GETTING GLOBAL MONETARY POLICY ON TRACK

EDITED BY

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EUROPE

INTRODUCTORY REMARKS

Michael D. Bordo

The pandemic of 2020–21 and the lockdowns (it is debatable whether they were needed) led to a massive collapse in the real economy and then a huge fiscal and monetary policy response in the United States and most other advanced economies. The situation was treated very much like World War II.

In addition to expansionary aggregate demand, significant supply shocks reflecting the disruptions to the global economy contributed to a rapid run-up in inflation, a scenario not seen since the 1970s. The pattern of inflation differed across countries, with it being higher in the European Union (EU) and United Kingdom than in the United States.

At the Hoover Monetary Policy Conference in 2021, Mickey Levy and I, and Larry Summers and others attributed the inflation in the United States to the Fed's being behind the curve and mistakenly attributing the inflation primarily to temporary supply shocks, as well as to their vision being impaired by their flawed FAIT (flexible average inflation targeting) policy.

The other countries were also behind the curve. One wonders if all their central banks were surprised by the run-up in inflation. Did they all follow the same wrong model?

The monetary authorities eventually all caught on by 2022, and now inflation is subsiding. The necessary tight monetary (less so fiscal) policies did lead to recessions in Europe but not the United States (so far). The US experience may reflect its serendipitous productivity boom and massive immigration. In Europe, the supply shocks, espe-

cially to energy after the Ukraine war, has made normalization more difficult. Other key factors in explaining the cross-country differences include the lack of a fiscal union in the EU and the lingering effects of Brexit in the UK. In this panel, these themes and others are developed in four fascinating presentations.

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After Four Crises, the Euro Needs Clearer Boundaries between Fiscal and Monetary Policy

John H. Cochrane and Luis Garicano

We present here some of the insights of our forthcoming book *The Euro: Foundations, Crises, Incentives, and Reforms* (written together with Klaus Masuch) on the interactions among monetary, fiscal, and financial policies in the euro area.[1] In the book, we tell the story of how, in the course of responding to four major crises (the Great Financial Crisis, the euro sovereign debt crisis, the COVID-19 pandemic, and Russia's war on Ukraine), the euro-area member states, the European Central Bank (ECB), and other European institutions made a number of decisions that, while useful to address each crisis, ended up weakening significantly the institutional framework and the incentives for the European Union's institutions and member states to be fiscally responsible.

The foundational architecture of the euro, established in the Maastricht Treaty more than three decades ago, set up a monetary union without a fiscal union. The European Union (EU) has some centralized finances and centralized functions, but it is far from a federal state like the United States. The architects of the treaty understood well the dangers of a soft boundary between monetary

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This paper and the forthcoming book reflect solely the views of the authors and not necessarily those of their current or previous employers or institutions, including in particular the executive board or the governing council of the European Central Bank.

policy and independent fiscal policies of the member states. The treaty focused the central bank on price stability, prohibited monetary financing of government budgets, and set deficit and debt limits for each country. It also included a no-bailout principle that public debt would not be rescued by fiscal transfers either.

This framework implied that in cases where overindebtedness couldn't be resolved through tax increases or spending cuts, sovereigns would default just like companies do and would not be bailed out by printed money that could cause inflation. But, crucially, it made no explicit provision to deal with these cases. Neither the treaty nor subsequent secondary EU legislation established how countries could default within the monetary union. They did not establish rules that would insulate banks from government defaults. There was no crisis-resolution body at the European level akin to the International Monetary Fund (IMF), or anything resembling a banking union. These omissions, combined with shocks and crises far beyond what the initial architects expected over the last two decades, distorted incentives and created vacuums.

Initially, during its first decade, the ECB adhered to the founding philosophy, carrying a small balance sheet, in which banks held few excess reserves, and purchasing no government bonds. Its actions and communications helped to make clear that the ECB would not support individual member states in fiscal difficulties. This was seen as a responsibility of fiscal policies of member states.

However, already in 2003, France and Germany had undermined the fiscal framework by breaking the debt and deficit rules. During the crises, the missing elements of the treaty framework and the earlier weakening of fiscal rules had consequences. The ECB continued to focus on price stability but gradually moved into decisions with significant fiscal implications, effectively supporting government debt and providing balance-of-payments financing for weaker member states. Starting in 2010, the ECB bought bonds of troubled individual member states. Later, it bought bonds of all

member states. So in contrast to bond purchases by the Fed, the ECB mainly bought national bonds with different default risks. These actions blurred the distinction between monetary and fiscal policy and weakened incentives for sound public finances at the individual member state level.

