%. Second, the pandemic was a genuine global shock of unprecedented magnitude, which, if left unaddressed, was bound to have extremely negative economic, financial and social consequences. The discussion then focused on what a “new normal” would look like and what should be done to prevent the worst effects of the shock.

It is worth recalling that the response of fiscal and monetary policy on both sides of the Atlantic had been extremely accommodative. Indeed, in the United States, government transfers had been so large, and the pent-up demand so great, that they had led prominent economists to predict a surge in inflation in the face of full capacity utilisation and tight labour market conditions, fuelled further by wage pressures catching up with inflation surprises.¹⁶ Indeed, there was an inflationary surge in 2021, and there was also some increase in nominal wages, but, as recently pointed out,¹⁷ most of the story was in product markets, given wages. The recovery in demand as pandemic fears dissipated, thanks in part to the extremely rapid delivery of vaccines, was abrupt and, given the still depressed services sector, particularly concentrated in consumer durables.

It is a matter for historians and complex counterfactual analyses to determine to what extent the rapid government response also played a role in the availability and diffusion of vaccines, helping to accelerate the return to near-normal economic conditions. In any case, the sudden rebound in consumer demand came at a time of reduced capacity at the sectoral level, due to severe disruptions and bottlenecks in the supply of raw materials and intermediate goods (semiconductors being a notable

¹⁵ Besides the above-mentioned CEPR report (English et al (2024)), relevant contributions are to be found in two preceding reports by the ICMB (Guerrieri et al (2023)) and the G30 (Group of Thirty (2023)). I would also recommend reading Bernanke and Blanchard (2024) which contains links to the application of their 2023 US model to 10 other economies. I also found the evidence and considerations in Reis (2022) and Borio et al (2023) useful. Finally, and without implicating them in my remarks, I would like to mention the most recent contributions of my former colleagues in the ECB Governing Council, ie Hernández de Cos (2024), Lane (2024), Panetta (2024) and Villeroy de Galhau (2024), as well as research papers by ECB and Bank of Italy staff (for the latter, I refer to Neri (2024)).

¹⁶ See, inter alia, Blanchard (2021) and Summers (2021).

¹⁷ Bernanke and Blanchard (2023).

example) through global value chains. This was also reflected in freight and shipping costs due to health-related containment measures.

I think it is fair to acknowledge that both the Federal Reserve and the Eurosystem failed to anticipate the build-up of these disturbances and their consequences. Given the high level of capacity, they were initially felt mainly in the United States, but with sectoral implications that were not sufficiently taken into account in the euro area either. Indeed, once identified, they were still considered manageable and the bottlenecks reversible as the recovery spread globally. But we did not understand how quickly and how strongly they would propagate, as the prevailing view was that the overall demand dampening effect of the pandemic would last for some time. The health crisis then created a supply shock at the global level, which, together with a significant shift in demand, led to sectoral price spikes that eventually spread throughout the economy, including through dispersed and rising inflation expectations.

In the course of 2021, demand in the services sector also began to pick up, especially in the United States. The improvement in economic activity had an impact on global commodity prices. The rise in oil prices during 2021 then contributed to the overall increase in consumer prices. In Europe, gas prices also rose significantly during the year as a result of supply cuts from Russia, initially attributed to weather conditions and then to political pressure related to the opening of the Nord Stream 2 pipeline. The Russian invasion of Ukraine in February 2022 was a real surprise, not only for central banks. It led to a major energy shock, this time mainly in Europe, due to the proximity and the extremely high volumes of natural gas imported from Russia. While this was obviously a negative terms-of-trade shock for European countries, it may have had the opposite effect on the real economy in the United States, which is instead a net exporter of energy products.

As I understand it, most of the rise in consumer prices in the euro area in 2022 was due to the increase in the price of energy products (directly consumed, transformed to generate electricity and via inter-industry relations in the production process). The rise in inflation could have been limited and temporary if the pass-through of higher costs to final prices had been sufficiently slow. However, the shock was not limited to energy products, but the war in Ukraine also affected food prices directly and through its impact on fertilisers. Moreover, while there was no major attempt by wages to recover the immediate loss of purchasing power, nor were there any apparently significant attempts by firms to use these shocks to obtain a permanent increase in their profit margins. Some useful and detailed research has recently identified a remarkable non-linearity in the frequency of price changes following a large shock. That is, as it has been aptly put, "large shocks travel fast",¹⁸ and this may have contributed to the maintenance and propagation of the initial shock to final producer and consumer prices throughout the economic system in 2022 and 2023.

If we then look at the source of the inflation forecast errors, especially in 2022, I still believe that in the case of headline CPI, at least for the euro area, they were largely due to the inability to correctly anticipate the rise in gas prices due to the war.¹⁹ However, the lag with which core domestic prices followed the deceleration in headline prices associated with the reversal of the energy shock may well be indicative not only of transmission through sectoral interdependencies, but also of the accelerated frequency with which producers react in a higher inflation environment. A further non-linearity has also been identified in the transmission of energy price shocks to consumer prices, which appears to be stronger in high-inflation regimes.²⁰ A similar effect would have been observed if wages had responded more quickly to past unexpected losses in purchasing power. This has been empirically rejected for the United States. Even in the euro area, despite more widespread unionisation and stronger wage adjustments in some countries with very tight labour markets, this catching-up effect does not seem to

¹⁸ Cavallo et al (2023).

¹⁹ See, amongst others, Chahad et al (2023) and Delle Monache and Pacella (2024).

²⁰ De Santis and Tornese (2023) and Neri et al (2023).

have been a dominant factor, unlike what was observed in some European countries in the 1970s and 1980s.²¹

Monetary policy

As a starting point, before considering the role that monetary policy might have played in the disinflation process, we can discuss the main reasons for the apparent lateness of central banks' tightening response. The question would then be whether they were really behind the curve and whether they could have anticipated the very high inflation levels of 2022 by acting earlier. Meanwhile, some have suggested that by delaying, an "inflation disaster" and the associated de-anchoring of expectations were bound to occur.

Two main criticisms were voiced at the time. On the one hand, it was observed that central banks were still fighting the last war against deflationary risks, which continued to be seen as dominant due to the pandemic effects. On the other hand, it was noted that central banks viewed the adverse price shocks stemming from supply disruptions and the global rise in energy and food prices as essentially transitory, calling for, if not benign neglect, then at least a wait-and-see approach, rather than a rapid shift of the very loose monetary policy stance into restrictive territory.

