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War in Ukraine: implications for the ECB

Compilation of papers

Policy Department for Economic, Scientific and Quality of Life Policies
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Monetary Dialogue Papers
June 2022

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

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And now, the Ukraine shock

Charles WYPLOSZ

Abstract

The Ukraine shock comes at a most inconvenient time, when the inflation surge generated by the recovery from the pandemic requires urgent attention. The Eurosystem must proceed with policy normalisation, raising interest rates and shrinking its balance sheet, which can trigger financial instability. Defining and communicating its strategy is essential.

This paper was provided by the Policy Department for Economic, Scientific and Quality of Life Policies at the request of the committee on Economic and Monetary Affairs (ECON) ahead of the Monetary Dialogue with the ECB President on 20 June 2022.

CONTENTS

LIST OF ABBREVIATIONS

APP	Asset purchase programme
ECB	European Central Bank
EU	European Union
GDP	Gross domestic product
HICP	Harmonised index of consumer prices
LNG	Liquefied natural gas
NGEU	Next Generation EU
OMT	Outright Monetary Purchases
PEPP	Pandemic emergency purchase programme
QE	Quantitative easing
QT	Quantitative tightening

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EXECUTIVE SUMMARY

- **For the European economies, the Ukraine invasion affects both supply and demand**. The increase in oil, gas and food prices is an inflationary and contractionary supply shock. The likely weakness of consumption and investment expenditures is a deflationary and contractionary demand shock.
- **We do not know yet which effect will be larger**. We observe a rapid increase in inflation while overall activity has not declined much, yet. Sanctions on Russia are still evolving and counter sanctions by Russia are gradually and selectively phased in, so that much can change in the coming weeks and months.
- **The Ukraine shock hit at a time when the effects of the pandemic shock were still filtering through**. Disentangling the impacts of each of these shocks is nearly impossible, so that interpreting the data is very hazardous.
- **The standard principle is that monetary policy should not attempt to deal with the direct impact of a supply shock**. It should be used to stunt the secondary impact through the wage and price spiral. This requires keeping expectations well anchored, which calls for precise central bank communication. Given the conjunction of both pandemic and Ukraine shocks, this is highly challenging, especially now that we observe the secondary impact of the pandemic shock.
- **Normally, monetary policy is expected to alleviate a demand shock, but the ECB has run out of instruments**. In addition, the ECB has finally accepted that the inflation surge generated by the recovery from the pandemic is not temporary and needs to be dealt with. This provides the long-awaited opportunity to normalise monetary policy, and this opportunity should not be missed. This implies that the task to deal with the demand shock should be borne by national fiscal policies, even though it comes at a time when budget deficits are unusually large.
- **The Ukraine shock is highly asymmetric, affecting more some countries than others and, within each country, more some people and firms than others**. Furthermore, some governments are already highly indebted, which raises the spectre of instability and financial fragmentation within the euro area. Monetary policy normalisation stands to heighten the risk, as interest rates rise and the reduction of the Eurosystem's balance sheet will result in sales of public bonds.
- **Both the Eurosystem and governments need to anticipate financial instability and fragmentation**. The ECB should not give up on fighting inflation and reducing its balance sheet, but it should be prepared to provide support to governments under duress, using previous instruments like OMT and PEPP. The governments need to consider mutual support, possibly extending NGEU. Communicating intentions can play a major stabilising role.
- **Current expectations of how far the interest rates will have to rise seem far too modest**. In order to avoid future bad surprises and attendant instability, the ECB ought to define and clarify its intentions, and let it be known.

1. INTRODUCTION

The first ten years of the European Central bank (ECB) were the easy years: there was no serious shock or challenge. Then, over the next fifteen years, the euro area has faced an unprecedented series of seriously adverse shocks: the global financial crisis, the European debt crisis, the COVID-19 pandemic and now the invasion of Ukraine. These shocks have accumulated increasingly fast so that the economy had not fully recovered from the previous one when the next one hit. Ordinary people are dazzled and policymakers are overwhelmed.

The invasion of Ukraine by Russia is first and foremost a major geopolitical event and an unfolding humanitarian disaster, which can spread to many countries in Europe and beyond. It also has important economic implications. Poorer countries are particularly exposed to higher food and oil prices, with little or no way to protect their populations. In Europe too, the Ukraine shock is pushing the prices of several products sharply up, just as the recovery from the pandemic is already fuelling a surge of inflation. It is also likely to reduce growth as consumers react to rising uncertainty by cutting spending. This evolution presents the ECB with a new challenge. As it debates its policy to deal with the post-pandemic inflation surge, the Ukraine shock worsens the trade-offs under consideration:

- How to calibrate the interest increases when it is not known whether the inflation surge will spontaneously end or whether there already is a spiral under way?
- How quickly should the asset purchase programme (APP) be withdrawn so that quantitative easing (QE) is replaced with quantitative tightening (QT), raising the risk of triggering financial instability?
- In particular, how careful should the ECB be about the impact of its actions on debt sustainability and the risk of fragmentation withing the euro area?

There is no clear answer to any of these questions, because of the extreme level of uncertainty. Some uncertainties arise because of the lack of experience with the situation (the end of a decade of stubbornly low inflation, the post-pandemic inflation surge, the war in Ukraine) and with the policies under consideration (QT and, more generally, the normalisation of monetary policy). In addition, the traditional fears of financial market reactions to uncertainty itself weigh on policy options. The Ukraine war is the next shock, with its own implications and uncertainties.

This paper starts with a characterisation of the economic impact of the war in Ukraine. Of course, we do not know how this conflict will evolve nor how long it will last, which means that any assessment is highly premature. It is hoped, though, that the characterisation is robust. The next section draws the implications of the fact that the Ukraine shock is coming at a time when the economies have not yet exited the COVID-19 shock – which may not be over yet. The following three sections are dedicated to the policy implications. Section 4 looks at monetary policy, Section 5 at fiscal policies inasmuch as they interfere with monetary policy, while Section 6 focuses on asymmetries across people and across countries. Section 7 considers the so far mild exchange rate effects. Section 8 concludes.

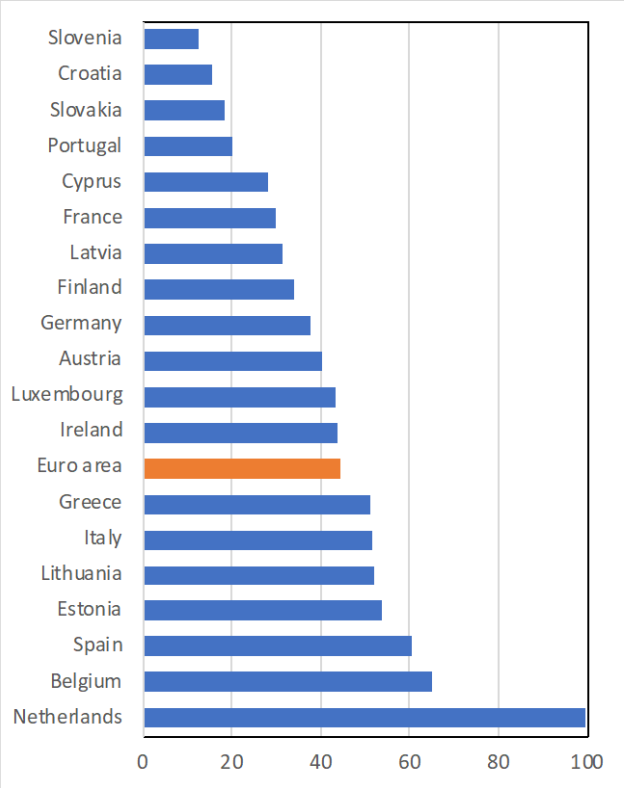
2. THE ECONOMIC NATURE OF THE UKRAINE SHOCK

2.1. Both supply and demand

The war in Ukraine triggers three main categories of economic effects: (1) It is a supply shock, which raises inflation and reduces growth; (2) It is likely to reduce demand; (3) It will also affect national budgets.

The supply shock is driven by sharp increases in oil, gas and other commodities prices. In fact, it started September 2021, before the invasion, when Russia slowed down deliveries of oil and gas not guaranteed by long-term contracts. This is when prices started to rise. The open conflict has now stopped these deliveries. Embargoes imposed as part of sanctions and Russia's pre-emptive suspension of deliveries have further driven prices up sharply. Figure 1 shows that, by the end of March, energy prices faced by final consumers have increased by some 50% on average in the euro area. The wide variation across countries likely reflects measures taken to reduce the pass-through from wholesale to retail markets through subsidies or caps.

Figure 1. Increase in HICP Energy – March 2022 relative to previous year (%)



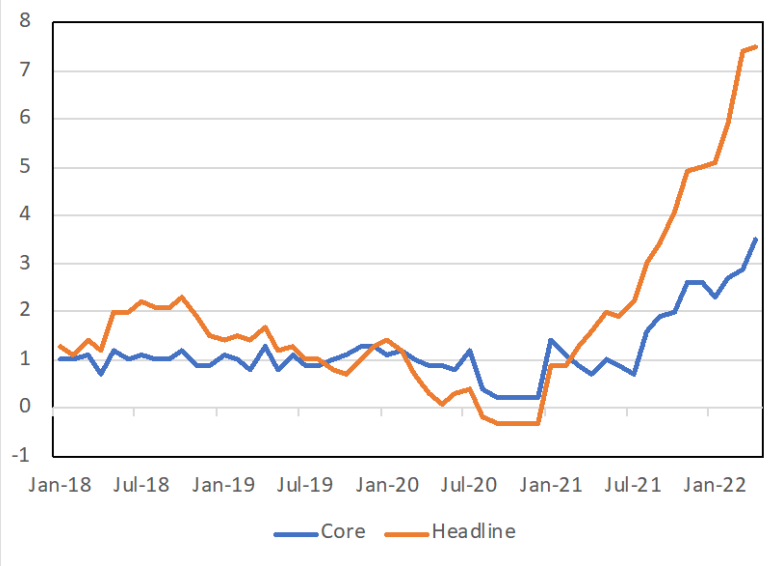
Source: Eurostat.

Such a sharp increase in energy prices produces widespread effects, resulting in higher inflation and reduced growth. The higher prices of energy directly affect the consumer price index and generate further effects that eventually surface in final consumption. As they face higher production costs, firms will tend to increase their own prices, further adding to inflation. If they cannot recoup the costs, some firms may reduce their activities. This could be the end of the story, as reflected in initial assessments that the inflation surge would be temporary and accompanied by a modest growth slowdown. Even if

energy prices stop growing and stabilise at their new higher level, employees will have suffered losses in their purchasing power. They are likely to press for wage increases, which would further raise production costs and incite firms to increase prices. These secondary effects stand to trigger the much-feared wage-price spiral that stands to transform a one-off energy price increase into persistent inflation. Figure 2 shows that headline inflation has reached 7.4% by April 2022 in comparison a year before (more on core inflation below).

Figure 2. Increase in HICP inflation, headline and core

January 2018- April 2021 (% over 12 months)



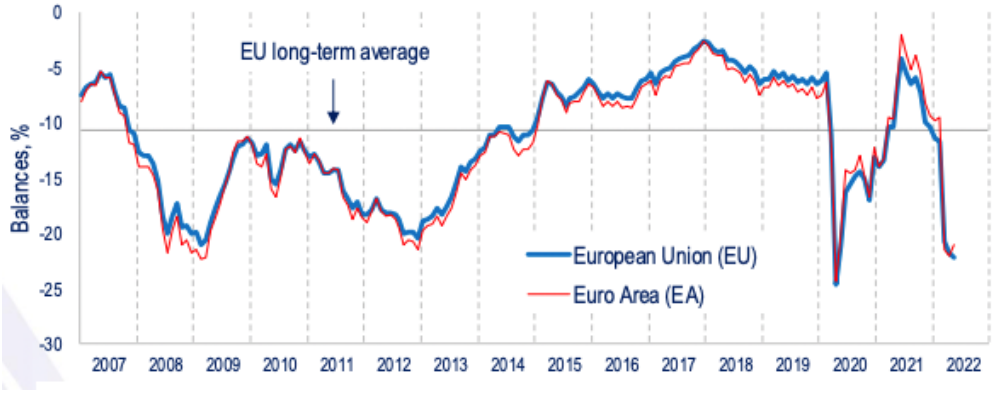
Source: Eurostat.

Note: Core inflation excludes energy, food, tobacco and alcohol.

There is also a demand side to the story. A war on European soil is a worrisome event, including the potential that the armed conflict spills over beyond Ukraine. This is confirmed by the Commission's May survey of consumers' confidence, displayed in Figure 3. Confidence has markedly declined in March, followed by a very small recovery in May. Obviously, the situation is volatile. As is often the case, there may be a succession of bad and good news regarding consumers' confidence but current levels are similar to those seen during the pandemic. Concerned consumers spend less, and they spend differently, typically shunning durable goods. When consumption declines, or is just volatile, firms slow down their own purchases of productive equipment. Such a demand shock is contractionary and is expected to gradually reduce inflation.

Summarising, the supply shock predicts a rapid increase in inflation followed by a gradual reduction in growth while the demand shock implies a fall in growth and a gradual decline of inflation. All in all, therefore, growth should be durably reduced while inflation is expected to surge and then decline over time. The relative sizes of the two shocks will matter, but it is too early to assess this issue as the situation is far from settled. The sanctions concerning oil and gas are continuously evolving, as is the military situation that affects consumer confidence.

Figure 3. Consumer confidence indicator



Source: European Commission.

2.2. Sanctions on oil and gas

The nature of the sanctions also matters. Currently, Europe is focusing on reducing its imports of oil and gas, while Russia has started to cut deliveries of gas to some countries. Europe is therefore looking for alternative sources, which contributes to higher prices. However, Russia is also looking for alternative customers, including large countries like China and India, which can bargain for lower prices. Absent delivery issues, a plausible outcome would have Russia sending more oil and gas to non-European countries, which would imply an equivalent re-routing of oil and gas from these countries to Europe, with limited overall price effect. (The re-routing would probably be based on higher prices in Europe and lower prices elsewhere.) However, while re-routing oil tankers is fairly straightforward, Europe receives much of its gas from Russia through pipelines and Russia does not have a significant possibility to expand pipeline gas deliveries to potential new customers. Liquefied natural gas (LNG) could be re-routed like oil, but the existing equipments (ships, LNG stations) cannot be expanded fast. Until they are, Europe will have to pay higher prices to scrap as much LNG as possible from other producers, while Russia will have few possibilities to send its gas to alternative customers and therefore it will have no reason to cut its prices.

An alternative sanction, favoured by most economists, is to impose tariffs on oil and gas imports from Russia (Gros, 2022; Sturm, 2022). Tariffs are not a black-or-white measure like a purchase embargo. Under plausible assumption, a tariff will result in Russia's cutting its prices so that European consumers would face a smaller price increase than the tariffs. They would also benefit from lower prices than in the case of an embargo since the global supply would not decline as much since Russian oil and gas would remain available. Instead of paying a higher rent to Russia, income from tariffs would be collected by the European countries, partly paid by their own households and firms, but also partly by the Russian exporters when they reduce their prices.

The wild card is that Russia might decide to retaliate against the sanctions by unilaterally stopping all its exports, as it has already partially started to do. This would be very costly for Russia since it exports about 80% of its oil and gas to the countries currently imposing sanctions (the EU, the UK, Turkey, Japan). Such a global subtraction of deliveries would be very costly to oil and gas consumers around the world. As prices further rise and bottlenecks occur, the supply shock would be magnified.

3. BAD TIMING?

3.1. The pandemic and its recovery

Coming on the steps of the pandemic, the shock is badly timed, just when the recovery was firming up. A new recession would prolong the misery of the last couple of years. The recovery has been accompanied by a sharp increase in inflation. Initially, most central banks have argued that the inflation surge would be temporary because it was the result of a very dynamic recovery, which was creating supply-chain bottlenecks that would be progressively erased. That argument was dubious, however, as it ignored the expansionary impact of fiscal expansions and of lax monetary policy. It also ignored the risk of a second round involving wage increases feeding into higher prices – the wage-price spiral. As unemployment has been declining in the wake of the recovery' rapid pace, the odds of a wage-spiral were quickly rising.

Just as central banks were recognising that "temporary" could be "persistent", the impact of the Ukraine shock is hurting employees and reinforcing the wage-price spiral. Figure 1 shows that headline inflation – measured by the increase in the consumer price index HICP – in the euro area took off in January 2021. The core price index – which excludes traditionally volatile prices and is seen as a more reliable indicator of inflation – remained quite stable until the end of the second semester of that year. Then, however, core inflation too started to rise relentlessly, indicating that the price hiking process was becoming more widely spread, and therefore unlikely to be temporary. The reason is that a new inflationary shock coming soon after the previous one increases the possibility that inflationary expectations rise. Indeed, Afunts et al. (2022) and Seiler (2022) respectively provide early evidence that the Ukraine shock has had a significant impact on inflation expectations of German consumers and Swiss firms. Importantly, this shift concerns inflation expectations for both the short and the long run. Since actual inflation is partly driven by expectations, which guide wage and price decisions, these results suggest that inflation is likely to be both higher and longer lasting.

3.2. The older shocks

By the time of the pandemic's outbreak, most countries had not yet fully recovered from the previous shocks, including the global financial crisis of 2008. Central banks in general, and the ECB in particular, still kept their interest rates at extremely low levels and had not significantly reduced their balance sheets. As a result, monetary policy was highly expansionary. Yet, inflation remained below target and banks were keeping massive excess reserves, even though the returns on these reserves were very low and even negative. Explanations for the persistence of low inflation in the face of the expansionary stance of monetary policies abound but remain debated.[1]

Whatever the interpretation, monetary policies had not been normalised more than ten years after the global financial crisis when the pandemic hit. Eager to bring inflation up to their targets, the central banks could not cut their interest rates much further and essentially expanded their already bloated balance sheets. Even though these actions removed the spell of a financial crisis, their macroeconomic impact was at best limited.

Fortunately, governments have stepped in and managed to circumscribe the economic damage wrought by the pandemic. They could have been deterred by the high levels of public indebtedness inherited from the previous shocks, but the Next Generation EU (NGEU) programme and the ECB's pandemic emergency purchase programme (PEPP) alleviated the risk of a debt crisis. Thus, fiscal

[1] Wyplosz (2021b) provides a review of this debate.

policies have achieved what monetary policy alone could not: they powerfully raised demand and inflation started to climb. However, with rapid post-pandemic dissaving by consumers, the resulting boost to demand proved too much for a slower supply response hampered by a host of bottlenecks along the global production chains.

4. IMPLICATIONS FOR MONETARY POLICY

4.1. Principles meet reality

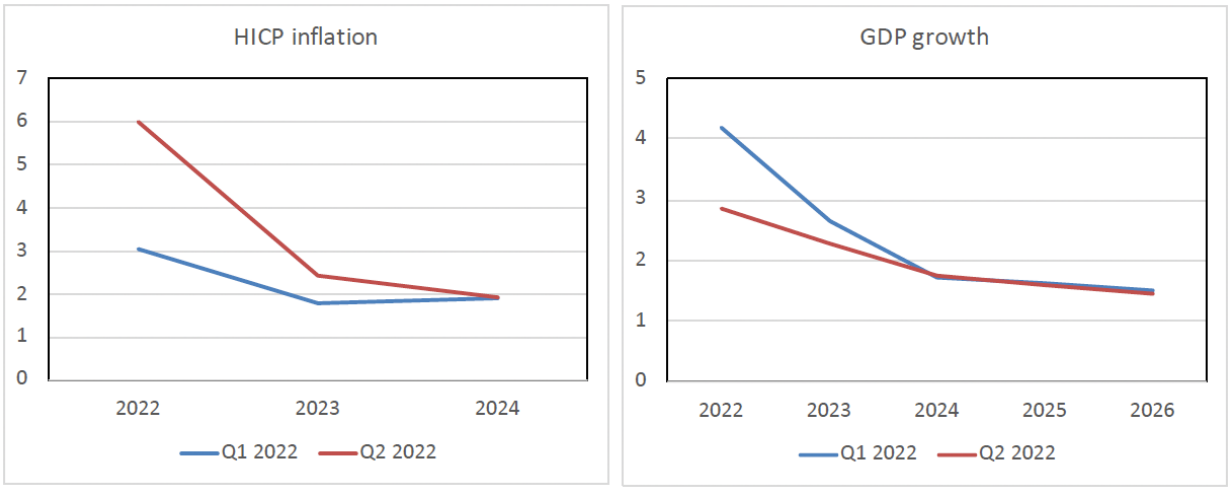
The generally admitted principle is that central banks should not respond to supply-side shocks. They should neither combat inflation at the risk of deepening the economic slowdown nor support growth at the risk of fuelling inflation. They should also make clear that they will not ratify the secondary development of a wage-price spiral, even at the cost of mounting unemployment. Keeping inflation expectations anchored is seen as the yardstick of an adequate stance.

This is a "blue sky" principle, corresponding to a situation where the shock affects an otherwise well-balanced economy. As argued in the previous section, this is not the case. Before the invasion, most central banks were starting to normalise. They were reducing QE interventions and policy interest rate increases were either under way or planned. The principle implies that normalisation should proceed as intended, with no interference from the Ukraine shock. In practice, however, such a clean separation is impossible, for the following three reasons:

- First, the Ukraine shock is not a pure supply shock, it also includes a weakening of demand. Monetary policy is meant to deal with demand shocks. This would call for a slowdown of normalisation.
- Second, the inflation surge that preceded the war in Ukraine was also driven by a mix of supply and demand shocks. Supply was being restrained by supply chain disruptions and by a progressive restart of activity. Demand was being driven by dissaving as customers caught up with delayed spending and firms were also catching up on investment. Central banks indeed argued that they should not respond to the transitory supply restraints and were keen to let the resumption of demand run its course in order to bring GDPs back to their pre-pandemic levels. This view was correct, except that it assumed that there would be no secondary effects, essentially the wage-price spiral. Increasingly tight labour markets settled the debate.
- Third, before the Ukraine shock, the central banks correctly argued that the normalisation process would be guided by data. They would raise interest rates and gradually shift to QT, calibrating their actions according to the evolution of inflation and growth. In other words, they intended to proceed with pragmatism as they deal with an unprecedented situation. The Ukraine shock is perturbating this approach because the data will combine the previous trends and the effects of the Ukraine shock. It is one thing to stick to a flexible data-dependent normalisation plan and another thing to disentangle the previous trend from the impact of the new shock.

An example can illustrate this issue. We do not yet have reliable data for the post-Ukraine shock period. Figure 4 instead displays forecasts collected in early April by the ECB among professional forecasters, concerning inflation and economic growth. The figure shows that inflation expectations are sharply revised upward from where they stood three months before, while growth expectations are cut down. Does the difference correspond to the Ukraine shock? Some of it, probably, but views were already moving in this direction before the invasion started. Furthermore, the professional forecasters expect these disturbances to disappear in two years, but we do not know what they expect the ECB (and the governments) to do to achieve this result.

Figure 4. Forecasts for the euro area of the Ukraine shock (% per annum)



Source: Survey of Professional Forecasters, ECB

An optimistic reading of Figure 4 is that the inflation expectations of professional forecasters are well anchored: they trust the ECB to act in a way that brings inflation to its target within two years. This is in line with the ECB's repeated statements that keeping inflation expectations well anchored is a major objective. However, as noted in Wyplosz (2022), inflation forecasts by professionals often go astray and are significantly more optimistic than those by households and firms, which drive the wage-price spiral.

4.2. An incomplete monetary strategy

The monetary strategy review of last year does not help. It makes it possible for the ECB to overshoot its target, as it has undershot it in recent years. This is quite unprecise, though. Is it willing to countenance a large but brief overshoot? Can the overshoot last for a few years as the previous undershoot lasted for about a decade? The ECB will need make its strategy clearer over the complicated period ahead.

Traditionally, it commits to bring inflation to its target over "the medium term". That commitment could be credible if we can assume away another unexpected shock. If a new shock occurs, it will provide an excuse for the ECB not to deliver on its commitment. Professionals will easily accept this excuse as they understand that the unexpected may happen. But the broader public's reaction is far from certain. This is not a risk that the ECB should take after many years of turmoil and missed commitments.

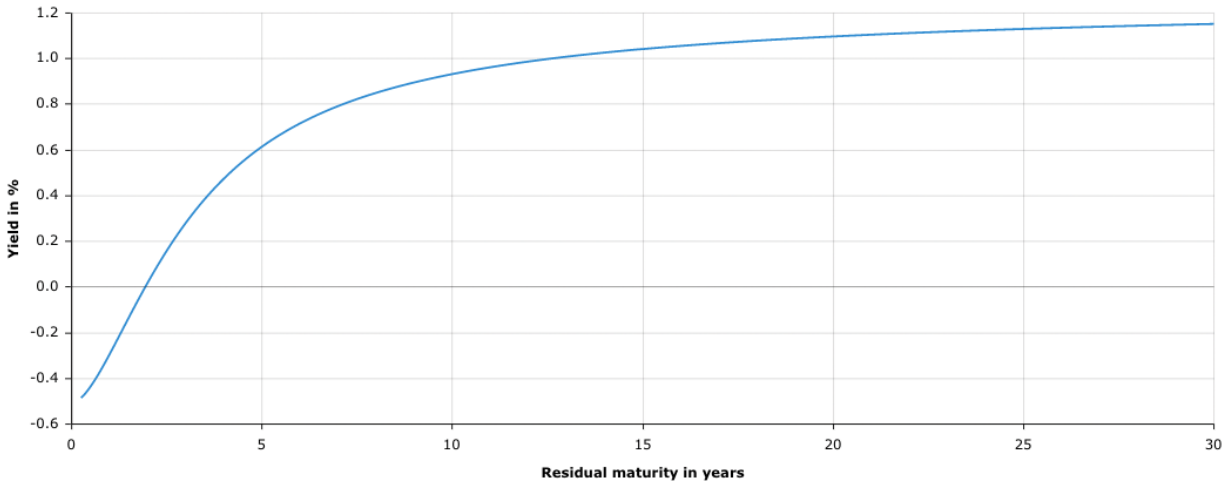
Instead, the ECB should explain its intentions regarding the setting of its instruments. The focus should be on the normalisation process, mainly because monetary policy effectiveness is currently limited. By missing out on normalisation after the global financial and euro area debt crises, the ECB was in a weak position when the pandemic broke out, as explained in Wyplosz (2021a), as it failed to achieve its inflation target. This is in line with Schnabl (2022) who states that "given the exceptional accommodative monetary policy measures still in place and the growing risks of inflation settling above our target over the medium term, continuing the process of policy normalisation that we started in December 2021 remains the appropriate course of action for monetary policy." She refers to the decision to phase QE out but, in contrast with Federal Reserve, she does not provide any specific strategic information on the interest rate and QT. Very recently, however, President Lagarde has announced that the policy interest rate (the deposit rate) would be brought from -0.5% to zero by the

end of September. Chief Economist Lane subsequently indicated that this would occur in tow steps of 0.25% each.[2]

4.3. Confusion about where the policy interest rates are heading

In particular, how far can we expect the policy interest rate to go? As long as the interest rate remains below inflation, monetary policy remains accommodative. This will have to change. Even if the inflation surge is temporary, a return to the 2% target will not happen until after the interest rate has been raised high enough. The current market-based expectations of interest rates as embodied in the yield curve displayed in Figure 5, suggest interest rates below 2%. Dispelling these expectations should be the first order of business.

Figure 5. Europe area yield curve for AAA bonds (as of 12 May 2022)



Source: ECB, Euro area yield curves.

Assuming that the ECB intends to raise the interest rate above expected inflation, what should the inflation benchmark be? Figure 4 illustrates the challenge. Measures of expected inflation are changing by significant amounts, making any target highly unreliable. In addition, professional forecasters see a quick return to the 2% target, suggesting that this should be the benchmark. However, the forecasters have been predicting such a quick return for quite a while and they were proven wrong repeatedly. As noted above, they trust the ECB to do whatever it takes, but what does that mean, really?

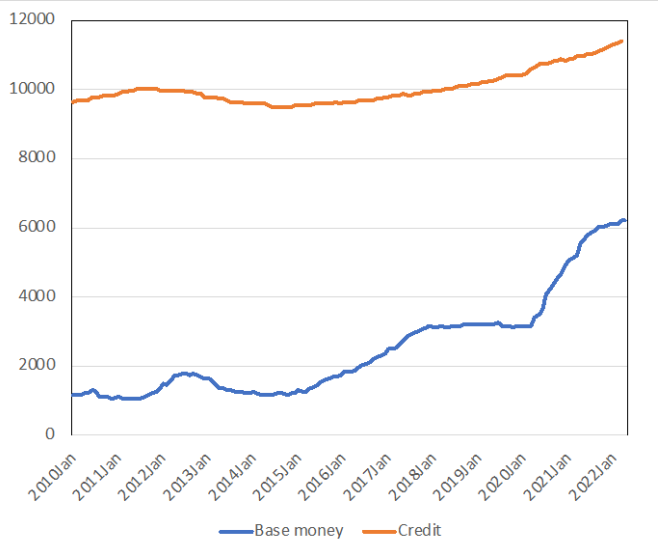
That means that it is nearly impossible for the ECB to explicitly specify how far it intends to raise the interest rate. What it can do, however, is to publicly share its reasoning and acknowledge the depth of the uncertainty that it faces. This would be the natural next step after Schnabl (2022). A key advantage of clear communication is that it stands to move the longer-term interest rates, which are a key channel through which monetary policy affects the economy, in the desired direction. As the conditions change, possibly in unanticipated directions, the ECB will need to update its reasoning. Sharing this evolution with the public, will be a key condition for effectiveness.

[2] These statements can be found in https://www.ecb.europa.eu/press/blog/date/2022/html/ecb.blog220523~1f44a9e916.en.html and in https://www.ecb.europa.eu/press/inter/date/2022/html/ecb.in220530~bc5cf9621c.en.html, respectively.

4.4. Quantitative tightening and financial stability

QT is the other component of normalisation. The ECB should also develop a strategy. QT will matter for financial stability – to be discussed below - and for the evolution of long-term interest rates. The large injections of central bank money through QE mean that the financial system is awash with liquidity. This abundance has allowed governments to borrow at very low interest rates but it has not triggered a rapid growth of credit to the private sector. This can be seen from Figure 6, which displays the evolution of the monetary base of the Eurosystem (roughly the size of its balance sheet) and the stock of bank credit to households and firms (non-financial corporations). Before the financial crisis, bank credit typically followed the evolution of the monetary base more than proportionally. Since then, bank credit barely responds to QE.

Figure 6. The Eurosystem's monetary base and the stock of bank loans (EUR billions)



Source: Author's computations based of data from the ECB.

Three tentative conclusions seem to be warranted. First, QE has had a limited impact on credit distribution, and hence of the level of activity. Its main effect has been to flatten the yield curve, that is to lower longer-term interest rates, which in turn has pushed share prices sharply up. Second, by symmetry, it is plausible that QT – the reversal of QE – will have a muted impact on credit growth and the level of activity. Third, there is no need for the balance sheet of the Eurosystem to be so large.

Normalisation will therefore have to include a significant shrinkage of the balance sheet. It is generally agreed that the balance sheet will not return to its pre-global financial crisis size, mainly because bank and financial institution regulations adopted since then require them to hold more liquidity. The question is how far the balance sheet is likely to be reduced. The answer cannot be given with a great degree of precision, but the ECB can provide an order of magnitude: should it be twice (relative to GDP) what it was before the global financial crisis? Less? More? Even though the answer involves a complex set of issues, work must be undertaken to narrow down the range of possibilities and publicly discuss.

Since a key achievement of QE has been to preclude a financial crisis, could QT dangerously weaken the financial system? The the size and speed of QT could test the limits, in particular concerning the stock markets that have witnessed large increases on share prices and are now falling. Beyond

assessing the ultimate size of its balance sheet, the Eurosystem needs to make preparations in case financial stability is threatened. The strategy review has recognised that the ECB is in charge of financial stability, but it has provided limited information about what it would mean in practice. For example, falling share prices are not necessarily systemic in the sense that they seriously affect ordinary citizens. Should the ECB suspend the reduction of its balance sheet in that case? Normalisation requires that this issue be examined in detail.

A particularly important aspect of financial stability is the sharp increase in public debts over the last years. Governments have been able to borrow large amounts at very low interest rates, even at negative rates. Normalisation should lead to significantly higher rates, which stand to fragilise countries with very large public debts. The risk here is that normalisation be postponed to avoid a return of financial fragmentation within the euro area. As explained in Wyplosz (2021a), this would represent a dangerous instance of fiscal dominance, which may require collective action by the Member States. Again, this possibility must be anticipated, as discussed in the following section.

5. IMPLICATIONS FOR FISCAL POLICY

In normal times, the ECB would deal with the inflation surge and governments would not have to be involved in any way. However, a war on the European soil is a major geopolitical event, which concerns, first and foremost, the European governments. This was already the case with the pandemic. In fact, in both events, the central bank is merely playing a secondary role, focusing on its core objectives of price and financial stability.

Governments are involved in the diplomatic, military, humanitarian and migration aspects of the shock. From a purely economic perspective, they also must deal with both the supply and demand effects. The supply side shock disrupts production and cuts into the purchasing power of citizens, especially the less well-off. The demand shock is contractionary, which could directly concern monetary policy if it were not taking place in an inflationary context, as explained above.

Diplomacy, defence and income distribution are all national competences in the EU power-sharing organisation. Humanitarian assistance and migration are a shared competence, which has proved difficult to coordinate in the past. This time however, the governments are cooperating quite closely. The economic implication of these policies is that they entail increases in public spending at a time when most budgets already are in deficits. In addition, spending on climate change should also increase. Unless spending on other programmes is reduced or taxes are raised, the deficits are unlikely to be reduced.

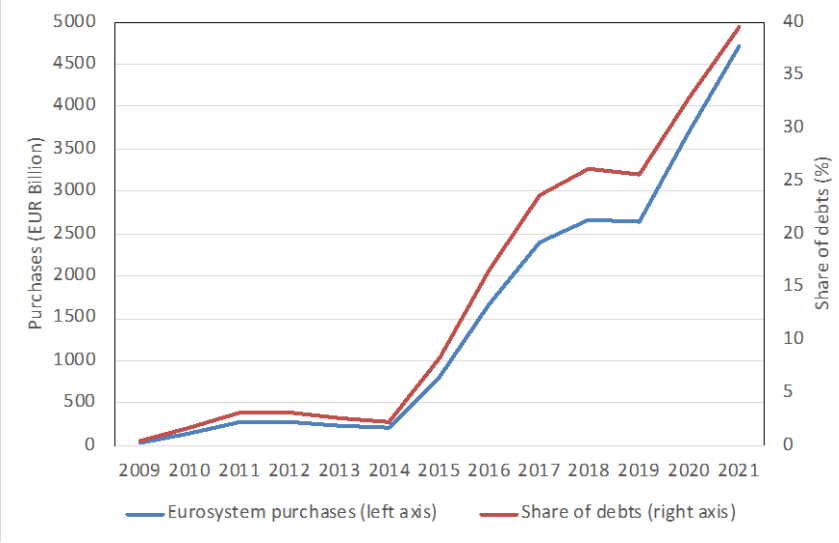
During the pandemic crisis, the ECB has increased its monetary base by more than the deficits of member countries. In order to do so, it purchased debt instruments on the financial markets, paying with newly created money. Much of its acquisitions concerned national public debts so that, indirectly, it financed roughly all the deficits in 2020 and 2021. The end of QE implies that governments will have to borrow from the markets to cover their deficits.

Figure 7 displays the cumulated purchases by the Eurosystem of assets, most of which are public debts. It also shows the estimated share of existing public debts held by the Eurosystem, which reached 40% at the end of 2021. Removing public debts from the financial markets effectively suspends debt service since governments pay interest to their central banks, which in turn transfer their profits back to their governments.[3] When QT starts, the amounts of public debts held in the financial markets will increase, effectively increasing debt service. This represents a potential challenge for the more highly indebted governments.

With one exception, the Eurosystem purchases national public debts in proportion to each country's "key", its share of ownership of the ECB. Interest received on these debt holdings is thus exactly equal to the payments of profits to member governments. This implies that asset purchases by the Eurosystem concern the same proportion of each country's public debt, thus precluding any income transfer among Member States. The exception is the PEPP created during the pandemic, which aimed at providing support to the more highly indebted governments. QT will eliminate this support, potentially putting these governments under financial pressure. The combination of higher public spending and of QT stands to worry the financial markets, which could result in financial instability.

[3] When the interest rate is negative, the mechanism works in reverse but the conclusion, that the debts held by the Eurosystem are suspended, remains.

Figure 7. Eurosystem holdings of gross public debts



Source: Author's calculations from ECB and European Commission data.

It is sometimes argued that the low real interest rates offer a protection against financial instability. Indeed, as a proportion of GDP, debts mechanically grow along with the interest rate and decline with the economic growth rate, both measured in nominal terms. Currently low interest rates and high inflation tend to reduce the debt/GDP ratio. Thus, the latest forecasts from the European Commission for the euro area see this ratio decline from 97.4% to 94.7% over 2022, even though the budget deficit is expected to stand at 3.7% of GDP. These forecasts assume that the interest rates will not increase by more than inflation in the short to medium run. The previous section argues that this will not be sufficient to tame inflation, which would be a case of fiscal dominance. Over the long run, it is often asserted that the interest rates will remain very low, because the natural real interest rate is structurally low, see, e.g. Blanchard and Pisani-Ferry (2022). This is possible, but equally unlikely. Evidence is weak and controversial.

6. ASYMMETRIES

So far, the Ukraine shock has been described in its broad macroeconomic aspects. However, its effects differ across countries and, within each country, across people and across sectors of activity. These asymmetries significantly affect the desirable policy responses.

Across countries, geography plays a major role. Eastern countries face immigration pressure as Ukrainians flee fighting. They also are more dependent on imports from Russia, chiefly energy. On both counts, this calls for more public spending. Within countries, higher energy prices affect some citizens more than others and the less well-off are not equipped to bear the costs. Firms that trade with Russia and those that have energy-intensive production processes are hit especially hard, unless they can raise their prices, which then fuels inflation. This calls for transfers, if possible targeted to those less able to cope.