Bailouts are common in crises. After crises, however, must come reforms to address the moral hazard that the crisis bailouts bring. And after the sovereign debt crisis began, there were strong efforts between 2011 and 2014 to improve institutions, such as setting up the European Stability Mechanism (ESM) and the Single Supervisory Mechanism (SSM) and strengthening fiscal discipline via a new fiscal compact. Greece did eventually restructure its debt in spring 2012, with conditionality. Alas, progress on such euro-area reforms faltered post-2014. Important member states failed to reduce their debt during the good years, the ECB did not find a way to stay out of the business of buying sovereign debt, and the EU failed to complete an institutional transformation to address fiscal and financial moral hazard.

The ECB's Transmission Protection Instrument (TPI) decision in July 2022 highlighted the blurring of the fiscal-monetary boundary. The ECB announced that it would buy debt of individual countries, with the aim of supporting the smooth transmission of monetary policy by holding down sovereign debt spreads. So far the ECB has not made TPI purchases. Still, the announcement likely dampened sovereign spreads, which might have risen after the substantial increase in policy rates from July 2022 onward. The ECB justified this action as necessary to counteract "fragmentation risks" to "monetary policy transmission." Even granting the motivation, the effect is sovereign debt support. The TPI support, unlike the previous program designed in 2012 to implement then ECB president Mario Draghi's "whatever it takes" (Outright Monetary Transactions, OMT), did not require euro-area member states to agree to an economic adjustment program with the country in

trouble and to put financial assistance money on the table before the ECB intervened.[2] Thus the TPI clearly blurred the fiscal-monetary policy distinction more than "whatever it takes."

By 2022, the ECB's balance sheet had grown significantly, with over 60% of GDP in assets, mainly government bonds and favorable loans to banks. The ECB is now exposed to sovereign risk.

Banks are hostages. They hold a lot of their own government debt, so any sovereign restructuring will imperil the banking system. This persistent risk of a "doom loop" between banks and sovereigns remained unaddressed. Strong commitments by the EU Council during the sovereign debt crisis were soon forgotten. The ECB's emergency actions blurred the boundaries between monetary policy and fiscal policy, pushing the bank into a role that effectively supported relatively weak states and banks. Banks continued to receive subsidized financing with nonmarketable collateral, distorting the price mechanism (higher interest rates for riskier investments), partly crowding out market financing, and preventing clear identification of weak banks. With large ECB sovereign bond holdings, continued gross purchases during the high-inflation period, and the announcement of the TPI, the market perceived a strong aversion of the ECB to any significant rise in sovereign spreads. And member states, particularly larger ones, may have felt less need to put their fiscal houses in order, as evidenced by recent large deviations of 2023 deficit from previous estimates in Italy and France. Spain's "counter-reform" of the pension system, which significantly increased the long-term structural budget deficit of the country, and Italy's "Superbonus" paying 110% of energy-related home upgrades, are other examples of member states not feeling any particular urgency to reform their fiscal situations.

In conclusion, the missing elements of the treaty framework, the insufficient implementation of the fiscal framework, and the ECB's response to the four successive crises have accumulated and created a situation of weak institutions providing inadequate

incentives. In the book, we make several proposals to attempt to remedy this situation, in particular the following:

1. Establish a European fiscal institution to unburden the ECB from rescuing bondholders of member states in trouble and to implement programs, conditionality, and bank recapitalizations. This institution must be significantly larger and more powerful than the existing ESM and be able to take decisions by majority voting (rather than unanimity) to ensure its agility.
2. Complete the banking union by introducing European deposit insurance and addressing weaknesses in banks. Sovereign debt on banks' balance sheets should carry risk weights, or concentration charges, and thus require higher capital buffer. If banks hold sovereign debts, they should hold diversified portfolios.
3. Reduce the ECB's balance sheet. Outside a major systemic financial crisis, stop subsidizing banks relative to market conditions by allowing them to post weak collateral. Restrict eligibility of nonmarketable securities to emergency liquidity assistance.

These reforms clarify boundaries by having a European fiscal institution handle fiscal tasks, completing the banking union, and ensuring that the ECB's balance sheet supports a return to a limited role without support for bond prices of individual member states or banks in trouble.

Notes

We thank Klaus Masuch for input and comments.

1. Forthcoming (Princeton University Press, 2025).
2. For Mario Draghi, see "Speech by Mario Draghi, President of the European Central Bank, at the Global Investment Conference in London, 26 July 2012," European Central Bank, 2012.

3

The Digital Euro

Markus K. Brunnermeier

What Is Digital Money?