There is no doubt that the initial conditions were very easy, as the main discussion at the time was about how to engineer an upward move out of the effective lower bound trap of zero or negative nominal interest rates (what those among us of a certain age may have once called the "liquidity trap", even if QE rather than the Keynesian fiscal prescription had now become the way to try to get out of it). And it is also true, I think, that the supply disruptions might actually have been expected to fade more quickly than turned out to be the case. But was this because of a misplaced fear of deflation?

I think the jury is still out on this, given the extraordinary shock of the pandemic and the truly radical uncertainty about its impact. In retrospect, we know that this uncertainty, at least in public opinion, has been substantially reduced by the return of confidence, mainly linked to the exceptionally rapid availability of vaccines. However, I still remember very well the discussions and the risks linked to a "second wave" of the pandemic, the services sector still significantly affected, travel still very subdued throughout 2021 (and most of our meetings, including Jackson Hole, taking place remotely – a notable exception was the hybrid G20 meeting that took place in Venice in July 2021, which included a large number of in-person participants).

In any case, at least for the euro area, it is hard to say that inflation expectations became substantially de-anchored in 2021. Indeed, in the summer of that year, when the ECB's strategic review was completed, headline and core inflation were still below 2% and 1%, respectively. And the sentiment in financial markets up to the end of the year seemed to be, if anything, that there was still a relevant tail risk of deflation, which had indeed become persistent since the sovereign debt crisis. Some increase in expected inflation occurred in the last few months of 2021, but, as I have already mentioned, expert and market expectations were clearly pointing out that energy prices would quickly come down from the relative highs reached at that time. However, it was only after Russia's invasion of Ukraine that short-term inflation expectations, including those of households and firms, rose significantly and the opposite tail risks to those that had previously prevailed actually materialised.²²

²¹ For Italy, in the years of oil shocks and high wage indexation, I would refer to the estimates in Visco (1984), which were a relevant part of the Bank of Italy quarterly econometric model of the time (see also Gressani et al (1988)). It is interesting to note that, while a catch-up effect was largely dominant at the time, recent estimates of the Bernanke-Blanchard model (Bernanke and Blanchard (2023)) suggest the absence of such an effect for Italy, and a very modest effect of unexpected inflation in the aggregate estimate of a wage growth equation for the euro area (see Pisani and Tagliabracchi (2024) and Arce et al (2024), respectively).

²² Hilscher et al (2022) and Neri et al (2022).

A related criticism has been that, given central banks' commitment to fighting deflationary risks, they had to stick to the announced sequence of raising policy rates only after QE tapering had been completed. I think this observation is factually correct, with the main answer being the need to maintain credibility without contradicting their stated commitment, while avoiding risks to financial stability. The question, then, is whether things would have been very different if the Federal Reserve had started to raise its policy rates in the autumn (or perhaps the summer) of 2021 and the ECB in December 2021, when the "normalisation" of monetary policy had been formally announced.

This is certainly a relevant question, which would require a detailed and granular counterfactual analysis. However, even in the absence of such an analysis, I do not think there would have been much to be gained unless the move from a very loose to an aggressively tight monetary policy stance, with obvious recessionary effects and risks to financial stability, had taken place in a very short period of time. But I am not sure that this is what the critics would have seen as a truly pre-emptive move, since the most obvious question has to do with the initial conditions. And here I believe that the counterfactual, certainly for the euro area, perhaps less so for the United States, would be even more difficult as, between the financial crises and the pandemic, monetary policy had unfortunately been left alone to act as the "only game in town". But even if central banks did take some time to react, I do not think it was because of their natural tendency to see through a supply shock. In our case, it was clear from the outset that second-round effects would have to be strongly countered. And this was indeed the case.

But what were these second-round effects? I agree that most of the attention had to do with labour markets and the risks of wage-price spirals of the kind we saw around fifty years ago. In the end they looked rather weak, both in Europe and in the United States, and much of the story, as I have mentioned, came through price adjustments, given wages. Moreover, a possible and prolonged de-anchoring of inflation expectations would have delayed the disinflation process and made it more arduous. Indeed, what research has highlighted has been the occurrence of sectoral price spikes as a result of large supply disruptions and the non-linearities associated with an increase in the frequency of price adjustments and the propagation of energy prices in response to large supply shocks.

The risk in this case would have been to move from a low- to a high-inflation regime.²³ In the end, however, these phenomena appear to have been temporary, especially so as the supply disruptions faded and the energy shock was largely reversed. In Europe this was also thanks to a rapid shift in the composition of supply away from Russia, together with caps and targeted government measures.²⁴ Disinflation then proceeded, although it took some time for domestic core prices to slow visibly. What contribution has the sharp tightening of monetary policy made? And has it been enough or too much, given the time lags needed for full transmission to the economy?

Before answering these crucial questions, I would like to make a brief detour. This has to do with the persistence of an inflationary process. Inflation can be described as a combination of forces acting over time, including the costs of labour, capital and intermediate goods, and the interplay of demand and supply determinants, together with expectations and macroeconomic policy effects. A formal representation of this process would lead to a statistical model that could be solved to a "final form" in which inflation could be described in terms of its past, for example in a linear time series representation, as an autoregressive process. If there is homogeneity at the nominal level (in a simple price-wage example, this would be the case if both ended up responding proportionally over time to changes in the other),²⁵ such a representation would have what is mathematically known as a unit root.

²³ Carstens (2022) and Borio et al (2023).

²⁴ In the case of an energy shock, Guiso and Visco (1988) showed that in the presence of price and wage rigidities, it is optimal to respond with both monetary and fiscal policies (through lower administered prices or tariffs). For a recent paper along the same lines, see Bartocci et al (2023).

²⁵ This homogeneity condition is indeed "imposed" and satisfied in the estimates of the Bernanke-Blanchard model (Bernanke and Blanchard (2023, 2024)).

It is a well known result that a shock to the process will then lead to a higher permanent rate of inflation, with greater inertia the longer it takes for the process to reach a new steady state. At that point, the new “equilibrium” rate of inflation will be higher than the initial one by a simple amount given by the ratio of the size of the shock to the mean lag of the process.²⁶ The latter would be larger the more the process is spread over time. If, on the other hand, the process had a root less than one, we would return to the initial inflation rate after the shock, more or less quickly depending on the inertia of the process.