Like during the pandemic, highly indebted governments will face a difficult trade-off between providing relief and deepening existing budget deficits. The possibility of sharing the burden between countries will naturally emerge. During the pandemic, the ECB has created PEEP to support some countries, while the NGEU programme has provided grants and loans. Both PEPP and NGEU were explicitly created as exceptional responses to an exceptional situation that was beyond the control of member countries. The Ukraine shock is obviously an exceptional event. A similar response is well-justified, even though the idea of transforming an exceptional collective response into a possible precedent triggers opposition.

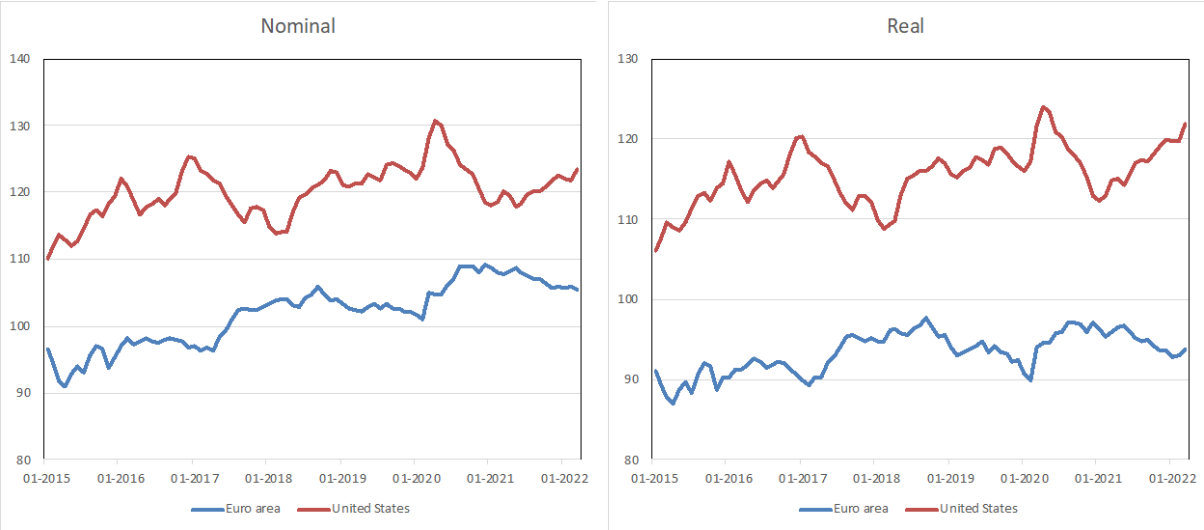
In the case of the ECB, restarting a PEPP-style programme runs against the need to control inflation and normalise its policies, eventually through QT. Two solutions are possible. First, the Eurosystem could use QT to reduce its holdings of all public debts and then it could conduct PEPP, on a smaller scale to normalise its balance sheet, in order to acquire some specific countries' public debts. Alternatively, it could restart the outright monetary transactions (OMT) programme, pledging to support some countries' public debts to preclude the risk of fragmentation.[4]

[4] OMT was created in 2012, in the midst of the euro area debt crisis. The "whatever it takes" statement by President Draghi was sufficient to bring the crisis to its end, without any actual intervention.

7. THE EXCHANGE RATE AND INTERNATIONAL ISSUES

Figure 8 shows that the effective exchange rates[5] of the US dollar and of the euro have little changed during the pandemic and since the invasion of Ukraine. At the broad level, the reason is that the economic impact of these momentous shocks is reasonably similar. Since 2021, the dollar has appreciated a little, while the euro has slighted depreciated. This reflects the fact that the Federal Reserve has changed its stance earlier than the ECB, and seems intent to raise its interest rate more forcefully. The recent acceleration of the real appreciation of the dollar reflects the strength of inflation in the US. The Ukraine shock is weaker in the US than in Europe. On the other hand, the ECB will have to catch up with the Federal Reserve on normalisation, which could mean a small reversal of euro depreciation.

Figure 8. Nominal and real effective exchange rates (Index: 2010 = 100)



Source: Bank for International Settlements, Effective exchange rate indices.

The stability of exchange rates indicates that, so far, at least, there is no hint of a serious instability in international financial markets. In recognition of the asymmetric impact of the Ukraine shock on central and European countries, the ECB has extended until January 2023 its swap/repo lines that had been put in place at the outset of the pandemic and were expiring at end of March. This is a precautionary step with no immediate effect and no particular significance beyond a confirmation that the ECB remains mindful of the role of the euro in its neighbourhood.

[5] The effective exchange rate looks at the average change of each currency relative to a large number of trading partners, weighting each bilateral rate according to the importance of bilateral trade.

8. CONCLUSION

The succession of crises faced by the euro area and the world has made the task of the ECB significantly more complicated. The Ukraine shock is no exception. It adds to the inflation already under way and it has a contractionary impact. On both counts, it raises the odds that fighting inflation will lead to a recession.

It is partly a supply shock, which central banks are not supposed to react to, unless wage and price second-round increases take a hold. It comes on the footsteps of the post-COVID-19 inflation surge, partly a supply shock. The surge has not been foreseen and is still under way, with likely second-round effects under way. As it is practically impossible to untangle the impacts, direct and secondary, of these two supply shocks, the ECB will need to develop a clear and transparent reasoning. More than ever, candid communication will be a condition for effectiveness.

The Ukraine shock may also include demand effects if the consumers are concerned enough by the unfolding events to cut spending, with a knock-on effect on investment expenditures by firms. As it focuses on its primary objective of price stability, the ECB is unlikely to try to alleviate this shock. The task of protecting the most adversely hit people belongs to governments.

A key objective of the post-pandemic recovery is to normalise monetary policy. The ECB should not be derailed from this endeavour. It should raise its interest rate back to positive territory. Based on current forecasts, driven by ECB pronouncements, the interest rate is not expected to be raised enough to bring inflation down to target. At stake is the risk that inflation becomes entrenched because of secondary effects resulting into a wage-price spiral increasingly more difficult to break. The development of such a spiral raises the odds that the Ukraine shock quickly adds to the wage-price spiral. It would greatly help if the ECB would provide a detailed analysis of how far it sees the interest rate rising.

Normalisation also involves shrinking the ECB's balance sheet through QT. This is bound to have a contractionary effect, but most likely a small one. The risk is that QT fragilises the financial markets, which have sailed through the pandemic crisis thanks to abundant liquidity. A correction of financial exuberance, fuelled by low-for-long interest rates, is part and parcel of normalisation. Unless the correction threatens the real economy, the ECB may not want to change its QT strategy. It should clarify this issue.

Finally, highly indebted governments may struggle when interest rates rise and the ECB starts selling the public debts that it acquired during QE. The natural solution, to aim at budget surpluses, may often be at out of reach as governments need to raise spending on health, defence, inequality and climate change. The threat of a new debt crisis is real, and the ECB will not be able to look in the opposite direction.

Given the massive level of uncertainty on all these issues, the ECB cannot expect to have worked out solutions for each of them. Yet, it should resist the temptation to keep all its options open by not discussing its intentions. The financial markets need to reduce the range of possibilities. Governments, which will be involved one way or another, must prepare their own actions and understand the limits of monetary policy. The public at large will not want to be surprised as it has been by the inflation surge. The European Parliament should want to know how the ECB appraises the huge challenges that it faces.

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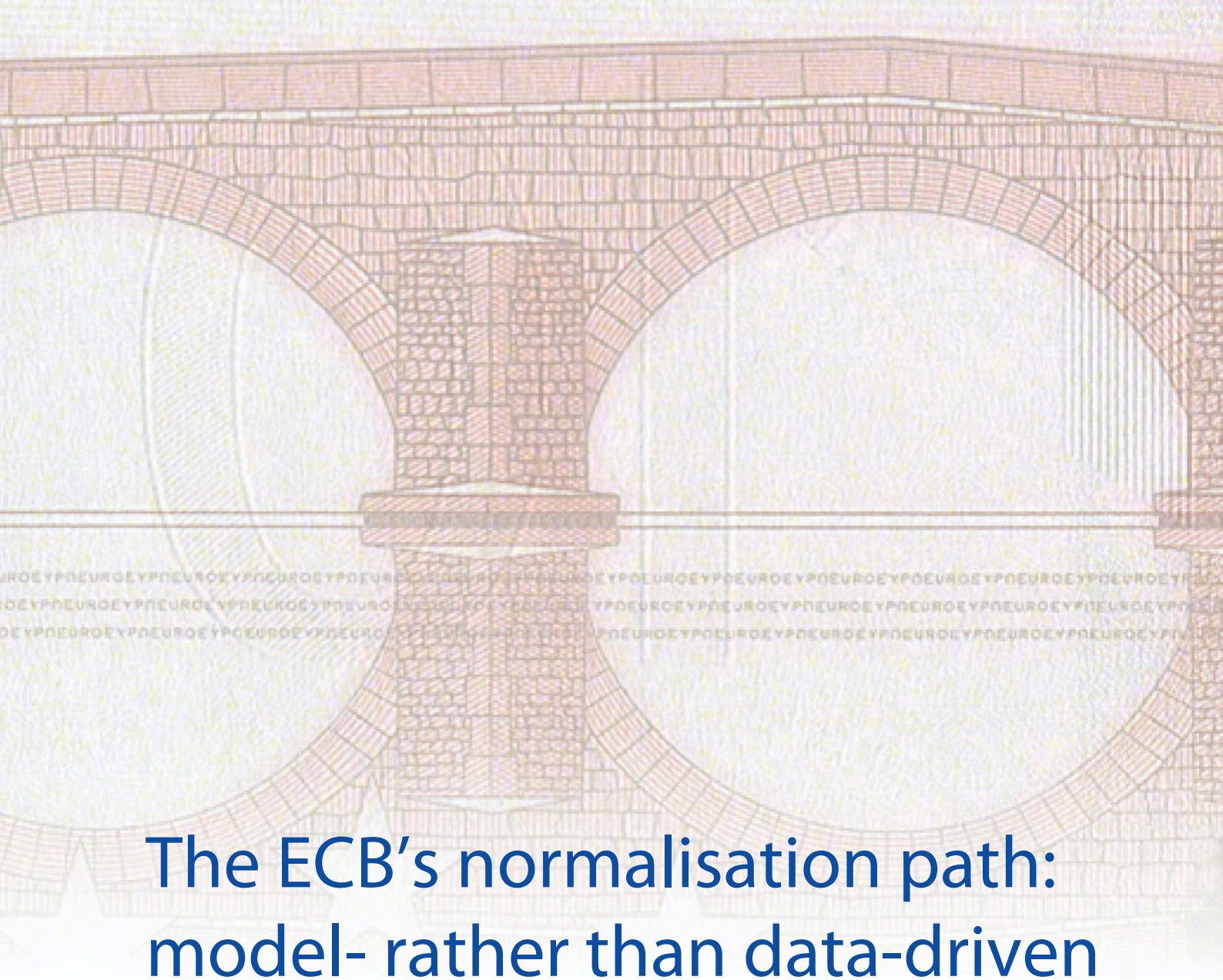


The ECB's normalisation path: model- rather than data-driven

Daniel GROS and Farzaneh SHAMSFAKHR

Abstract

The ECB has fallen behind the curve over the last few months as it has stuck to an extremely expansionary stance based on model predictions that inflation would return to slightly below its 2% target within two years. The real problem is thus the nature of this approach, which can justify endless procrastination. In this sense, policy is "model-driven" – and the assertion of the ECB that its normalisation path will be "data-driven" is meaningless unless the ECB abandons the old model with its hardwired low-inflation end point. Besides increasing rates, the ECB should also stop its reinvestment policy of the bonds accumulated so far to start a gradual reduction in its holdings.

This paper was provided by the Policy Department for Economic, Scientific and Quality of Life Policies at the request of the Committee on Economic and Monetary Affairs (ECON) ahead of the Monetary Dialogue with the ECB president on 20 June 2022.

CONTENTS

LIST OF ABBREVIATIONS

APP	Asset purchase programme
ECB	European Central Bank
EU	European Union
GDP	Gross domestic product
HICP	Harmonised index of consumer prices
ILS	Inflation-linked swap
IPN	Inflation Persistence Network
NIRP	Negative interest rate policy
PELTRO	Pandemic emergency longer-term refinancing operations
PEPP	Pandemic emergency purchase programme
PSPP	Public sector purchase programme
OMT	Outright monetary transaction
QE	Quantitative easing
TFEU	Treaty on the Functioning of the European Union
TLTRO	Targeted longer-term refinancing operations

LIST OF BOXES

LIST OF FIGURES

EXECUTIVE SUMMARY

- **The main challenge for monetary policy stems from the rapid increase in energy and commodity prices, which pushed headline inflation to over 8% in May.** Only part of the increase in energy prices is due to the war. as evidenced by the fact that the increase started in 2021.
- **The ECB has fallen behind the curve because its policy has been set following models that are hardwired to yield at the end an inflation rate of 1.9%.** If one follows these models even the present, very high inflation rates do not constitute a reason to tighten policy.
- **An important market-based gauge of inflation expectations, the so-called 5/5 years swap rate, has also been affected by the assumption that in the end inflation will converge to the 1.9% rate.** The expected inflation rate the ECB extracts from the market rate has effectively been constrained to remain continually close to this value.
- **ECB policy is thus model-based and little influenced by actual data.** As long as the ECB continues to base its policy on the existing models, its assertion that policy will be data-driven will remain meaningless.
- **Bond buying might have been necessary when inflation was too low, but policy rates were already zero or negative.** When policy rates turn positive there is no longer any need to keep the large outstanding stock of sovereign bonds (and others) on the balance sheet, especially in a period with above-target inflation.
- **The normalisation of policy should not lead to important, new financial market risks.**
- **The banking system might experience a small positive impact if interest rates turn positive.**
- **Fragmentation on the basis of idiosyncratic sovereign risk remains, but in the near future debt sustainability will improve as the increase in inflation is likely to remain far higher than the increase in interest rates.**

1. INTRODUCTION

It is always tempting to ascribe today's state of the world to the most memorable recent event. That is why many simply assume that the world we are facing today is due to the Russian assault on Ukraine combined with the ensuing reactions in terms of sanctions. The problem facing the European Central Bank (ECB) today is thus often formulated as how to manage the challenges to price and financial stability resulting from the war.

This view is not fully consistent with the price action one can observe not only since 24 February, but over the last 12 months. Moreover, supply disturbances have so far been limited for the major energy products, oil and gas. The European Council agreed during its last meeting a partial embargo (exempting oil delivered via pipeline), which will come into full force by the end of the year. Even such a delayed and partial embargo might have an impact today. But some simple calculations suggest that an embargo by the European Union (EU) on imports of crude oil from Russia should have at most a moderate and temporary impact on oil prices.

Russia is a major producer of crude oil, accounting for about 10% of the global total and the EU is a major customer for Russian oil (and derivatives like diesel). However, most of the oil that the EU might no longer import, once the embargo agreed in May comes into force, could be exported by Russia to other countries. That is especially so given that the embargo concerns only seaborne trade, which is anyway more flexible in terms of the ultimate destination than crude oil delivered via pipelines.

EU imports of Russian oil have already fallen over the last few months due to self-sanctioning, but until now this has not been a problem for Russia, whose overall crude exports have held up (Lee, 2022).

This makes it difficult to argue that the current price level is due to a shortage caused in turn by EU sanctions.

It is possible that market participants expect a full embargo to come at some point in the future. But experience so far suggests that Russia would anyway be able to export about the same quantities as before. A full EU embargo might reduce Russia's exports by about 10%, but this would mean a reduction of less than half of 1% in the global supply of oil.

That is not to argue that the war has no impact on oil prices. The price today is 30% higher than just before the war. It would suggest that the war and the sanctions might have had a material impact, but that even without the war the price of crude oil would be much higher than last year.

For natural gas one would have expected a stronger impact of the war on prices given that Russia would not be able to export any gas no longer demanded by Europe elsewhere. It would take years to build new pipelines to the east or new liquefaction facilities. The widely discussed measures to reduce imports of gas from Russia at the EU and national levels, and the thinly veiled threats by Russia to stop delivering to European countries (implemented for three smaller countries) could thus be expected to have a strong impact on prices.

Even so, that is not the case. The spot gas price in Europe is now (end May) at about the same level as of end-2021, i.e. months before the war. Gas prices increased strongly throughout all of 2021, mostly on the back of strong growth in Asia. The spring forecast of the European Commission shows that this pattern of massive price increases before the war applies also to many other commodities.

Embargoes on imports of Russian energy supplies are not the only consequences of the war. Another one is that the aggression against Ukraine has prompted the EU into prioritising the reduction of energy dependence and speeding up the green transition. This acceleration of the green transition cannot be held responsible for today's high prices, since it should imply over time lower imports of

fossil fuels by the EU, with a dampening impact on prices, at least future prices. A quicker green transition could nonetheless lead to higher prices for critical inputs, like lithium, copper or cobalt. Still, these commodities make up only a small part of the economy and do not enter directly into the harmonised index of consumer prices (HICP). Any indirect impact of higher input prices caused by the acceleration of the Green Deal is likely to swamped by the direct impact of higher energy prices today – which might be slightly mitigated by a quicker green transition.

What, if not the war, then caused the present spike in energy prices?

The International Energy Agency analysed "record" gas and electricity prices in late 2021 and argued that they were due to a combination of factors[1]. Gros (2022) argues that high energy prices can best be understood as the result of years of underinvestment.

One might argue that it does not matter much what caused the spike in energy prices. Some might be tempted to argue that if the war is to blame, the ECB should be absolved of its duty to preserve price stability. The ECB itself has not made these arguments. The ECB has to deal with them anyway, even if to quote the Irish adage: "I wouldn't start from here".

In the remainder of this contribution, we will thus discuss the challenges for monetary policy resulting from high (and variable) energy prices but will not refer to them as challenges resulting from the war. We take high energy prices largely as given.

In the following sections, we thus analyse how higher energy prices have led to inflation and how the ECB should deal with this situation.

In Section 2, we confirm the known link between global energy prices and the energy component of the HICP. Our main argument is then that much attention has been placed on the repeated under-prediction of inflation in the short term by the ECB. The real problem for the ECB is not the much higher-than-expected, subsequent outturn of euro area inflation, but that even with the very high energy prices already visible at end-2021, it insisted that inflation would come back down to below 2% by 2024 (Section 3). Section 4 then briefly discusses some issues concerning the sequence of policy normalisation.

Another problem has also arisen over the last month. With a fall in the demand for "risky" assets, the spread of Italian long-term bonds over the German equivalent has risen to above 200, a level breached in recent years only temporarily during the financial market turbulences at the start of the COVID-19 recession. Spreads on other "peripheral" countries, like Portugal and Spain have also increased. But the level of the 10-year rate reached by Italy, over 3%, is worrying because it is just about at the same level as the likely Italian medium growth of (nominal) GDP. An interest rate higher than the growth rate risks starting a spiral of ever higher debts and a higher debt burden unless the government can run a substantial surplus before interest rate expense.

Ten years ago, the ECB was able to respond to this risk of financial fragmentation because inflation was below target and it could defend bond buying as a measure of monetary policy, needed to increase inflation to its 2% target. This will be impossible in today's circumstances. The ECB could not defend buying government bonds to increase inflation when inflation is running out of control as far as the eye can see. Moreover, in response to a German court case, the Court of Justice of the European Union has clarified that the ECB should concentrate only on monetary policy and that it has institutional power to target the prices of government bonds just to help some governments to finance their deficits. The highest European Court observed that "when that the ECB purchases government bonds

[1] See 'What is behind soaring energy prices and what happens next?' Alvarez and Molnar, IEA Natural Gas Commentary, 12 October 2021.

on secondary markets, sufficient safeguards must be built into its intervention to ensure that the latter does not fall foul of the prohibition of monetary financing in Article 123(1) TFEU".

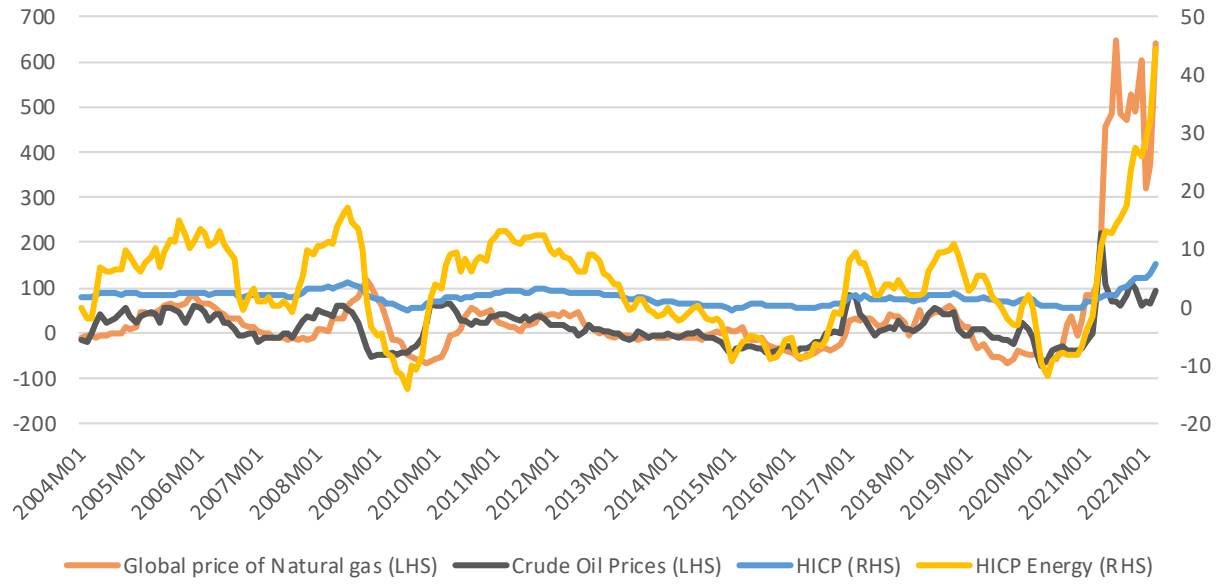
2. PROSPECTS FOR INFLATION

The last two years were dominated by the aftermath of the COVID-19 recession, which saw inflation first declining into negative territory, but then increasing rapidly throughout 2021 to reach record levels in early 2022.

Early 2021 marked a sharp surge in global energy prices, particularly natural gas, which increased by more than 600% in July 2021, year on year[2]. Apace with international prices, the domestic price of energy started to soar in the third month of 2021 and has been persistently rising since then, despite the relative stabilisation of global gas and oil prices (Figure 1).

Figure 1. Development of international gas and oil prices, euro area headline and energy inflation

Annual changes in percentage



Sources: IMF, Eurostat.

Note: International gas and oil prices are in EUR.

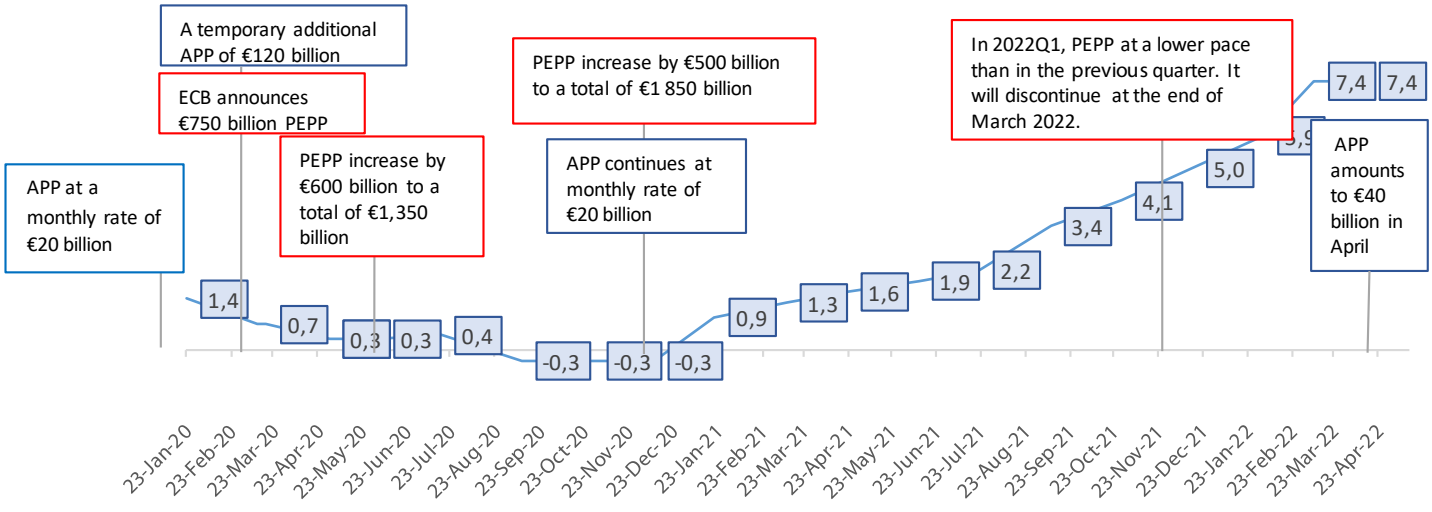
Figure 2 associates the development of euro area headline inflation with monetary policy decisions regarding asset purchase programmes.

The figure shows that, with the benefit of hindsight, the ECB has been very slow to react to the rapid increase in inflation. This raises two questions:

- could this continuing increase in inflation have been anticipated?
- was the ECB justified in arguing that the spike in inflation would be temporary?

[2] On a technical note, price increases are usually calculated as a percentage change by dividing the change by the initial value of the variable concerned. When changes are very large this can lead to considerable asymmetries. For example, an increase of 600 % means that the price increased by a factor of 7 (600=(700-100)/100). When the price returns to the original value the percentage fall is not minus 600 %, but only about minus 86 % (=(100-700)/700) or about 7 times smaller in absolute values. Accordingly, one would also find this asymmetry in the observed energy price changes.

Figure 2. Timeline of monetary policy decisions during 2020-2022



Source: Authors' elaborations based on ECB press releases, Eurostat.

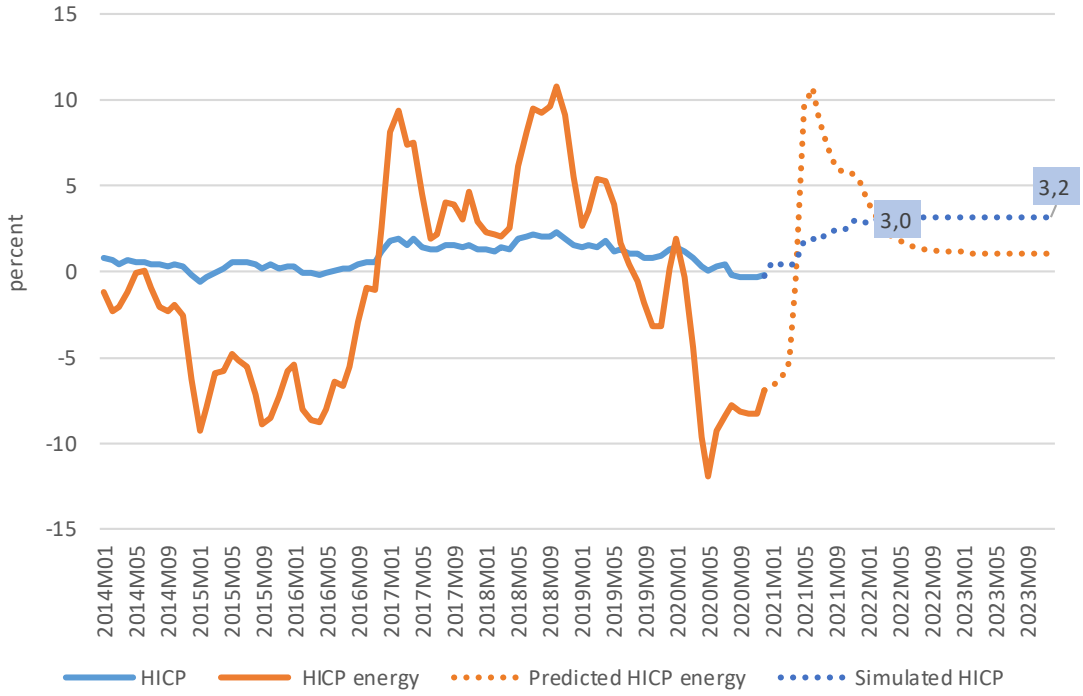
Notes: Labels coloured in blue show the euro area annual inflation rate, in percentages.

2.1. Avoidable forecast errors?

We conduct a simulation exercise under the three scenarios, assuming that the international gas and oil prices stay constant at the level of a) 2020m12, b) 2021m12, and c) 2020m3. Based on the estimated relationship between the energy component of the HICP and global gas and oil prices, we predict the development of the energy component of the HICP under each scenario. Using the weight assigned to energy item in the HICP we simulate the outcome for headline HICP inflation. As depicted in the charts below, the results imply that at the end of 2020, using the information at that time, an inflation rate of 3% and 3.2% was foreseeable for 2021 and 2022-2023, respectively. A similar result for 2022-2023 is captured based on the data until the end of 2021. In addition, based on the recent data for global gas and oil prices, as of the third month of 2022, our model predicts an inflation rate of 6.1% at the end of 2022, given that energy prices remain constant. On the same assumption, it is anticipated that the inflation rate will moderate and reach 3.7 % at the end of the forecast horizon, the year 2023. So even without further increases in energy prices, the inflation rate is expected stay far above 2% over a 2-year horizon.

Figure 3. Development of the HICP and HICP energy inflation

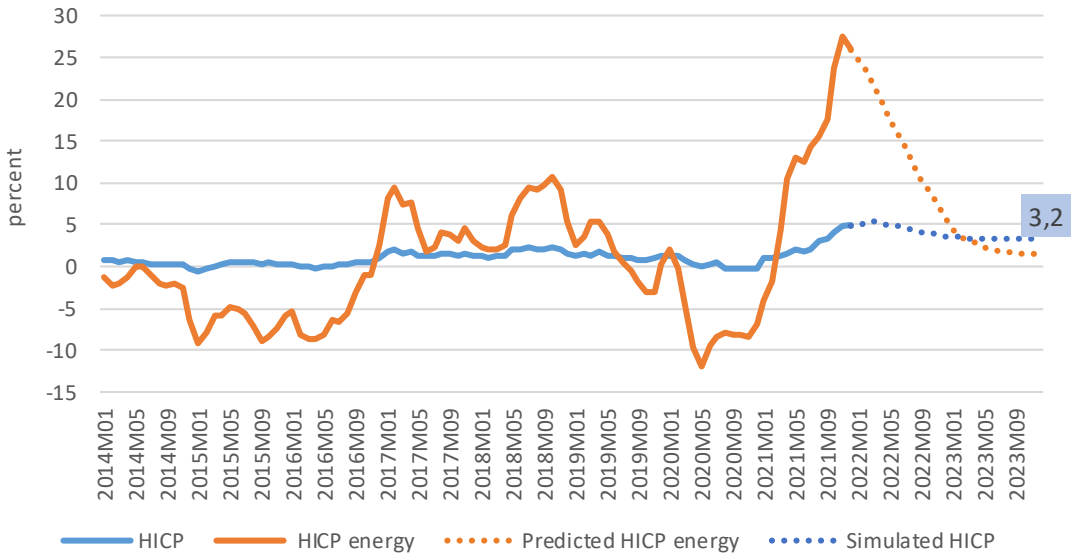
a) Simulation based on the data until the end of 2020



Source: Authors' calculations based on IMF and Eurostat data.

Note: The numbers represent the annual rate of change.

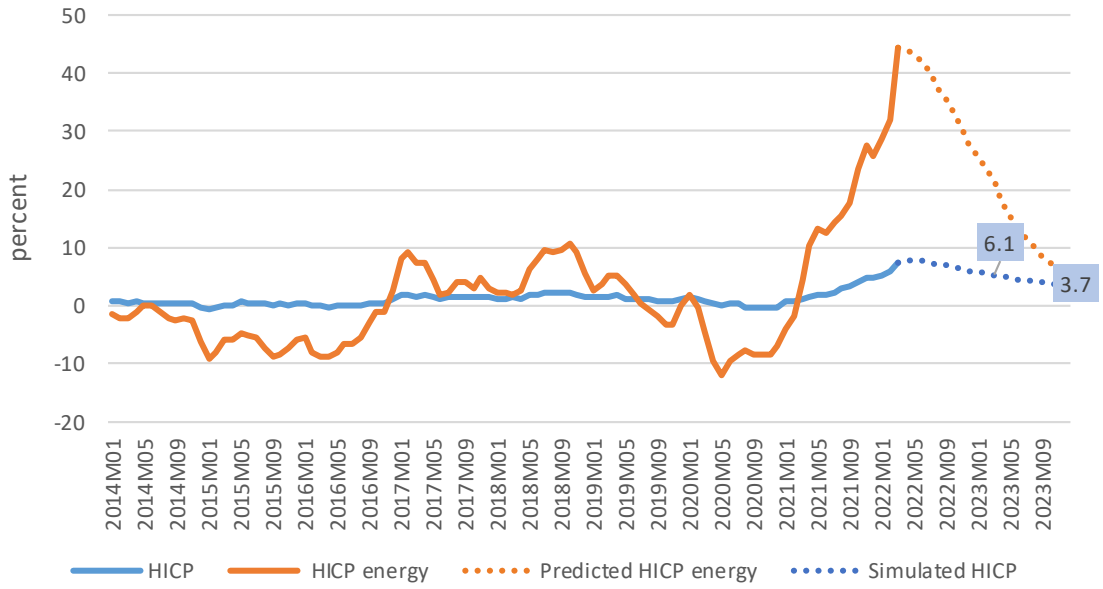
b) Simulation based on the data until the end of 2021



Source: Authors' calculations based on IMF and Eurostat data.

Note: The numbers represent the annual rate of change.

c) Simulation based on the data until 2022m03



Source: Authors' calculations based on IMF and Eurostat data.

Note: The numbers represent the annual rate of change.

2.2. Hardwired models?

With the benefit of hindsight, it would be easy to criticise the ECB for the very large under-prediction of inflation in the first quarter of 2022. As of end-2021, it was not possible to anticipate the continuing increase (even acceleration) of energy prices in early 2022.

However, one can criticise the ECB for basing its monetary policy decisions on models that seem hardwired to produce, under almost any circumstance, inflation forecasts slightly below the ECB's target of 2%. With its own forecasts always ending with inflation below target, the ECB acquired a dovish bias.

The models of the ECB imply that if energy prices drive inflation up to 5-7%, inflation would fall back "automatically" anyway (i.e. without any policy change) to slightly below 2%. How is this possible?

A first argument of the ECB is that it employs the "technical assumption" that future oil and gas prices can be read from the quotes of the market for future deliveries. These future markets are thin, and their prices have not been found to be good predictors of prices a few years down the road. But lower future prices cannot constitute the full explanation for why inflation is supposed to come back down on its own because, at least for oil, over the last few months future prices have been only modestly below today's prices. For example, at the end of 2021 the spot price for Brent crude oil was already USD 80 per barrel and the forward price shown in the ECB's own publication was around USD 78 per barrel.

A correct reading of forward prices would thus have suggested only very slowly declining energy prices for quite some time. Why would this not translate into higher inflation? It can only be possible if none of the transitory (past) inflation translates into higher prices and wages in the future (i.e. if inflation dynamics are driven by expected, not past inflation). Even if energy prices remain at a very high level, they would no longer contribute to inflation approximately one year after they stabilise. Inflation would then return to the status quo ante, but naturally only if the, by assumption, temporary spike in inflation does not lead to higher prices for other goods and in particular if wages remain at the same level.

Both conditions are highly unlikely. European wages have so far increased very little (unlike in the US), but it strains credulity that even patient European workers would accept a loss of purchasing power of 7-10% without demanding any compensation. Wage demands have recently creeped up considerably across all of the euro area, including double-digit increases in minimum wages in several countries and an initial wage demand of an 8% increase by the influential metal workers union IG Metall in Germany.

The slowly mounting militancy of trade unions is understandable given the fact that Europe's industry enjoys high profits.

The ECB has recently noted that the increase in energy prices leads to a higher cost of importing energy and commodities by about 3.6% of GDP (Gunnella and Schuler, 2022). Yet, the impact of the deterioration of the euro area's terms of trade on income was only about one third of this value, namely 1.2% of GDP. As the ECB explains, euro area exporters were able to offset two thirds of the increase in energy and commodity prices by increasing the prices of their own products, thus protecting their profit margins. It is unlikely that workers will acquiesce to this distribution of income.

The models used by the ECB (and other central banks) to forecast inflation assumes that wage and price setting is mostly forward looking because they are meant to describe an economy subject only to moderate supply and demand shocks which average out over the long run. This renders them of little use when the euro area faces an unprecedented relative price shock and workers experience an unprecedented loss of purchasing power. These models imply that any wage pressure would be neutralised because the models assume explicitly that the ECB has an inflation target of 1.9% and that this will be reached because rational agents assume that it will be reached (Burban et al., 2021).

An interesting assessment of the US inflation trajectory by John Cochrane based on two different models arrives at similar conclusions. He incorporates the Fed's announced interest rate path into both an adaptive expectations model and a rational expectations model. Cochrane's simulations show that with a one-time shock and the same starting point of 5.5% for inflation in both models, the inflation rate under the adaptive expectations accelerates steadily and reaches around 10% over 2 years. Under rational expectation hypothesis it diminishes gradually and settles down at around 2.5% by the end of 2025, and this is achieved without increasing the interest rate (Cochrane, 2022).

We conclude that after almost 20 years of "lowflation" the models used by the ECB have been hardwired to deliver inflation forecasts a bit below 2% two years out. Since the ECB is setting its policy on the basis of its own forecasts of inflation for this time horizon, this has created a strong bias to keep an expansionary policy even as inflation tops 7%.

2.3. Monetary policy driven by models with fixed long-term inflation (expectations)

Models that keep predicting inflation coming swiftly back down were the key reason why the ECB kept rates negative and too slowly trimmed its bond buying programmes – including those under the pandemic emergency purchase programme (PEPP) although the emergency had long passed by end-2021.

A particularly interesting example of how the ECB models have a bias towards expansionary policy is provided by the discussion of the ECB staff projections of March 2022 which consider three different scenarios for energy prices[3].