Today I will talk about the possible introduction of the digital euro. This raises the questions, What is digital money? and Aren't private bank deposits already digital? I would like to define digital money as money that is connected to a ledger, which in turn is connected to many other recordkeeping ledgers. These ledgers can be supply chain ledgers, big tech ledgers, credit ledgers, and platform ledgers that link to the Amazon and Alibaba tech ecosystems, which include customer ratings and other information. As soon as these ledgers are updated, an automatic digital payment can be executed. Automatic contingent payments and transactions as well as smart contracts are possible. If these ledgers are better interconnected, digital money becomes more useful (Brunnermeier and Payne 2024).

The digital euro offered by the European Central Bank (ECB) is a central bank digital currency (CBDC). To what extent it will be linked to other ledgers and how competitive it will be with other payment options are important design issues.

Private, Public, and PPP Money

One question is, Who has the power to control this ledger where everything is recorded, and who can issue money? There are two polar views. According to the libertarian view of Friedrich Hayek, private actors should have the right to issue money. Different forms of private

money should compete with each other to limit rent extraction and inflation (Hayek 1976). One challenge is that private-money issuers do not have sufficiently high incentives to invest in the resilience of the entire monetary and payment system.

The other polar case is an economy in which only the government is allowed to issue money. Private banks are only allowed to issue demand deposits in the form of inside money if fully backed by public money. The proponents of the Swiss sovereign money referendum envisioned such a monetary system (The Swiss Federal Council 2018).

Our fractional reserve banking system is a public-private partnership (PPP). The government issues public money through its central bank, while private banks can issue private inside-money claims. More recently, fintech and big tech players entered the space by issuing cryptocurrencies. Stablecoins, which are pegged to an official currency, try to serve as payment instruments but lack public liquidity support—at least as long as they are not systemic.

CBDC to Ensure the Uniformity/Singleness of Money

Today in the eurozone there are many issuers of money. One role of the digital euro is to maintain the uniformity of money across all issuers. All types of money should be anchored by a single form of money. There are two ways to ensure the uniformity (or singleness) of money (Brunnermeier and Landau 2023).

The first way is by convertibility—for example, deposits in a checking account can be converted into central bank cash. However, as the use of cash disappears, we need a credible substitute as anchor. A CBDC could step into this void. Convertibility into a CBDC would anchor the entire system onto a single currency. Historically, there are episodes during which the uniformity of money was sacrificed. In US history, in the free-banking era before the Civil War, multiple state banks issued their own banknotes (which often cir-

culated at a discount, reflecting the credit risk of holding them). In Europe during the euro crisis, the value of Greek euros, for example, differed from that of German euros because of the risk of a Grexit. Convertibility into a common currency—for instance, national banknotes in the nineteenth-century US case, or a common euro digital currency—would create a uniform money.

An alternative and second approach, instead of the convertibility option, is through bank regulation, deposit insurance, and lender-of-last-resort policy. All three policy instruments, combined with sufficient fiscal backing, can ensure that all bank deposits are always fully guaranteed, and hence uniformity of money is ensured.

CBDC to Reduce Private Seignorage and Rent Extraction

Private-money issuers have an incentive to issue money during an *initial coin offering* (ICO) and promote it heavily to make their coins broadly used and systemic. Large seignorage resources thus flow to the issuer of private money. Private-money issuers do not have sufficient incentives to invest in the resilience of the entire payment system. After large parts of the population have adopted the currency, a collapse of a private coin can cause great havoc and disruptions to the economy. At this stage the money becomes systemic, and the government sector is compelled to extend guarantees to the private money. In short, private-money issuers reap the benefits from the ICOs at the beginning, while the public has to provide the guarantee at the end.

Private-money operators can also extract rents from users if competition among currencies is limited due to network externalities. Indeed, considerable rent extraction is possible because the private issuers have *exclusion power*, meaning they can exclude users from the ledger. Some of the exclusion power might be justified, if the money ledger operator also extends credit to its users. The threat of being excluded from the money ledger is very powerful and ensures that

borrowers definitely pay back their loans. Default and delinquency rates can be pushed to a minimum. For example, credit extended by Ant Financial's Alipay in China has a very low default probability. A CBDC can give private users an alternative to the private-money ledger and hence limit the exclusion power of private actors.

Private banks enjoy *deposit market power*. Central banks have raised their policy interest rates to reduce inflation. However, private banks are reluctant to pass on the higher rates to their deposit account holders. The low pass-through of changes in policy interest rates to depositors hurts in particular less financially literate citizens, who suffer from inertia. Introducing a competitive CBDC that *pays some interest* could limit this distortionary power and rent extraction. However, one should be careful and introduce the interest payment on CBDC only gradually to ensure that banks make sufficient profits to sustain the current losses they incurred from acquiring fixed-interest-rate assets in the past. After a transition phase, banks knowing that in the future their deposit market power is limited will be more careful with their interest rate management.