What can we do with this result? Suppose that a large supply shock had occurred in an environment of very high inertia. Not only would it take a long time for its full impact to be felt, but the end result would be, *ceteris paribus*, a new steady state inflation rate that might not be very different from the initial one. On the other hand, if the shock were to be followed by a significant reduction in the inertia of the inflation process (eg due to an increase in wages catching-up with the inflation surprise or a higher frequency of price adjustments), inflation would immediately be higher and the risk of de-anchoring expectations would be greater, with a more negative end result. This would then require a strong and rapid monetary policy response in order to dampen the inflationary process directly through its demand-side effects and indirectly by keeping longer-term expectations firmly anchored. In turn, the more credible the response, the faster the return to a lower frequency of price adjustments and to a longer catching-up period, if a shortening had proved to be significant.

I believe that this is an adequate rationale not only for assessing the appropriateness of the monetary policy response to a supply shock, but also for understanding why, until the process is essentially under control (so that economic agents’ behaviour has become stable again), it would be prudent to be guided by the data as they become available. After all, by keeping expectations well anchored and by dampening the increase in aggregate demand, including through higher real interest rates, monetary policy has helped to ensure a disinflationary process, which, unlike the oil shocks of the 1970s, has certainly been facilitated by the rapid unwinding of the energy shock.

I leave open the question of the size of the ECB’s response, especially as the effects of tightening monetary policy by raising policy rates by 450 basis points in just over a year may still have to be fully felt, given the time lags in the transmission process. As regards the size of its contribution to reducing inflation from 2022 onwards, in addition to that due to the “natural” unwinding of shocks and the reversal of the dramatic rise in energy prices, the answer could again only be given on the basis of a careful and detailed post-mortem counterfactual analysis.

A preliminary exercise, based on a number of macro models currently available at the ECB, would suggest that the effect could have been to subtract up to 2 percentage points from what the inflation rate could have been between 2022 and 2026 (while also subtracting around the same amount from GDP growth).²⁷ While the slowdown in demand has been reflected in very low growth rates over the past year or so, the euro area has not entered recession and labour markets have not contracted. Similarly, in the United States, inflation adjustment has taken place in an environment of continued relatively high growth and low unemployment. Further analysis is certainly warranted but, as central banks were determined to respect commitments to price stability, transmission channels related to expectations and the anchoring of expectations may have greater relevance than some alternative views would have us believe.

²⁶ For a clear presentation and discussion of this result, see Bruno (1995), pp 70–9.

²⁷ Lane (2024, Chart 37). Similar results are also reported by Panetta (2024, Figure A5), with estimates by the Bank of Italy’s staff suggesting the impact of the hike in interest rates even higher in 2024 than in 2023.

5. Some issues related to the role and conduct of monetary policy

The assessment I have made so far of the role played by monetary policy, both in responding to the pandemic and post-pandemic shocks and in driving the disinflationary process, may appear rather positive overall. However, it is often observed that the delayed policy response to the shocks was both the result of initial conditions being far from where they should have been in order to quickly counteract the implicit rise in inflation, given the prevailing deflationary fears, and of not properly taking into account the changes in behaviour caused by the pandemic. Had the central banks reacted more quickly, not only would the inflation peaks have been much lower, but also the forecasting errors would have been smaller and confidence in the central banks' policies would have been reaffirmed.

It is certainly true that the initial monetary and financial conditions were very accommodative and it should be acknowledged that disruptions in global value chains were largely expected to be short-lived and were somewhat downplayed. However, it seems to me, on the one hand, that the reasons that led to these initial conditions were not unfounded and, on the other hand, that the inflation peaks in 2022 might not have been much lower if the monetary contraction had started six months or so earlier. In any case, I admit that this mainly reflects my conviction that, at least in the euro area, the height of these peaks was largely related to the energy shock, which was amplified extraordinarily by the Russian aggression in Ukraine, rather than to the supply disruptions.

I would not venture to estimate how much an anticipated tightening by the Federal Reserve might have reduced the impact on consumer prices of pandemic-related pent-up demand on the part of US households, leaving the answer to our American friends. However, for this effect to be significant enough, households' inflation expectations would probably have had to respond to the monetary tightening by as early as mid-2021. Through this channel, consumer spending would then have been curbed, counteracting the boost from the large savings accumulated as a result of the pandemic's restraint. In any event, it is worth recalling that, at least in the financial markets, a reaction was already visible somewhat in advance of the actual tightening of monetary policy, as soon as central banks announced their intention to start normalising monetary policy, with spillover effects in the euro area linked to the communications and actions of the Federal Reserve.

With reference to the very large forecasting errors that accompanied the delayed monetary policy response, post-mortem exercises are certainly necessary, and much should be done to improve our macroeconomic models. But we should always remember the "non-ergodic" nature of economic systems and the simple fact that even the best and most flexible models are necessarily "local" (and generally somewhat linear) approximations of very complex and possibly changing economic and financial relationships.

I am certainly prepared to join those who criticise the use, both in forecasting and in policy simulations, of some particular classes of dynamic general equilibrium models that have become popular both in academia and in the research departments of central banks.²⁸ Although some improvements have been made in the aftermath of the Global Financial Crisis, in particular to take some account of the heterogeneity of economic agents and the non-linearities arising from financial imbalances, these models are unsuited to producing reliable forecasts and useful assessments of policy decisions, particularly in situations of regime change. But have they been responsible for our forecasting failures and have they guided our decisions?

On previous occasions, I have quoted on this subject the words of Herbert Simon, one of the greatest social scientists of the last century, and it seems appropriate to do so again:

²⁸ This point, which also reflects the critical observations advanced by David Hendry and Grayham Mizon (see Hendry and Mizon (2014) and Mizon and Hendry (2014)), has more recently been emphasised by Mervin King and John Muellbauer (King (2022), Muellbauer (2018)). For views raised on the occasion of forecast failures at the time of the Global Financial Crisis, see also Visco (2009, 2013).

Good predictions have two requisites that are often hard to come by. First, they require either a theoretical understanding of the phenomena to be predicted, as a basis for the prediction model, or phenomena that are sufficiently regular that they can simply be extrapolated. Since the latter condition is seldom satisfied by data about human affairs (or even about the weather), our predictions will generally be only as good as our theories. The second requisite for prediction is having reliable data about initial conditions – the starting point from which the extrapolation is to be made.²⁹

I will not dwell on this subject, except to make two observations. The first is that these remarks apply to all macroeconomic models currently in use, including those now defined as “semi-structural”, but this does not mean that they have been and will be used mechanically to produce forecasts or to assess the possible impact of policies. They need to be used, as I believe is more or less the case, with the necessary care, taking into account information available outside the domain of models, combining art and science. Of course, good results depend both on the science (the quality of the theories embedded in the models) and on the wisdom of those who manage and operate them.³⁰ But I have always felt that, for our purposes, models are best seen as adaptable (flexible) frameworks, rather than self-contained tools, with often well considered limitations on the superimposition of constraints that are unlikely to match real-world configurations, and which also run the risk of constraining the way we think.