[3] ECB staff macroeconomic projections for the euro area (March 2022) . https://www.ecb.europa.eu/pub/projections/html/ecb.projections202203_ecbstaff~44f998dfd7.en.html#toc5

Here the ECB considers not only the usual "baseline" of energy prices declining slowly (following futures markets), but also an

> "adverse" scenario [that] *"assumes that stricter sanctions are imposed on Russia, leading to some disruptions in global value chains. Persistent cuts in Russian gas supplies would lead to higher energy costs and to cuts in euro area production, but this would be only temporary as substitution into other energy sources takes place."*

This adverse scenario thus contains much higher energy prices, but the staff projections conclude that

> *"as oil and gas markets rebalance, the large spikes in energy prices would gradually unwind, causing inflation to decline below the baseline, especially in 2024."*

A policy under which the ECB only cares about the inflation rate at the end of its forecasting horizon then leads to the strange conclusion that if the euro area is hit by an inflation shock the ECB should loosen policy because inflation at the 2-year forecast horizon would be lower (below 2%). The intervening years of higher inflation do not seem to count. Phillip Lane asserted recently that the ECB would accept "a transitory period in which inflation is moderately above target". The date of this statement is March 2022, when it was already clear that inflation would rise above 6%. Even at the time the term "moderately" seemed misplaced (Lane, 2022b; Burban et al., 2021).

Another example how the approach of the ECB is guaranteed to yield inflation below the target level concerns the interpretation of inflation-linked swaps (ILS). The ECB has used the evidence of 5/5 forward inflation swaps (i.e. the 5-year inflation rate expected 5 years in the future). This indicator has hovered above 2% since mid-2021. At first sight this level would have supported starting normalisation already during the second half of 2021.

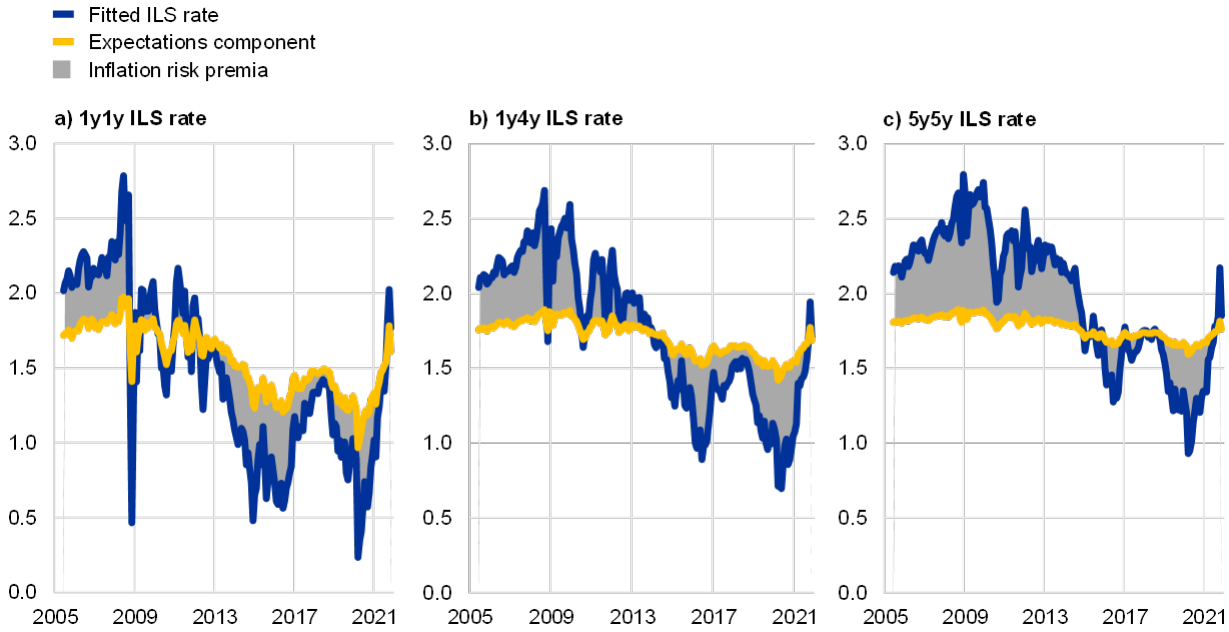
Still, one has to take into account that a long-term asset like the 5/5 year ILS also contains a risk premium. One could thus argue that the 5/5 inflation swap rate is determined not only by future expected inflation, but also the sum of expected inflation and a risk premium. Expected future inflation could be much lower than the 5/5 inflation swap rate if this risk premium is high. Unfortunately, the risk premium cannot be observed directly. It must be estimated indirectly, making assumptions about market structure, and in particular making an assumption concerning the end point for inflation. Since different models yield different estimates of the risk premium implicit in the 5/5 year inflation swap, it makes sense to use different models. The ECB thus proposes to use an average of two very different models. But, all models require an endpoint. As the ECB itself admits the choice of this endpoint is arbitrary.

Both models imply that the short-term ILS rate converges on a fixed number over the long run, as will any stationary term structure model. As this endpoint is hard to pin down empirically, it is calibrated to a level of 1.9%.

This seemingly technical assumption is key, as it implies that the ECB has hardwired the expectations of future 5/5 inflation to be below 1.9% under almost any circumstance. Figure 4 from ECB (2021) below shows the actual inflation swaps for three time horizons (1 year ahead (1/1), 1 year ahead for 4 years (1/4) and the most often used 5 years ahead for 5 years (5/5)). The blue lines show the raw market values whereas the yellow lines show the expectations component derived from the market values by subtracting the risk premia. It is apparent that for short-time horizons like a year the risk premium makes little difference. However, the risk adjustment of the 5/5 year inflation swap results in a very stable expectations component around 1.9%[4].

[4] Perhaps not coincidentally this corresponds exactly to the old formulation of "below, but close to 2%".

Figure 4. Market-based inflation measures – inflation-linked swap rates



Source: Burban et al. (2021).

Given this assumption that the endpoint of the model describing the inflation swaps is slightly below 2%, the "risk-premium-adjusted" inflation swaps presented by the ECB thus almost always show that expectations remain solidly anchored.

The justification for using this calibration is that it makes the swap predictions consistent with the model. As the ECB explains (Burban et al., 2021):

> *"Calibrating the long-run inflation mean at 1.9% is in line with the New Area-Wide Model in which, prior to the adoption of the ECB's new inflation target of 2%, the central bank's long-run inflation objective was set to 1.9% per annum."*

Other market-based indications of inflation expectations, like the break-even rates calculated from inflation protected and non-inflation protected bonds of the same maturity are less affected by the end-point problem that arises from the risk adjustment to inflation swaps because the two bonds whose yield is compared should share the same risk premium. Alcidi et al. (2022) discuss different market-based and other indicators of inflation expectations. The most widely used alternative market-based measure is the one based on French bonds, "OATs", which as of late May indicate an average expected inflation rate until 2030 of about 3% (Alcidi et al., 2022)[5].

The ECB uses these of course and also other indicators of inflation expectations, but it remains true that one key measure used to check inflation expectations creates an inherent confirmation bias. The argument is simple: the present policy stance must be right if it leads to well-anchored inflation expectations. When, as now, the ECB today starts from a very expansionary policy stance this confirmation bias goes in the direction of maintaining an easy policy stance even if actual inflation reaches very high levels[6].

[5] The latest data are available here: https://www.aft.gouv.fr/en/oateuroi-key-figures.

[6] This mechanism might be behind the observation that market participants have been expecting monetary policy to be more patient (expecting less of an interest rate increase for a given increase in inflation swaps). See Schnabel (2021).
The reason why this phenomenon is relatively recent is that the risk premium adjustment to recover inflation expectations from inflation swaps is also relatively recent.

Another implication of this model-based policy setting with a predetermined endpoint is that new information about inflation or the economy has little impact on the policy setting, since this new information would be unlikely to change the inflation rate at the end of the forecast horizon. The present policy setting would thus appear to remain adequate unless important input into the model is changed. In this sense, ECB policy is model- rather than data-driven.

The consequences of the "1.9%" bias can be seen best in the December 2021 decisions on monetary policy when inflation was already running at 5% and the ECB had to admit[7] that "this may also imply a transitory period in which inflation is moderately above target".

A closer look at the monetary policy decisions taken in December 2021 reveals that they were, on net, expansionary: the ECB expanded the PEPP on net since it announced a somewhat earlier end to purchase (stopping at EUR 1,718 instead of 1,850 billion). But, it also prolonged the reinvestment period by a year, which would be the equivalent of about EUR 230 billion in bonds bought during 2022[8].

Regarding the asset purchase programme (APP), the ECB made a small change to the time profile: an immediate increase (to EUR 40 billion per month during Q2 2022, and EUR 30 billion during Q3 2022, to keep total bond purchases declining smoothly), then following back to a previous rate of purchase of EUR 20 billion. This would result in a small increase in purchases.

This means that in December 2021, when inflation was running at 5% and could be expected to remain substantially above the 2% target for 2022, the ECB slightly increased the already very expansionary stance of its policy.

Box 1. Details of the December 2021 monetary policy decisions

On the PEPP

In the first quarter of 2022, the Governing Council expected to conduct net asset purchases under the PEPP at a slower pace than in the previous quarter. It would discontinue net asset purchases under the PEPP at the end of March 2022.

The Governing Council decided to extend the reinvestment horizon for the PEPP. It now intends to reinvest the principal payments from maturing securities purchased under the PEPP until at least the end of 2024.

On the asset purchase programme, a similar pattern emerges

In line with a step-by-step reduction in asset purchases and to ensure that the monetary policy stance remains consistent with inflation stabilising at its target over the medium term, the Governing Council decided on a monthly net purchase pace of EUR 40 bn in the second quarter and EUR 30 bn in the third quarter under the APP. From October 2022 onwards, the Governing Council will maintain net asset purchases under the APP at a monthly pace of EUR 20 bn.

Source: ECB press releases on monetary policy decisions.

[7] And, in a number of speeches by Governing Council members. For example, see Lane (2022a).

[8] The ECB does not publish the redemption profile for the PEPP, but it can be estimated from the published redemption profile of the APP by scaling the PEPP to the APP or PSPP. The maturity profile published in the annual report of the ECB 2021. (ECB, 2022) shows that over 14% of the PEPP holdings have a maturity of less than 1 year. Applying this percentage to the total holdings of approximately EUR 1,700 billion yields EUR 240 billion.

3. ASSET PURCHASES VERSUS INTEREST RATES AND THE SEQUENCE OF POLICY NORMALISATION

Central banks started large-scale asset purchases ("quantitative easing", QE), when they could not reduce their policy rates anymore, but wanted to stimulate the economy. With large-scale purchases of long-term bonds, they hoped to lower long-term interest rates, thus spurring investment and maybe also consumption. As policy interest rates move into positive territory this motivation for asset purchases can no longer be invoked. The sequence of policy normalisation followed by the ECB, namely to first stop asset purchases and then increase rates, follows this logic.

Nevertheless, the question remains of whether it still makes sense for the ECB to keep a large stock of government bonds on the balance sheet of the Eurosystem even after interest rates lift off. The ECB has so far only decided to halt *net* asset purchases but intends to keep reinvesting the maturing principal for some time (until 2024 for the PEPP and "for an extended period" for the APP). The maturing principal will amount to about EUR 500 billion per year for the foreseeable future.

A key background factor for this issue is that the ECB's own research implies that the outstanding stock of bonds on its balance sheet has a considerable impact on the term premium and thus keeps long-term interest rates much lower (see Schnabel, 2021). When the ECB increases its policy rates while keeping the large stock on its balance sheet, it will press one foot on the brake while keeping the other foot on the accelerator. It is difficult to understand how this should make sense.

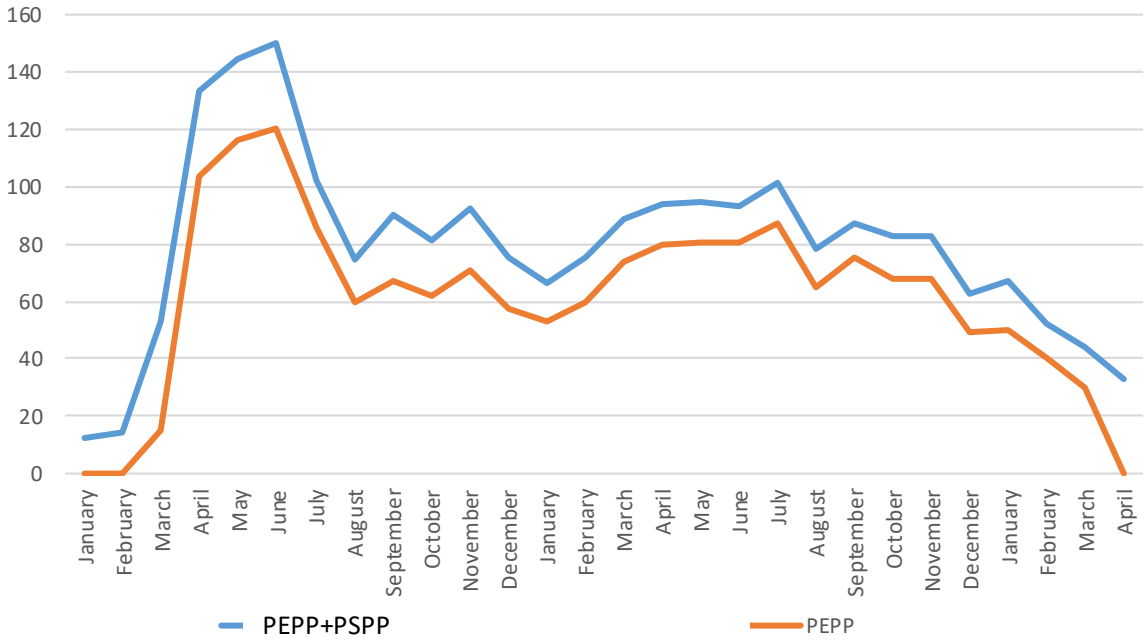
The result of this policy stance will be to reduce artificially the slope of the term structure as short-term rates increase and long-term rates are kept low. To avoid this compression of the term structure one should consider halting reinvestment once policy rates have lifted off.

3.1. The recent time path of Eurosystem sovereign bond purchases and stocks

Figures 5 and 6 below illustrate how the pace of bond purchases increased rapidly with the onset of the COVID-19 crisis and then declined gradually starting at the end of 2020.

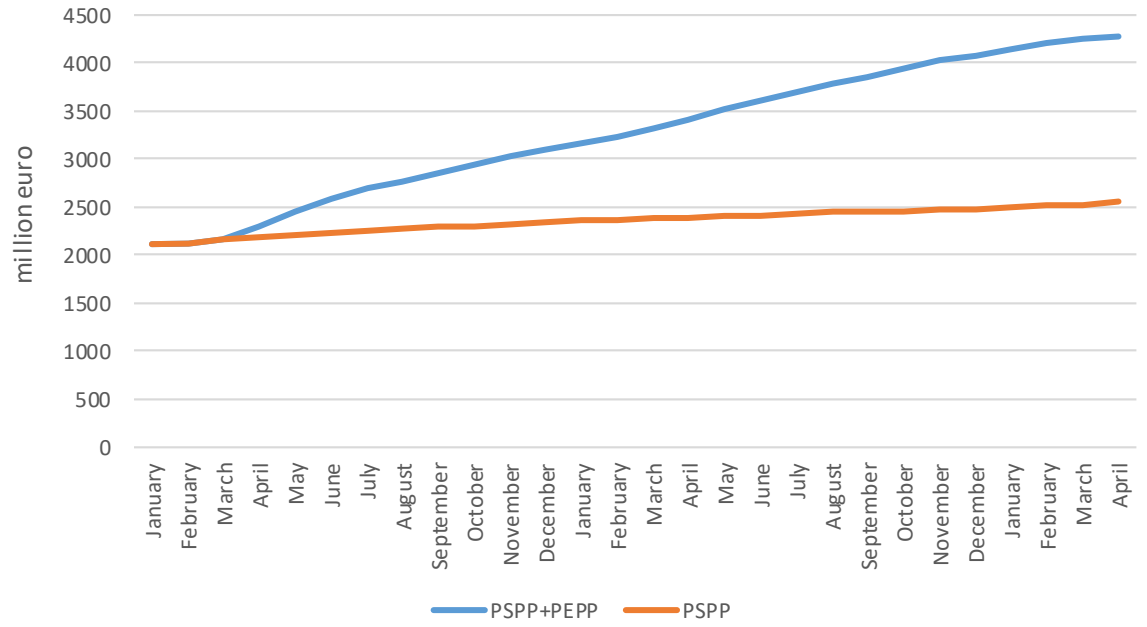
In terms of the outstanding stock held by the Eurosystem, one sees the increasing relative importance of the PEPP holdings. These now account for about 40% of total sovereign bond holdings (somewhat less in terms of overall bond holdings, which include EUR 80 billion of private sector bonds).

Figure 5. Government bond purchases since January 2020



Source: ECB.

Figure 6. Eurosystem sovereign bond holdings since January 2020



Source: ECB.

3.2. The impact of asset purchases, reinvestments and stocks

The impact of central bank asset purchases on interest rates has by now been extensively debated in the literature. We do not intend to revisit this debate. Instead, it might be more useful to analyse the impact of halting asset purchases using the parameters which the ECB is itself using.

Even this simpler exercise is fraught with difficulties since the long-term interest rates that are ultimately the target of asset purchases are reflected in bond prices. Traders in bonds would thus react mainly to news about future asset purchases, rather than their actual implementation.

This is the reason why most early evidence on central bank bond buying comes from "event studies" (Belke et al., 2021). These studies look at changes in interest rates around the dates when central banks announce their intention to buy large amounts of government bonds (see Altavilla et al., 2015; Borio and Zabai, 2016; Urbschat and Watzka, 2017; and Dell'Ariccia et al., 2018).

Once larger stocks of bonds had been on central bank balance sheets, newer studies provided estimates. For example, Eser et al. (2019) find a 10y term premium compression of about 50 basis points at the initial APP announcement in January 2015, which increased alongside the expansion of the programme and reached around 95 basis points in June 2018. The effect is explained by the duration extraction channel and estimated to be persistent with a half-life of 5 years. According to the authors, a larger impact on term premia is expected over a longer reinvestment horizon after APP net purchases.

More recently, Isabel Schnabel, a member of the ECB's Executive Board, laid out the ECB's own estimate of the impact of bond purchases (Schnabel, 2021).

The two key parameters concern the stock and the flow effects.

First, the stock of sovereign bonds held by the Eurosystem keeps the term premium on 10-year bonds 180 basis points lower than it would otherwise be[9].

Second, each EUR 500 billion of sovereign bond purchases lowers the term premium by about 20 basis points (slightly less in tranquil or non-stressed periods)[10].

The second of these parameters would seem to imply that advancing the end of reinvestment by 1 year would lead to an increase of the term premium, and thus long-term interest rates of 20 basis points since it would imply that the outstanding stock shrinks by about EUR 500 billion per year. The impact of advancing the date of zero gross purchases from 2024 to now would be around 30 basis points.

Ending reinvestment immediately would thus have a modest impact on the yield curve given that the ECB is now widely expected to increase its policy rates by at least 1 full percentage point this year. ECB policy would still lower the slope of the yield curve, but the effect would be somewhat smaller than under the present policy of reinvestment until 2024.

[9] Data on term premium can be found here: https://www.unive.it/pag/39846

[10] No reinvestment assumed.

4. POLICY NORMALISATON AND RISKS TO FINANCIAL STABILITY

We briefly discuss two potential risks to financial stability which could materialise as a result of policy normalisation:

- the end of negative rates and bank profitability; and
- fragmentation of financial markets along national lines.

4.1. The end of negative interest rate policies and bank profitability

In an earlier contribution (Gros and Shamsfakhr, 2021), we discussed the widely held presumption that negative interest rate policies (NIRPs) depress the profitability of banks and lead to more risk-taking. Our conclusion was that these negative effects are difficult to find in the data. This would imply that the return to positive rates should not have a major positive impact on bank profitability.

The fear that negative rates would depress bank profitability (and thus stability) is often based on the simple fact that banks then have to pay interest to the ECB on the large amounts of excess reserves (currently over EUR 4,600 billion) they were induced to hold by the asset purchases of the Eurosystem while it proved very difficult to charge negative rates on household deposits.

This potential impact of negative rates on bank profits could be substantial (0.5% on EUR 4,600 bn would amount to EUR 23 billion per year). But this effect on bank's profits has been offset by two other policy measures: the tiered deposit rates and heavily subsidised longer-term refinancing operations (targeted longer-term refinancing operations, TLTROs, and pandemic emergency longer-term refinancing operations, PELTROs).

The latter have allowed banks to refinance very cheaply (often at minus 1%) a large proportion of their lending to non-financial corporations. Gros and Shamsfakhr (2021) calculate that the interest savings alone from the TLTRO compensated for the loss of income from not charging negative rates on household deposits.

Other relief came with the two-tier deposit scheme introduced in 2019, under which the negative rate only applies to about three quarters of excess reserves, providing further relief to banks.

The more recent data on bank profitability cannot be linked to negative rates, as the 2020 and 2021 results have been mostly determined by the combination of the exceptionally severe COVID-19 recession in 2020 and the extraordinary fiscal support measures.

When the main policy rates, especially the deposit rate, reaches zero the tier deposit rate will become moot. At the same time, no further TLTROs and PELTROs will presumably be made available. The refinancing costs will thus increase for banks, but they will still keep the low rates on outstanding amounts. The direct impact of policy normalisation on the banking system should hence be minor.

4.2. The end of bond purchases and the risk of fragmentation

The task of the ECB is only to maintain price stability and it is explicitly forbidden to finance governments. However, the financing conditions of governments can influence the wider economy and the transmission mechanism of monetary policy. This can create tension when markets are under stress and some sovereigns encounter difficulties in refinancing their debt. At this point, the ECB might have to intervene in the markets and buy sovereign bonds, which could be construed as financing governments. This tension became very acute twice over the last decade, in July 2012 and in March 2020. In both cases the ECB could argue that inflation was too low and that buying sovereign bonds was the appropriate tool to bring inflation up to its target.

That line of argument will be more difficult to sustain when inflation is by a wide margin above 2%.

In March 2020, the president of the ECB was just stating the obvious. But the statement had a very large impact on spreads because she did so during a period of extreme market turbulence. The state of financial markets is therefore key for the effectiveness of bond purchases.

Box 2. The March 2020 episode

The record of the March 2020 press conference contains the following question:

> **What can the ECB do if the spread for government bonds increases? Would it be an option to activate, for example, the OMT programme, or could there be other possibilities to help certain countries?**

The answer contained the following passage:

> Well, we will be there, as I said earlier on, using full flexibility, but we are not here to close spreads.

Lagarde added:

> This is not the function or the mission of the ECB. There are other tools for that, and there are other actors to actually deal with those issues.

The ECB took the extraordinary step of adding a footnote to this passage, which contains a subsequent statement made to a business channel:

> [Statement in the CNBC interview after press conference] I am fully committed to avoid any fragmentation in a difficult moment for the euro area. High spreads due to the coronavirus impair the transmission of monetary policy. We will use the flexibility embedded in the asset purchase programme, including within the public sector purchase programme. The package approved today can be used flexibly to avoid dislocations in bond markets, and we are ready to use the necessary determination and strength.

Source: ECB Introductory Statement, 12 March 2020.

4.3. Bond purchases and spreads

A widely held presumption is that the asset purchases of the Eurosystem can have a strong impact on the risk premia of peripheral countries in the euro area. For example, in one of the first estimates of the impact of the public sector purchase programme (PSPP), Altavilla et al. (2015), found that the impact of the announcement of the PSPP on the 10-year rates of the three countries with the highest risk premiums – namely Spain, Italy and Portugal – were several times larger than those on riskless rates, such as longer-term German rates, or on EONIA swap rates (which were low and often statistically not significantly different from zero).

Belke et al. (2021) provide evidence that the impact found on the announcement dates of the PSPP was temporary. They attribute this outcome to the fact that the PSPP was different from other "normal" forms of QE in other advanced countries in that most of the sovereign bond purchases were undertaken not by the ECB, nor jointly by the entire Eurosystem, but by the national central banks (NCBs) on their own account.

This key feature of the PSPP (which also applies to the PEPP, see also above) implies that there is just an exchange of one form of government debt with another when a national central bank within the

Eurosystem purchases the bonds of its own government. Belke et al. (2021) also argue that given that the PEPP started during a period of much higher volatility than the PSPP, its short-term impact might have been larger, but the longer-term impact of the PEPP might be limited, as financial stability was quickly restored in the second half of 2020.

However, the prevalent opinion seems to be that even when "non-risk sharing" asset purchases (of the NCB) can lower risk premia because they provide additional demand for bonds.

It is *a priori* difficult to measure to what extent a continuing flow of purchases can influence the spread. The experience of Italy with the tensions arising when the first Conte government came to power in June 2018 suggests that the PSPP did not have a decisive influence on spreads.

The first Conte government started with the declared intention to increase the deficit, breaking the rules of the Stability and Growth Pact and some exponents of the leading parties toyed with the idea of leaving the euro. This situation led first to a sharp increase in the spread[11], which fell back only in the autumn of that year when the government achieved a compromise with the Commission. During this period, the PSPP purchases were reduced from EUR 20 billion during the first half of 2018 to EUR 10 billion during the second half and essentially to zero in 2019. The increase of the spread for Italy coincided (fortuitously) with the pre-announced reduction in PSPP purchases. But the spread continued to decline along with the clarification of the political situation, even once PSPP purchases had stopped.

In 2018-2019, the ECB did not adjust its policy despite the sharp increase in the risk premium and it did not undertake any specific operations to address the tensions in the Italian bond market. The ECB thus did not interpret the situation as representing a fragmentation of financial markets which might impair the monetary policy transmission mechanism.

This position that the ECB should not try to manage the idiosyncratic risk of individual countries seems to be changing, at least partially. Its April 2022 statement hints that it might stand ready to intervene in favour of individual countries, at least provided it could interpret any resurgence of risk premia as "pandemic related".

The April 2022 statement of the ECB's Governing Council contains this passage:

> *"In the event of renewed market fragmentation related to the pandemic, PEPP reinvestments can be adjusted flexibly across time, asset classes and jurisdictions at any time. This could include purchasing bonds issued by the Hellenic Republic over and above rollovers of redemptions in order to avoid an interruption of purchases in that jurisdiction, which could impair the transmission of monetary policy to the Greek economy while it is still recovering from the fallout from the pandemic."*

4.4. Fiscal risks as a source of fragmentation?

One of the reasons for the tension in the sovereign debt markets over the last decade was the concern that the debt of countries like Italy or Spain might not be sustainable. With debt levels increased through the pandemic by about 20 percentage points, it seems at first sight that sustainability concerns should be even more relevant over the near future, thus increasing the risk of fragmentation. Still, the increase in debt levels is only one factor influencing fiscal sustainability concerns. Other key factors are interest rates and the growth rate of nominal GDP. The Commission publishes a synthetic indicator of the pressure on sustainability in the form of the "snowball effect", which is the product of the debt level

[11] Gros (2018) argued on the basis of different financial market indicators that the increase in the spread was due to concerns about fiscal sustainability and the perceived risk of euro exit.

(as a percentage of GDP) and the difference between the growth rate of GDP and the interest rate paid on public debt. This indicator thus combines the impact of debt levels, growth rates and interest rates, which can vary with risk premia.

Figure 7 below shows the snowball effect (as a percentage of GDP) for the two main candidates subject to fragmentation risk, Italy and Spain. It is apparent that between 2009 and 2013, i.e. during the period of major financial market tensions, both countries were subject to strong headwinds with the snowball effect being positive – around 4% of GDP (higher for Italy, lower for Spain). This means that during this period these two countries had to generate primary surpluses of this order of magnitude just to offset the impact of the combination of high interest payments and low growth.

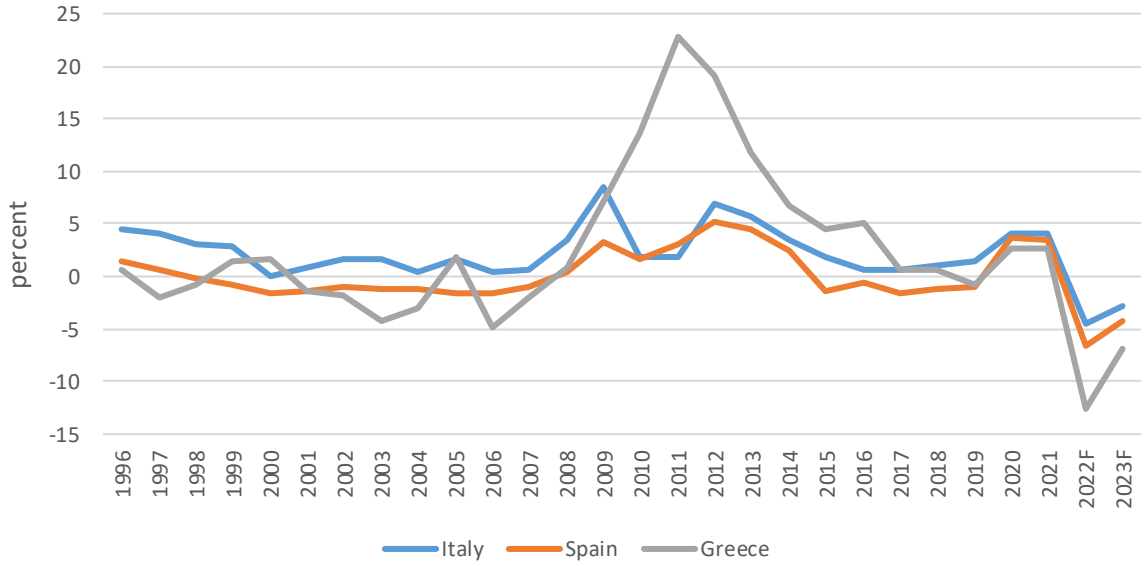
Today the situation is very different. The snowball effect is now negative and predicted to remain negative next year. The reason is that interest payments have fallen over time and the growth rate of nominal GDP can be expected to remain high even if real growth remains modest because prices are increasing much more rapidly than in the past [12].

There are thus reasons to believe that concerns about fiscal sustainability should be less pronounced over the foreseeable future. This should reduce the concern that the end of sovereign bond purchases will usher in a period of higher fragmentation risk.

The risk remains nonetheless, and one must prepare for the eventuality of fragmentation risk materialising again. The near-term period of easier fiscal conditions should be used to accumulate more powder for a more uncertain longer-term outlook. This provides another argument to run down the sovereign bond holdings of the Eurosystem as quickly as possible.

[12] The relevant price deflator here is the GDP deflator, which increases at present somewhat less than the HICP because the GDP deflator is not influenced by energy prices. But, according to the latest Commission forecast, inflation measured by the GDP deflator is still expected to remain considerably above the average of the last decade.

Figure 7. Snowball effect on gross public debt, as a percentage of GDP at current prices



Source: ECB.

Note: The values for 2020 and 2021 represent the average for these two years to even out the impact of the COVID-19 recession and recovery. Values for 2022 and 2023 are estimates. A negative value means that growth helps to reduce the debt to GDP ratio.

The PSPP and the PEPP, which were motivated by inflation being below the 2% target, can no longer be used when inflation is clearly above the target. The main instrument to deal with fragmentation remains (or rather becomes again) the outright monetary transactions (OMTs). However, it would be difficult for the ECB to proceed with large OMT purchases when it already owns a high percentage of the outstanding bonds of a government. Ending the reinvestment for both the PSPP and the PEPP holdings immediately would, over time, provide the ECB with much more room to manoeuvre if fragmentation risk materialises. An end to the reinvestment policy would lead in the first instance to a reduction in Eurosystem holdings of shorter-term maturities. This would fit well with the potential need to activate an OMT because any bond buying under the OMT would be concentrated on shorter-term maturities.

5. CONCLUSION

The increase in energy and commodity prices is widely attributed to the war in Ukraine. However, this might be mistaken as prices had already risen considerably throughout 2021. It would thus not be correct to see the war as the root cause of the present level of energy prices. That being stated, the drivers of energy prices do not matter much for the ECB. It has to take them as given and deal with the situation as it is [13].

It could be argued that keeping inflation low when energy prices increase rapidly might be difficult because it would require the costs of many other goods to fall. But the ECB's own research by an entire network on inflation persistence (IPN) suggests that this should not be too much of a concern (ECB, 2006):

> *"The finding that overall price falls are very common has important implications for the optimal inflation objective. It has been argued that downward nominal price rigidities that are not matched by similar upward rigidities may justify a higher inflation objective in order to facilitate relative price adjustments. The IPN findings do not suggest that this is an important reason for such an inflation buffer."*

Up to now the policy of the ECB seems to have been driven by the argument that it is not responsible for higher inflation due to short-term spikes in energy prices and that it is more concerned with the slight undershot of inflation that might materialise when energy prices fall again. This is based on the claim that the ECB can only be responsible for medium-term inflation – which, according to the models of the ECB – is always projected to end at 1.9%.

The policy so far has created the impression of an asymmetry with little reaction to an excess of inflation by several percentage points but strong reaction to past undershoots of inflation, which were of a smaller order of magnitude (fractions of percentage points).

This might change now. With the publication of the special blog post by the ECB President on 23 March 2022 (Lagarde, 2022), the ECB has switched from "whatever it takes to keep the euro area together" to "whatever it takes to get inflation under control". That is exactly what the mandate of the ECB requires today.

The ECB could do more than announcing an end to net asset purchases and future rate hikes. ECB justification for asset purchases was to provide additional stimulus to the economy, in the presence of the zero lower bound on policy rates. This implies that as soon as policy rates reach zero this justification no longer holds, and the ECB should stop reinvesting the proceeds from the about EUR 500 billion of principal payments on its overall bond holdings of ca. EUR 5,000 billion.

[13] We allow ourselves a political comment: a switch to fighting inflation will create tensions as southern European governments have counted on continuing low rates in their fiscal plans. Their narrative is likely to be that they are suffering from high energy prices because of European sanctions and thus deserve support when interest costs increase.

This is the point where the narrative of what challenges Europe faces these days comes into play: if the high energy prices are due to the war, the electorate will demand compensation and special rules for fiscal policy. However, if the real problem is one of structurally high energy prices as far as the eye can see, the response of monetary policy has to be straightforward – namely tightening whatever happens to government bond yields. As mentioned above, the preponderance of the evidence is that about three quarters of the commodity price increase is of a structural nature. This would suggest that there should be little wiggle room for monetary policy apart from fighting inflation. The ECB is thus likely to face a difficult period with its anti-inflation credibility tarnished while tensions might build up in financial markets.

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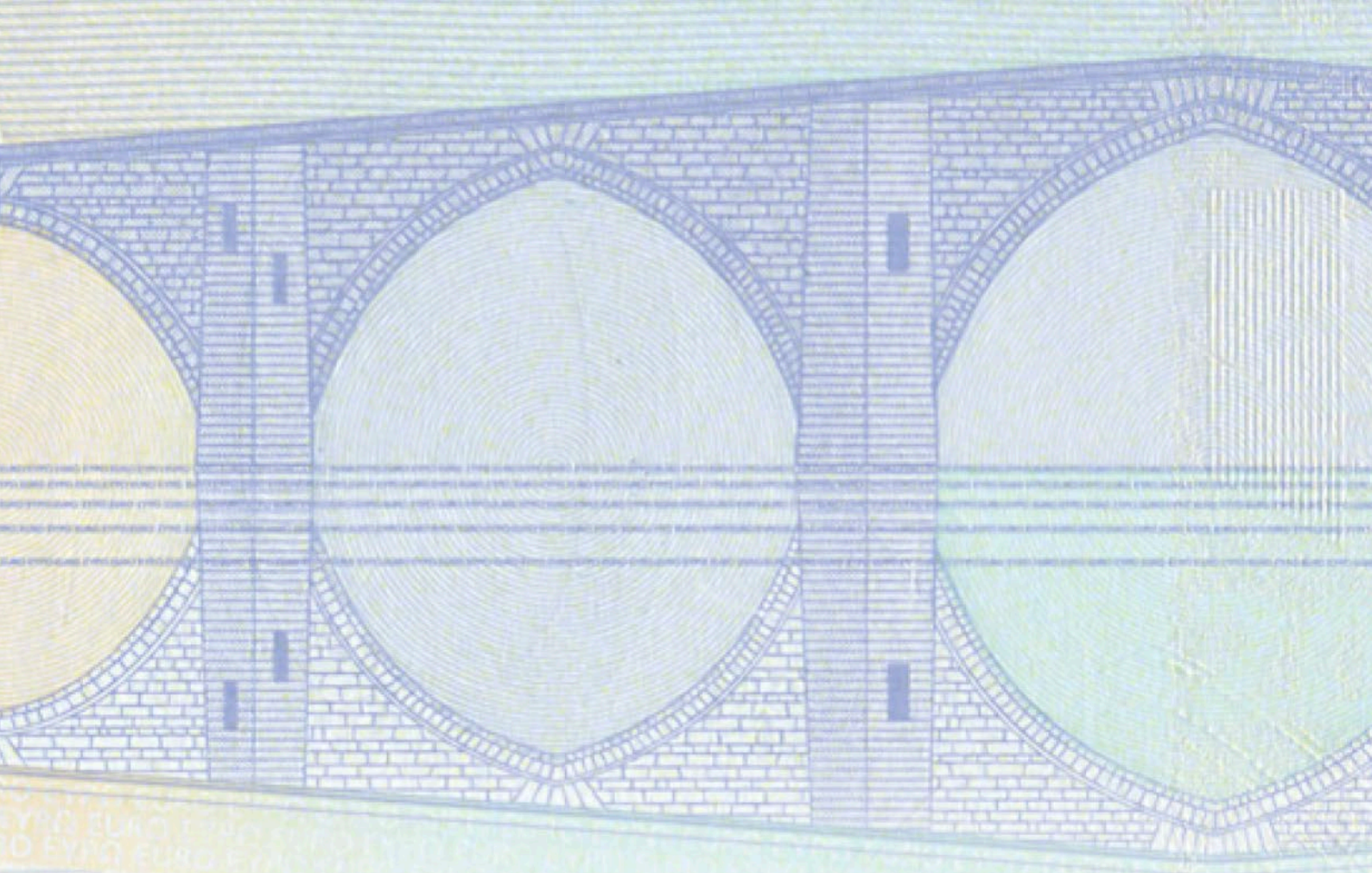

Is this time different? War, supply constraints and the resilience of monetary policy

Pierre SIKLOS

Abstract

The ECB has fallen behind the curve over the last few months as it has stuck to an extremely expansionary stance based on model predictions that inflation would return to slightly below its 2% target within two years. The real problem is thus the nature of this approach, which can justify endless procrastination. In this sense, policy is "model-driven" – and the assertion of the ECB that its normalisation path will be "data-driven" is meaningless unless the ECB abandons the old model with its hardwired low-inflation end point. Besides increasing rates, the ECB should also stop its reinvestment policy of the bonds accumulated so far to start a gradual reduction in its holdings.

This paper was provided by the Policy Department for Economic, Scientific and Quality of Life Policies at the request of the Committee on Economic and Monetary Affairs (ECON) ahead of the Monetary Dialogue with the ECB president on 20 June 2022.

CONTENTS

LIST OF ABBREVIATIONS

APP	Asset purchase programme
BIS	Bank for International Settlements
EA	Euro area
ECB	European Central Bank
EMU	European Monetary Union
EP	European Parliament
EU	European Union
GC	Governing Council
GDP	Gross domestic product
GFC	Great financial crisis
HICP	Harmonised index of consumer prices
MPS	Monetary policy strategy
PEPP	Pandemic emergency purchase programme
QE	Quantitative easing
QT	Quantitative tightening
SDC	Sovereign debt crisis
TLTRO	Targeted longer-term refinancing operations
UK	United Kingdom
UMP	Unconventional monetary policy(ies)
US	United States

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EXECUTIVE SUMMARY

- **The current crisis exceeds the ECB's capacity to control inflation without severely endangering credibility in the institution.**
- The ECB's monetary policy strategy reveals a combination of complacency, over-confidence, and an excessive concern over very low inflation.
- The ECB's communication over the past year displays benign neglect of signs of a coming surge in inflation.
- The war in Ukraine, together with an over-reliance on an outlook predicated on the ECB's full credibility, risks a further deterioration in the public's trust in the ECB.
- The presumed trade-off between price and financial stability is partly illusory and reveals the difficulties for a central bank that is over-burdened with responsibilities.
- Institutional reforms that involve the governance of the ECB, including its monetary policy strategy, and changes in the relationship between euro area governments and the ECB, are required.
- Reforms recommended in this paper will be very difficult to achieve.

1. INTRODUCTION

The last 15 years have seen events that have run the gamut of economic shocks. More recently, the ongoing pandemic first led to a large negative demand shock, followed by start-stop rebounds as economies reopened and then partially shut down again, as well as repeated supply shocks as production chains struggled through interruptions due to travel and other barriers erected to contain the COVID-19 virus. The war in Ukraine represents the latest supply shock with, this time, food shortages looming on the horizon. Meanwhile, China appears now to be experiencing a combination of negative demand and supply shocks as government efforts to stamp out the virus are proving difficult, and the implications are felt globally. If consumer sentiment deteriorates and pessimism sets in, this may, in turn, be followed by a future negative demand shock. A frequently overlooked risk is that household and firm pessimism can have the property of becoming a self-fulfilling prophecy (Curtin, 2019).

Simultaneously, despite vaccination programs in advanced economies especially that have seemingly blunted the worst of the side effects from the pandemic, the health crisis continues with politicians and the public apparently having decided to "move on". As a result, pent-up demand is worsening the aggregate demand and supply imbalances leading to inflation rates not seen since the 1970s. This is the fallout, in no small part, from a concerted effort at using fiscal policy on a large scale to cushion the blow from the health shocks than began in March 2020 (e.g., see Siklos, 2021 and references therein).

The latest shock is perhaps made worse, not only because of the speed with which inflation has risen around the globe, but because the two most important central banks, the US Federal Reserve (hereafter the Fed) and the European Central Bank (ECB) introduced revised monetary policy strategies (MPSs) overwhelmingly influenced by a decade of inflation rates considered too low. Therefore, early inflation rates that exceeded targets were not countered by tightening monetary policy but by deeming them acceptable under the revised policy strategy since it was assumed to be a transitory phenomenon. Central banks later laid the blame on unexpectedly large forecast errors, but they appeared incapable of explaining why they judged the stance of policy to be appropriate when inflation rates began to soar in 2021. It took several more months for major central banks to acknowledge that mistakes were made and that they may have been "behind the curve", only to tighten monetary policy in earnest. Pinpointing the sources of imbalances in aggregate demand and supply continues to be as difficult as it was in 2020 and 2021.

It is not surprising then that complaints about the conduct of monetary policy and the competence of central banks are on the rise. Indeed, broader questions are once again being asked about whether politicians expected central banks to do too much and whether the monetary authorities were themselves willing conspirators in accepting more responsibilities for stabilisation policy (Economist, 2021).

Beginning in 2007, the advanced economies experienced two major financial crises, the so-called great financial crisis (GFC), usually associated with the near-death experience of the US financial system, followed by the euro area sovereign debt crisis (SDC) starting in 2010. The low inflation and low growth that followed apparently did not permit monetary policy to go back to normal, that is, for the ECB to rely on policy rates to signal the stance of monetary policy and the withdrawal of asset purchase programmes (APPs) that inflated the central bank's balance sheet. Instead, the advanced world was, we were told, mired in secular stagnation.

Even when the COVID-19 crisis arrived, the euro area could still not yet contemplate fully withdrawing support in the form of the portmanteau term quantitative easing (QE) despite a decade's worth of effort

and large fiscal stimuli. It is only in late 2021, as the spectre of high and persistent inflation rates threatened large economies, including the euro area, that the expression quantitative tightening (QT) entered the vocabulary of monetary policy.

It does appear that the events of the past decade and a half for monetary policy are unprecedented in scope and scale but, more importantly, for economic policy more generally. Historically rare events arrived in a cluster. Financial crises in large and advanced economies, a global pandemic that has cost millions of lives, and now a war which, in many respects, feels global even if the battlefield is in a relatively small region of Europe.

With the foregoing considerations in mind, the present paper examines the risks to price and financial stability in the euro area as a result of the war in Ukraine. Context is vital and so I also revisit, in narrative terms, recent decisions of the ECB to assess whether the central bank misunderstood the incipient inflationary forces that would roil monetary policy. The study concludes by suggesting that the events of the past 15 years only serve to reinforce the need to revisit some core responsibilities of the ECB and its governance. To paraphrase US President Kennedy who talked about the challenges of a manned flight to the moon in 1962, changes are necessary "…, not because they are easy, but because they are hard,… because that challenge is one that we are willing to accept, one we are unwilling to postpone…"[1] No doubt many will make the reasonable claim that one should wait until the present crisis has passed before undertaking reforms (or, the "if it ain't broke, don't fix it" attitude). However, this ignores the possibility that once a crisis has passed, urgency for reform also dissipates. At the very least, preparations should be made for the changes that ought to ensure not only that monetary policy is more resilient but to reinforce the ability of the European Union to continue to thrive.

The rest of the paper is structured as follows. The following section examines whether the ECB's monetary policy is off-track. Broadly speaking, the answer is in the affirmative. That said, there is much to commend the ECB for the changes made to the previous monetary policy strategy even if the current one is much too ambitious given the present state of knowledge and is rooted in an era when only low and stable inflation rates were contemplated. The bottom line is that the new MPS reflects the arguably unintentional hubris of policy makers who came to believe that they had the ability to act and talk in such a way as to keep inflation in a certain target range by simply assuming, as their models do, that they are always credible. Credibility, however, is fragile and recent events undermine that presumption. As a result, central bankers are engaged in shifting blame onto forecast errors and heightened uncertainty. This pivot does great harm to the credibility and institutional trust in central banks.

Section 3 asks where we go from here. Significant changes are needed in the role and governance of the ECB not because there has been a complete failure in the past. Indeed, the ECB as an institution has largely been a success. Instead, the shocks of the past decade and a half point to a need to move away from the arm's length relationship between the ECB and Member States government to a clearer contract between them that acknowledges cooperation is essential, and coordination with the fiscal authorities can also help under some circumstances. The kind of independence the ECB obtained under the Maastricht Treaty is no longer appropriate in the present era. As noted above, this will be hard to achieve. The paper concludes with a summary.

[1] Excerpt from Kennedy's speech at Rice University, https://er.jsc.nasa.gov/seh/ricetalk.htm

2. IS THE ECB OFF TRACK?

In what follows I provide an overview and evaluation of the ECB's monetary policy since the new MPS was introduced on 8 July 2021. A proper assessment also requires some cross-country evidence as well as lessons from the history of inflation. I conclude with some observations about the so-called trade-off between price and financial stability. To be sure, the two concepts are inter-connected, but the trade-off as portrayed by central banks is partly an illusion.

2.1. A new monetary policy strategy coming undone?

After a delay due to the ongoing pandemic, the ECB released its new MPS in July 2021. The background work leading to the Governing Council (GC)'s announcement on 8 July is considerable.[2] Unsurprisingly, the MPS is a creature of its time. It focuses on inflation rates deemed too low and the struggle to return to an era where a single policy instrument suffices. It helps for what follows to briefly highlight the principal elements of the new MPS. They are:

a) 2% inflation target in HICP inflation over the medium term.[3]

b) The target is treated symmetrically with the proviso that monetary policy is intended to be relatively more aggressive when it is threatened by the effective lower bound of interest rates. Accordingly, there is also a recognition that inflation may be higher than the stated target for a transitionary period.

c) ECB interest rates remain the primary monetary policy instrument.

d) Notwithstanding (c), forward guidance, asset purchases, long-term refinance operations may be used as appropriate.

e) The ECB system aims to take into account the implications of climate change and incorporate climate factors into its assessments.

f) The ECB undertakes to next reassess its policy strategy in 2025.

Table 1 below summarises the main features of statements, as interpreted by the author, published since the introduction of the new MPS to assess changes in the substance of the statements over time. Note that since the December 2021 meeting a related document, called the Combined Monetary Policy Decisions and Statement, has been provided in addition to the usual Statement. This is a welcome addition since a reading of the transcript of the press conference that follows a decision or listening to the Q&A by the President and Vice-President of the ECB represent a mix of opinion and statements and may not necessarily give a clear indication of the salient economic considerations that go into each decision.

Three themes emerge from a reading of the relevant documents. First, there is an immediate concern about APP, including one directly activated to deal with the financial threats stemming from the COVID-19 pandemic (the so-called PEPP). From the rear-view mirror, one could posit that the belief in an accommodative monetary policy stance, as stated following the July 2021 meeting, remained the GC's position for the foreseeable future. Second, there is little concern shown over inflation prospects until the December 2021 meeting. One must wait until the outcome of the February 2022 meeting for an upward "tilt" in the inflation risk assessment. There is no indication whatsoever that a tightening of monetary policy is in the offing until the latest meeting, as of this writing, when there is belated

[2] Readers should visit https://www.ecb.europa.eu/home/search/review/html/index.en.html for all studies and analyses.

[3] The GC also recognises that improvements need to be made to HICP data to better incorporate owner-occupied housing costs.

recognition that a policy rate rise will be triggered before it projects inflation to reach its 2% "well ahead the end of its projection horizon". This, despite earlier recognition that large forecast errors were made (Chahad et. al., 2022) which suggests, in a turbulent time such as the one we are going through, that there is little confidence the projection horizon offers much clarity about the future course of inflation.

Placing blame on uncontrollable or unexpected factors and taking comfort in the fact that other central banks made similar errors is unlikely to inspire much confidence in the ECB's ability to persuade markets and the public that the timing of any future policy rate increase, based on the next set of forecasts, will be successful. More importantly, the ECB's attitude suggests that it places more emphasis on models than is warranted or desirable. Adding a concern for the economic implications of climate change only confuses matters even more. At its root, this is simply another shock whose impact is likely to be felt more keenly in the coming years. However, it is not the task of monetary policy to stress one type of shock over others. Giving climate change pride of place only raises worries that the ECB may find new ways to intervene in financial markets without the political or public support that must come first.[4]

Central bankers have, for a long time, stressed that while projections represent an input into their decisions, they also rely on judgment (e.g., see Siklos, 2017). As will be shown below, there were several signals indicating that a sharp rise in inflation was coming well before the Spring of 2022. Second, others including Brunnermeier (2020), warned of the inflation "whipsaw" phenomenon at the 2020 virtual edition of the ECB Forum.[5] Even if, as we shall also see below, a sudden or sharp tightening of the monetary policy stance was inappropriate in the near term, the ECB could have prepared the public much earlier about the widening range, or rising statistical uncertainty, around point estimates of expected future inflation.

There will always be an unexpected element in projecting the future and, while the size and timing of the surge in energy prices, typically the main culprit in explaining recent large forecast errors, is unknown the sign is not. Indeed, during the summer of 2021, when the ECB suggested that assistance through the PEPP can be moderated, the kind of stress tests commonly carried out for banks, could have been initiated for aggregate economic activity and inflation.

Table 1. Monetary policy statement narratives

Date	Summary
22 July 2021	Maintain a persistently accommodative stance to meet its Inflation target.
9 September 2021	Judges that PEPP can be moderated.
28 October 2021	APP to be moderated over time but to run so long as necessary. Same opinion about PEPP until the GC judges "that the coronavirus phase is over".
16 December 2021	Step-by-step reduction in APP and discontinue net APP under PEPP by March 2022. Notes economic improvement and "ample policy support" driven by robust domestic demand.

[4] Not to mention that our understanding, let alone modelling, of climate change on macroeconomic outcomes is in its infancy and complex. See, for example, ECB (2021). At a time when existing models are under attack for their forecast errors, this threatens to pile on new sources of forecast errors.

[5] Brunnermeier (2021) would later expand on the potential surge of inflation following the pandemic.

	Targeted and growth-friendly fiscal measures should continue to complement monetary policy. Inflation elevated in the near term "but we expect it to decline in the course of next year". Risks to growth balanced; no formal risk assessment for inflation.
3 February 2022	GC expects net purchases under APP to end shortly before it starts raising key ECB interest rates. Inflation is expected to remain elevated for longer than previously expected, but to decline in the course of this year. Economic impact of the pandemic is now proving less damaging. Growth should rebound strongly over the course of 2022. Risks to growth balanced over the medium-term; inflation risks tilted to the upside. No mention of rising geopolitical risks.
10 March 2022	War in Ukraine a watershed for Europe. APP will end in the 3rd quarter, but final decision will be data dependent. Notes economic boost from falling impact of Omicron variant. Inflation "continued to surprise on the upside" due to "unexpectedly high energy costs". GC "sees it as increasingly likely that inflation will stabilise at its two percent target over the medium term". All scenarios generate a 2% inflation rate by 2024. Price rises have become more widespread. Inflation risks remain on the upside, but economy should continue to rebound.
14 April 2022	Opening comments discusses the war in Ukraine's impact across the board and the appearance of new supply side bottlenecks. Inflation rose "significantly" and mainly because of the sharp rise in energy costs. APP still expected to be concluded by the 3rd quarter. Maturing securities will continue to be reinvested for "an extended period of past" when key ECB interest rates will begin to increase. ECB interest rates will increase only when inflation is seen as reaching 2% "well ahead of the end of its projection horizon". Fiscal and monetary policy support remain critical. Long-term inflation rates from financial markets and professional forecasters remain around 2% but GC sees "initial signs of above target revisions". The war is generating higher downside growth risks. Inflation risks are seen as rising.

Source: See : https://www.ecb.europa.eu/press/govcdec/mopo/html/index.en.html

Note: Author's interpretation of Monetary Policy Decisions of the ECB. Quotes are extracts from the policy statement or the Combined Monetary Policy Decisions and Statement. Note that the latter document is first introduced following the 16 December 2021 meeting.

2.2. Same old story, new risks?

It is useful to take a step back and ask whether history offers any guide that might have led to a different strategy in dealing with the current inflationary surge, conditional not only on the pandemic but also on the ongoing war in Ukraine. As always, history offers guidance and not a prediction of future outcomes. Matters are more difficult still since we have little evidence to draw on that resembles the case of a war on the doorstep of the euro area.

Table 2 provides some evidence that ranks *changes* in inflation for five economies throughout history. Clearly, until 2022, the euro area's history is short and, thankfully, free from a nearby war. The euro area data are augmented by post-World War II data for Germany. Additionally, for the US, the UK, and Canada, monthly consumer price inflation data are available since World War I.

The top 10 largest changes in inflation are shown for each economy as well as how recent inflation rates fare in the ranking. Consider first the euro area where data have been compiled since January 1990 by the Bank for International Settlements (BIS), that is, the data include a synthetic inflation rate is estimated for the years when the single currency, introduced in 1999, did not exist. The surge in inflation in recent months makes the top of the list. Brief inflation surges around the time of the GFC and the SDC round out the list. It is striking how large the recent changes in inflation have been since August 2021 when compared to earlier inflation scares.

The theme that, once inflation surges, it can be persistent is one, as we shall soon see, that applies to all the other cases considered. If we consider Germany, the top ten list of positive changes in inflation take place in the early 1950s, as the country was still adjusting to the post World War II environment and before the deployment of the Marshall Plan. All ten instances occur in 1951 once again highlighting the persistence property of changes in inflation. Recent increases in inflation are, however, not far behind with rises in late 2021 and early 2022 some of the largest changes in Germany's inflation rate since the early 1950s.

In the case of the US, the UK and Canada we have data that includes World Wars I and II, as well as the Korean and Vietnam wars. The latter two may not have involved major powers directly, but as is arguably true of the ongoing war in Ukraine, implicated the great powers by proxy. Beginning with the US we see that the largest changes in inflation history since the founding of the Fed take place shortly after World War II. While the inflation rate rises in late 2021 and early 2022 don't make the top ten list, they are well within the top 10% of inflationary surges. The same results are obtained for the UK and Canada. Wars, and their aftermath, lead to surges in inflation and the ongoing war is, sadly, no different.

Table 2. Largest acceleration in inflation rates

Euro area 1990:1-2022:3			Germany 1950:01-2022:3			US 1914:1-2022:3			UK 1916:01-2022:3			Canada 1915:01-2022:3		
Rank	Date	Size	Rank	Date	Size	Rank	Date	Size	Rank	Date	Size	Rank	Date	Size
1	2022.3	6.07	1	1951.6	16.61	1	1947.2	17.10	1	1920.11	28.32	1	1917.5	14.98
2	2021.12	5.23	2	1951.7	16.42	2	1947.3	16.86	2	1920.12	26.59	2	1922.11	14.69
3	2021.11	5.15	3	1951.10	16.19	3	1946.12	15.88	3	1920.10	25.46	3	1922.12	13.94
4	2022.02	4.96	4	1951.11	15.74	4	1947.1	15.88	4	1940.7	23.86	4	1923.3	13.47
5	2021.10	4.33	5	1951.5	15.23	5	1947.4	15.65	5	1940.8	22.91	5	1917.6	13.02

Euro area 1990:1-2022:3			Germany 1950:01-2022:3			US 1914:1-2022:3			UK 1916:01-2022:3			Canada 1915:01-2022:3		
6	2022.01	4.24	6	1951.8	14.59	6	1934.3	15.56	6	1922.12	22.45	6	1917.7	13.02
7	2021.09	3.68	7	1951.4	14.24	7	1946.11	15.42	7	1940.5	20.42	7	1917.8	13.02
8	2021.08	3.13	8	1951.12	13.72	8	1947.5	15.03	8	1940.6	20.18	8	1923.2	12.81
9	2010.7	2.36	9	1951.9	13.48	9	1934.4	14.91	9	1923.1	19.58	9	1923.1	12.42
10	2008.7	2.28	10	1951.3	12.40	10	1934.2	14.65	10	1940.4	17.51	10	1948.2	12.09
35	2001.5	1.33	15	2021.12	5.59	81	1922.2	6.19	81	2022.3	6.30	107	2022.2	4.60
			16	2022.3	5.55	95	1922.1	6.08	95	2022.2	5.68	109	2022.3	4.47
			17	2021.11	5.52	115	1922.3	5.92	115	2021.11	4.77			
			18	2021.10	4.72	117	1921.12	5.67	117	2021.12	4.76			
			20	2021.9	4.25	121	1921.11	5.63	121	2022.1	4.67			
No. of periods 375			867			1299			1275			1287		

Note: Inflation rates are monthly annualised rates. Changes are evaluated on an annual basis and were ranked from largest to smallest. Dates are expressed as year and month (YYYY:M). Only selected data for Size are shown and are all in %. Rank is based on the full available sample for each economy.

Source: Data are from the BIS (https://www.bis.org/statistics/oth_ind.htm?m=2680) and author's calculations.

Goodfriend (1993), almost 30 years ago, warned policy makers that failing to address inflation scares, defined as adverse movements in inflation expectations that threaten the credibility in the inflation objective being pursued, is a challenge but one that must be tackled quickly to prevent inflation from rising and persistently remaining too high. I return below to the role and experience with inflation expectations in the euro area. In the meantime, Table 3 shows three episodes of monetary policy tightening and loosening by the ECB since it came into existence. Changes in policy stances are defined as consecutive rises or falls in the policy rate of the central bank or, as in the case of the loosening of policy since 2019, one that is explained by the continued application of QE.

Alongside these episodes are shown the mean real GDP growth and inflation rates and changes in the unemployment rate. Other than during the SDC, monetary policy tightening periods did not impair economic activity, took place when unemployment rates were falling, and while inflation remained above the then target of close to but under 2%. The loosening of monetary policy occurred when real GDP growth was negative and unemployment was rising, as it should. That said, and other than during the COVID-19 era, inflation remained above the then inflation objective. Given the record of growth, and changes in unemployment and inflation since the ECB's inception (last line of Table 3), tightening episodes are seen to have taken place when growth was considerably higher than its mean and when inflation was also higher than its objective, while unemployment changes since 1999 have been negligible. On this, admittedly stylised, score, monetary policy appears to have done its job adequately. Nevertheless, one exception is the 2011 episode. This event could be an example of a "hard landing" with the other two tightening episodes more akin to "soft landings".

Table 3. Tightenings and loosenings in ECB monetary policy stance

Type	Dates	Real GDP Growth	Unemployment Rate Change	Inflation	Change in Policy Rate
TIGHTENINGS	1999.3-2001.1	3.63	-1.4	2	2.3
	2005.3-2008.3	2.49	-1.8	2.53	2.3
	2011:1-2011.3	2.12	2.4	2.75	0.5
LOOSENINGS	2008:1-2009:2	-1.68	2	2.16	-2.9
	2011:3-2013:1	-0.33	1.8	2.45	-0.7
	2019:4-2020:2	-5.88	0.33	0.78	0
Since inception	1999:1-2022:1	1.30	-0.04	1.71	1.55

Source: Author's calculations based on same sources as in Figure 1.

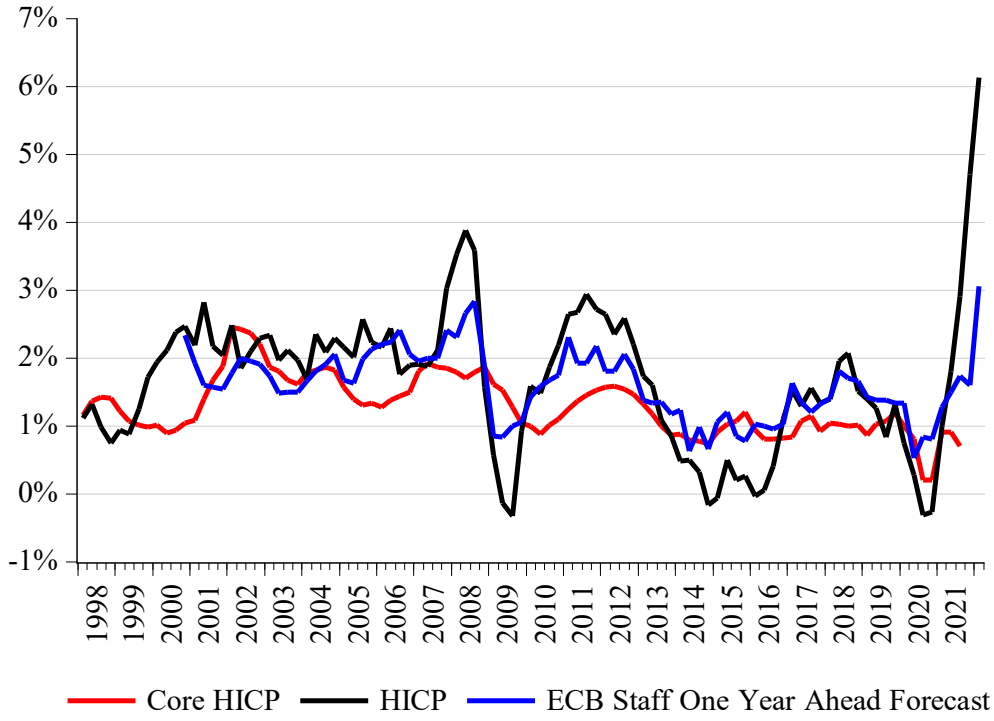
Note: Data refer to mean levels in the variables, unless otherwise indicated. Real GDP growth rate are in % as is inflation (in HICP). The policy rate is the main refinancing operations interest rate. Data are from the BIS (https://www.bis.org/statistics/oth_ind.htm?m=2680) and author's calculations. Dates are chosen according to persistent increases or decreases (i.e., more than one consecutive change) in the policy rate. All data are quarterly.

It is perhaps bad luck that both the ECB and the Fed announced revisions to their policy strategy when they did, namely when a pandemic was raging. The principal worry was to create conditions that would move monetary policy away from the effective lower bound of interest rates, return inflation to target after almost a decade of inflation below target, and shrink balance sheets closer to pre-financial crisis levels. The sub-par inflation performance is clear to see from Figure 1 which plots HICP inflation, core HICP inflation that strips food and energy prices from the headline index, and the ECB Staff's one year ahead inflation expectations. Other than a brief respite in 2011, when a sudden energy price shock generated a spike in inflation, observed inflation and the Staff's expectations were well below the then close to but below 2% inflation objective of the ECB. If the tightening episode stemmed from a supply shock, then the ECB's response at the time must be counted as a mistake.

If an inflation scare is visible, then the last few observations of the sample shown in Figure 1 suggest that one might be underway. Although the ECB Staff's inflation expectations have risen during the last few quarters, they fall far behind observed inflation thereby providing an explanation for the ECB's mea culpa about model performance mentioned earlier. However, other forecasters were not as modest in their response to the latest set of economic conditions. Figure 2 plots 8 other inflation expectations from professionals, households and international organisations. Many, especially the forecasts of households and firms (i.e., EC Business Survey, EC Consumer Survey, ZEW) react much more strongly and sharply to recent economic news than the professionals or central bankers. This reflects in part the well-known finding that households and firms form their expectations based on what they see in real time giving them a forecasting advantage over professionals who will await data from statistical agencies that arrives with a lag (e.g., see Curtin, 2019). Surely the ECB must also have seen this, but their models are not well-suited to consider the forecasts of others. The ECB must also have been aware that more accurate forecasts can be generated from estimates from the dynamic association among observed variables (viz., factor models). That said, the one year ahead forecasts even as late as early 2022 were falling far behind observed inflation rates thereby exacerbating forecast errors. While the economics profession may not have reached a consensus on how to quantify credibility the public has

been conditioned over the past two or three decades to lay the blame for inflationary surprises at the feet of the monetary authorities.

Figure 1. Varieties of inflation rates



Source: ECB Statistical Data Warehouse, https://sdw.ecb.europa.eu/, and ECB Macroeconomic Projections, https://www.ecb.europa.eu/pub/projections/html/index.en.html

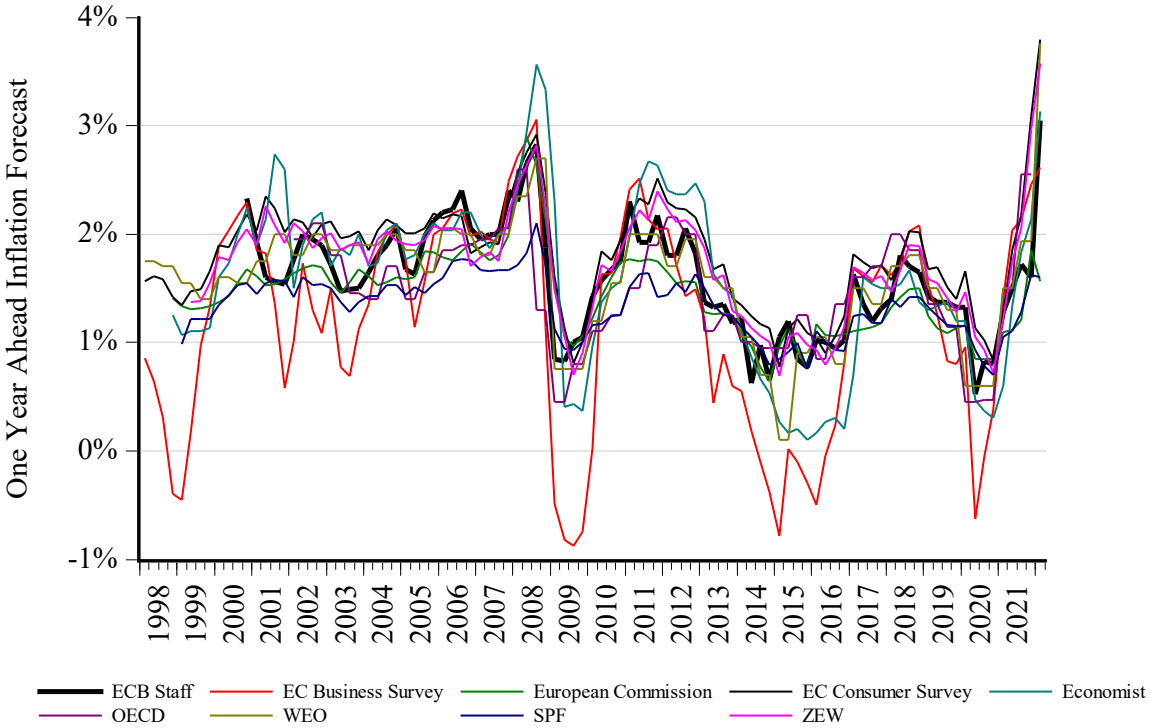
Note: Annualised quarterly inflation rates.

These features in the data were either ignored or somehow did not influence the judgment about how to communicate monetary policy decisions. What is being emphasised here is not that the current set of interest rates and QE style interventions leaned excessively on the easing side, although they likely did, but the failure to alert the public that a change was brewing and that the central bank alone was incapable of preventing a significant rise in inflation.

Perhaps, as has been suggested recently (e.g., Rudd, 2021), policy makers place far too much emphasis on inflation expectations, or possibly the wrong ones, by arguing that all is well because markets and professionals believe the current inflation target will be achieved. Meanwhile, consumers and households do not. One does not have to go too far to see that the winds of change were in the air. Figure 3 plots data for selected major components of the harmonised index of consumer prices (HICP) published by the ECB. The price levels for food, goods, industrial goods, services and even administered prices display noticeable movements upwards at various times well before the surge in HICP inflation (Figure 1) is observed. There seems to be a change in the direction of prices in food as early as May 2021, in goods beginning in January 2021 and in services starting in April 2021. Administered prices display sudden shifts in December 2020 and again in June 2021. Finally, prices of industrial goods have become far more volatile since the pandemic.[6]

[6] Plots for global commodity, fuel and non-fuel prices (not shown), would have led to a similar conclusion.

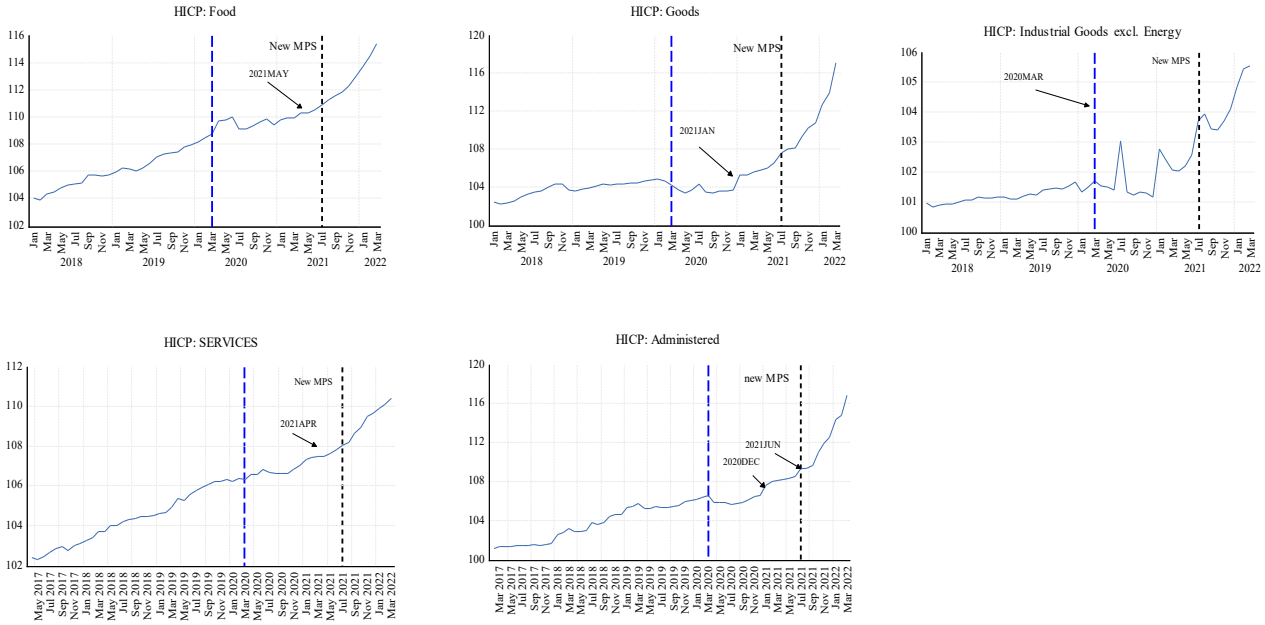
Figure 2. Varieties of expected inflation rates



Source: ECB Statistical Data Warehouse, https://sdw.ecb.europa.eu/, OECD Economic Outlook, International Monetary Fund (WEO), Survey of Professional Forecasters (ECB), European Commission (EC Business and Consumer Surveys) and European Commission) the *Economist* magazine, and ZEW. Additional details for the sources are also provided in Siklos (2020).

Note: Annualised quarterly inflation rates.

Figure 3. Anatomy of HICP level changes



Source: ECB Statistical Data Warehouse, https://sdw.ecb.europa.eu/

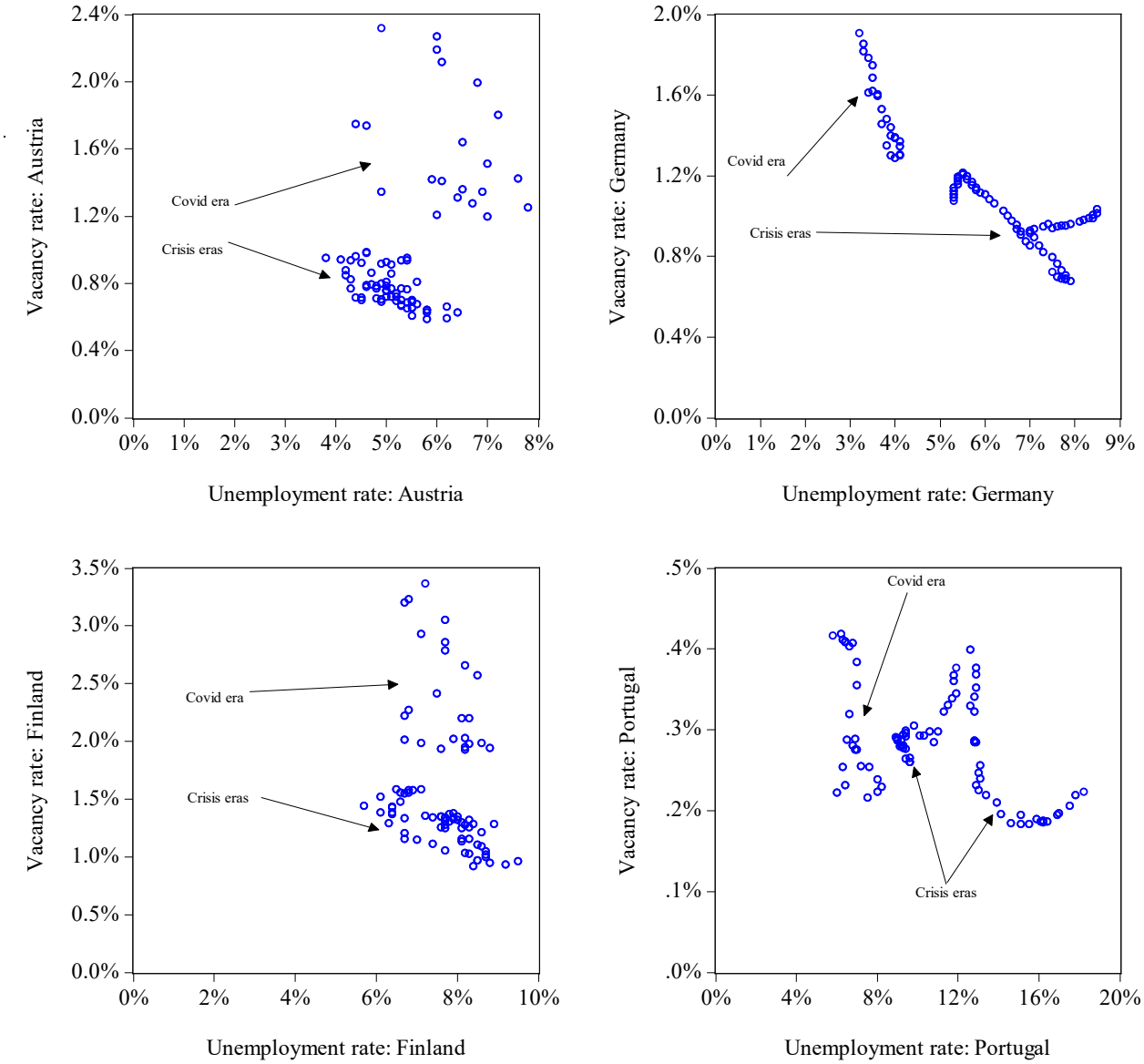
Note: Price levels (index). Data are monthly. The first vertical dashed line dates the beginning of COVID-19 (March 2020); the second vertical dashed line is the month when the ECB's MPS was introduced.

While one does not wish central banks to respond to every wiggle in the data the broad scope of changes ought to have alerted the ECB to modify how it communicated its inflation outlook. No doubt some will argue that this would be akin to yelling fire in a crowded theatre, but this is misleading. If expectations are indeed crucial to ensure that inflation is anchored around the announced target, then the ECB ought to have raised the issue and helped prepare the public and governments for what might come. This need not have been done using alarmist language. Instead, the ECB staff and the Governing Council are left to explain forecasting mistakes and reduce the likelihood that its outlook will be taken as seriously.