However, there is little we can do about initial conditions other than be alert to their effects, and much should be done to improve the quality of external information (such as the energy price projections used in 2021–22), but epidemics and wars are in the category of the unpredictable, perhaps incommensurable, and in some cases create situations of radical uncertainty. On the “scientific” side, we can improve by learning from episodes like the one we have experienced in the last five years, and from the research that has been generated. But I very much doubt that models, no matter how flexible and disaggregated, will be able to cover all the states of the world and go beyond the regularities (including the non-linearities that have been identified and sufficiently evaluated) of which we have some, albeit minimal, experience.

Second, if there is a recurring problem, of which we are all aware but which is difficult to overcome, it is between the production of forecasts and their use, as well as in the way they are ultimately communicated and internalised by users, the media, politicians and the public at large. Too much attention is paid to “point” forecasts, ie the numbers that summarise a central or “baseline” scenario, whereas forecasting is much more complex and involves an assessment of the magnitude and direction of the risks associated with the specific projections. I believe that a major effort should be made to revise the way we communicate these exercises, making it clear not only that nobody has a crystal ball, but also that point estimates have zero probability of being validated. The aim should then be to improve the construction of appropriate confidence bands (or fan charts) and to develop and use scenarios that can help policymakers when uncertainty seems overwhelming.³¹

However, central banks have certainly not used models and forecasts without discussing and addressing risk management considerations. Even today’s “data-driven” decisions are the result of thoughtful discussions about the direction of risks and about alternative, albeit sometimes not really formalised, scenarios. Of course, the data include the available forecasts, “judgmentally” corrected to take account of developments outside the statistical population from which the model estimates are usually derived, and thus not necessarily “mean-reverting”. This is what has led to the progressive, and

²⁹ Simon (1981, p 170).

³⁰ This is indeed a long-standing observation. See, for example, Samuelson (1975).

³¹ Opinions differ on the use of fan charts (from the very positive one advanced in Group of Thirty (2023), to the more negative view expressed in Bernanke (2024)). I believe that, in the absence of major regime changes, there are satisfactory ways of using fan charts to represent uncertainty around baseline forecasts (see, for example, the proposal advanced in Miani and Siviero (2010)). However, when uncertainty is extremely high, as suggested by both the Group of Thirty (2023) and Bernanke (2024), carefully conducted scenario analysis can shed some light on possible alternative outlooks, even if the further problem of “assigning” subjective probabilities to such scenarios then obviously arises.

aggressive, tightening of monetary conditions, which is now widely seen as an appropriate and firm response – whatever its starting point – to the risks of higher and, above all, more persistent inflation.

Indeed, given the magnitude of the shocks, it became clear that a firm and consistent increase in policy rates would have been necessary to offset the reduction in real interest rates implied by high, and rising, underlying and expected, inflation, which would have further exacerbated excess domestic demand. This was done in a way that eventually became increasingly understood and appreciated by the markets, with core prices decelerating steadily from early to mid-2023.³² There were, of course, concerns in various quarters about the costs that such a policy stance might impose on households and firms. In the end, or at least so far, our economies have not experienced a hard landing, nor have we seen the rise in unemployment that many had feared.

Moreover, as far as the euro area is concerned, risk management considerations did not lead to a debate on whether to abandon the restrictive policy stance when inflation appeared to be on track. If there was a debate, it was about whether, given this stance, to tighten further, preferring the risk of “doing too much” to that of “doing too little”, or to maintain a more balanced approach as the effects of the rise in interest rates and the progress of QT gradually took hold. We can now ask how important the monetary policy response has actually been in managing disinflation. In fact, this is not divorced from today’s main question, namely the expected duration of the current restrictive stance, which, incidentally, is also not independent of considerations relating to our assessment of what might be “neutral” conditions, given the objective of price stability (or 2% inflation in the medium term).

As I have discussed, most assessments of the effective performance of monetary policy after the shocks focus on the anchoring of long-term inflation expectations and the rapid decline in expected short-term inflation. However, it is fair to ask about which channels were effective and led to the disinflation we have observed since 2022, ie how the tightening of monetary policy has been transmitted to the economy. After all, one of Mervin King’s main criticisms of his former central bank colleagues in the autumn of 2021 was this:

Central banks have been caught out by this sudden upturn in inflation. For several years they have been giving “forward guidance” that interest rates will remain close to or below zero for the indefinite future. They have drawn heavily on concepts derived from a family of theoretical models which rely on the assumption that expectations drive inflation, and central banks drive expectations.³³

I have already touched on the issue of “initial conditions”. But this statement points to another very relevant issue: whether inflation really depends on its expected counterpart, and to what extent the latter is influenced by monetary policy decisions. And if we have doubts about both parts of this issue, how important has the sharp monetary tightening been? And through which channels?

We can start by recalling, on the one hand, that no wage-price spiral has been observed (some might add “so far”, but I think that is beside the point). So we have not seen a particular role for expected inflation in a wage Phillips curve, notwithstanding the increase in the short term, nor much catching-up, except to a limited extent in those euro area labour markets that are tighter and where the strength of collective bargaining is still relatively high. There has also been no particular weakening of employment opportunities, and while there has been a slowdown in growth in some European countries in 2023, there has been no recession; at the same time, the US economy as a whole has been remarkably resilient.

On the other hand, the size of the shocks and sectoral bottlenecks were identified as factors behind the non-linearities observed in firms’ price adjustment decisions. However, once the energy shock started to unwind, this was quickly transmitted to headline consumer prices and, with a time lag,

³² Cuciniello (2024).

³³ King (2022, p 3). For a sceptical view on the role played by inflation expectations in driving actual inflation, see Rudd (2021).

domestic core price inflation also started to decline. So, what is the role of monetary policy and how much does it have to do with anchoring inflation expectations?