So far, the foregoing analysis has followed the usual recipe of looking for signs of potential loss of price stability in past inflationary episodes and in periods of monetary policy tightening and loosening. But it is inconceivable that the turbulence and distortions occasioned by over a decade of massive monetary and fiscal interventions, not to mention changes triggered by the rapid digitalisation of the economy, would leave labour markets unaffected. Not surprisingly, an old device has been revived to address this question and it suggests a structural shift of macroeconomic importance. The Beveridge curve (Elsby et. al., 2015) has been used to remind us of the possibility of a return to another period when low growth combines with high inflation to produce stagflation.

Figure 4 shows, for four European countries where the data are plentiful enough, scatter plots of unemployment versus vacancy rates which is the Beveridge curve. There seems to be a clearly visible separation in the relationship between the two variables during the COVID era (i.e., post March 2020) and the crisis eras (i.e., August 2007-December 2012). In all four cases, though less clearly so for Portugal, vacancy rates are higher, to much higher, and unemployment rates comparable or lower in the pandemic period than since the GFC and SDC eras. This is normally thought to set the stage for higher future wages and, consequently, higher future inflation. And because the shift is a structural one it is not clear how a mere inflation objective, unaided by policies that stimulate higher productivity and facilitate other structural improvements, can alone bring inflation back to the desired target range. The data for Germany suggest that we may well see difficult wage negotiations later this year with, as yet, unknown inflationary consequences.

Figure 4. Beveridge curves for selected European countries



Source: Federal Reserve Bank Economic Data, Federal Reserve Bank of St. Louis, https://fred.stlouisfed.org/

Note: Data are monthly. The COVID era begins March 2020. The pre-COVID era begins in the late 1990s with small differences in data availability across countries.

If history is any guide, then wars, and their aftermath, are most likely to lead to a surge in inflation. Unfortunately, the most recent policy episode can also easily cloud our judgment about new risks. The accumulated impact of two major financial crises, a pandemic that has yet to end completely, and a war that appears superficially to be regional but has global repercussions, on top of policies that have suppressed financial instability while giving the appearance of maintaining price stability, have all conspired to make policy makers complacent about new risks. Just as price stability seems to have been threatened so is the risk of a loss of financial stability.

2.3. The price stability-financial stability trade-off: an illusion?

There is ample evidence that lax regulations, combined with complacent supervision, are ingredients that create conditions for future financial crises. It is outside the scope of this paper to consider the extent to which unfinished business from the GFC and the SDC concerning the unhealthy links

between the banking system and sovereigns, and the structure of the financial system more generally in the euro area, are preparing the ground for the next financial crisis.

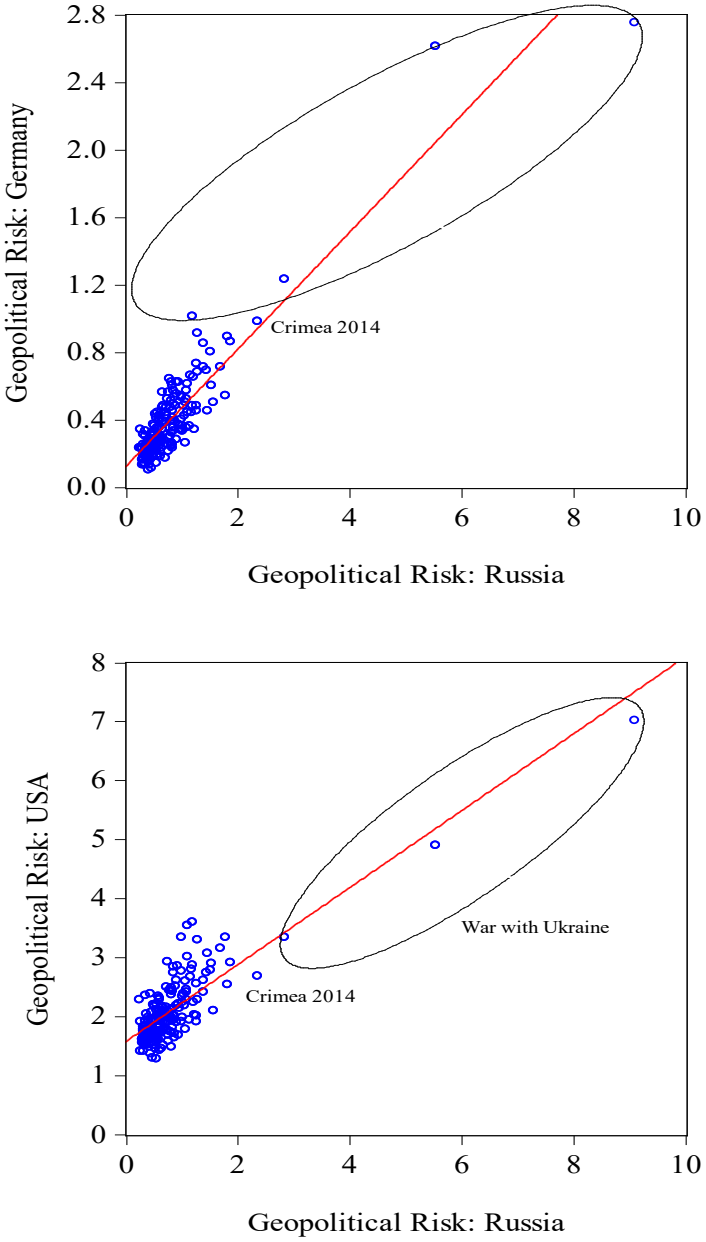
In any case, there are other potential sources that do not augur well for the maintenance of financial stability. Many have already written about how the series of central bank interventions in the financial system, referred to by the umbrella term QE, are unsustainable, limit the scope of future interventions that may become necessary, and have already created large distortions that cannot easily be repaired (e.g., Lombardi et. al., 2018, and White, 2021).

While central bankers received the green light from politicians for taking on simultaneously the responsibility of jointly maintaining price and financial stability, the theoretical and empirical links between the two are, at best episodic and, at worst, illusory. Schwartz (1995) long ago made the case that price stability was a means of ensuring financial system stability. Of course, this did not prevent the twin GFC and SDC of the 2000s. Having experienced a form of price stability for over two decades, theorists and policy makers then argued that higher than desired inflation was a price that can be paid to extricate ourselves from the secular stagnation forces that drove inflation to be too low (e.g., Woodford, 2012).

China's entry into the club of systemically important economies did not do any favours to policy makers trying to reach their inflation objectives from below. Instead of turning to structural reforms that international organisations (e.g., OECD, IMF) repeatedly called for, central banks stepped into the breach by repeatedly arguing that QE was a critical policy that would permit financial markets to heal and provide the impetus for eventual economic growth. By the time the COVID-19 pandemic erupted, the advanced economies had not escaped stagnation. Now, the war in Ukraine is exacerbating the problem by adding inflation into the picture and setting the stage for a renewed bout of stagflation.

Beyond the surge in inflation and in inflation expectations documented earlier, at least one other risk threatens financial stability. Conflict is not a friend to investors and the war in Ukraine is a global phenomenon. A good way to see this is by examining how geopolitical risks in a major economy, such as Russia, spills over into other countries. Figure 5 is a scatter plot of geopolitical risk in Russia against the same risk as perceived in the US and Germany. It is abundantly clear that the positive relationship between geopolitical risks across countries is partly driven by the war in Ukraine as the "outliers" in Figure 5 suggest. That said, notice that the Russian occupation of Crimea in 2014 also stands out. Hence, at least in the political realm, current events may partially have their origins in a different kind of policy failure. This kind of policy mistake is, of course, not in the realm of monetary policy even if the monetary authorities must deal with some of the economic fallout from such failures. To the extent that these geopolitical risks translate into poorer economic outcomes and continued high inflation (e.g., see Caldara and Iacoviello, 2022) the risks to financial instability cannot be far away.

Figure 5. Spillovers in geopolitical risks



Source: See : https://www.matteoiacoviello.com/gpr.htm

Note: Author's calculations based on Caldara and Iacoviello's (2022). All dots inside the ellipses are for 2022 and began rising in January 2022 before war in Ukraine was actually declared.

If central banks are in fact withdrawing their support of financial markets via QE and have switched to QT then only other, and older, forms of financial repression are conceivable to thwart any imminent financial crisis due to the events in Ukraine and the political economy implications arising thereof.

Figure 6 shows the observed, shadow, and recommended policy rates for the euro area. If the shadow policy rate, which seeks to quantify how loose monetary policy is once QE interventions are accounted for, reflects the actual stance of monetary policy it is difficult to see how the negative economic impact of a financial crisis can be prevented via a return to a form of QE. If, instead, the focus turns to what policy rate might be recommended given what we know about current observed and expected inflation, the degree of aggregate slack in the economy, the weight policy effectively places on attaining output and inflation objectives, then even conservative estimates of policy rules would have

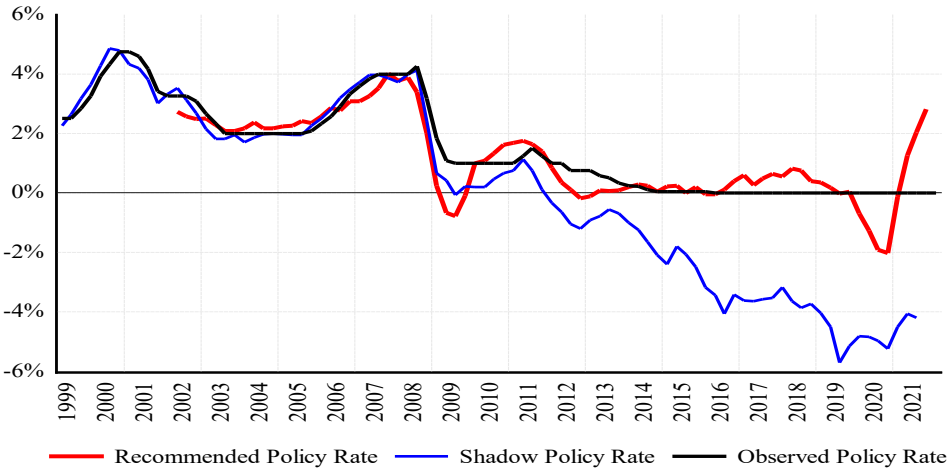
recommended swift rises in policy rates beginning in 2021. Even the shadow rate, which remains negative, reaches a turning point in 2021. As the ECB's focus turns more to inflation to make up for its past complacency the resulting tightening of policy, likely far more modest than any policy rule would recommend, suggests that the risks to financial stability must rise, if past history is any guide. Hence, while there may be a range of economic conditions where price and financial stability can be traded-off against each other, as was the case post GFC and SDC, we are in uncharted waters. Matters are made worse because the ECB and national central banks have taken on additional responsibilities they cannot meet unless there is more effective coordination with the political authorities. One hopeful element is that the same forces that produced Next Generation EU funding at the supra-sovereign level will likely be required when the ECB and national central banks start to claim that there are limits to what they can do to prevent the next financial crisis.

Figure 6 also illustrates another key limitation the ECB faces in the near term. Because the stance of monetary policy combines the observed policy rate and the impact of various forms of APP style interventions over time, of course, we do not observe a shadow rate. Observers of monetary policy, however, have been conditioned to think about what the policy rate might be if a version of the well-known Taylor rule were used. A variety of these rules were considered and the one that combined what economists think the inflation and output gaps, neutral real rate and degree of conservatism in changing the policy rate are produces the line labelled as the recommended policy rate in the Figure. Many other variants were also considered but they yielded even larger changes than the ones shown in Figure 6. Nevertheless, it is seen that the pandemic would have yielded a policy rate far more negative (-2%) than the one actually in effect while the rebound in 2021 would have produced a sharp rise in the policy rate of around 3%. If the ECB had implemented the Taylor rule as estimated this would have meant a swing of about 5% in the policy rate in approximately one year. This, despite limiting the size of any change to account for interest rate inertia. Clearly, no central bank would likely envisage such volatile policy rate movements. However, given that the actual policy rate remained at zero percent the emphasis then turns to justifying the level, scope, and duration of APP interventions and communicating alternatives for changing the stance of monetary policy that would have been much less palatable. Yet, the ECB did relatively little to communicate the public of the policy rate constraints it faced nor how euro area government policies worked in combination to soften the blow of the pandemic or prepare for tightening when the economy rebounded as everyone expected.

Central banks will argue that a wide range of macroprudential tools are available to forestall any incipient financial instability. Once again, however, the prediction is a theoretical one. There is little evidence that existing macroprudential tools have been put to the test and, in any case, they cannot possibly cover all sources of financial excesses nor do these seem to have slowed down the rise in private sector debt. There is a sense in which macroprudential tools give central banks comfort that a financial crisis is a thing of the past but, if complacency in dealing with sharply higher inflation is any guide, then this a not a reassuring state of affairs.[7]

[7] Lombardi and Siklos (2016) and Forbes (2019) critically examine the promise of macroprudential policies.

Figure 6. Policy rates and policy rules



Source: The shadow rate is the mean of the Wu-Xia and Krippner shadow rates. The former is available from https://sites.google.com/view/jingcynthiawu/shadow-rates; the latter from https://www.ljkmfa.com/. The observed policy rate is from the ECB, https://sdw.ecb.europa.eu/

Note: The recommended policy rate is based on the expression: policy rate=Neutral real rate+0.5*inflation gap+0.5*Output gap. Three other alternatives were considered. In one case the weight on the output gap is increased to 1. Another alternative is to add a term reflecting inertia or persistence in policy rate changes. In this extension +0.85*last period's policy rate is added to the previous expression. The 0.85 weight is an approximate historical average of the degree of policy inertia in the policy rate. Finally, one version allows the neutral real rate to vary over time. The estimates are based on the technique used in Sikos (2021). The inflation gap is observed inflation less expected inflation where the latter is the simple mean of eight different measures of expected one year ahead inflation expectations in the euro area. The output gap is also evaluated as the difference between observed real GDP growth and four different estimates of one year ahead real GDP growth in the euro area. See Siklos (2021) for the sources of inflation and real GDP growth expectations. The recommended policy rate shown in the Figure is based on the (0.5, 0.5, 0.85) weights for the inflation gap, output gap, and interest rate inertia variables.

3. WHERE DO WE GO FROM HERE?

3.1. The fallout from major conflicts: a time for reform

It has been argued that complacency, combined with a loss of memory about events that took place long ago is a recipe for the next conflict. Indeed, the GFC, the SDC, and the COVID-19 pandemic were crises that most did not see coming even if others warned such crises could emerge.

History might be repeating itself with the war in Ukraine. After all, the European project was meant to ensure that conflict would never again rear its ugly head. After over seven decades of peace, and a policy intended to bring Russia closer to the West and Germany in particular, we are seeing the real possibility that old problems that we long ago thought would remain in the past are resurfacing.

The Annex to the paper reproduces three graphs to illustrate the point. The first shows the percentage of years when the "great powers" were in conflict with each other. The figure has declined steadily since World War I and stood at zero in 2015. The next piece of evidence estimates the number of deaths from various kinds of conflicts (civil, conflicts between states). These declined rather sharply after the 1980s and remained low relative to the available data since 1946. Finally, the other telling data come from estimates of the number of people who die annually from famine. Given the ongoing risks to food supplies and the threats from sharply rising food prices the likelihood that famine will strike globally has risen. However, one needs to go back to the 1960s, and the 1920s through the 1940s, to see significant numbers of deaths from famine. Indeed, the death rate from famine in the 2010-16 period was only 1% of the same rate during the 1960s.

A more prosaic interpretation is that we are witnessing the emergence of forces that have existed in the past but were suppressed or thought to have been eliminated. As the cartoon below (Figure 7) from illustrates, what was apropos in 1904 is also relevant in 2022.

Figure 7. The past repeating itself?

Source: Punch magazine, 24 April 1904.

Clearly, conflict and its impact on the livelihood of families is not the direct concern of monetary policy. Nevertheless, since spillovers from such events on inflation cannot be avoided, central banks will be called upon to navigate the consequences under a regime that calls for low and stable inflation. Unfortunately, the two will be in conflict for some time.

Paralleling the foregoing forces are ones that argue the end of the globalisation era is upon us. Intuitively, one can understand the reasoning behind such arguments. After all, conflict is often associated with a rise in nationalistic tendencies and, consequently, a shift away from ever more reliance on trade between countries. Blanchard and Pisani-Ferry (2022), for example, argue that deglobalisation is one of the likely consequences of the war in Ukraine. James (2022) takes a different point of view as he argues that crises can represent a spur for future globalisation. Whether globalisation withers or not also has monetary policy consequences because the impact of spillovers from global shocks will be reflected in a shift towards greater reliance on domestic sources that will almost certainly have consequences for producer and consumer prices.

The only exception then is to enhance the resilience of institutions that are currently under stress, including central banks. As Hartwell and Siklos (2022) demonstrate empirically, central banks that are more resilient are also more credible and the trust such institutions build up over time is also a function of the political environment, including the strength of property rights.

In the current environment the consequences of war in Ukraine, on top of the other shocks the global economy has experienced, translates into more frequent supply shocks for the foreseeable future (Ip, 2022). There may be a lender of last resort in case of a demand shock. There is no lender of last resort when the shocks are supply side driven. One can understand, therefore, why the reaction to central banks who thought that the rise in inflation was transitory has been so negative (Rendell, 2022). Instead, they are left with arguing that they are determined to return inflation to target while simultaneously arguing that there is so much uncertainty that there are no guarantees about the timing of the return to lower and more stable inflation. Indeed, governments are rushing to find ways to cushion the blow from higher energy prices especially by cutting fuel taxes and subsidising households. Of course, this is a recipe for maintaining higher aggregate demand, worsening deficits with the consequent further rise in debt, all of which may exacerbate the inflation problem.

If governments then increasingly rely on policies that will suppress price movements, or distort them via tariffs, export controls, and the like, the public will soon ask whether any inflation target is meaningful. Indeed, central banks will be left wondering how useful are signals about the stance of monetary policy especially if balance sheets remain bloated thanks to the continuation of unconventional policies.

Just as the world had become convinced that low and stable inflation, that is, around 2 to 3% was thought as delivering the best aggregate economic outcomes we now face the distinct possibility, if inflation remains elevated for the medium term, that observers will begin asking again what is an acceptable inflation rate in the more uncertain and volatile environment we are living under. Economists long ago debated this question and, in the case of the trade-off between growth and inflation, readers might be surprised to find out that inflation rates quite a bit higher than 2% were deemed tolerable before growth was significantly negatively impacted (Bruno and Easterly, 1996; 1998, Temple, 2000). Reopening arguments about acceptable inflation rates will likely be similar to the reopening of old wounds. After all, if the alternative of tightening monetary policy sufficiently to tame the current spike of inflation is adopted then we are back to episodes such as the 1979-82 period in the US when then Fed Chair Paul Volcker managed to reduce inflation but at a great economic cost.[8] A softer return to lower inflation, at least in terms of real economic effects, is likely to consist of a mix of policies that suppress inflation but with a significantly tighter monetary policy stance.

[8] A literature emerged that attempted to estimate sacrifice ratios, that is, how much economic growth is lost when policies to reduce inflation are implemented.

3.2. Doing the hard things

There is undoubtedly considerable truth in the argument that the Maastricht Treaty, with all of its flaws, laid the groundwork for the creation and introduction of a successful single currency (Brunnermeier et. al., 2016). The overly generous report card about EMU the EU gave itself after its 10th anniversary would be followed by a near failure soon after in the form of a SDC. Unless the current inflation and financial stress that envelops Europe, and the globe more broadly, can be overcome it risks triggering another existential moment for the EA in the foreseeable future.

In the short-run, the ECB can only respond as it has in the past three crises (GFC, SDC, COVID-19). However, just as the next generation EU program was capable of overcoming resistance to creating an EU-wide form of fiscal policy, the ECB's mandate and role also requires some rethinking. This will be difficult since it is likely that a new Treaty may be required. However, the ECB as an institution is now mature enough to withstand the necessary changes. At issue is the resilience of monetary policy when shocks are more frequent, larger, and shine a light on the limitations of what central banks can accomplish. Not at issue is the desirability of low and stable inflation nor is the concept of the autonomy of the central bank in question. That said, there must be recognition that it is autonomy within government and not from government that works best.[9]

Second, if the conflict in Ukraine prevents the ECB from credibly meeting its inflation objective, the MPS must be modified to include an escape clause for circumstances beyond the ability of conventional (or UMP) to control inflation. Simultaneously, some responsibility should be shifted onto euro area governments via requiring a directive for the ECB to temporarily suspend any inflation target. It would assist the credibility of the directive if euro area governments treated any threat to the single currency area from inflation, or some other existential danger, much like article 5 in the NATO Treaty.[10] That is, large economic shocks that would likely disproportionately impact some countries in the euro area would be seen as a threat to all countries in the monetary union.

Finally, the sequence of crises over the past two decades has, hopefully, taught policy makers that monetary policy cannot do all the work of economic stabilisation. Democratic accountability, combined with best practices in institutional governance, ought to lead to a sharing of policy responsibilities across different institutions. Equally important, euro area governments cannot remain oblivious to the interaction of fiscal and monetary policies. Responsibility for defining the objectives of policy should be jointly determined by euro area governments and the ECB[11]. And, once the remit is set, the ECB should not be interfered with until a new remit is negotiated. This would bring the ECB more in line with practices in other jurisdictions.

The time to shift more of the responsibility for economic stabilisation away from central banks has come. The war in Ukraine has laid bare the limits of monetary policy. Nevertheless, undesirable, and even disastrous, economic outcomes can be avoided if it is recognised that economic stabilisation is the joint responsibility of fiscal and monetary policies. The ECB cannot remain an island in the fight to

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[9] This is especially difficult when proposals for reform require unanimity. However, there is already recognition within the EU that unanimity is not a sustainable model. If the current model is eventually replaced by a new and more flexible one then reforms of the ECB will be easier to implement.

[10] The relevant texts is: "The Parties agree that an armed attack against one or more of them in Europe or North America shall be considered an attack against them all…". See https://www.nato.int/cps/en/natolive/official_texts_17120.htm for the full text.

[11] This requirement could also impact the oversight role for the European Parliament if, for example, Member States, are happy to allow the responsibility to remain at the EU level. Existing frameworks, such as articles that define the current European Commission's oversight responsibilities under the existing Treaty on the Functioning of the European Union might also be relied on to deal with the question. Alternatively, the European Commission might serve as the coordinating mechanism (e.g., as in the current Alert Mechanism Report) to report to individual euro area Member States who would then define the objectives of monetary policy but ask the Commission to report on its status at regular intervals

prevent a return to stagflation that may well emerge from the war in Ukraine. Ultimately, the consequences of the ongoing conflict with Russia are political first and will then spillover into the economic sphere. Central banks have no policy instrument that can deal with this type of shock.

4. CONCLUSION

All is not doom and gloom. Central bank interventions since 2008, fiscal interventions during the pandemic, and vaccine developments have demonstrated a level of policy resilience that is impressive. We are in a much better place than if benign neglect was deemed to be the best strategy. That said, there are storm clouds on the horizon and the next steps fraught with added risks because they are dependent on actors whose actions are not motivated by economic outcomes but by political ones.

It should be acknowledged that the ECB has been too late to react in the face of current inflationary pressures. The war in Ukraine adds to the difficulty of identifying supply versus demand shocks and certain comments by the ECB President to the effect that the current situation is largely due to supply side factors is not supported by the facts (Lagarde, 2021). Even if the latest shock is primarily a supply side one, it is puzzling then that there is a rush to promise tighter monetary policy faster. Unless the textbook description is entirely wrong, central banks ought to look past the first-round effects of supply shocks and use communication to persuade the public that this will pass once aggregate imbalances are eliminated. Instead, we may see a worse version of the 2011 ECB monetary policy mistake that produced a hard landing. If so, the economic pain of the early 1980s in the US triggered by the Fed then led by Paul Volcker, may also be in our future.

Beyond these short-run considerations the ECB as an institution requires reforms. The Maastricht requirement that the central bank set its own course and is largely independent of how fiscal policies are set in the single currency area is no longer helpful. Governments and central banks are in this together. To pretend otherwise suggests that the ECB lacks maturity. After more than two decades of existence, it is time for policy makers to think differently about how monetary and fiscal policies should co-exist.

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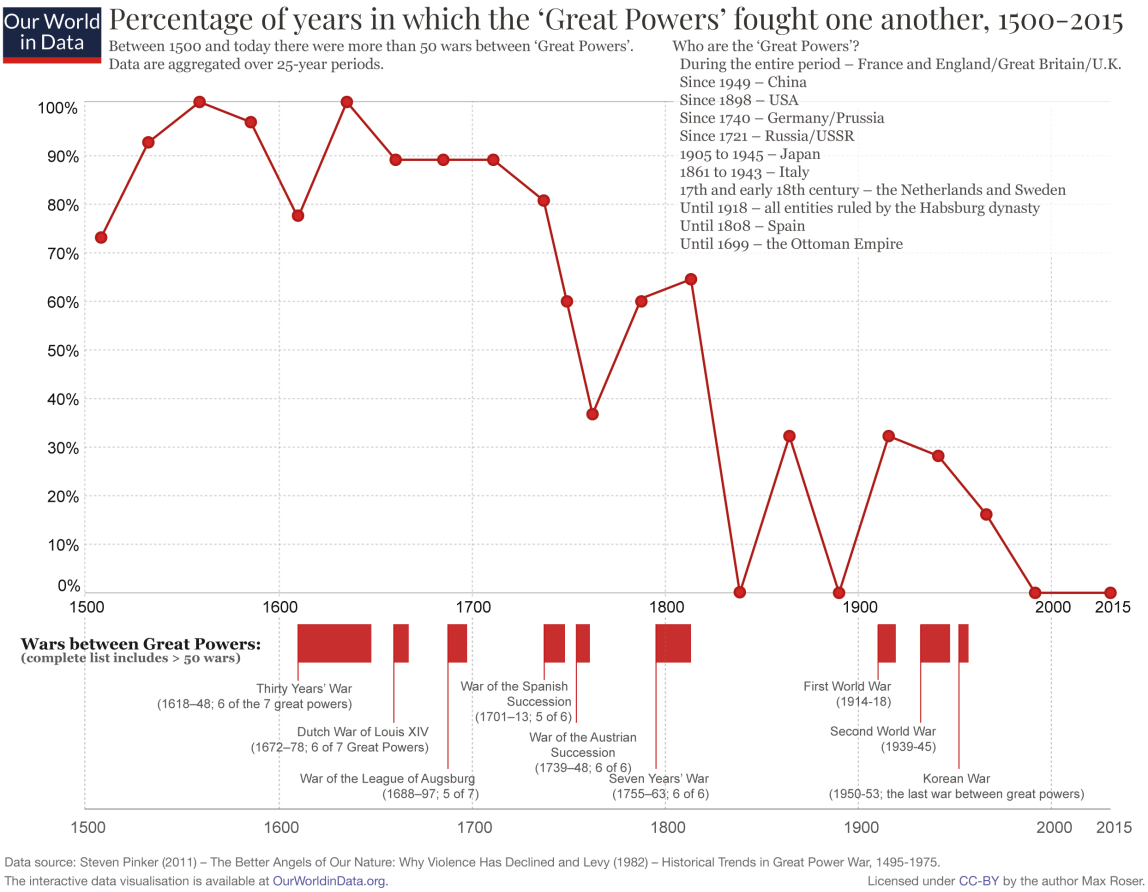
ANNEX



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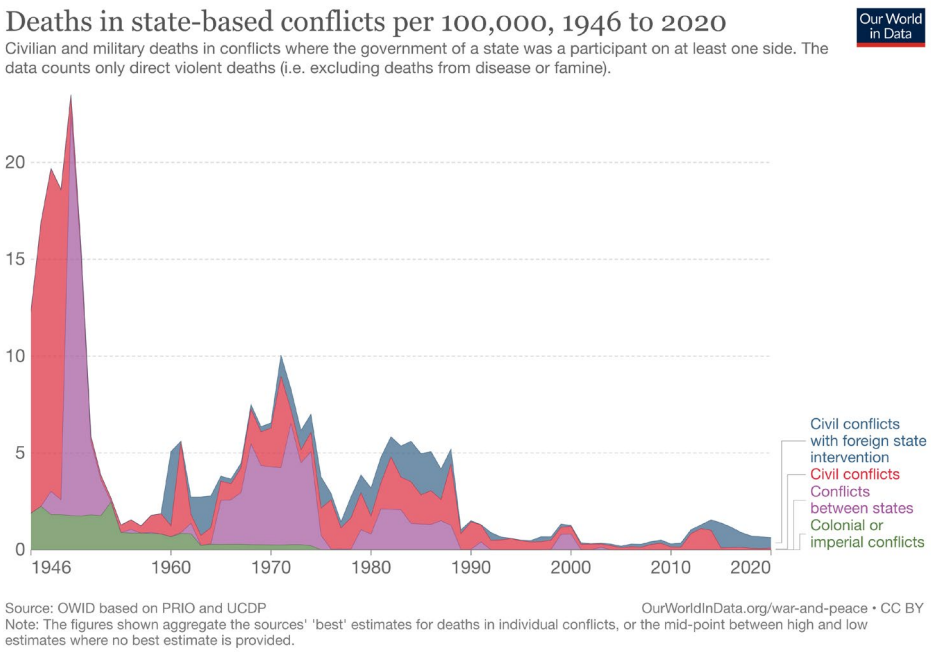

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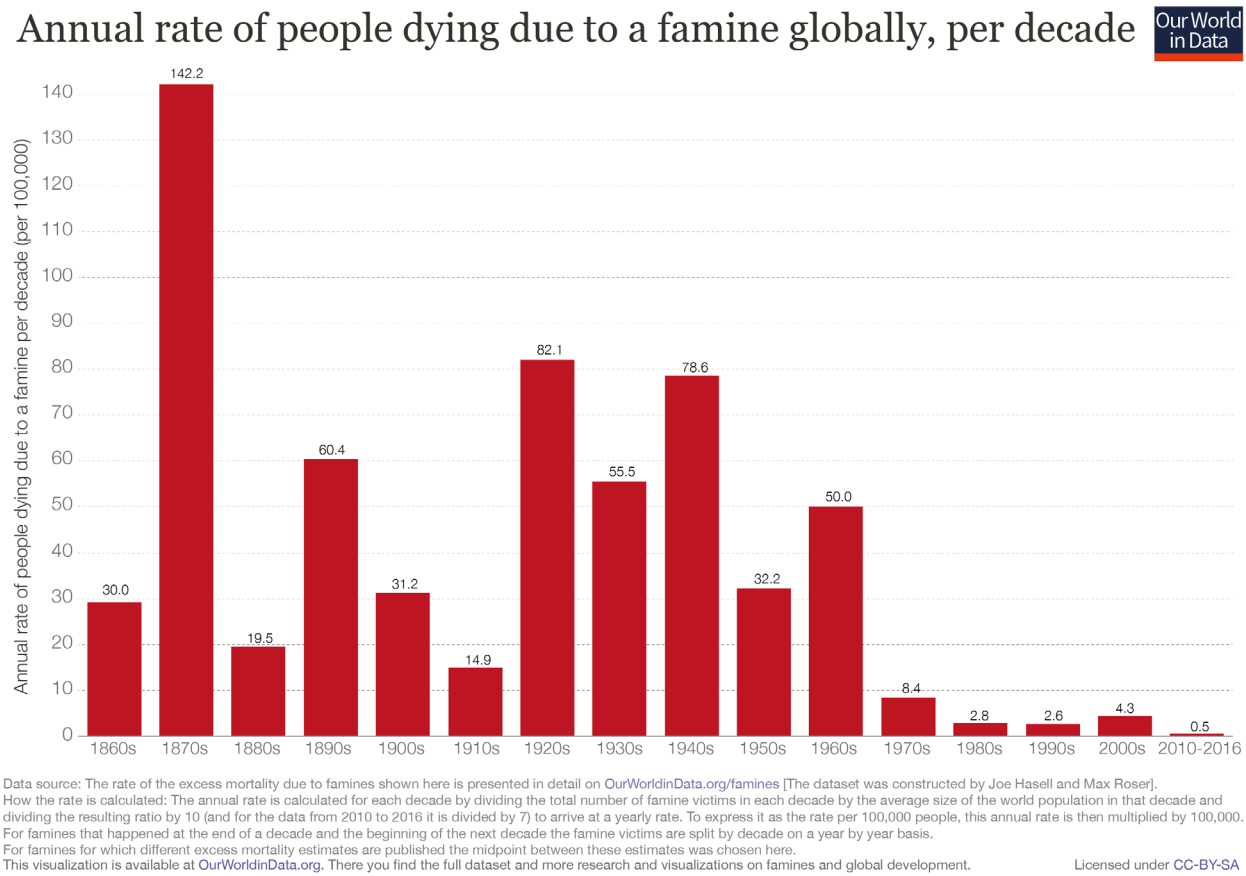

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The ECB and the Ukraine war: threats to price, economic and financial stability

Luigi BONATTI and Roberto TAMBORINI

Abstract

As a consequence of the Ukraine war, in the aftermath of the COVID-19 pandemic, monetary policy in the euro area is severely challenged by the convergent threats to price, economic, and financial stability. After examining them, we argue that the burden of the euro area stability cannot be left entirely on the shoulders of the central bank. The successful synergic coordination of monetary policy with central and national fiscal policies inaugurated in response to the pandemic should be strengthened.

This paper was provided by the Policy Department for Economic, Scientific and Quality of Life Policies at the request of the committee on Economic and Monetary Affairs (ECON) ahead of the Monetary Dialogue with the ECB President on 20 June 2022.

CONTENTS

LIST OF ABBREVIATIONS

APP	Asset purchase programme
ECB	European Central Bank
EU	European Union
GDP	Gross domestic product
HICP	Harmonised index of consumer prices
NGEU	Next Generation EU
PEPP	Pandemic emergency purchase programme
REP	Real energy price
TOT	Terms of trade
UK	United Kingdom
US	United States

LIST OF FIGURES

EXECUTIVE SUMMARY

- The Ukraine war is **exacerbating some of the problems that were already afflicting the European economy**, and in particular the euro area, such as the sharp increase in the prices of energy and the difficulties inherent in restoring cross-border supply chains that had been disrupted by the pandemic.
- The war has also added new ones, given that it is forcing Europe to quickly **seek alternative energy sources** to Russia, to welcome the many refugees fleeing Ukraine and to increase its defence expenditures. Furthermore, the shock suffered by businesses and consumers and the great uncertainty created by the war are contributing to endangering a post-COVID recovery that before the Russian aggression seemed robust.
- Monetary policy in the euro area is severely challenged by convergent **threats to price, economic and financial stability.**
- Cost-push, and specifically **import-cost-push**, inflation is first and foremost a change in **relative prices** with both demand and supply-side **real effects**. The **spectre of stagflation** – inflation accompanied by economic slump – is inbuilt into the price increases that are fuelled by the world markets for energy, raw materials, food.
- Conventional wisdom asserts that **monetary policy is ill suited**, if not counterproductive, to correct real, structural shocks. A monetary restriction would **further reduce demand across the board of all sectors**, whereas the correct reallocation response would require a shift of demand away from higher-price imported goods towards lower-price domestic goods. However, monetary restrictions may be justified **if an acceleration of disinflation is deemed necessary**, though at the cost of a deeper economic contraction.
- **There are also motives to think that the ongoing inflation surge is not purely temporary**, since the negative supply shocks that have been at the origin of the current increase in inflation are likely to persist over the medium and long term. In this perspective, **suitable targeted fiscal policies**, at the national, as well as EU central level, can usefully complement monetary policy moving from stimulus to normalisation. Examples are **fiscal sterilisation of households' energy bills**, which may prevent pressures for wage-price spirals, and subsidies for investments in **energy sources substitution**.
- The short and long term necessities of the post-pandemic legacy, of the stagflation shock, of the economic and strategic implications of the new international stance of Russia and China, and of the EU Member States' commitments towards green transition, all **make an increase in the borrowing requirements of governments likely**. In the euro area context of sharp differences in Member States' indebtedness, the ECB's choice of whether, when and how much to taper its purchases of government bonds and raise its policy rates to dampen inflationary pressures will inevitably appear **controversial and highly political.**
- ECB officials are well aware of their delicate position, and call for a "**credible backstop**" for the euro area stability. This means that the whole burden cannot be left entirely on the shoulders of the central bank. The successful **synergic coordination** of monetary policy with central and national fiscal policies inaugurated in response to the pandemic should be strengthened.

1. INTRODUCTION

The Russian invasion of Ukraine, in addition to having ignited after many decades a full-fledged war in Europe, with all the horrors that this is entailing, hit the European Union (EU) economy just as it was struggling to emerge from the COVID-19 pandemic and the European Central Bank (ECB) was about to begin the impervious path of monetary policy "normalisation". The war has therefore exacerbated some of the problems that were already afflicting the European economy, and in particular the euro area, such as the sharp increase in the prices of energy that has raised inflation everywhere, as well as the difficulties inherent in restoring cross-border supply chains that had been disrupted by the pandemic.

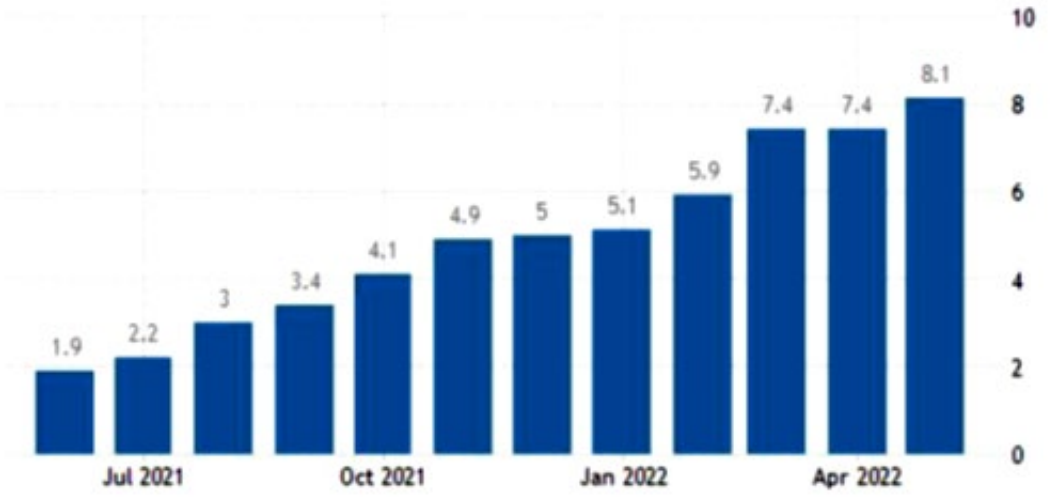
To these problems the war has added new ones, given that it is forcing Europe to quickly seek alternative energy sources to Russia, to welcome the many refugees fleeing Ukraine and to increase its defence expenditures. Furthermore, the shock suffered by businesses and consumers and the great uncertainty created by the war are contributing to endangering a post-COVID recovery that before the Russian aggression seemed robust.

With this situation in the background, the paper addresses some of the issues that are more relevant now and in the near future for the conduct of monetary policy in the euro area. Hence, in Section 2 we illustrate how the ECB and its officials reacted to the events that happened in the last months. Section 3 highlights different aspects of inflation, in particular introducing the distinction between demand-pull and cost-push inflation, and the real effects of imported energy shocks, which are also discussed through a simple formal model. Section 4 deals with the implications for monetary policy of imported energy shocks, which are studied through a system of three equations that allow to simulate the economy's adjustment trajectory under different hypotheses about monetary policy and inflation expectations. Section 5 is devoted to three important issues: recent systematic errors in central banks projections of future inflation and misdiagnoses of commodity price movements; arguments in favour of the hypothesis that the current inflation spike is transitory rather than long-lasting and policies that could avoid price-wage spirals; risk of fragmentation in the euro area and need of a credible backstop. Section 6 concludes.

2. THE ECB IN THE FACE OF THE UKRAINE WAR

In February 2022, with annual inflation above 5% in the euro area and on the rise since the summer of 2021 (see Figure 1), the ECB Governing Council expected its key policy rates to remain at their current[1] "*or lower levels until it sees inflation reaching 2% well ahead of the end of its projection horizon and durably for the rest of the projection horizon, and it judges that realised progress in underlying inflation is sufficiently advanced to be consistent with inflation stabilising at 2% over the medium term*" (ECB, 2022a).

Figure 1. Euro area inflation rate, 2021-22



Source: Trading Economics https://tradingeconomics.com/euro-area/inflation-cpi

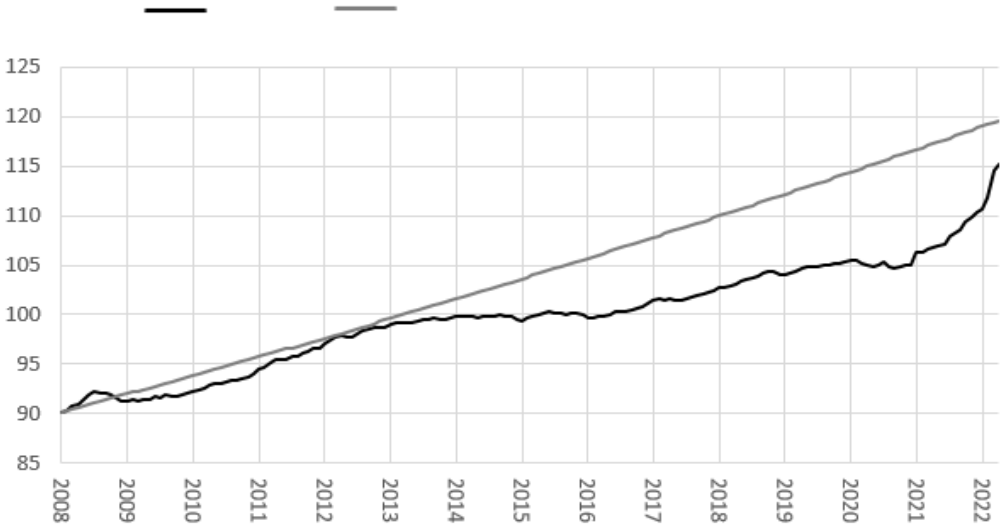
It appears from this official statement that, on the eve of the Russian invasion of Ukraine, the Governing Council was still convinced that the main challenge for the ECB was to push inflation up in the medium term, so as to stabilise it at 2% after years in which it had remained stubbornly below this target (see Figure 2). At the basis of this conviction there was the judgment, shared by the other major central banks and supported by market indicators of future inflation, that **the price level hike observed in the second half of 2021 was driven by transitory factors** (see Bonatti et al., 2022), such as fast-growing fossil energy prices, rising food prices, continuing supply chain disruptions, clogged ports and logistics strains due to the COVID-19 pandemic.

In a recent issue of its Economic Bulletin, the ECB admitted that its staff projections had substantially **underestimated the surge in inflation** (see Chahad et al., 2022), with this underestimation that began to occur in the first quarter of 2021, became more pronounced since the third quarter of 2021 and reached its peak in the first quarter of 2022, when the difference between the outturn and the December 2021 projection was 2.0 percentage points (see Figure 3). Consistently with this recognition, in its 9-10 March meeting, "***with inflation continuing to surprise on the upside***" (ECB, 2022b) and the Russian invasion of Ukraine under way, the ECB Governing Council decided to remove any reference to the possibility that its policy rates may fall below current levels. As a matter of fact, the outbreak of the Ukrainian war had an immediate impact on commodity prices, especially those of oil and gas, that—

[1] Interest rates on the main refinancing operations, the marginal lending facility and the deposit facility were, respectively, at 0.00%, 0.25% and -0.50%.

rising from already elevated levels—pushed the euro area consumer inflation up to an annual rate of 7.4% in March.

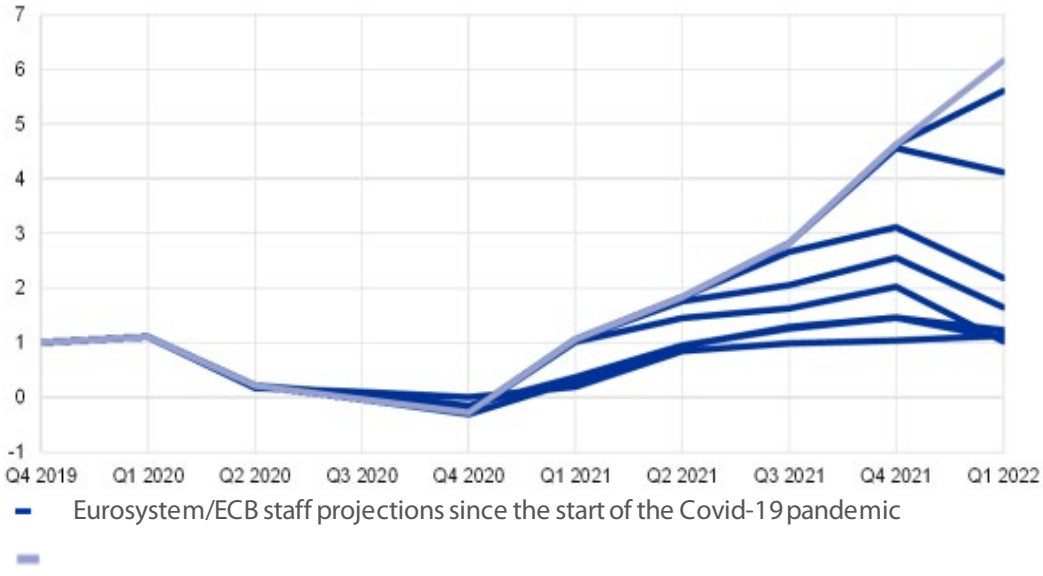
Figure 2. Euro area actual HICP and its 2%-trend value, 2008-2022 (2015=100)



Source: ECB Statistical Warehouse.

Figure 3. Evolution in HICP inflation projections

annual percentage change

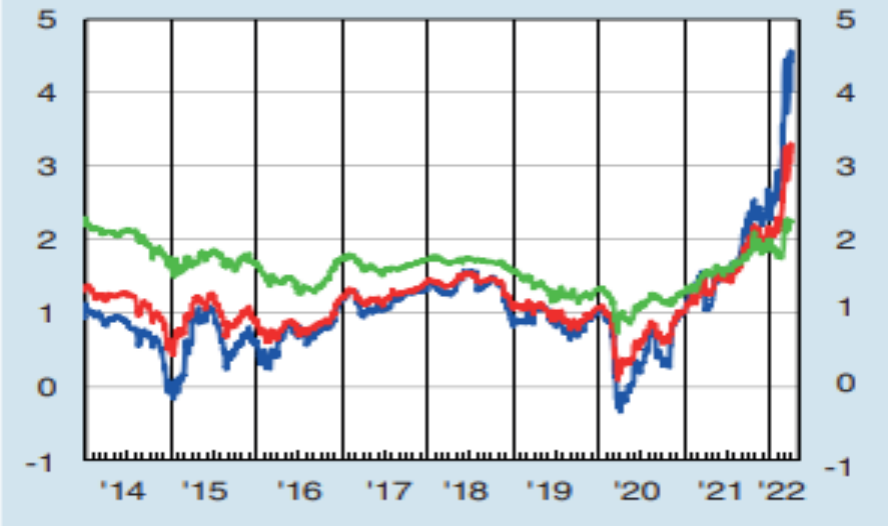


Source: ECB Economic Bulletin, issue 3, 2022.

Although even food prices rose 5% in March, more than half of the increase in the euro area price level was due to the price of energy, with core inflation estimated to be at a much lower 3% annual rate. Also **short-term inflation expectations rose sharply**: as of 1 April, the expectations derived from the inflation-linked swap contracts were equal to 4.0% over the two-year horizon and to 3.0% over the five-year horizon (from 2.5% and 2%, respectively, in mid-January), while the 5y5y inflation swap rate stood

just above 2% (see Figure 4). Thus, market indicators of future inflation, together with operators interviewed in the Survey of Monetary Analysts, apparently agreed with the ECB's staff in predicting an inflation hike in 2022 and a gradual return in the medium term to the 2% target. Almost symmetrically with the ECB staff upward revision of the December 2021 inflation forecasts, the ECB staff projections for real GDP growth in the euro area were revised down in March 2022 by 0.5% (to 3.7%) for 2022, by 0.1% (to 2.8%) for 2023 and remained unchanged (to 1.6%) for 2024: **the invasion of Ukraine represented a supply/cost shock for the euro area that was expected to have both an inflationary and a contractionary impact on it** (more on this in sections 3 and 4).

Figure 4. Expected inflation rates implicit in inflation-linked swaps



Source: Bank of Italy.

Together with the elimination of the "*easing bias*" that had previously characterised its forward guidance on interest rates, in March, the Governing Council announced the reduction of its net asset purchases taking place in the context of the asset purchase programme (APP) to EUR 40 billion in April, EUR 30 billion in May and EUR 20 billion in June, and the intention to stop or make them "**data-dependent**" in the third quarter of 2022. The decision of putting an end to the APP sooner than previously expected (based on previous roadmap, monthly net purchases should have amounted to EUR 40 billion in the second quarter and EUR 30 billion in the third quarter), was not fully anticipated by the markets, which reacted by consolidating the upward trend of the 10-year Bund yield (see Figure 5) and raising immediately the spread between the latter and the government bonds of the most vulnerable euro area countries (in particular, the spread between the Bund and the Italian BTP, see Figure 6).

Furthermore, in its March meeting, the Governing Council stated that **any policy rate rise will take place "*some time*" after the end of the APP and will be "*gradual*"**, thus giving rise to speculations amongst analysts and commentators about when the ECB will start raising its policy rates and how much the latter will be raised by end-2022. Apparently, in the days that followed the Russian invasion, market expectations regarding future increases in ECB policy rates had been revised, in the anticipation that a first 25-basis points hike will take place around the turn of the year, about two months later relative to pre-war expectations. In any case, the outbreak of the war increased uncertainty about future monetary policy and in general about the economic outlook: in March, the Governing Council

noticed that "*the distribution of risks around the expected path of the three-month EURIBOR had widened substantially, reflecting the heightened uncertainty surrounding both the economic and the inflation outlook*" (ECB, 2022b). In this climate of **growing uncertainty**, the risk assessment prevailing among market participants was not symmetric, since "*the more pronounced skewness of the distribution suggested that markets had become even more concerned about upside risks to inflation*" (ECB, 2022b).

Figure 5. Germany 10Y Bund yield (percent), 2021-2022

Source: Trading Economics https://tradingeconomics.com/germany/government-bond-yield

Figure 6. Spread between Italy's 10Y BTP yield and Germany's 10Y Bund yield (basis points), December 2021-May 2022

Source: Italian Stock Exchange https://www.borsaitaliana.it/obbligazioni/spread/italia/btp-bund.htm

Members of the Governing Council emphasised in the March meeting that the war not only had created more uncertainty, but also that the latter was typically "**Knightian uncertainty**", i.e. a type of uncertainty that is not quantifiable. Given this uncertainty, at the end of March, ECB chief economist Philip Lane stressed that the ECB should maintain **"*two-sided*" optionality**, since two opposing forces were at work and nobody could predict which of the two will prevail in the medium-to-long run (see Lane, 2022). Indeed, for a major energy importer as Europe (more than 90% of its energy consumption is imported), differently than for the US that is also a big producer of fossil energy, a gas and oil price hike determines both a cost shock pushing inflation up and a deterioration of its terms of trade

depressing real income and aggregate demand. Hence, the impossibility of quantifying a priori the relative strength of those forces, also dependent on the evolution of the war and the geopolitical context linked to it, justified the insistence with which ECB officials tried in their communication of this period to reaffirm the "*data-dependent*" character of the ECB policy, namely to maintain a "*wait and see*" attitude with regard to timing and size of their future moves in matter of policy rates (see, e.g., Lagarde, 2022a).

Therefore, in its 14 April meeting, the ECB Governing Council restated that "in the current conditions of high uncertainty", it "will maintain **optionality, gradualism and flexibility** in the conduct of monetary policy", and reiterated its determination to conclude the ECB net asset purchases in the third quarter of 2022. The Governing Council also reaffirmed on this occasion its intention to reinvest, in full, "*the principal payments from maturing securities purchased under the APP for an extended period of time past the date when it starts raising the key ECB interest rates and, in any case, for as long as necessary to maintain favourable liquidity conditions and an ample degree of monetary accommodation*" (ECB, 2022c).

Similarly, in this meeting it was confirmed that "*the Governing Council intends to reinvest the principal payments from maturing securities purchased under the PEPP until at least the end of 2024*", and that "*the future roll-off of the PEPP portfolio will be managed to avoid interference with the appropriate monetary policy stance*", with the important specification that "*in the event of renewed market fragmentation related to the pandemic, PEPP reinvestments can be adjusted flexibly across time, asset classes and jurisdictions at any time*" (ECB 2022c).

The above reference to the way in which the ECB would respond to a possible **risk of market fragmentation** is aimed at reassuring the financial markets, given the widespread fear that the announced end of ECB's net asset purchases could create difficulties for the more heavily indebted euro area governments. In fact, in response to changes in market sentiment linked to the evolution of the war in Ukraine and coming data on inflation and growth, phases in which fears of recession or declining growth prevail, with consequent decreases in stock prices and bond yields, have recently alternated with phases in which fears of persistently high inflation and rapid, substantial, increases in central banks' policy rates prevail, with consequent falls in bond prices and rises in their yields (and in the spreads between European sovereign bonds).

3. INFLATION IS NOT ALWAYS AND EVERYWHERE THE SAME

We now wish to draw a simple conceptual framework that may help to organise and assess the unexpected evolution of events on the inflation front, and the "real time" reactions of the ECB over the last year outlined above.

It should never be forgotten that inflation is a complex phenomenon. It may have different causes across time and space behind the same appearance. Inflation is generally classified, and analysed, as a macroeconomic phenomenon, in the sense that the index numbers of prices gather composite baskets of goods and services, and inflation is commonly understood as an upward movement of prices of (the majority of) goods in the basket. More technically, inflation is registered when prices present a **common trend.**

At the same time, single prices move upwards or downwards for specific reasons. These are basically: (i) changes in demand and supply, (ii) changes in productions costs, (iii) changes in market structure, (iv) changes in price expectations. Common trends arise when these factors align themselves pushing single prices in the same direction. To this end, macroeconomic models of inflation monitor the behaviour of these factors at the *aggregate level*, but the fact that prices are eventually a microeconomic phenomenon should never be overlooked.

3.1. Demand-pull versus cost-push inflation

Against this background, a long-standing distinction can be found in the literature between **demand-pull** and **cost-push** inflation. In the former type, a generalised pressure on prices arises from a tendency of the various components of aggregate demand to grow faster across sectors than production capacity on the supply side. How much of the demand-pull is translated into some increases in production, and how much is translated into pure increases in prices, depends on the initial state of the economy (whether dwelling below, or just close to, full capacity), on the degree of pricing power in the various sectors, on the degree of "stickiness" of prices and nominal wages in the face of market imbalances. In this process, also costs of intermediate goods and of labour are obviously involved, since they rise as a result of firms' attempts at producing more. But this is a second-round effect, not the primary impulse of inflation. In the cost-push type, on the contrary, the inflationary impulse comes directly from production costs, which may increase out of "exogenous" factors with respect to the other macroeconomic conditions. This is more typically the case of costs of imported production inputs, such as raw materials, energy and intermediate goods.

Main macroeconomic theories highlight that the two types of inflation display different consequences and have different policy implications. Demand-pull inflation is typically **procyclical**, meaning that the increase in prices (the acceleration of inflation) is positively correlated with aggregate demand and GDP. By contrast, cost-push inflation tends to be **anticyclical**, namely negatively correlated with GDP (in this respect, it looks like a negative "supply shock"). This effect is also commonly known as **stagflation**, i.e. inflation accompanied by a fall in economic activity.

The reason of this different macroeconomic pattern can be traced back to plausible firms' behaviour *vis-à-vis* an unexpected cost shock.[2] To fix the ideas, consider the simplest case where the energy sector is entirely abroad, and the non-energy sector is entirely domestic. Depending on the market structure they face, firms can, at least in the short run, either seek to transfer higher costs onto sale prices (this may happen even near to perfect competition if the shock is evenly affecting all firms) and/or have to

[2] See e.g. Battistini et al. (2022) for a clear account of these processes.

economise on more costly inputs, which may entail a cut of production too. In some, frequent, cases, however, the demand for the more costly inputs is rigid, since they are not easily substitutable - think of the case of the day, energy. Hence the actual trade-off for firms is between raising sale prices or cutting operation margins, and eventually production. This is the first channel whereby the cost push leads to lower GDP. Yet, even though firms are to some extent able, as is generally the case, to pass higher costs through prices, the contraction of GDP will come about as a result of the effect of higher prices on demand.

The price index P of the domestic product, i.e. the GDP deflator, will look like the following:

(1) $P = \alpha P^n + (1-\alpha)eP^*$

i.e. a composition of the prices of non-energy (domestic) inputs P^n, and of the (imported) energy input eP^*, according to the respective shares in production α, $1-\alpha$, where P^* is the energy price at origin and e is the nominal exchange rate (units of euros for one unit of foreign currency).

As to households, energy is also a consumption item together with the domestic product. The index of consumer prices (ICP) is therefore:

(2) $ICP = \beta P + (1-\beta)eP^*$

according to the respective consumption shares β, $1-\beta$.

Overall, the pass through of the energy price to the ICP results:

(3) $ICP = \alpha\beta P^n + \beta(1-\alpha)(1-\beta)eP^*$

The weight of the energy price on the total "headline" ICP depends on the weight of energy in production and consumption, given the degree of cost-price pass-through by firms.

3.2. Real effects of imported energy shocks

By means of these relationships we can identify three channels through which the imported energy shock generates **negative real effects** on economic activity in the domestic economy.

The first and most straightforward is the **real income effect** on households via the ICP. Other things equal, the energy shock on eP^* raises the ICP and, as long as nominal incomes are not immediately and perfectly linked to the HICP, households suffer from a loss of purchasing power. However, this may not be evenly distributed across the consumption basket. Households find themselves in the same position as firms: the demand for energy services is rigid. Hence the increase in their energy bill forces households to cut other items in the budget. In this way, the cost push not only does lead to lower demand and GDP, but also triggers **sectoral spillovers** from the sector(s) where the cost shock originates to others.

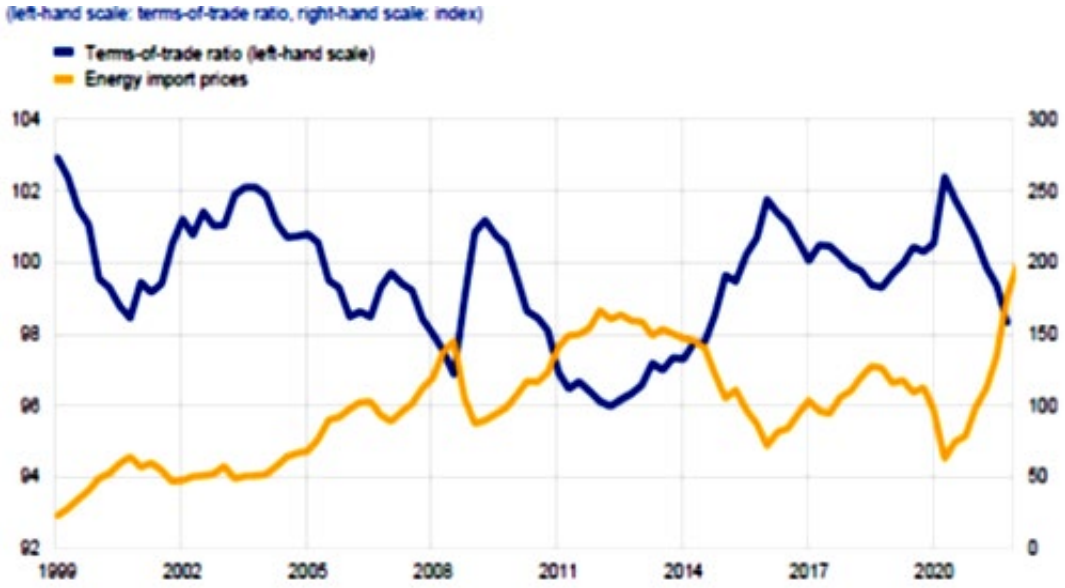
The literature[3] offers two more detailed indicators in order to gauge the real effects of *imported* energy prices: the ratio of the energy component to the total CPI, eP^*/CPI, also called **real energy price** (REP), and the ratio of the GDP deflator to the energy price, P/eP^*, also called **terms of trade** (TOT). As can be seen from expression (2), the energy shock *raises* the REP. At the same time, from expression (1) we can deduce that the same energy shock *lowers* the TOT. Therefore, we can expect that as an effect of energy shocks the two indicators move in opposite directions.

This prediction is largely confirmed by the data reproduced in Figure 7, that we borrow from a recent ECB staff study (Battistini et al., 2022). Notably the REP (yellow line) remained relatively stable around

[3] E.g. Blanchard and Galì (2010), Battistini et al. (2022).

100 from 2008 to 2019. The TOT (blue line) displayed larger fluctuations, especially in the aftermath of the Great Recession, mainly due, therefore, to the non-energy and domestic components. The data after 2020 vividly show the upsurge of the REP and the consequent fall in the TOT.[4]

Figure 7. Real energy price and the terms of trade in the euro area (2010=100)



Source: Battistini et al. (2022).

In order to understand the consequences of these phenomena, note first that the increase of the REP indicates that the domestic non-energy good has become cheaper relatively to the imported energy good, which in international economics is dubbed **real depreciation.** This *may* trigger a substitution from the imported to the domestic good, and is generally regarded as a means to improving the foreign trade balance, *if* the two kinds of goods are substitutable. If they are not, as in the case under consideration, the real depreciation has entirely a different, and perverse, effect, namely it **deteriorates the trade balance** and the current account. According to the ECB calculations, the euro area current account has worsened since early 2021 by approximately one point of GDP, with the negative drag almost entirely due to an increase in the imported energy bill of about 3.5% of GDP (ECB, 2022d, Box 1). Since, according to national accounting, the current account is a component of national disposable income, the deterioration of the current account reported above can be seen as the other side of the coin of the households' negative income effect of the energy shock.

On the other hand, the TOT measure the amount of imported energy that can be obtained by exporting one unit of domestic product. Hence, the concomitant fall of the TOT, represents a **real loss** for the domestic country since a unit of domestic good buys less imported energy, or in other words, more of the domestic good has to be given in exchange for one unit of the imported energy. From this point of view, the fall of the TOT entails a **transfer of purchasing power abroad**, which, as of the end of 2021, for the euro area amounted to a loss in the order of 1.3 percentage points of GDP (ECB, 2022d, p. 33).

[4] Note that in the same period of observation some depreciation of euro against the dollar also occurred, i.e. a rise in the variable *e* of the imported cost of energy.

Overall, the three indicators presented above, from different angles converge to the point that the imported energy shock which the euro area is experiencing is not the cause of a mere nominal escalation of the HICP, but is triggering various **real effects.**

As is intuitive even from our overly simple formulations, the phenomena expounded above are more intense the more the country is **energy-consuming** and **energy-dependent** from abroad. Therefore, the intensity of the effects may vary from country to country. Considering comparable economies like the US or the UK, it may be said that the euro area is somewhat less energy consuming but is significantly more dependent from abroad. Overall, it seems so far that the negative impact of the imported energy shock is more pronounced in the euro area than elsewhere (ECB, 2022, Box 1). Nonetheless, concern is no less acute overseas. In the words of the Governor of the Bank of England at his latest press conference:

> *"To characterise the situation, the United States is facing what looks like a demand shock, with a strong domestic labour market, strong domestic demand and relatively less exposure to the energy price shock given its position as a major gas producer. The euro area by contrast is facing a supply/cost shock, as it starts with a somewhat weaker domestic labour market, and is heavily exposed to the rise in gas prices. In the UK we are seeing elements of both. Like the euro area, we are experiencing a sharp terms of trade shock emanating from the rise in the price of tradable goods and energy. But our strong labour market is more akin to that in the US* […]
>
> *UK CPI inflation rose to 7.0% in March. The strength of inflation relative to the 2% target mainly reflects previous large increases in global energy and tradable goods prices, owing to the build up to and subsequent Russian invasion of Ukraine, and to the continuing effects of the pandemic on the pattern of global demand and disruption to global supply chains* […]
>
> *UK GDP growth is expected to slow sharply over the first half of the forecast period. That predominantly reflects the significant adverse impact of the sharp rises in global energy and tradable goods prices on most UK households' real incomes. It is a measure of the scale of the shock that total real household disposable income is projected to fall by 1¾% in 2022 which, apart from 2011, would be the largest contraction since comparable records began in 1964"* (Bailey, 2022, pp. 1, 2).

4. MONETARY POLICY AND IMPORTED ENERGY SHOCKS

4.1. Lessons for monetary policy

Lesson number one, cost-push, and specifically *import*-cost-push, inflation is first and foremost a change in **relative prices** with both demand and supply-side **real effects**. If conditions occur, it may even translate itself into a *structural* change (ECB 2022d, Box 1).

Lesson number two, conventional wisdom asserts that monetary policy is ill suited, if not counterproductive, to correct real, structural shocks. A monetary restriction would reduce demand across the board of all sectors, whereas the correct reallocation response would require a **shift of demand** away from higher-price imported goods towards lower-price domestic goods.[5] Likewise, if interest rates rise, they rise for all borrowers including those who should instead be incentivised to invest in the production of alternative energy technologies.

Lesson number three, stagflation is intrinsic in imported energy shocks, independently of any monetary restriction (Blanchard, 2022). Yet, notably, no endogenous real income effect is present in the basic macroeconomic models for monetary policy, such as the New Keynesian three-equation model, certainly not at the textbook level, but at more advanced levels either (e.g. Galì, 2008). The consequence is not merely of academic interest.

Briefly, in the standard policy model an unexpected inflation shock (above the central bank's inflation target) can have a negative impact on aggregate demand and GDP (according to the so-called IS function) only if the central bank reacts by raising its policy rate more than one-to-one with the shock, and hence if it raises the *real* interest rate (as dictated by the typical Taylor Rule). The contraction of demand below potential GDP then curbs inflation (via the inflation-output relationship labelled Phillips Curve). This sequence (plus other technical conditions usually taken for granted) is quintessential to the central bank's ability to drive inflation back on target. In this view, stagflation is the by-product of the central bank's commitment to price stability, and it is often presented as the "**real price of credibility**" of the commitment itself. Furthermore, in absence of the monetary restriction, the model predicts that aggregate demand would *increase* and *amplify* the inflation shock. The reason is that the real interest rate that regulates aggregate demand is equal to the difference between the nominal rate controlled by the central bank and the expected inflation. If the latter increases while the nominal rate does not, the real interest rate falls, which *spurs* aggregate demand and inflation. Despite that this class of models hinges on the assumption of sticky nominal wages and prices, the endogenous real income effect of the inflation shock is absent.[6]

In order to better assess the point, we have re-elaborated the simple simulative version of the New Keynesian policy model presented in our previous Monetary Dialogue paper (Bonatti et al., 2022), where the real income effect on consumption, in relation to an unexpected inflation shock (above the central bank's target) has been added to the IS function. The difference is that, before any central bank's intervention, consumption is subject to two opposite effects: the fall of the real interest rate, which

[5] Whelan (2021) provides a fine reconstruction of this debate in some documents of the US Fed in the stagflation climate of the 1970s.

[6] The technical reason is that this class of models embeds a "pseudo" consumption function, i.e. the optimal intertemporal path of consumption planned by households, which in fact depends on the real interest rate, without the budget constraint, so that there is no real income effect. See Smith and Wickens (2006), Tamborini (2014).

pushes upwards as in the standard model, and the fall of current real income, which pushes downwards.[7]

After all the relevant reciprocal interdependencies among the three equations have been worked out, the current inflation rate π_t, the current output, and the policy interest rate i_t, result as follows:

(4) $\pi_t = \pi^* + a_1(\pi^e_{t+1} - \pi^*) + a_2 u_{pt}$

(5) $y_t = y^* + b_1(\pi^e_{t+1} - \pi^*) + b_2 u_{pt}$

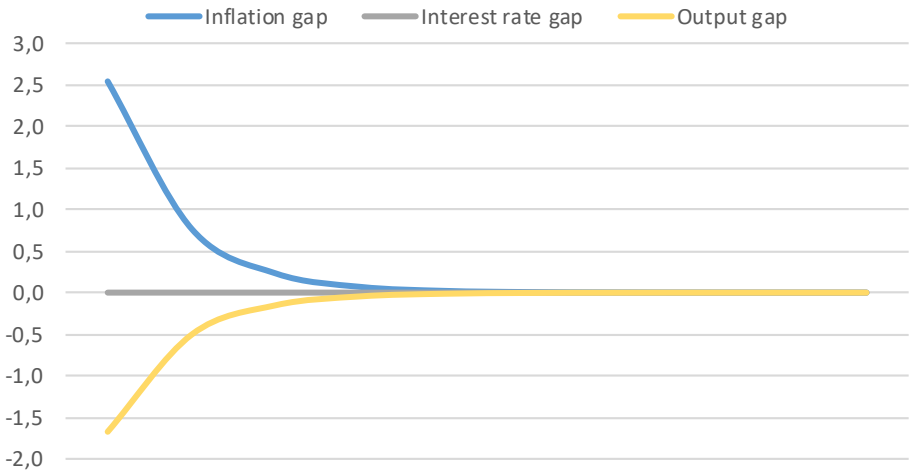
(6) $i_t = r^* + \pi^* + c_1(\pi^e_{t+1} - \pi^*) + c_2 u_{pt}$

where π^e_{t+1} = expected inflation, π^* = inflation target, y^* = potential output, r^* = equilibrium real interest rate, u_p = price shock. The coefficients a_n, b_n, c_n $(n = 1, 2)$ are combinations of the parameters of the three equations. The inflation target has been set to 2%. The values of the coefficients a_n, b_n have been obtained from the estimated structural parameters of the three equations commonly found in the empirical literature.

4.2. "Anchored" expectations and transitory shocks

In order to obtain meaningful scenarios, assumptions are needed about the inflation expectations and the evolution of the price shock.[8] In the first baseline simulation, we have set expected inflation anchored to the inflation target $\pi^e_{t+1} = \pi^*$, and a transitory, low-persistence shock of 3% (50% of the previous period's shock is left in each next period).[9] We have run two simulations. The first of the complete three-equations model, the second with the interest-rate equation "frozen" to capture neutral policy stance Figure 8).

Figure 8. The adjustment paths of inflation and output with neutral policy stance



Source: Authors' simulation.

[7] This effect is fully consistent with the canonical Permanent Income Hypothesis. An unexpected fall of current real income below the long-run future streams of income discounted to the present that constitute the household's intertemporal budget constraint,, triggers a cut of current consumption, less than proportional, in reason of the "short-run" marginal propensity to consume (Friedman, 1957; Hall, 1988).

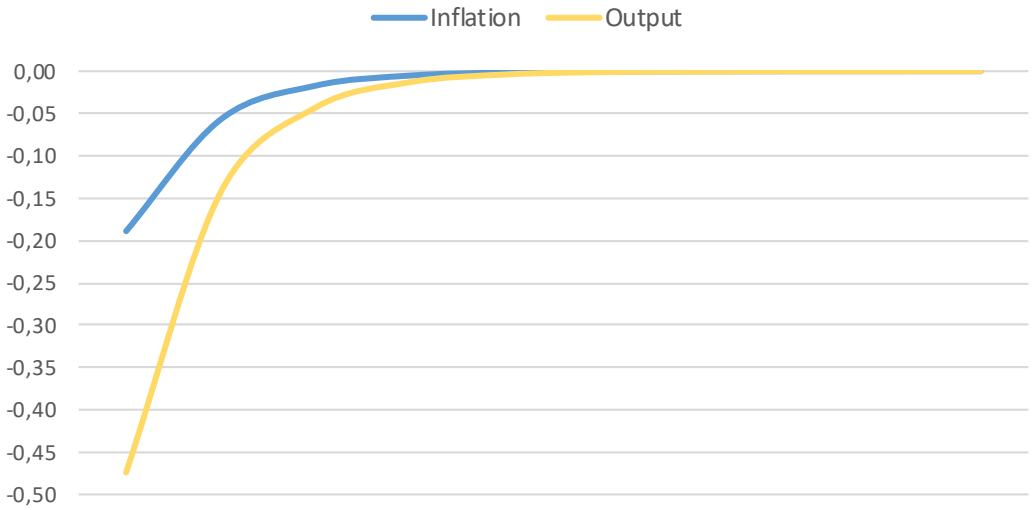
[8] More on this point in Bonatti et al. (2022).

[9] Technically this figure measures the autocorrelation of the shock over time, how much of today's shock remains tomorrow. The speed of transition is the complement to 1 of the persistence.

The thrust of the simulation is that the inflation shock is **reabsorbed even with a neutral policy stance.** The reason is that the negative real income effect of the energy shock on consumption alone creates a negative output gap (1.7% on impact) sufficient to curb inflation.

What difference does unfreezing monetary policy make? Figure 9 gives the answer. As can be expected, it just enhances the fall of aggregate demand and output, and hence the convergence process. Both inflation and output are lower (one fifth, and one half of a point, respectively, on impact) all along the adjustment path.

Figure 9. Difference of the adjustment paths of inflation and output with monetary restrictionwith respect to neutral stance (see Figure 8) (% points)



Source: Authors' simulation.

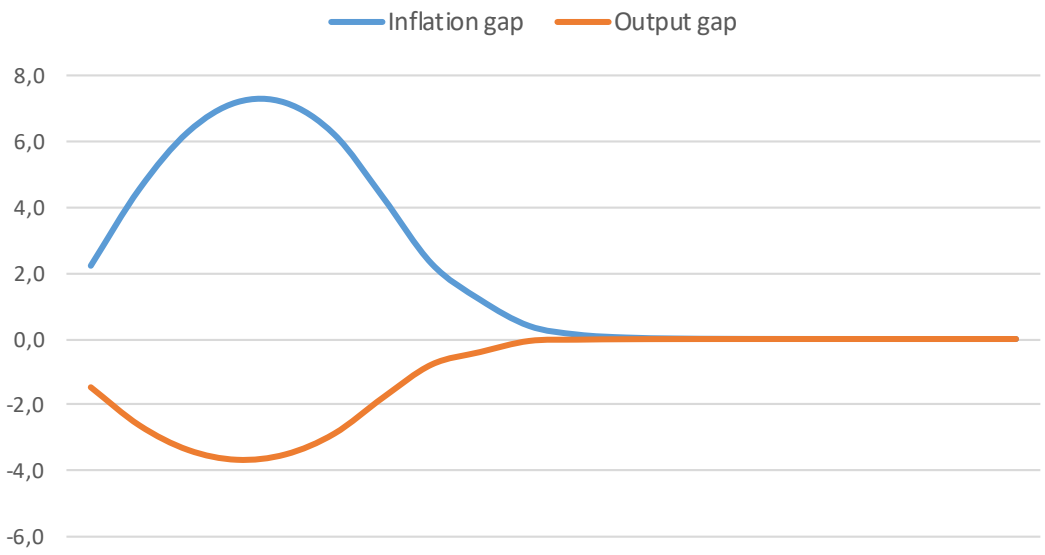
4.3. "De-anchored" expectations and hump-shaped shocks

A common argument in favour of enacting a monetary restriction is that shortening the extent and length of the adjustment path matters in order to prevent two phenomena that may set inflation on an explosive path: the price-wage spiral and the de-anchoring of expectations. Therefore, to add some realism, and challenge, we have introduced a hump-shaped path of the price shock (peaking at 6% in 4 periods and then petering out to zero), and de-anchored expectations in the form of adaptive updating.[10] These two features together boost the inflationary process at initial stages, while adaptive expectations may self-sustain it over time if actual inflation is not curbed fast enough.

Figure 10 presents this new simulation in the case of neutral policy stance, and it confirms that the process still converges to the inflation target. The inflation peak is hit after 5 periods at 7.2% above the target, i.e. a bit later and higher than the peak of the price shock. The concomitant trough of output is 3.7% points below potential. The comparison of this scenario with one with restrictive monetary policy is analogous to the previous case, namely the adjustment is faster with lower inflation (-0.8% at peak) and output (further -1.5% at trough) along the process.

[10] In each period expected inflation for the next period is the weighted average between the inflation target of the central bank and the actual observed inflation. The weighing factor, which ranges between 0 and 1, can be interpreted as the degree of anchorage to the inflation target. We have set it to 0.5.