There are several channels through which expectations can play a role. And while there is still much information to be gleaned from financial market data on swaps and options, as well as from surveys of professional forecasters. We have recently seen a proliferation of new surveys and research on consumer and business expectations.³⁴ Indeed, I agree with the observation that they should very much be part of any attempt to have a sound understanding of how our economies are working.³⁵ While much of this is still at an early stage, better accounting for the heterogeneity of expectations and responses of a wide range of economic agents to macroeconomic shocks and developments will go a long way. I am reasonably confident that it will ultimately provide further support for the narrative that follows.

A very long period of price stability, favoured by several factors – of which the rapid opening of the world economy was certainly one – found a credible quantitative counterpart in the moderate inflation targets of central banks. This reduced both the importance of paying attention to actual aggregate price changes and the need for large and frequent wage and price adjustments, in order to maintain households' purchasing power and firms' profit margins. If anything, between the Global Financial Crisis and the pandemic shock, some below-average inflation was observed, with market-derived expectations somewhat unmoored to the downside.

With the big shocks of 2021–22, after an equally long period in which the concept of "rational inattention" was given particular prominence,³⁶ more attention began to be paid to actual price developments (perhaps with extrapolative forces beginning to dominate over those pointing to a return to more normal conditions). In real terms, given nominal market and bank interest rates, the perception of lower returns and lower borrowing costs favoured an increase in demand beyond the post-pandemic recovery, while higher expected inflation favoured forward-looking spending decisions. There was, of course, a fall in real incomes due to the loss of purchasing power, but the impact was mitigated by the use of savings accumulated during the worst months of the pandemic, including through government transfers.

We have seen that not much has happened in the labour market, with unemployment being absorbed quickly enough in the United States. Meanwhile, employment was sufficiently protected by furlough schemes in Europe. At the same time, we have seen an increase in the frequency of price adjustments, probably linked to the perception of a change in the inflation regime and, in some countries, combined with an increase in demand pressures. But here the role of monetary contraction comes into play, through a series of significant increases in policy rates, complemented to some extent by the gradual evolution of QT.

As nominal interest rates rise, and in the absence of any further upward shock to commodity and intermediate prices, real interest rates rise accordingly, in the various dimensions and markets to which they are relevant. Excess demand is then contained and the reduced pressure favours a reassessment of the inflation outlook, with the anticipation of a further tightening of monetary conditions at the same time as inflation expectations begin to be revised downwards. This leads to a return to a less rapid frequency of price adjustments, the effects of which are now also visible in core prices. Moreover, to the extent that previous adjustments had led to higher profit margins, a recovery in wages may offset some of the loss in purchasing power of wages without further price increases.

³⁴ For a review of the measurement and interpretation of inflation expectations and some considerations on their role in the transmission of monetary policy, see Visco (2023b) and the references therein. To those I would add Pedemonte et al (2023), D'Acunto et al (2024) and the very recent, though rather different, first proposals for modelling the formation of expectations under radical uncertainty, by De Grauwe and Yi (2024) and Frydman and Tabor (2024).

³⁵ Reis (2023).

³⁶ The standard reference is Sims (2003); for an extensive review article, see Maćkowiak et al (2023).

While the disinflation has not been triggered by a fall in aggregate demand, the easing of the supply disruptions (Graph 7) helped to reduce the positive post-pandemic output gap, and, of course, the return of energy prices to much lower levels (Graph 3) reduced the pressure of total costs on profit margins. But let us suppose, as a counterfactual, that there was no monetary restraint, based on the (incorrect) assumption of an unchanged slow frequency of price and wage adjustments. It is very likely that demand pressures and expectations of persistently high inflation would then have reinforced the non-linear response observed in final producer and consumer prices, ie the increase in the frequency of their adjustments, and sooner or later, perhaps even before the good news from supply conditions and energy prices was fully perceived, a generalised wage catch-up would probably have followed. A rise in interest rates would eventually have been needed to slow down these changes, but to a much greater extent and for longer.

Before concluding this section, it is indeed interesting to note that the duration of a monetary restriction necessarily depends on a correct assessment of the distance from neutral conditions (when there are no more pressures in the economy to deviate from price stability) or, alternatively, of the strength of the restriction itself and the time needed to close such a gap (or to end the restriction). Thus, the discussion often refers to a concept such as the “natural” real rate of interest (which is “naturally” related to other quantities such as a natural rate of unemployment or a steady rate of potential growth).³⁷ However, not only is quantifying this concept a rather elusive exercise, since it depends very much on one’s view of the world (or on the estimates of the economic model from whose structure it is derived),³⁸ but in fact there is a high variability between different estimates, and they are also associated with confidence bands that are so wide as to undermine any attempt at practical ex ante application.

This is not to deny that there is much to be learned from examining the long-term evolution of measures of real interest rates. Not least, this can highlight possible signals of financial stability risks or practical difficulties in the vicinity of “effective lower bounds” (or risks of a “liquidity trap”). It can also help to reflect on the implications that may arise from the evolution of factors such as demographic and technological trends, or related to increased trade fragmentation, geopolitical risks and other determinants.³⁹ Overall, a relatively informed reading of most recent assessments leads me to conclude that there do not seem to be overwhelming reasons to suggest that real long-term (and, as much as possible, risk-free) government bond yields will not remain generally low, say, below 1%, albeit at levels higher than the very low levels that followed the Global Financial Crisis (and which were considered to be in line with predictions of “secular stagnation”).

While I do not believe that, in practice, monetary policy could be conducted on the basis of the distance to such equilibrium real rates (or even their “neutral” counterparts, which assume limited rather than complete price flexibility in the economic system),⁴⁰ it is certainly necessary to assess the degree of constraint imposed on the economy. We must then look at various indicators and also take into account the tightening that is still under way, given the time lag with which monetary policy measures complete their transmission.

The evolution of bank and non-bank financing of the economy provides relevant information. As shown in Graph 12, growth in loans to enterprises in the euro area is currently zero on a 12-month basis. Looking at the annualised three-month rates of change, they have also been around zero on average for several months for both enterprises and households, and the latest data do not point to a strengthening of credit dynamics. The dampening of demand by higher financing costs has been

³⁷ The standard reference is Woodford (2003), which builds on Wicksell (1898). See also the interesting discussion in Woodford (2024).

³⁸ For recent revision of semi-structural estimates of both “the” natural rate of interest and its output counterpart, see Holston et al (2023).

³⁹ Obstfeld (2023) provides a very rich and illuminating review of both empirical and theoretical issues. See also Benigno et al (2024) and the discussion in Borio (2021).

⁴⁰ See also Weber et al (2007).

accompanied by a tightening of supply conditions, as indicated by the Eurosystem Bank Lending Survey since early 2022. Market-based measures of financial conditions have tightened markedly in the last two years and remain close to their peaks. A similar picture emerges for credit conditions in the United States. On the contrary, overall financial conditions have improved significantly in recent quarters, probably reflecting the increased role of market-based financing and investors' continued high risk appetite.

Finally, forward real rates derived from overnight and inflation-linked swaps, the maturity structure of which is shown in Graph 10, provide a clear picture of the contractionary phase as assessed by the market, with the short-term rate remaining well above the longer-term (one-year, nine years ahead) "equilibrium" real rate. Monitoring these and other indicators helps to assess not only the tightness of the monetary policy stance, but also the impact of its duration. In this respect, it is worth recalling that the empirical evidence for the euro area shows that, on average, a change in policy rates has its maximum impact on GDP growth after about one and a half years, while the maximum impact on inflation may take somewhat longer.⁴¹

6. New lessons and challenges ahead

The quotation above from English et al (2024) that the aggressive central bank response may have ensured that supply disruptions in 2021–22 (and I would include the energy shock) ended up having transitory inflationary effects has essentially been confirmed. Certainly, the response was not synchronised with the demand-supply imbalance identified when the worst phase of the Covid-19 pandemic was over, and it had to start from very easy initial monetary policy conditions. I have argued that this was so for good reasons, at least for the area I know best, both before and after the outbreak of the pandemic, but I am open to counterfactuals that would at least qualify such a statement from both a quantitative and a temporal perspective. I may then simply emphasise that I am satisfied not to have seen the outcome of less accommodating initial conditions.

As we meet, inflation, not only in the euro area and the United States but also elsewhere, is approaching the 2% price stability objective, as are short-term expectations, as derived from both financial market data and household and business surveys, with some fluctuations and some heterogeneity in individual responses. Longer-term expectations have, as far as we can judge, remained well anchored over this period, and we have not experienced either a recession due to monetary restraint or a wage-price spiral, which were both feared and, in some quarters, expected. In what follows, I would like to add some relevant qualifications to this summary and try to highlight some of the key points that we may have learned or seen confirmed by this experience. Finally, I will highlight some of the more prominent challenges that central banks may have to face.

It has been argued in some quarters that central banks were noticeably late, ie "behind the curve", in responding to the inflation spikes. While it may be true that they entered the race with a certain handicap (in terms of initial conditions) and somewhat after the starting gun, in the end this does not seem to have led to a loss of credibility, nor were they conditioned in their response by the sometimes strong reproaches from politicians or the private sector at large. Among these criticisms was the one already mentioned earlier: had they reacted earlier, they might have been able to limit the rise in interest rates and the cost of financing the economy. Whether this would have been possible at all and whether it would have really mattered, is better left to further research. But there is another counterfactual that could be considered here.

There is no doubt that the disinflation process, in the context of a solidly restrictive monetary policy stance that has kept inflation expectations firmly anchored, has been helped by the return to more reasonable levels, some time after the violent shock of the Russian aggression against Ukraine, of energy prices, especially those for natural gas in Europe, as well as other commodity prices. It is therefore fair

⁴¹ Lane (2022).

to ask what would have happened if energy and other commodity prices had remained at much higher levels for a longer period, as in the 1970s and 1980s. The negative terms-of-trade effect for European economies would certainly have been much stronger and more protracted. However, the counterfactual for inflation must take into account the fact that considerable changes have taken place in product and labour markets since then, in particular with the widespread disappearance of indexation mechanisms between prices and wages, the weakening of the power of trade unions in wage negotiations and increased international competition. But it is still possible to conclude that, as then, monetary policy would have had to respond with higher interest rates for a long time to come, ultimately leading to significantly higher “sacrifice ratios”, with income losses and falling employment.

In the end, a firm and credible monetary policy, made possible by the major change brought about by the independence of central banks, would have made it possible to contain inflation, but possibly only after a period of pronounced non-linearity in the frequency of price adjustments and with the revival of the catching-up components of wage dynamics in relation to real losses in purchasing power. Today, therefore, as then, in order to speed up the return to price stability and reduce the serious social costs of inflation, including those due to monetary restraint, it would have been necessary to accompany monetary policy with an effective economic policy response aimed at containing the growth of nominal demand and limiting targeted support to the most affected households and firms.

For the euro area, as for other economies that are net importers of energy, the energy price shock is effectively a tax on the economy that cannot be circumvented by a fruitless race between wages and prices (nor by an excessive and permanent increase in public debt). It remains to be seen whether the “stability culture” that prevailed in Germany fifty years ago, which allowed it to experience much lower rates of inflation than other comparable economies, could be replicated today in all euro area countries, including Germany. At the same time, it would be prudent to find ways to ensure that any nominal adjustments in profits and wages remain as spread out over time as possible, and that the latter are closely linked to real productivity improvements, rather than pushing for a return to automatic indexation mechanisms.

Even if today’s situation seems to be sufficiently under control, thanks to the fact that the energy shock was violent but temporary and to the determined response of central banks, there is a general feeling that the race is not yet over. Indeed, the discussion now focuses on the so-called last mile, the distance separating us from the 2% inflation target to be maintained over the medium term. I believe that even if such a distance may be attributable to items and sectors with relatively low direct input of energy costs and a higher dependence on labour, as is the case in much of the services sector, the current monetary policy stance is such that, barring new shocks, the inflation gap will be fully closed as expected, ie in the case of the euro area, by the end of next year.

This means that it is sensible to continue to move gradually out of the restrictive territory in which we currently find ourselves. But it also means that sectoral developments should be closely monitored. After all, if central banks have rightly refrained from raising interest rates further, only to have to reduce them more quickly in the coming months, they may choose to keep them at less restrictive but still relatively high levels for longer, albeit still on a downward path. There is one possible justification for a slower and more data-dependent move, even if the lags in the transmission of the tightening of monetary conditions are still in place (and would only require “patience”, as was suggested more than a year ago, albeit about transmission in the opposite direction).⁴² This justification has to do with the negative “headwinds” stemming mainly from the geopolitical situation.

⁴² Indeed, the word “patience” featured prominently in the title of the Geneva 2024 Report on the World Economy (Guerrieri et al (2024)).

Indeed, there is still a great deal of uncertainty at the global level, both in the short term and in the long term.⁴³ However, this does not imply a wait-and-see policy and an excessively prolonged maintenance of a very restrictive monetary stance. Even when inflation was much higher than it is today, I would have proposed adhering to the time-honoured Brainard principle, according to which a central bank should move cautiously when it is uncertain about the effects of its actions. The exception would have been the possible persistence of high inflation, in which case a strong monetary policy response might have been needed to prevent it from becoming entrenched in the minds of agents.⁴⁴ But we have certainly passed that point.