Figure 10. The adjustment paths of inflation and output with neutral policy stance, hump-shaped price shock and adaptative expectations



Source: Authors' simulation.

These findings by no means justify any neglect of the insurgence of inflation. Yet, they may help to put the cost-benefit balance of policy choices in the right perspective. The spectre of stagflation is inbuilt into the kind of price increases that is being fuelled by the world markets for energy, raw materials, food, with or without monetary restrictions. The consequent endogenous fall of demand and activity may by itself be sufficient to curb the inflation process. However, monetary restrictions, too, may be justified if an acceleration of disinflation is deemed necessary, though at the cost of a deeper economic contraction.

5. SOME HOT ISSUES

5.1. Errors and misdiagnoses

It is true that **errors** are inherent to the nature of projections and that the recent underestimation of inflation was shared by other central banks, but wrong—or even worse—systematically distorted predictions on the part of the authorities can increase uncertainty and reduce public confidence in them. Hence, it is appreciated that the ECB analysed the reasons underlying its errors in the prediction of inflation (see Chahad et al., 2022). This notwithstanding, when one learns from this analysis that predominant sources of errors are market assessments of energy prices—such as those reflected in oil price futures—on which the ECB staff projections (as those of other major central banks) are conditional, one wonders whether in these cases a sort of circularity may not be created whereby market predictions and central bank's projections reinforce each other. Some could argue that in "**normal**" times this **circularity** is harmless and indeed generates robust predictions; however, if one is "***data oriented***"—and these data come from market forecasts and therefore from financial analysts who project forward their probabilistic assessments based on what has been observed in the past—in times of structural changes this circularity risks producing substantial and persistent mistakes (see e.g. Tria, 2022).

As said, underestimation of inflation was going on in Europe and in the US many months before Russian invasion of Ukraine and was mainly (but not exclusively) due to the fact that energy prices have turned out to be higher than expected. In general, core inflation is considered more informative about future headline inflation because it removes the consumer price index components that are deemed to be more volatile, namely food and energy prices, since they tend to reflect supply disruptions. However, commodity prices such as **gas and oil prices can be also driven by global demand developments that are affected by global monetary policy conditions** (see Filardo et al., 2020).

The problem here is that, in a world of many central banks with purely domestic mandates, each central bank focuses on domestic core inflation, since it can reasonably neglect the effects of its own monetary policy on the rest of the world, and thus on commodity prices, that are treated as exogenously given. In particular, in the presence of a global shock like the COVID-19 pandemic, central banks tended to act in a correlated way by implementing ultra-expansionary policies, which endogenously drove commodity prices up.[11] Under these circumstances, a **coordination failure occurs**, since each central bank does not internalise its own impact on commodity prices, thus contributing to push world inflation above the level that is collectively desirable. Furthermore, large but less energy-dependent economies such as the US may have weaker incentive to cooperate in a general contraction of demand.[12] Finally, in this context, central banks can make prediction errors and implement inappropriate policies if they "*misdiagnose a commodity price swing as being driven by an external supply shock when it is, in fact, driven by an endogenous global demand shock, and vice versa*" (Filardo et al., 2020).

[11] Evidence that loose monetary policies have an effect on commodity prices via the global demand channel can be found in Anzuini et al. (2013) and Filardo and Lombardi (2014).

[12] As rightly noted by Blanchard: "The question is where does advanced economy inflation come from, and my sense is that it largely comes from the US, including the effect of the US on commodity prices. If the US had been more careful, there would have been a much smaller increase in commodity prices. We are focusing on commodity prices at this stage, because of Ukraine, but the rise had largely happened before the war and I think you have to trace it mainly to very strong demand from the US" (Blanchard, 2022).

5.2. Is the current inflation spike transitory? And what policy makers could do to avoid price-wage spirals?

In the light of the ECB staff's recent underestimation of current inflation, it is legitimate to express doubts about its projection envisaging a decline of the euro area inflation—currently at 8.1%—below 2% for 2024. Obviously there are arguments in favour of a relatively **fast mean reversion in inflation**. Among them, one may consider that, even if we will not have a reversal of the jump in energy prices that we had in the past months as an effect of the rapid removal of coronavirus-related restrictions and the Russian invasion of Ukraine, it is unlikely that we will experience in the near future further significant rises in commodity prices. Moreover, it is reasonable to think that the upward effects on the prices of goods and services—due to global supply bottlenecks and post-COVID spikes in demand—will gradually fade away. Finally, there are only modest signs in the euro area that current inflation is sparking a price-wage spiral and a de-anchoring of medium-to-long term inflation expectations.

In contrast, **there are also motives to think that the inflation surge occurring in 2021-22 is not purely temporary**, since the negative supply shocks that have been at the origin of the current increase in inflation are likely to persist over the medium and long term. On several occasions Roubini has listed the reasons why, according to him, such shocks are destined to last over time:

> "*For starters, there is the trend toward deglobalization and rising protectionism, the balkanization and reshoring of far-flung supply chains, and the demographic aging of advanced economies and key emerging markets. Tighter immigration restrictions are hampering migration from the poorer Global South to the richer North. The Sino-American cold war is just beginning, threatening to fragment the global economy. And climate change is already disrupting agriculture and causing spikes in food prices. Moreover, persistent global pandemics will inevitably lead to more national self-reliance and export controls for key goods and materials. Cyber-warfare is increasingly disrupting production, yet remains very costly to control. And the political backlash against income and wealth inequality is driving fiscal and regulatory authorities to implement policies strengthening the power of workers and labor unions, setting the stage for accelerated wage growth*" (Roubini, 2021).

With regard to the last point touched by Roubini, however, one may think that in the current context of rising prices **fiscal policy might help avoiding an acceleration of wage growth**: "*The more fiscal policy protects the real income of workers, the weaker the demand for wage increases is likely to be in further rounds. The more a decrease in inflation becomes credible, the less the European Central Bank (ECB) will have to tighten to achieve lower inflation. In effect, larger deficits can lead to a smaller output cost of fighting inflation*" (Blanchard and Pisani-Ferry, 2022, pp. 2-3).

In other words, in the presence of the ongoing energy and food price hikes, *"transfers do not affect first-round inflation, but they limit the initial decrease in real income, thus potentially reducing wage pressure in second and subsequent rounds. To put it strongly, more protection and higher deficits reduce the need to tighten monetary policy to return inflation to its target"* (Blanchard and Pisani-Ferry, 2022, p. 19).

Moreover, in section 3 we have put forward some reasons why monetary policy alone may not be fit for the purpose of accommodating a change in real energy prices. If the current energy shock, together with the strategic issues raised by the new international stance of Russia, turn out to be just the (somewhat earlier and faster) start of the long-run process of green transition and diversification of

energy sources that lies at the core of the NGEU programme, also a specific easing role for the monetary authority will be involved.[13]

The unusual interaction between fiscal and monetary policy proposed by Blanchard and Pisani-Ferry is in continuity with the **monetary-fiscal *synergic* approach**[14] that has emerged with the pandemic in the place of the monetary dominance principle on which the Monetary Union has been built . However, what is problematic here is that, especially in the event of a prolongation of the Ukraine war that will continue to keep energy and food prices at their current high levels, governments with less fiscal space could be in big trouble in financing fiscal transfers in favour of households and firms needing protection.

5.3. In need of a credible backstop

In a monetary union of sovereign states where some member countries are exposed to the risk of a public debt crisis, the central bank's choice of whether, when and how much to taper its purchases of government bonds and raise its policy rates to dampen inflationary pressures will inevitably appear controversial and highly political. This differentiates the ECB's position from that of the Fed, which can afford under these circumstances to reverse its policy stance without fear of causing excessive turmoil in its jurisdiction. In a scenario of rising prices where the high-public debt countries tend to grow less than the low-public debt countries, it would be very problematic for the ECB to find a balance among the different national interests and attitudes towards inflation. This is a hazardous scenario for the future of the euro area, that the Recovery and Resilience Facility aims at averting, but that nobody at the moment can rule out.

Especially when ECB officials announce that the date of policy rate lift-off draws closer (probably in July, with the exit from negative rates likely to occur by the end of the third quarter, see Lagarde, 2022b), the lack of a clear indication by the ECB about the instrument it would adopt in the event of tensions on sovereign bond markets once the APP will be over does not help to allay the great uncertainty now dominating; a lack that adds to the absence of a clear orientation within the EU on the possibility of a new common budgetary instrument alongside the NGEU to meet the costs of the Ukrainian crisis and the accelerated energy transition, which would benefit above all the EU countries with less fiscal space. The lack of these instruments could put the ECB officials before a difficult choice, which is thus summarised by Blanchard:

> *"Their position has been that if the rise in spreads is not due to fundamentals, but just to markets becoming dysfunctional or crazy for some reason or another, they would do what it took to keep the rates low. But if it were due to fundamentals, they say, it's not something they could deal with. So, what are they going to do if the spread on Italian bonds, say, goes up by another 100 basis points? Is it fundamentals? Is it really a worry about Italian debt, or is it just investors being edgy? It's going to be very difficult if the ECB is faced with a large increase in spreads, because the only way they could do the right thing would be to say, well, we think its fundamentals are fine and we think investors are wrong"* (Blanchard, 2022).

ECB officials are well aware of their delicate position: "*given its current architecture, the euro area remains vulnerable to fragmentation, meaning there is a risk that unexpected policy adjustments may be amplified*

[13] Some ECB materials about climate change and green transition can be found on https://www.ecb.europa.eu/ecb/climate/html/index.en.html

[14] Synergic means that the joint and coordinated use of both policy arms allows for *less* use of each (Bonatti et al., 2020; Della Posta and Tamborini, 2022).

in parts of the euro area, leading to changes in financing conditions that are sharper than intended" (Schnabel, 2021), and call for a credible backstop: "*A credible backstop that commits to counter such risks of fragmentation may help protect against disorderly movements and thereby allow the central bank to focus on its price stability mandate*" (Schnabel, 2021)[15]. The Ukrainian war has made apparent how urgent is to strengthen the euro area with instruments like a credible backstop, or anti-spread shield as it is sometimes called in the media.

[15] For an elaboration of a credible backstop see Della Posta and Tamborini (2022).

6. CONCLUSION

From an economic point of view, the Russian invasion of Ukraine has been a major shock for the euro area, causing both an upward push in the price of fossil fuels of which Europe is a strong net importer and a cut in the population's real income. Therefore, this shock has both inflationary and recessive effects on the area. Economic policy, and monetary policy in particular, should be very carefully calibrated in order to take the narrow path along which the euro area economy can avoid a recession, at the same time managing to bring inflation down substantially from the peaks it has recently reached. This task is made more problematic by the great uncertainty created by the war, the limited fiscal space available to the euro area countries characterised by high public debt, and the risk of financial market segmentation that still looms over the area.

In this paper, we have discussed some of the issues related to this task, beginning with the illustration of how the ECB has reacted to the events that have occurred in recent months, and examining what the theory of economic policy in the face of imported energy shocks suggests. We then tried to better understand the reasons of recent systematic errors in central banks projections of future inflation and misdiagnoses of commodity price movements.

In assessing the arguments in favour of the hypothesis that the current inflation spike is transitory rather than long-lasting, we have argued together with Blanchard and Pisani-Ferry (2022) that fiscal transfers in favour of workers hit by energy and food price hikes could help to prevent price-wage spirals which may lead to the de-anchoring of inflation expectations, thus making the current high inflation persistent and hard to eradicate.

Finally, we have claimed that the Ukrainian war has made apparent how urgent it is to strengthen the euro area with instruments like a credible backstop, so as to allow the ECB to focus on its price stability mandate without being conditioned by the risk of fragmentation.

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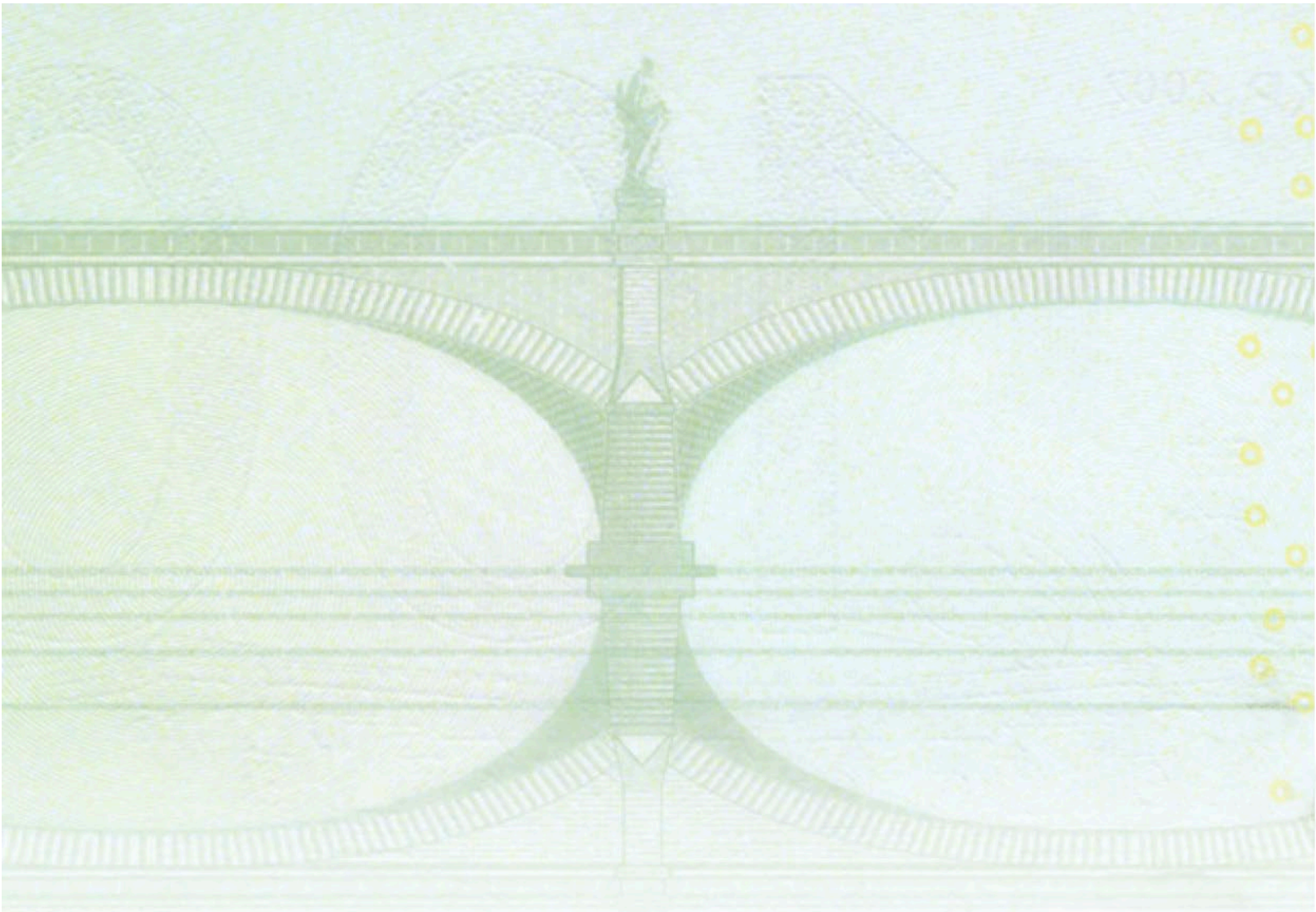

The aggravated monetary policy dilemma

Atanas PEKANOV and Stefan SCHIMAN

Abstract

Amidst an already heightened inflation environment, the repercussions of the war in Ukraine resemble a macroeconomic supply-side shock which puts monetary policy in a challenging situation. The ECB faces a difficult trade-off and needs to find the right balance between dampening inflation and sustaining economic growth. Our empirical estimates suggest that the ECB is presently not overly loose relative to its historical monetary policy record and that current inflation cannot be easily tamed by monetary policy alone.

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CONTENTS

LIST OF ABBREVIATIONS

APP	Asset purchase programme
ECB	European Central Bank
EONIA	Euro OverNight Index Average
EP	European Parliament
EU	European Union
GDP	Gross domestic product
HICP	Harmonised index of consumer prices
LNG	Liquefied natural gas
OPEC	Organization of the Petroleum Exporting Countries
PEPP	Pandemic emergency purchase programme
QE	Quantitative easing
SPF	ECB Survey of Professional Forecasters
TLTRO	Targeted longer-term refinancing operations
US	United States
VAR	Vector autoregression

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EXECUTIVE SUMMARY

- **After a decade of largely staying below target and remaining low during the pandemic-induced downturn**, inflation has undergone a significant surge throughout 2022. The war in Ukraine has a number of channels through which it affects and will further affect the euro area economy and, hence, decisions regarding monetary policy.
- **First and foremost, possible further EU sanctions or the halt of Russian gas and oil exports would have the most significant impact for the European** economy by inflicting the double negative effect of pushing economic growth down and inflation up. Existing evidence suggests that the biggest GDP losses would result from a sudden gas supply stop for the EU, however these losses should not be catastrophic.
- **Further channels will dampen the economic outlook, including uncertainty** induced by the war and further supply chain disruptions, including food supply disruptions and food price increases, which would inevitably have direct effects on price pressures.
- **Financial stability risks have increased since the onset of the war, however they remain broadly limited.** In case of ensuing market fragmentation, the ECB can use its asset purchase programmes and its amended flexibility to reduce the risk of impairment of its monetary transmission mechanism.
- **To assess the role of monetary policy in the current macroeconomic environment, we estimate a small vector-autoregressive model**, which passes various plausibility checks, e.g., concerning the size of the monetary policy rule coefficients, the chronology of monetary policy shocks and the conflicting effects of aggregate supply shocks for monetary policy.
- **By means of a structural scenario forecast, we find that the ECB was significantly restricted from below in setting interest rates during the pandemic-induced crisis.** We also show that the disinflationary effect of constrained monetary policy persisted far beyond its duration and until today, although by now interest rates are already below the level implied by our model.
- **Neither monetary policy nor the estimated (size of) aggregate demand and supply shocks can explain the price surge since 2021.** It is, hence, almost exclusively due to non-cyclical factors. The most obvious candidate is the unusually swift rebound in economic activity that took place amid severe structural distortions that shutdowns and social distancing brought along for world trade and global supply chains.
- **We conclude that headline inflation is currently a poor guide for monetary policy and cannot by easily tamed by the ECB** unless it is willing to orchestrate a significant economic downturn.
- **For its upcoming decisions, the ECB will have to follow closely developments in terms of inflation expectations, wage pressures and a possible broadening of inflation to assess its optimal policy response.** For the time being, the approach of gradualism, flexibility and optionality remains proper in terms of making data-driven decisions for the further policy path and reacting to pressures on financial markets by adjusting asset purchase programmes accordingly.

1. INTRODUCTION

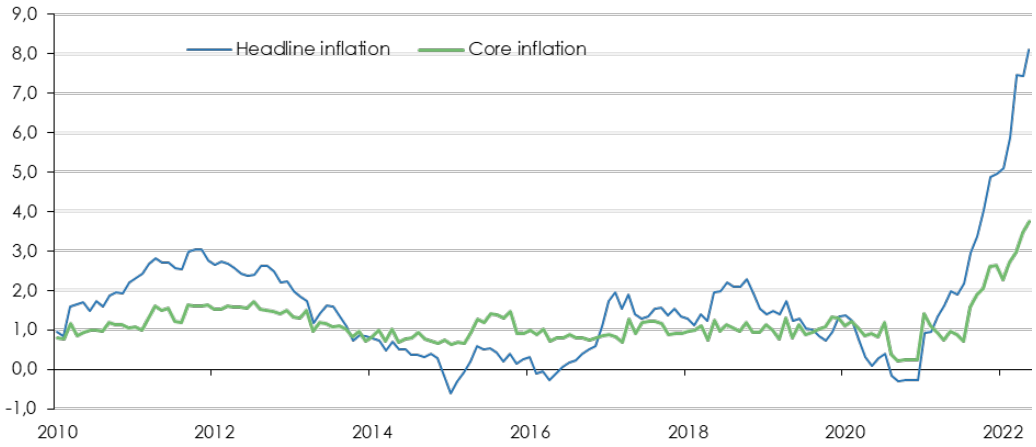
The euro area economy has been undergoing a significant surge of inflation throughout 2022. After a decade of inflation largely staying below the target of the European Central Bank (ECB) of close, but below 2% in the medium run, inflation in the euro area retained very low levels also during the pandemic-induced economic downturn. In accordance with standard economic theory, inflation was expected to increase during the economic recovery from the pandemic. However, both headline inflation (price of all goods and services) and core inflation (excluding food and energy) have been considerably above the 2% target of the ECB since the beginning of 2022 (Figure 1).

The war in Ukraine is a tragic development, which presents further challenges for euro area policymakers amidst an already difficult macroeconomic environment. Its immediate outcomes have been an increase in energy prices, expectations about further supply chain problems, especially regarding the delivery of food, and an increasing uncertainty, which affects firms and households. Its further repercussions will essentially depend on the future geopolitical developments and the decisions taken on the implementation of further EU sanctions and possible oil or gas supply stops from Russia to further EU Member States[1]. These could be key drivers of the dynamics of economic output and inflation in the coming months. However, the overall outcome will also depend on the decisions taken by monetary and fiscal policy makers. In this paper, we therefore discuss the current economic environment, possible and realised repercussions of the war in Ukraine and the implications this will have for the implementation of monetary policy by the ECB.

This policy paper pursues as follows: Section 2 describes the current economic environment and the nature of the already existing factors contributing to inflation before the war in Ukraine, as their relevance and duration are important for further monetary policy actions. Further in this section, we outline the nature of the current shock stemming from the war in Ukraine and the repercussions it already had for growth, inflation, monetary policy and financial stability. The section concludes with a summary of the ongoing debates on the effects of the possible energy supply sanctions on behalf of the EU. Section 3 presents a macroeconometric framework to evaluate the current stance of the euro area economy and the role of monetary policy. We estimate aggregate demand, aggregate supply and monetary policy shocks and assess their relevance for the evolution of real activity and prices over the last two years. The estimation of a monetary policy rule helps us to understand the causes and consequences of interest rate (non-) policy and to derive conclusions about its current stance and further development. The distinction of aggregate demand and aggregate supply shocks enables us to consider the shift that the euro area economy is undergoing since the outbreak of the Ukraine war. Finally, Section 4 draws conclusions on the way forward for monetary policy based on our previous analysis and results.

[1] At the end of April, the Russian Federation has already imposed a gas supply halt on Bulgaria and Poland.

Figure 1. Euro area inflation, monthly, year on year in percent



Note: Core Inflation: Overall Index excluding Energy, Food, Alcohol, Tobacco.

2. THE ECONOMIC ENVIRONMENT

2.1. Economic conditions at the onset of the war

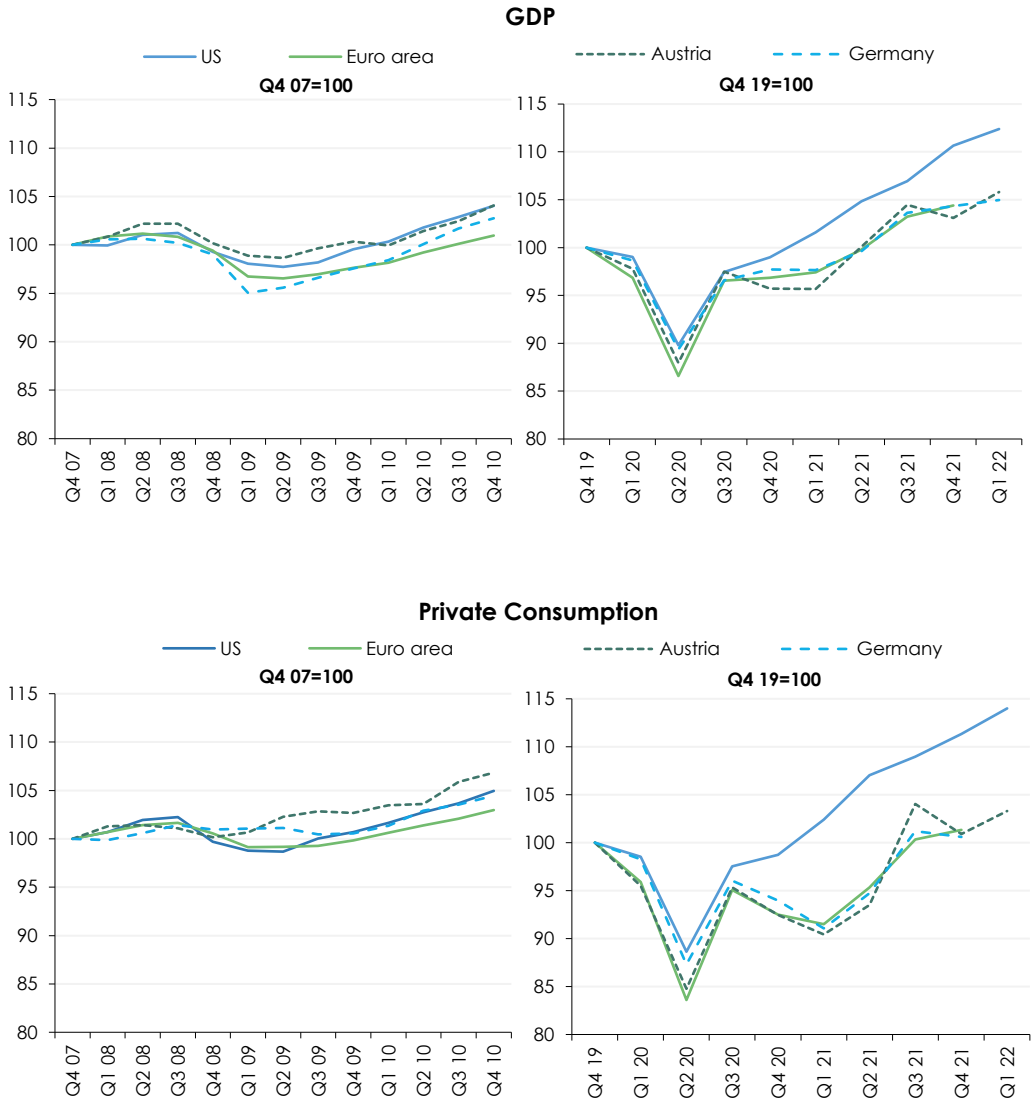
Inflationary pressures have been heightened globally and both in the euro area and the United States already before the onset of the war in Ukraine. However, the factors underlying those pressures have partly been different. The economic recovery in the United States (US) has been stronger, driving aggregate demand and the labour market to return to its pre-pandemic position at a fast pace. Aggregate income and consumption have recovered much faster and to higher levels than in the euro area. A particular explanation of this can be attributed to the different composition and design of the pandemic fiscal stimulus (Boone, 2022). The lump-sum nature of the fiscal stimulus in the US has meant that for some low-income households it has led to higher income than before the pandemic and has thus spurred an increase in consumption in comparison to the pre-pandemic levels. The mixture of pandemic-related quantitative easing (QE), expansionary monetary policy and very expansionary fiscal policy therefore pushed the level of demand higher.

The recovery in the euro area in terms of aggregate demand, aggregate income and consumption has been milder. Figure 2 compares the downturn and recovery of both aggregate output and aggregate consumption in the US and the euro area during the pandemic and during the global financial crisis. The recovery in both constituencies has been stronger than in the aftermath of the global financial crisis, but the euro area lagged in its pandemic recovery to the US. Inflationary pressures in the US have been driven much more by aggregate demand and the mixture of monetary and fiscal policy than in the euro area, where external factors have been more important. While the contribution to inflation from the pandemic stimulus programmes was at first expected to be transitory, by the end of 2021 the evidence has shifted in favour of arguments that inflation will be more persistent than expected. This was driven also by savings of households, accumulated during the earlier stages of the pandemic, which lead to a stronger surge in aggregate demand than expected. The persistence of this aggregate demand strength will in the end depend also on the steps taken by central banks to respond to it.

A further channel which has contributed to the unexpectedly high level of inflation before the war were supply chain disruptions, as well as bottlenecks resulting from pandemic-driven changes of relative supply and demand for certain types of goods. During the pandemic, due to lockdowns or other restrictions, there has been increased pressure on supplies, which have brought supply shortages and rapid price increases, e.g., most notably in used car prices. One indicator to measure such disruptions is the Flexport Ocean Timeliness Indicator[2], which reports the number of days to carry goods on the two biggest trade routes – from Asia to Europe and to North America. Since October 2021 both indices have been showing heightened values close to all-time highs and higher than even in the first pandemic months. This persisted throughout the first months of 2022, however since the beginning of May 2022 a significant decline has been observed, although it has been partly determined by seasonal effects.

[2] Flexport Ocean Timeliness Indicator, https://www.flexport.com/research/ocean-timeliness-indicator/.

Figure 2. GDP and private consumption trends after the 2008/2009 economic crisis and during the COVID-19 pandemic



Source: OECD Quarterly National Accounts, Macrobond.

Note: GDP and total private final consumption in current prices and seasonal adjusted.

In addition to disruption on the supply side, specific types of goods – mostly durable goods, have experienced a great surge in demand throughout the pandemic, as consumers, who could not consume services due to different restrictions on socially-related activities, have shifted their preferences toward durable goods. This shift on spending on durable goods has led to significant increase in the price of these goods, which was at first been expected to be temporary. Such a reallocation shock acts similarly to a cost-push shock and creates both increases in prices and unemployment. Fornaro and Romei (2022) show how the increased spending on durable consumption, if financed by trade deficits as in the case of the US, then generates inflationary spillovers vis-à-vis the rest of the world. The increased spending on durable goods can thus also be linked to a phenomenon called "the globalisation of inflation" (Forbes et al., 2021). Since durable goods are tradable, the increased world aggregate demand or aggregate demand in one major economy (e.g. the United States) translated to world aggregate demand for tradable goods increasing. This increases the pricing power of firms producing durable goods, which can then increase their prices overall. This

phenomenon can contribute to inflation significantly increasing even in regions where overall aggregate demand did not recover as strongly as in the United States[3]. Furthermore, a part of the relative shift in demand from services to durable goods might also become more persistent if more people shift to working from home[4].

2.2. Economic implications of the war

Starting from this environment of heightened inflation, the war would have a number of particular channels through which it would affect the euro area economy and therefore might affect decisions regarding monetary policy. First and foremost, the essential result from the war will depend on its effects on trade and mostly on energy imports from Russia. Possible EU sanctions or the halt of Russian gas and oil exports would have the most significant effects for the European economy by inflicting the double negative impact of pushing economic growth to the downside and inflation to the upside. We discuss this central issue in the next section, as it is the most relevant in terms of magnitude, as well as having repercussions for the necessary stance of monetary policy. Secondly, the war results in major uncertainty. This could lead to increases of precautionary savings by households and an investment halt by firms. A similar phenomenon was already observed during the COVID-19-induced pandemic uncertainty (Pekanov and Schiman, 2020). Economic effects can already be seen from the recent downgrade of forecasts on economic output for the euro area for this year (Lane, 2022). Thirdly, there are further additional channels through which the macroeconomic situation in the European Union would change as a result of the war, their overall implications on GDP should however be relatively limited. The war has induced an influx of refugees to Europe, for which the necessary fiscal spending adjustments would be needed. Increased spending on refugees is evaluated to be around 0.35% of EU GDP by Blanchard and Pisani-Ferry (2022). Furthermore, additional military spending increases have been announced by a number of countries. These channels should however have no significant effects for monetary policy or inflation developments.

Supply chain disruptions accounted also for one category of factors which were expected to be transitory and to be pandemic-related. The recent hard lockdowns in China however will contribute to further downstream disruptions this year which are yet to materialise. The war in Ukraine will also contribute to new supply chain disruptions in terms of specific raw materials, and in terms of specific food supplies. Food prices can be expected to increase due to several disruptions in the supply of some food categories from the Ukraine and the Russian Federation. This could have a significant effect on headline inflation in the euro area for some time. Ukraine and the Russian Federation account for around 30% of global wheat exports, so the war in Ukraine has increased wheat prices to record levels. This channel would also mean inflation can become more persistent, however increasing wheat and food prices overall will have the biggest negative effects for emerging markets and low-income countries (Agarwal and Kimbal, 2022).

Besides the specific effects it has on energy supplies and energy prices, the halt of trade relations with the Russian federation should not lead to very large macroeconomic losses. Overall exports of goods to the Russian Federation from the European Union amounted to EUR 89 billion in 2021. If half of them stop being exported this would lead to 0.3% of GDP decrease in aggregate demand for EU goods. While some sectors and companies can suffer significantly from this, this shock would not be of major macroeconomic concern (Blanchard and Pisani-Ferry, 2022).

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[3] For more on the globalisation of inflation, see Schnabel (2022).

[4] See Smith (2022) interview with Emi Nakamura, "to the extent that people shift to a lot more work from home (and less people are working at all) this could make some of the changes in demand patterns quite persistent."

Finally, in terms of financial stability, at the onset of the Russian invasion of the Ukraine there were concerns about the implications for the financial sector in the EU. The links between individual banks and their Russian subsidiaries was one argument for concern. During the global financial crisis, we have seen how risk exposures and network effects can accumulate to an overall systemic crisis. The worsening of macroeconomic conditions – growth and inflation, would be the major implication for financial stability in the euro area of the war in Ukraine. This could increase market volatility, as well as duration, credit and liquidity risk (ECB Financial Stability Review, 2022). For highly indebted entities, such as euro area sovereigns, household and corporates this would lead to higher interest rate payments and can lead to risks to debt sustainability. The major risk would be for vulnerable borrowers – for corporates the increasing rise of input prices may lead to lower margins, for households house prices might especially face a correction risk. Banks would also face weaker profits given the worsened macroeconomic environment. However, their buffers should suffice as a first line of defence against risks. These risks however are a standard consequence of a worsening macroeconomic environment. They should not lead to a major episode of financial fragility. National macroprudential policies should be carefully adjusted to account for the new macroeconomic situation, as well as national country-specific conditions. So far, since the onset of the war, there have been no major repercussions on the EU financial system, even after considerable number of the subsidiaries of Russian banks have been liquidated. European banks are also better equipped than in 2008 to withstand any further risks. A default by the Russian federation is not excluded, however its repercussions should also not be catastrophic. Capital requirements are sufficient at the time and do not imply an amplification of financial fragility similar to the aftermath of the global financial crisis. A further question regards the exposure of individual banking groups to their subsidiaries in the Russian Federation, which goes beyond the scope of this text.

The main expectations incoming from the war in Ukraine therefore are for the major effects to be similar to a supply side shock with the accompanying downward pressure on economic activity and upward pressure on inflation. Such a situation puts the central bank in a difficult situation to choose whether to accommodate the economy or to take aggressive measures in tightening policy rates to limit heightened inflation with the inevitable effects on aggregate demand and the labour market. The exact characteristics of the current discussions regarding energy supply sanctions and their implications are discussed in the next subsection. In Section 3, we will then analyse how the ECB has reacted to aggregate demand and aggregate supply shocks in the past and what this means for the current situation.

Table 1. Main factors contributing to inflation in the euro area and assessment of their relevance and duration of effects on output and inflation

Factor	Effect from war
Heightened aggregate demand	Will be affected downwards due to uncertainty and the supply-side nature of the shock
Tight labour market	Will be affected negatively due to uncertainty and the supply-side nature of the shock
Supply chain disruptions	Possibly will exacerbate and would matter longer than expected
Energy price increases	Will be further exacerbated and act as a supply-side shock pushing inflation up and output down

Factor	Effect from war
Additional fiscal budgetary measures for immigrants and military spending	Will increase fiscal deficits, but only to a limited extent
Trade disruptions between the euro area and the Russian Federation besides energy supplies	Macroeconomically limited effects
Financial stability concerns	Risks have increased since the onset of the war, but could be limited by macroprudential policies, capital buffers and ECB non-conventional measures if necessary
Inflation expectations	No de-anchoring of expectations so far

Source: Authors' own elaboration.

2.3. Energy supply sanctions

The most important consequences of the war on the euro area economy would come from any further actions regarding sanctions, tariffs of a full embargo of energy supplies from Russia (Blanchard and Pisani-Ferry, 2022)[5]. Russia is a major supplier of oil, gas and coal for the European Union, which primarily relies on imports for all three energy sources. The European Union also produces energy through renewables, through nuclear energy or imports electricity directly, but all of these have much lower shares in the energy mix. The discussions regarding further sanctions, after the packages announced so far by the European Union, have revolved around an embargo on oil and gas imports. It is important to note however that these two energy sources have very different characteristics in terms of their substitutability and therefore of their demand and supply elasticities.

The oil market is a global market, where the price is being set globally and is determined significantly by decisions taken by the Organization of the Petroleum Exporting Countries (OPEC). Before the war in Ukraine, the price of Russian oil was very close to the world price of oil. Russia therefore is a price-taker in this market. The market for oil is global also because of its physical characteristics that permit transportation. Due to these factors, both the European Union should easily be able to find some substitutes for oil deliveries in the case of an oil embargo, and the Russian Federation will most probably find additional buyers for its oil outside of the European Union. The war has already had an upward effect on the price of oil; however, the real price of oil is below its all-time highs (Figure 3). Since the Russian Federation cannot control the global price for oil, it can only make quantity adjustments and try to offset some of its revenue losses by selling to other countries.

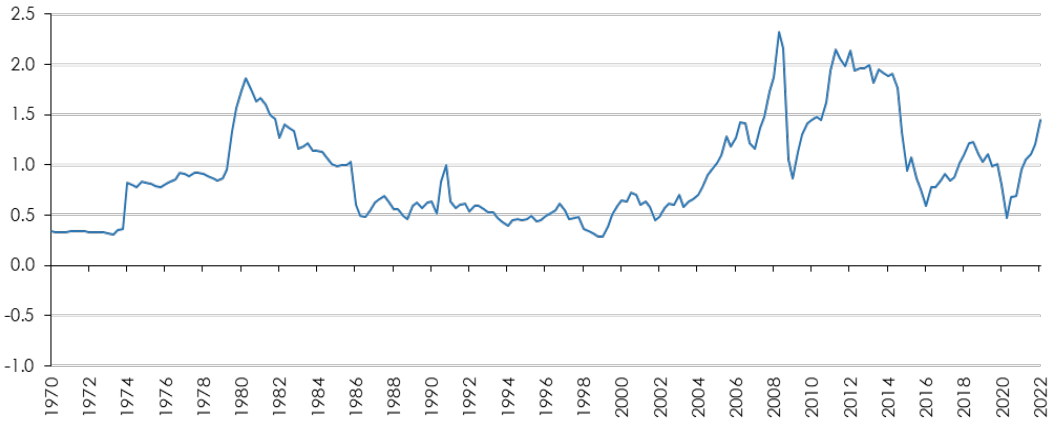
The gas market is, however, regional. Even though world prices are related because liquefied natural gas (LNG) has made it possible to ship between them, the prices can still differ. There are also constraints on LNG shipments both in terms of boats and terminals available, although the latter constraint can be overcome in a matter of months. There can also be internal disputes, but if we assume that European countries can overcome them, the European market can be treated as one. For the European market, then essential in terms of the outcome would be the pace of imposition of a possible gas embargo or tariffs. In the short run, regarding gas sanctions, the Russian federation should be seen

[5] On 3. June 2022, the EU adopted officially the sixth package of sanctions against Russia. Importantly it includes the complete import ban on all Russian seaborne crude oil and petroleum products (90% of all current oil imports from Russia) after a certain transition period and with a number of exemptions. The direct repercussions of this sixth package are not analysed here as the official technical details of implementation were announced after the cut-off date of this briefing paper. For exact details, see: https://ec.europa.eu/commission/presscorner/detail/en/IP_22_2802

as a monopolist and the supply delivery alternatives would probably come with increasing costs (Blanchard and Pisani-Ferry, 2022). Gas prices have already increased significantly both in 2021 and in 2022 as a result of the war.

The main possible outcomes for energy supplies can therefore be categorised in two types – a price increase, which could be due to the imposition of a tariff, or a full embargo on oil and/or gas, which equals a full stop of supplies and therefore a quantity restriction. The results of a full embargo are discussed in the box below. Blanchard and Pisani-Ferry (2022) use a back of the envelope calculation to estimate how the price increases would affect a standard consumption basket and the harmonised index of consumer prices (HICP). They assume a pass-through from a price increase in commodity prices to the price of energy of final consumers and firms of 0.5 and a pass-through from the rise in commodity prices on food prices also of 0.5. They assume for this year a price increase for commodity prices of 25% and for food price of 10%. Their back-of-the-envelope calculation results in an overall 2% increase in the price of a consumption basket for an increase in the price of commodity prices of 25% and in food prices of 10%. This is, however, the evaluation purely of the direct, first round effects, which are difficult to be limited by any intervention. The initial increase could then spur further, indirect effects if workers are compensated fully for their initial purchasing power loss or if firms index their prices completely to retain their profit margins. Using a similar back-of-the envelope calculation, Blanchard and Pisani-Ferry (2022) also estimate that the losses in terms of aggregate real income for the EU due purely to the assumed increase in oil and gas prices would be of the order of 1% of GDP. These losses come from the fact that the European Union is an importer of these products, which results in loss of aggregate income for the economic region as a whole. Finally, the price increases will also have an unequal distributional effect as in most EU countries, low-income households have higher shares of expenditures on gas, utilities and food then high-income households. In this sense, an OECD analysis also shows that home energy price increases have affected the poorest 20% of households more than high income households in each country of the EU[6]. While monetary policy cannot do anything in terms of these distributional effects, any fiscal measures should take this fact into account.

Figure 3. Real price of oil (indexed)



Source: Blanchard and Pisani-Ferry (2022) based on OECD and US Bureau of Labor Statistics, Macrobond.

[6] For more details, see Blake and Bulman (2022).

Box 1. The macroeconomic costs of a gas embargo

The question on the effects of a sudden stop of oil and gas deliveries on GDP and economic activity has led to numerous detailed discussions. Much of the discussion has centred around Germany, as the biggest economy in the euro area, as well as one of the economies, which is more dependent on Russian gas and oil. For Germany, about up to 55% of its gas imports and 14% of its total energy imports are from Russia.

A widely debated paper which has aimed to estimate such effects is Bachmann et al. (2022) and has led to numerous follow-up discussions regarding its assumptions and results. In its core, the paper uses a state-of-the-art model, developed in Baqaee and Farhi (2022), which raises the question – "How would the German economy cope with such a shortfall of gas deliveries?" The economic effects crucially depend on the feasibility of substitution and reallocation of energy inputs across sectors. To quantify these effects, the model accounts for elasticities of substitution and reallocation between different intermediate inputs.

The main result of the paper is that the cost of a full-scale ban of gas and oil imports from Russia would be in the margin of 0.5% to 3% of GDP for Germany. This is the overall outcome with the assumption of government fiscal measures and a reaction of the European Central Bank to fully limit any indirect, aggregate demand amplification effects. **Bayer et al. (2022) extend this study by modelling indirect, amplification effects through Keynesian channels and obtain a similar estimate of 3%, however without the supply-side heterogeneity modelled in the original study.** This has led to the argument that the two effects may be additive, as argued by the German Council of Economic Experts, which would put the cumulative effects between 3% and 6% (Berger et al., 2022). Furthermore, a crucial assumption regarding all of the results is the short-run substitutability across energy sources and possibly other intermediate production inputs, which determines how much in output losses some sectors and the overall economy will have to undergo in the case of gas shortage and if there is a lack of possibility to substitute it. An IMK study published more pessimistic estimates of the economic impact of a gas import stop that points to a loss of GDP of at least 6% for 2022, which would be a more significant shock than the COVID-19 pandemic (4.6% loss of GDP in 2020) (Feliciano et al., 2022). A study by the Bundesbank estimates the loss to GDP for Germany from a Russian gas ban to be 5.1%, followed by another 1.5% drop in the two years after that (Deutsche Bundesbank, 2022).

A survey of leading European economists by the Center for Macroeconomics at LSE asked about their assessment on the effects of a gas embargo on the economies of Germany and the European Union (Feliciano et al., 2022). **The majority of economists evaluated that the effects for the German economy will be to lose 1 % to 3 % of GDP growth in 2022-2023 if the government responded with fiscal policy measures targeted to compensate losing sectors and households.** If there are no such measures implemented, the losses will be more significant and the majority of respondents put them between 3% and 5%. The majority of economists put the estimation for GDP losses for the European economy also in the magnitude of 1 % to 3 % of GDP, but even without the European Union implementing offsetting measures in terms of fiscal or monetary policy. The overall milder impact on the European economy in comparison to Germany alone is due to the relatively high dependence of Germany on Russian gas, while this dependence is very heterogeneous across EU Member States. In other studies, most economists have also argued that the GDP losses to the Russian economy would be substantially higher than those on the countries imposing those sanctions (Chepeliev et al., 2022, Langot et al., 2022 and Mahlstein et al., 2022). Moreover, there are arguments that favour import tariffs as compared to an embargo, in particular that the ensuing price effects can be re-allocative and, hence, more efficient than pure quantity effects (Baumgartner et al., 2022).

3. MACROECONOMIC SHOCKS AND THE ROLE OF MONETARY POLICY

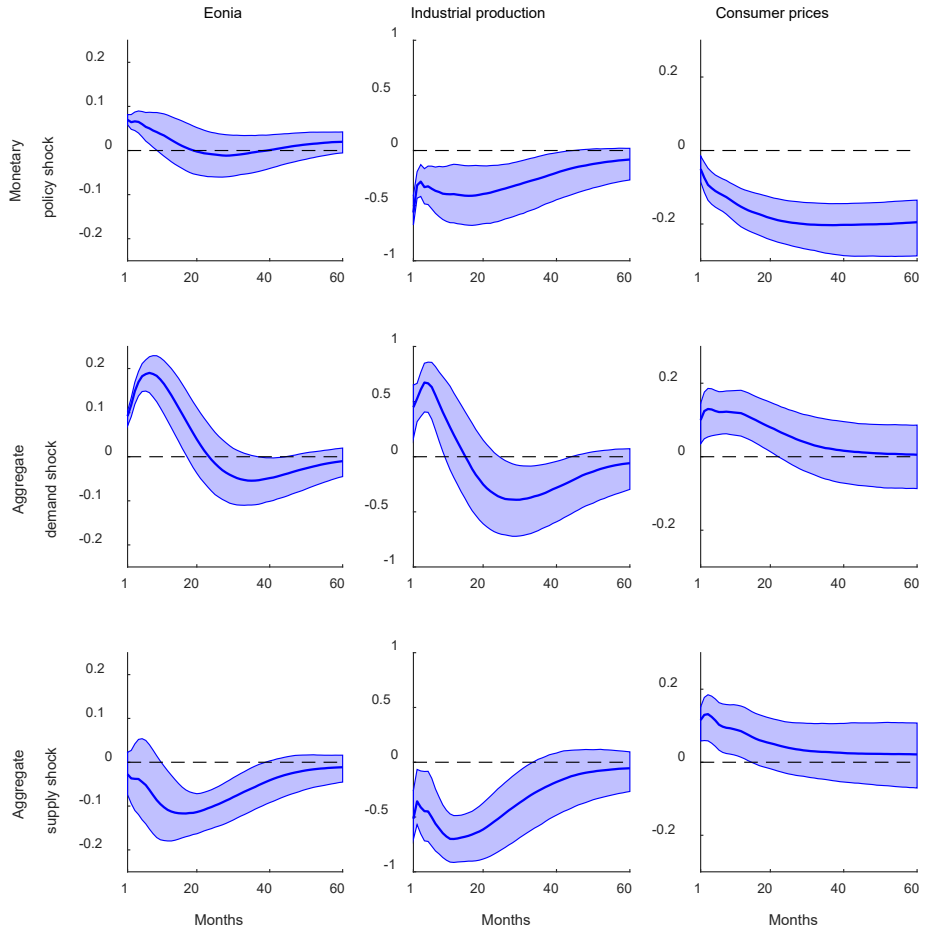
To assess the role of monetary policy in the current macroeconomic environment, we need to estimate its reaction function, i.e., the monetary policy rule. In a univariate framework this is typically done by means of so-called Taylor rules. A recent study that estimates a broad range of cutting-edge Taylor rule specifications for the ECB is the one by Paloviita et al. (2021). The authors not only consider real-time data and real-time forecasts, but also the effect of so-called credibility loss due to missed inflation targets in the past. However, to assess the ECB's response to specific macroeconomic shocks, a multivariate approach capable of identifying these shocks and monetary policy simultaneously is desirable. Our preferred model framework is a vector autoregression (VAR) with identified monetary policy shocks, aggregate demand shocks and aggregate supply shocks. While in doing so we aim for a better understanding of monetary policy in structural terms, this does not come without potential costs compared to the use of univariate Taylor rules. Specifically, the identification of monetary policy in VARs has been criticised for not sufficiently considering the plausibility of the identified shock series (see, e.g., Rudebusch, 1998).

Therefore, we choose an approach that addresses these shortcomings, the one proposed by Badinger and Schiman (2022). We deviate from their baseline specification, which involves six variables, and consider a VAR of three variables: Eonia, industrial production and the harmonised consumer price index. All other elements of the specification are the same: The estimation period ranges from January 1999 to December 2019, the VAR includes a constant and 12 lags and we use a Minnesota prior to prevent overfitting. The reason for reducing the dimension of the VAR from six to three variables is that unlike in the original article, we want to identify three structural shocks that encompass all unexplained fluctuations in the economy. Having more variables than shocks would leave some fluctuations unexplained. We have cross-checked the results with the original six-dimensional specification and find that the smaller model does not miss essential information. Before we proceed, a comment on the estimation period is needed. We cut the sample at the end of 2019 in the baseline model, as the ECB most probably hit a lower bound when the pandemic-related crisis in early 2020 struck, which would raise issues for the identification of monetary policy. However, we will use more recent data up to March 2022 to estimate an extended model where only aggregate demand and aggregate supply shocks are identified.

We proceed as follows: First, we present the average effects (impulse responses) of the three identified macroeconomic shocks. Then we analyse the coefficients of the monetary policy rule, i.e., how the ECB responds systematically to real activity and inflation. Next, we dissect the ECB's interest rate setting behavior conditional on whether it responds to aggregate demand or aggregate supply shocks. Subsequently, we extent the observation period beyond 2020 and estimate how this recent period was shaped by aggregate demand and aggregate supply shocks. Based on this, we estimate how the ECB would have responded if it had not been constrained by a lower bound, how actual monetary policy affected economic outcomes and what this means for monetary policy in the current crisis.

3.1. Impulse responses to macroeconomic shocks

Figure 4. Impulse responses



Source: Authors' own elaboration.

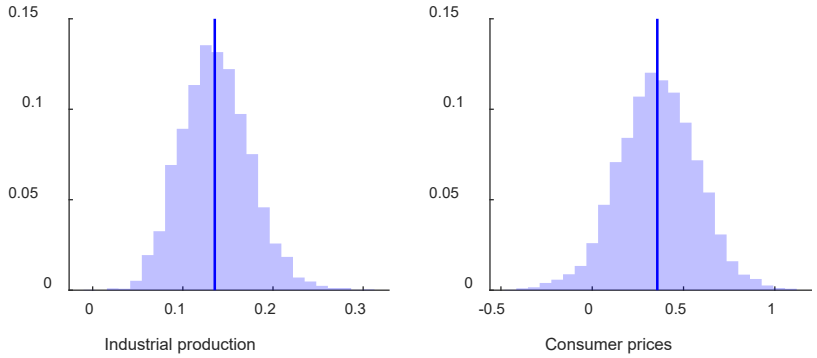
Notes: Blue lines are one-standard-deviation median impulse responses; blue shaded areas correspond to 68% credible sets. The impulse responses of Eonia are measured in percentage points, those of industrial production and consumer prices in percent.

Figure 4 shows the impulse responses for the three identified shocks. The monetary policy shock is identified in the same way as in Badinger and Schiman (2022); i.e., we set residual sign restrictions in four months in which the interest rate decision was followed by strong financial market reactions plus a magnitude restriction in a month in which the monetary policy shock was the only material driver of Eonia. Importantly, we do not set any sign restrictions on impulse response, so the presented effects of a restrictive monetary policy shock – an increase in Eonia and a decrease in economic activity and prices – are not assumed but arise as a result from our identification procedure. The other shocks are identified by means of traditional sign restrictions on the impulse responses. An aggregate demand shock moves all three variables in the same direction. An aggregate supply shock moves real activity and prices in different directions, while the response of the interest rate is not restricted. Intriguingly, a large share of draws involves a decrease in Eonia, i.e., a loosening of monetary policy, in response to an adverse supply shock to counteract the (disinflationary) downturn induced by the shock.

3.2. The systematic response of monetary policy

In line with Paloviita et al. (2021), we find that the inflation coefficient in the estimated monetary policy rule is substantially larger than the output coefficient, reflecting the ECB's inflation orientation (Figure 5). However, the high degree of interest rate smoothing implies that these coefficients are lower than in static specifications of the Taylor rule. The median estimates of the coefficients are 0.14 and 0.36 respectively, meaning that the ECB raises interest rates on average by 14 basis points when industrial production increases by one percent and by 36 basis points when consumer prices increase by one percent. These values are well within a range given by the ECB's New Area Wide Model (Coenen et al., 2018): The cumulative output and inflation coefficients in the new version of this model are 0.10 and 0.23, respectively. The coefficients in the updated original version are 0.15 and 0.44. The baseline estimates of Paloviita et al. (2021, Table 1) are somewhat higher: 0.24 and 0.71, respectively. Given that these are more sophisticated specifications – forward-looking elements, real-time data, incorporation of further elements like the output gap and the natural rate of interest – the similarity with the results of our monetary policy rule approximation is reassuring.

Figure 5. Monetary policy rule coefficients



Source: Authors' own elaboration.

Note: Distribution (blue shaded bars) and median (blue lines) of monetary policy rule coefficients.

While the monetary policy rule coefficients indicate how the ECB responds to real output and price developments in general, it is also of interest to examine the response to the identified structural shocks specifically. This can be achieved with a method proposed by Kilian and Lewis (2011) to determine the contribution of a specific variable to the response of another variable (Eonia) to a structural shock (aggregate demand and aggregate supply shocks). While this could be done for any horizon of the impulse response, we find that the response of Eonia to either shock at horizons beyond impact is predominantly autoregressive because of strong interest-rate smoothing. Substantial genuine effects of demand and supply shocks on monetary policy are confined to the month of impact. These effects are shown in Table 2.

While the central bank's response is unambiguous in case of an aggregate demand shock, the effects of aggregate supply shocks are putting monetary policy in a dilemma. On the one hand, an adverse supply shock creates upward pressure on interest rates due to its inflationary effect. On the other hand, downward pressure on interest rates emerges due the shock's dampening effect on real activity and associated disinflation. This is obvious when we look at the counteracting contributions of real output and inflation in Table 2. Note that even if we restricted Eonia to respond positively to an adverse supply shock, this would only reweigh these counteracting contributions in favour of the inflation effect (such that the overall median response of Eonia would be positive). But the fact that the central bank is in a dilemma when it faces a supply shock, remains. Moreover, remember that the

loosening motive dominates the tightening motive even more clearly in the medium term, i.e., some months after impact.

Table 2. Shock-specific monetary policy responses

	Aggregate demand shock	Aggregate supply shock
Eonia response	+9 [+7 , +11]	–3 [–8 , +3]
… due to output	+6 [+2 , +9]	–7 [–10 , –3]
… due to prices	+3 [0 , +6]	+4 [+1 , +7]

Source: Authors' own elaboration.

Note: Median impact response of Eonia to a one-standard-deviation shock in basis points; in brackets: 68% credible sets.

Armed with this knowledge about the interest rate setting behavior of the ECB, we now turn to the recent past. We first analyse to which extent aggregate demand and aggregate supply shocks shaped the period since 2020. We will then use the estimated shock series to derive a structural forecast of output and consumer prices based on the baseline mode, i.e., pre-pandemic estimates. We analyse how Eonia would have evolved and estimate the effects of actual monetary policy and of non-cyclical factors for the development of output and prices since 2020. Based on our findings, we draw conclusions for current and future monetary policy.

3.3. The economy since 2020

Extending the estimation period beyond 2019 leaves the estimated shock series until 2019 essentially unchanged: The correlation of the series until 2019 in the extended sample and the original series is 81% for aggregate demand shocks and 93% for aggregate supply shocks. That means that the baseline and the extended model identify the same shocks and that they are comparable with each other.

A remarkable result of the extended model is that the occurrence of very large shocks[7] intensified considerably since the outbreak of the pandemic. 57% of all very large demand shocks since 1999 and 83% of all very large supply shocks occurred between March 2020 and March 2022. The largest demand and supply shocks struck in March and April 2020. While the simultaneous occurrence of negative demand and adverse supply shocks at the start of the pandemic kept inflation in check, it slashed real output dramatically. On the other hand (and in contrast to previous crises), economic activity rebounded quickly. The negative aggregate demand effects were compensated already in the first half of 2021. From then on positive demand impulses prevailed.

Even more impressive than the very large negative demand shocks at the start of the pandemic is the simultaneous occurrence of very large adverse supply shocks. While the size of the supply shock in March 2020 was already unprecedented, in April 2020 it more than doubled compared to March. On the one hand this pattern might be partly spurious in the sense that due to forced lockdowns output declined much stronger than prices, which shows up as adverse supply shock. On the other hand, the outbreak of the pandemic and the related large-scale worldwide shutdowns mark the birth of supply chain disruptions, which perfectly fits the notion of marked adverse supply shocks. While, like aggregate demand shocks, a large part of these early supply shocks were compensated soon, further

[7] "Very large" means larger than two standard deviations of the shock series.

adverse supply shocks followed. The simultaneous occurrence of large positive demand shocks and large adverse supply shocks since the second half of 2021 was associated with a dramatic surge in consumer price inflation.

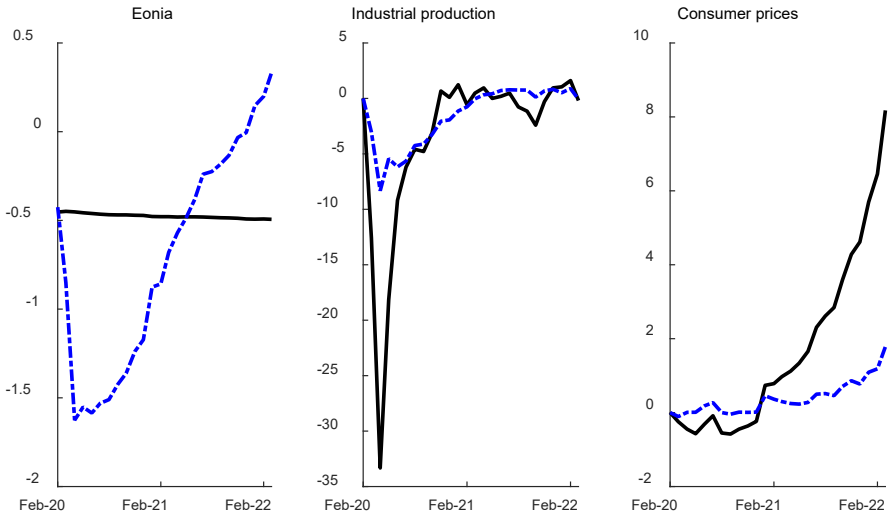
3.4. Structural scenario forecasts

To examine how monetary policy would have been set according to the monetary policy rule that we estimated up until 2019, we perform a structural scenario forecast. That is, we apply the median impulse responses of the original (pre-pandemic) model to the median shocks estimated for the last two years and calculate hypothetic paths of the variables at hand. This helps us to assess, first, to which extent deviations from the estimated monetary policy rule affected economic outcomes and, second, to which extent these outcomes are due to cyclical shocks on the one hand and non-cyclical factors on the other hand. Figure 6 shows the structural scenario forecast based on the median impulse responses from the baseline model and the median aggregate demand and aggregate supply shocks estimated for the last two years (using the extended model). The simulated data (dot-dashed blue lines) is compared with the actually realised paths (solid black lines).

It turns out that the ECB was significantly restricted from below in setting interest rates when the pandemic-induced crisis hit the euro area. According to the estimated policy rule, Eonia (and, hence, the deposit facility rate) should have been at times more than 100 basis points below its actual level. The lower bound forced the ECB to be overly restrictive for a considerable period of time. If it would not have been constrained from below, it would have started to hike rates (from a very low level) already in early 2021 and would have increased the policy rate to 80 basis points above its actual level in March 2022.

Figure 6 also shows the simulated and actual paths of real activity and inflation, both measured in deviation from their pre-crisis, i.e., February 2020, levels. The simulated paths suggest that the output loss in 2020 and the price surge since 2021 would have been much milder than they actually were. In order to assess the role of monetary policy for these hypothetical favourable paths, we simulate monetary policy shocks that bring Eonia back to its realised values over the whole forecast horizon.

Figure 6. Pandemic shocks based on pre-pandemic economy



Source: Authors' own elaboration.

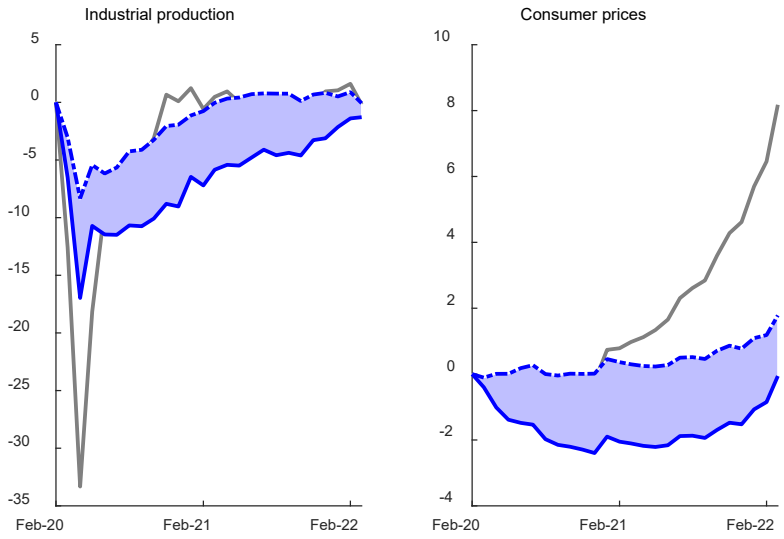
Notes: Dot-dashed blue lines are structural scenario forecasts based on the model estimated up to 2019. Solid black lines are realised data. Industrial production and consumer prices are in %-deviation from its February 2020 levels.

3.4.1. The effects of monetary policy

In this scenario, monetary policy shocks are calibrated to match Eonia's actual path over the forecast period (Figure 7, while in the other scenario monetary policy shocks are set to zero). We know from the impulse response analysis that this implies lower output and dampened inflation for the period in which monetary policy was constrained from below. But two further interesting observations emerge from Figure 7. First, overly tight monetary policy explains only a fraction of the tremendous decline in real activity during the first wave of the pandemic.

Second, the disinflationary effect of previously tight monetary policy persisted far beyond the period of constrained monetary policy and until today (although the estimated monetary policy rule would have implied swift and significant rate hikes since early 2021). That means that by remaining inactive (and, hence, loose) regarding interest rates in recent months, the ECB has only compensated for the dampening effects of its (presumably involuntarily) tight policy stance in the months before. This is in line with evidence that the ECB and other central banks attempt to correct past policy failings (see, e.g., Paloviita et al., 2021). It can also be understood in light of the revised ECB strategy, published in 2021, which binds the ECB more clearly to a symmetric inflation target and, hence, might at times permit higher inflation following a period of below-target inflation.

Figure 7. Actual versus unconstrained monetary policy



Source: Authors' own elaboration.

Notes: Dot-dashed blue lines are structural scenario forecasts with unconstrained monetary policy, solid blue lines are structural scenario forecasts with simulated actual monetary policy. The blue shaded areas are the estimated effects of actual monetary policy. Gray solid lines are realised data. All values are in %-deviation from February 2020 levels.

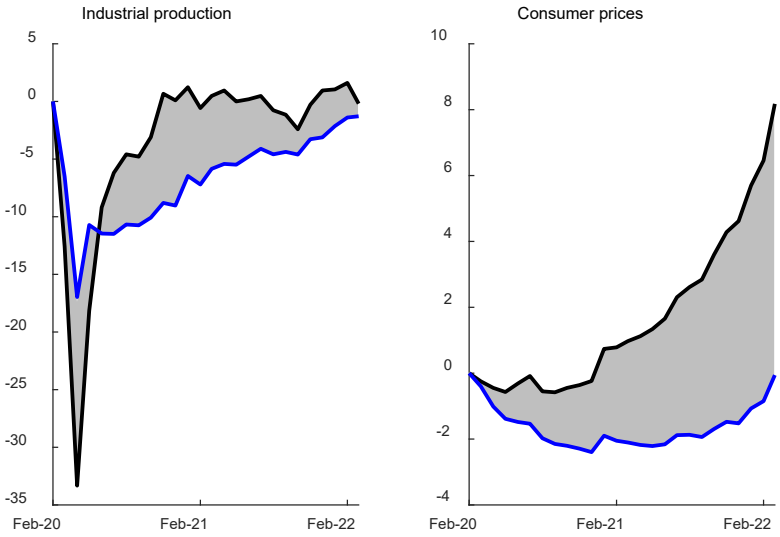
3.4.2. The effects of non-cyclical factors

So, if monetary policy does neither make up for the 2020 output loss nor for the 2021 and 2022 price surge, what does? Our model gives an indirect, yet clear answer to this question. Neither monetary policy nor the estimated (size of) demand and supply shocks can explain these phenomena (see Figure 8). Concerning real activity, not only the huge decline in output but also its rapid rebound remains unexplained. The most obvious candidate cause for this pattern of output is the deliberate and enforced nature of the downturn.

Shutdowns pushed real output far lower than "usual" negative shocks of the estimated size would have. By the same token, they prepared for an equally strong rebound when the social distancing measures were lifted. The pandemic-specific nature of the recession did not have longer lasting effects on the level of output. If anything, output recovered much faster than it would have if the economy had been hit by the same adverse shocks in an "usual" (i.e., non-pandemic) environment.

This might in part also explain the behavior of prices: The rapid surge in inflation is almost exclusively due to non-cyclical factors (Figure 8, right hand-side). It might result from the unusually swift rebound in economic activity taking place amid severe structural distortions that shutdowns and social distancing brought along for world trade and global supply chains, as discussed in Section 2.

Figure 8. Non-cyclical factors



Source: Authors' own elaboration.

Notes: Solid blue lines are structural scenario forecasts with simulated actual monetary policy. Solid black lines are realised data. The grey shaded areas are the estimated effects of non-cyclical (i.e., pandemic-related) factors. All values are in %-deviation from February 2020 levels.

4. CONCLUSIONS

In response to the environment of heightened inflation in recent months, the European Central Bank has taken steps to signalise it will start adjusting its monetary policy and reacting to the ongoing price pressures by using its conventional and non-conventional measures (Lagarde 2022)[8]. PEPP has ended in March 2022. APP will end at the beginning of Q3 2022. Some time after that, the first interest rate hike is expected.

The ECB's inaction so far on interest rates can be understood as offsetting the macroeconomic effects of its (presumably involuntary) tight stance in the first year of the pandemic. As the gap between the price paths given by the estimated policy rule and actual monetary policy (Figure 7, right hand-side) might close soon, the ECB will return to its usual monetary policy rule. This does not imply that interest rates will rise considerably, however, because the euro area is more exposed to adverse supply shocks than to favourable demand-side shocks since the outbreak of the Ukraine war, as summarised in Section 2. Headline inflation is currently a poor guide for monetary policy as it is still partly driven by structural pandemic-related distortions and cannot by easily tamed by the ECB unless it is willing to orchestrate a significant economic downturn. As this would only add further distortions to an already battered world economy, current seemingly runaway inflation should better be tackled at its root by resolving global supply chain distortions.

In the current highly uncertain situation, the ECB has taken the correct approach to favour gradualism and optionality. The interest rate path in the coming months should be driven by the further developments in terms of economic losses from the ongoing geopolitical instability and should be data driven. While at first inflation has been expected to be transitory and induced by external factors, a broadening of inflation has been observed lately. European inflation will continue to be determined by the factors discussed above – and their relative contribution towards overall inflation might change. Optionality also means that the ECB would not exclude even more aggressive measures, including 50 basis points interest rate increases, similar to the ones taken by the US Federal Reserve, if it recognises in the coming months that inflation is accumulating or broadening. This approach of constructive ambiguity could contribute also to partly tightening financing condition due to risk premia rising, which might be a beneficial development since it would lead to a tightening of credit and therefore dampening of inflation in the medium run.

In regard to ensuring price stability in the medium run, policymakers will also have to closely follow how inflationary expectations are evolving as a key component for the assessment on the stance of monetary policy. Inflation expectations anchored at 2% in the medium run is a major condition for the central bank to credibly achieve its target. And vice versa – the central bank is taking risk for its further monetary policy stance if inflation expectations de-anchor. It will need to act more aggressively if that happens and would therefore dampen demand considerably more to bring inflation back to the anchor. Available data from the Survey of Professional Forecasters (SPF) so far does not indicate de-anchoring of inflation expectations in the euro area (Lane, 2022). Inflation expectations have nevertheless been revised upwards and are now near the 2% target or even slightly above, after having fluctuated below it for a considerable period in the past decade (Figure 10). It is unclear whether inflation expectations will stay at this new level or will continue increasing – this will depend on the further steps of the central bank and its credibility. Inflation is also gaining attention in the wider public,

[8] At the time of writing of this paper, a first interest rate increase by the ECB is expected to take place in July 2022.

as can be easily observed from Google Search data. Figure 11 documents the frequency of Google Search for the word "inflation" in the top 4 European economies.

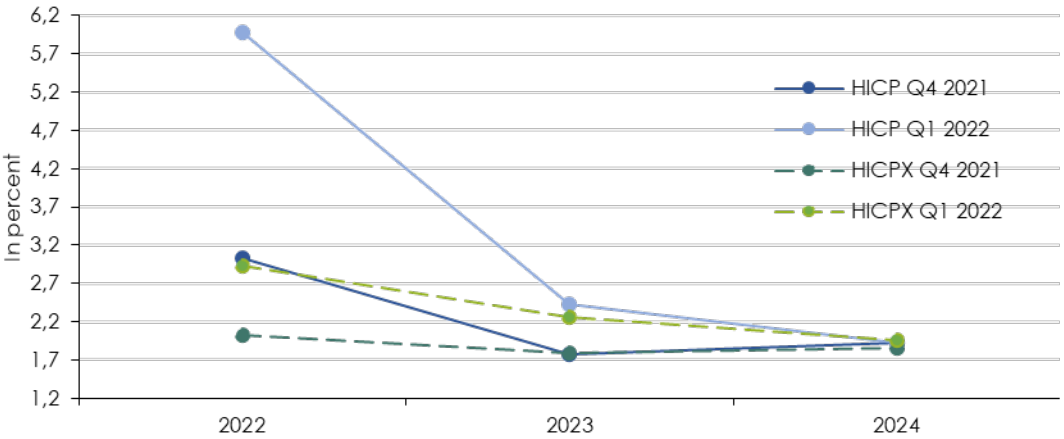
In taking their decisions in the coming weeks and months, the Governing Council of the ECB will therefore need to take into account a number of crucial factors to evaluate the further path of interest rates and the unconventional toolkit:

- Data on realised inflation and the differences between traditional headline HICP and core inflation as measurements of inflationary and signal of broadening of inflation. Furthermore, developments regarding demand for goods consumption versus consumption of services should be followed to evaluate whether the phenomenon of reallocation of demand from services to goods was temporary or would become more embedded and persistent.
- Wage developments will have to be followed closely by the central bank to evaluate how the labour market evolves, whether wage pressures are still mild or begin to increase and whether this signals to risks of the development of a wage-price spiral, which requires monetary policy action. The role of European trade unions here will be crucial, as the possibility of wage adjustments to be compensated by one-off energy compensation by government might be central to hinder a wage-price spiral from starting[9].
- Inflation expectations as measured by the SPF.

The central bank would thus need to find the right balancing act between dampening inflation without hampering economic growth and tightening financial conditions too fast in terms of financial stability perspective.

On the other hand, the ECB asset purchase programmes would continue to be available and can be further used again if any risk of market fragmentation starts to materialise in the euro area. In their latest design, they should enable a composition of asset purchases with more flexibility, which could address any evolving fragmentation in the euro area which could hinder the effective transmission of monetary policy. Even though financial stability risks have only mildly increased after the onset of the war, a careful monitoring of such risks would be needed and national macroprudential policies should be used to counteract any risks from materialising or amplifying further.

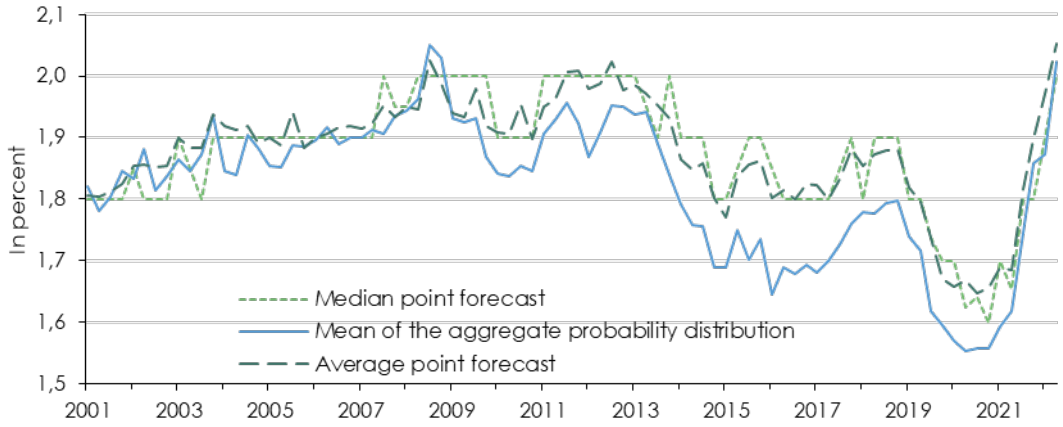
Figure 9. SPF on inflation, euro area



Source: ECB Survey of Professional Forecasters (SPF).

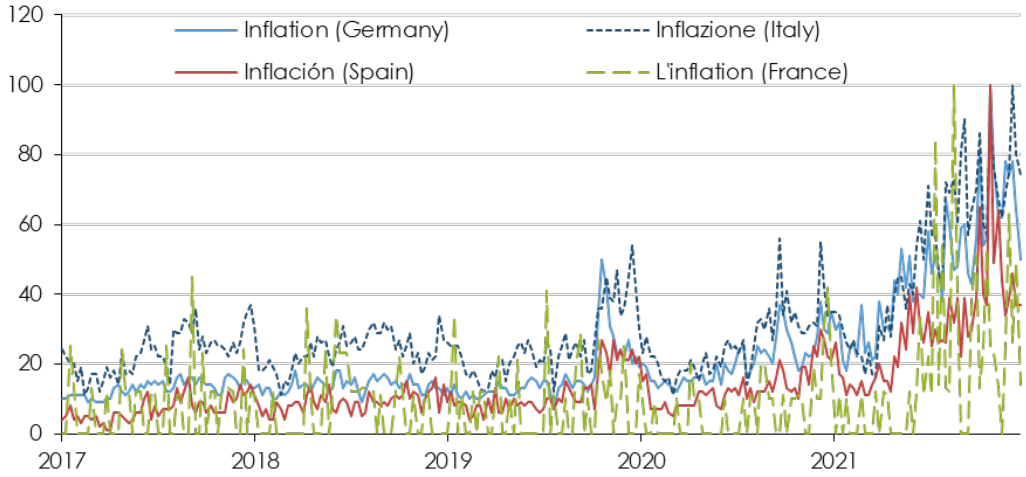
[9] For more on this, see Blanchard-Pisani-Ferry (2022).

Figure 10. Long-term inflation expectations



Source: ECB Survey of Professional Forecasters (SPF).

Figure 11. Google searches for the word "inflation" in Germany, France, Italy and Spain



Source: Google Trends. Country specific search for the word "inflation".

Notes: The values indicate the search interest relative to the highest point in the chart for the selected region in the specified period. The value 100 represents the highest popularity of this search term.

QUESTIONS FOR THE DISCUSSION

- Why did the ECB decide on following the sequencing approach?
- Would it have been possible to start with interest rate increases even before the end of QE and APP and what would have been the consequences?
- Would the APP retain the flexibility in the capital key that was embedded in PEPP?
- Does the ECB have an assessment on whether the reallocation of demand from services to goods that took place during the pandemic is transitory or expected to be more permanent?

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