So, have central bankers learned anything new, or is this just new wine in old bottles? First of all, I would like to stress that this is the first time since the “new” institutional framework of central banks – independence, various forms of inflation targeting, new instruments in the toolbox etc – has been confronted with a period of high inflation. Despite the difficult starting conditions, my overall assessment is that the performance has been satisfactory. Credibility has remained high and, having also led to rising market interest rates well in advance of actual policy measures, has kept inflation expectations generally well anchored. This, together with the unwinding of some shocks, has certainly contributed to the steady decline in inflation.

Second, institutional changes in the economy also helped. Financial intermediaries and markets did not get in the way of monetary tightening, and labour and product markets, apart from some non-linearity, functioned without a tit-for-tat reaction to the fall in real incomes or possible pressure on profit margins (even if, ex post, the share of profit in total value added turned out to be higher for some time than before the shocks). It is certainly important to pursue structural reforms aimed at raising trend productivity, especially in the services sector, and to improve the competition regime, while maintaining well regulated markets. But while we have not seen the wage-price spirals of past decades, neither have we seen, at least to the extent observed in the past, large and cumulative transfers of high unit costs from protected and low-productivity sectors to more open and competitive ones.

Third, it is true that since at least 2008, and not only as a result of the Global Financial Crisis, the global environment has entered an era of heightened uncertainty, and there have also been shocks that have led to periods of radical uncertainty,⁴⁵ although I believe that there are some “regularities” that households and firms (and also, it must be said, policymakers) tend to refer to. The years of the Great Moderation have therefore passed, and this has led to profound changes in the conduct of monetary policy, including the introduction of so-called unconventional measures. The discretion and flexibility of central banks have been and will continue to be crucial, but, contrary to what some would say, this is not arbitrariness. Indeed, greater discretion must be accompanied by greater transparency and accountability.

This is directly related to a fourth lesson, which central banks, while still on a learning curve, are certainly acting on. It has to do with the need for better communication, including with the public at large. There is both a forecasting dimension, which I have already touched on and which deals with the production of point estimates, fan charts, scenarios and the like, and what I would call a reaction function dimension. It is true that to some extent central banks have been victims of their own tools, having to abandon forward guidance when it was clear that policy had to change. But I would argue that the main problem has been the way in which the messages have been formulated – not making the conditionality of statements sufficiently clear. However, monetary policy is inherently forward-looking and central

⁴³ In his Per Jacobsson lecture two years ago, Jens Weidmann did indeed speak of a “new age” of uncertainty (Weidmann (2022)). What is relevant for the last mile of the current disinflation process is related to shorter-term developments, which will hopefully become clearer in the coming months.

⁴⁴ Brainard (1967) and Ferrero et al (2019).

⁴⁵ This term, which I have also used throughout this paper, has become popular with Kay and King (2020), although of course the original ideas are to be found in the works by Frank Knight and John Maynard Keynes in the first half of the last century, albeit with limited follow-up, although one can find some links with Herbert Simon’s ideas of bounded rationality.

banks need to strike the right balance between rules and discretion. After all, a “data-driven” approach cannot be the rule, and in monetary policy, too, there is no alternative to a prudent risk management process.

This leads me to reflect briefly on recent calls for “simple rules” to guide forward-looking monetary policy. I confess my ignorance, but I am not aware of any simple rule that could provide a sufficient basis for the success of monetary policy in preventing or responding to inflationary shocks. Again, I would like to appeal to authority by quoting Paul Samuelson’s words from more than seventy years ago, although I understand that they need to be adapted to different cases and different audiences:

One may set up an arbitrarily designed automatic mechanism consisting of specified reserve ratios, marginal-propensities-to-tax according to...“formula-flexibility,”...commodity-money,... and so forth in greater or lesser detail. Such an automatic mechanism is often contrasted with a so-called “discretionary” system. Now over the years I have struggled with this distinction ... and I am unable to isolate any real logical difference, either at the philosophical or pragmatic level...It is not simply that such a mechanism is set up by discretion, is abandoned by discretion, and it is interfered with by discretion – although this consideration is itself enough to destroy the notion of a genuine difference of kind. But even my efforts to establish a logically rigorous difference of degree has not met with success.⁴⁶

Ultimately, it all comes down to how good the discretion of monetary policymakers is, how well intentions and decisions are articulated and communicated, and how appropriate the balance between science and art is. With regard to the latter, analytical and quantitative improvements can be introduced, building on ongoing research and data collection, to take better account of the non-linearities and heterogeneities in households’ and firms’ expectations and responses to shocks. More should also be done to understand and take into account, in a more timely manner, changes at the global level that affect the functioning of our economies, be they related to production value chains or to the evolution of commodity markets. And, to stay with the set of issues raised earlier, considerations related to the collateral effects of the implementation and unwinding of unconventional measures, including the sequencing of decisions related to balance sheets and policy rates, should certainly be high on the research agenda.

Finally, there is what central banks have to deal with, not to overstretch their mandates, but to be aware of the implications of well known challenges such as the green transition or the major technological changes that will have a significant impact on our economies and societies as a whole. But that is clearly beyond the scope of these pages.

I will then conclude with the two challenges that several illustrious commentators have directly linked to the way central banks have dealt with the risks to price stability over the past fifteen years or so, namely the risks of fiscal and financial dominance, respectively.

With regard to the former, there is no doubt that governments’ responses to the pandemic and the energy shocks have led to a substantial increase in the public debt-to-GDP ratio, even taking into account the offsetting effect of the higher domestic price level resulting from the surge in inflation. This in itself will, *ceteris paribus*, determine a constraint stemming from the increase in the interest burden. If, when disinflation is complete, a new equilibrium with higher real interest rates and perhaps lower trend output growth prevails, this constraint will be exacerbated. Recently it has been suggested that central banks may eventually move from the anti-inflationary resolve fostered by their independence and primary mandate to maintain price stability (which could be summarised as monetary dominance) to what could be seen as an “inflation bias” in their monetary policy decisions (the result of a prevailing regime of fiscal dominance).⁴⁷

⁴⁶ Samuelson (1951, p 164).

⁴⁷ Group of Thirty (2023), as well as Rogoff (2024) and Afrouzi et al (2024).

Indeed, in the coming years, demographic trends, trade fragmentation and the shift towards renewable energy sources may lead to further pressures on government budgets and relative price changes. This, in turn, could lead to political pressure for a more flexible and lenient response to possible inflationary effects. Indeed, even in the post-pandemic experience, there was (and to some extent still is) no shortage of complaints about the sharp and large increases in interest rates. These complaints sometimes even echoed the remarks of some commentators that if central banks had acted earlier, the tightening might have been much less severe. Without discussing the merits of these remarks, there is no evidence that such complaints have succeeded in weakening the resolve of central banks in their fight against inflation. Even the QT is proceeding more or less as planned, with a gradual unwinding of central banks' balance sheets and no major impact on government bond markets so far.

However, there is a clear risk if a narrative were to emerge that the debt burden is not due to a lack of fiscal consolidation, but to central bank rigidities. This would perhaps also be exacerbated by the costly mismatches between their long-term asset purchases through QE programmes and their short-term liabilities to the banking system. I would venture to say that this risk could and should be countered by substantial improvements in analysis and communication, as well as efficient risk management policies to reduce the latter effects.

In addition, central banks could allow for some limited and temporary flexibility – in addition to that provided by non-zero inflation targets that, as suggested,⁴⁸ also aim to take account of changes in relative prices – in the presence of structural reforms that would reduce pressures on and from government debts. But they should certainly not aim at more flexibility to accommodate the needs of politicians. Indeed, since they do not operate in a vacuum or from an ivory tower, they would be wise to engage the political side in a constructive, forward-looking and non-confrontational dialogue, while at the same time demonstrating the value of their independence, mandate and consequent actions, by discussing and explaining their objectives and (limited) instruments with constituencies as diverse as the media, the business sector and the people at large.

I think one can question the claim that interest rates kept too low for too long were a really relevant factor in the expansion of public debts. Nor do I think that attention paid in the euro area to the risks associated with the fragmentation of the sovereign debt market really limited the room for manoeuvre of monetary policy. And although it is difficult to make a proper counterfactual analysis, I believe that the unconventional policies of the last decade were ultimately successful in countering a high risk of deflation in our highly indebted economies. However, this also raises the question of whether this level of indebtedness had much to do with the excess liquidity created by central banks with their QE, ie the “unconventional” expansion of their balance sheets. It also raises concerns about whether this may have created large risks to financial stability, how these risks might be mitigated as central banks continue to unwind their balance sheets, and whether there may be a further risk on the inflation front coming from the “monetary overhang” associated with such unconventional policies. All in all, then, how big is the challenge of financial dominance?

As this is a highly topical issue, it deserves much more than the few lines I can devote to it here. While I would refer to recent in-depth analyses for a critical assessment,⁴⁹ I would like to make just a few observations. The first has to do with the possibility that monetary policy may be conditioned by the QE legacy of financial stability risks. A one-to-one correspondence between price and financial stability should certainly be recognised, as there are both complementarities and trade-offs between policies aimed at these two objectives. As such, when risks of debt-deflation are high, it should be recognised that ultra-loose monetary policy, which counteracts the risk of deflation, may also induce excessive leverage. Recognising that this is a bit of a razor's edge implies that one should also proceed cautiously on the path of QT, while at the same time using macroprudential policies to prevent an excessive increase in leverage and stepping up efforts to improve the regulatory framework for banks and, in particular,

⁴⁸ Guerrieri et al (2023).

⁴⁹ See, among others, Group of Thirty (2023), Acharya et al (2024) and the pages on “less is more” in Rajan (2023).

non-bank financial intermediaries, which is certainly made more difficult by the rapid expansion of digital technologies.

So far, notwithstanding the relevant episodes in the United States and Switzerland in the spring of last year, financial stability risks have been kept under control, but vigilance, prudence and contingency plans remain of the essence.⁵⁰ And we should always emphasise that central banks should not be overburdened in their mandates, and monetary policy should certainly not remain the only game in town.

A related issue concerns central bank interventions in the interbank market and the relative merits of a “corridor” system for the interbank rate, such as the one that prevailed before the Global Financial Crisis, and the “floor” system, with excess liquidity also provided through “full allotment” refinancing operations, that has replaced it. The risk of distorting signals and reducing the efficiency of the financial system should then be seen in the context of the freezing of the money market that has occurred in the last decade or so. A pragmatic approach is inevitable and, as with QE, the use of central banks’ balance sheets to address market failures must, in my view, inevitably remain part of their toolbox, to be used pragmatically, albeit judiciously.⁵¹

Finally, the old question of “too much money chasing too few goods”, ie the problem of monetary overhang, also needs to be addressed pragmatically. Indeed, Milton Friedman’s words are more than just a harmless truism: they can be interpreted as a causal relationship between the money supply and the price level, which may hold, albeit with variable lags, over horizons that are not necessarily too long. However, persistently high inflation did not result from the extensive use of unconventional instruments, ie the increase in base money, in the pre-pandemic period, nor did its reduction prove problematic in the post-pandemic period, when the policy was reversed. And the broad money aggregates moved rapidly in the same direction, most likely eliminating the possible overhang. Moreover, while the historical experience of several industrial countries suggests the existence of a long-run relationship between the quantity of money and prices, recent structural changes seem to have blurred it considerably.⁵²

Let me conclude by recalling two words that featured prominently in recent reports from the last year on central bank performance in the context of the post-pandemic high inflation experience: “patience” and “humility”. I have already commented on the former, noting that this also applies in the face of uncertain geopolitical developments and the fact that the buoyancy of demand still observed in some countries may require a perhaps longer than expected period of moderate monetary restraint before returning to more normal conditions. With regard to the latter, I am not convinced that today’s central bankers require much reminding of the need to be humble. They are well aware that knowledge is limited, that there is no crystal ball and that better analysis must go hand in hand with better communication. This does not mean, however, that central bankers should be hesitant or submissive, but rather that we can refer, with reference to their future endeavours, to an oxymoron that the Romans borrowed from the Greeks⁵³ and that I am sure is common in many cultures. In Latin it is *festina lente* – a useful English translation for the world’s central bankers is “make haste slowly”.

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⁵⁰ See Du et al (2024) and the considerations in Logan (2024) and Schnabel (2024b).

⁵¹ On this, see Schnabel (2024a) and relevant considerations in Reichlin (2023).

⁵² Yung (2024).

⁵³ σπεῦδε βραδέως (*spèude bradéōs*).

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