In general, private issuers of money have incentives to maintain inefficiency that allow a larger rent extraction. This can also be seen in cross-border banking and cross-border payments in Europe today.

CBDC to Secure Monetary Sovereignty

The digital euro should be used to contain or maintain monetary sovereignty. Monetary sovereignty involves the collection of seignorage but, more importantly, it allows the central bank to manage the macroeconomy. If the unit of account is lost because of the universal use of different private currencies, it becomes difficult to alter interest rates and have an impact on the macroeconomy. A digital euro ensures the unit of account, so that most other forms of digital money are denominated in euros. This also empowers the ECB's lender-of-last-resort function.

Having monetary sovereignty puts public money at center stage, benefiting the government. Network effects can make it more difficult for citizens to switch to non-public-money-denominated assets. This makes it easier for the government to impose an inflation tax on its citizens—a form of financial repression if combined with macroprudential regulatory measures. As history shows, this is an important way to reduce high sovereign debt levels. A well-anchored digital euro could provide more power to conduct fiscal repression and thereby avoid potential default.

CBDC as a Catalyst to Establishing a European Payment System

Introducing a cost-efficient and coordinated payment system could reduce the expenses of many merchants for money transactions. The introduction of a digital euro could force most merchants to obtain new terminals in their shops. This could reduce the reliance on US credit card companies who dominate the credit card business. Given geopolitical uncertainty, having a European-controlled payment system strengthens Europe's sovereignty.

The digital euro would also facilitate a cross-border instant European payment system. At the moment, various private banks find it difficult to establish an efficient Europe-wide payment platform. Private banks may indeed prefer the inefficiency of the current system because it aids their rent extraction. A digital euro would be a catalyst to forcing the banks to coordinate and make payments efficient across many ledgers throughout the entire euro area.

CBDC to Set a Privacy Standard

Digital money transactions are recorded on a ledger. Entities that have access to the ledger gain access to agents' privacy. People are afraid of becoming a "transparent citizen" (having too much

of their information available to bad actors). For private digital money, private firms have access to citizens' private information. For CBDC, the central bank can in theory gain access to citizens' private transaction information. Ideally, CBDC should set itself a high standard so that citizens' privacy is protected other than in the case of money laundering and criminal activities. In general, it is helpful to citizens if they have, in addition to private payment providers, a competing CBDC environment at their disposal.

Interconnected Smart CBDC

If the digital money ledger can be interconnected with various other ledgers, it can become more attractive by offering greater convenience and programmability. Hence, it is decisive that the CBDC ledger or digital euro ledger will be *interoperable* with all others, including private ledgers. This ensures that all smart contracts can be enabled on the CBDC ledger. Credit could more easily be enforced. Given the current plans in Europe, it is not obvious that a smart, interconnected CBDC will be introduced.

In the US, there is considerable opposition to introducing a CBDC, a digital dollar. The political preferences seem to favor private stablecoins. They can be more easily connected to various other ledgers and made programmable. However, creating uniformity of digital money will be more difficult, and the revenue of initial public coin offerings will go to private hands instead of the public.

In the case of China, the private platforms Alipay and WeChat had the opportunity to promote the digital yuan in other countries, especially across Asia. However, the Chinese authorities have sidelined these platforms with recent regulatory policy measures. Hence, the spreading of the digital yuan across Asia is now less likely than a few years ago. That is, other emerging economies have less to fear in losing their own local monetary sovereignty.

Conclusion

The main takeaway is that a public-private partnership using either the convertibility or regulatory approach would create a uniform digital currency across the euro area and eliminate the denomination risk that characterized the euro crisis. A digital euro could also be used to reduce the existing dominance of US credit card companies. On the other hand, it would also facilitate the use of financial repression to reduce high sovereign debt.

In sum, the key issues are how to design a digital euro and make it an effective competitor to private players; how much interest should be paid on CBDC deposits; how to set up a CBDC ledger that provides sufficient privacy; how to contain the rents of the private sector; and how to preserve financial stability in the face of potential runs from private deposits to CBDC deposits.

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4

Monetary Policy in Europe: Out of the Woods?

Yuriy Gorodnichenko

The recent rise of inflation has been experienced by many advanced economies. While there is variation in the timing and magnitude, inflation was breaching 10% (see figure 4.1, panel A) and thus bringing back memories of the Great Inflation in the 1970s. The good news is that inflation has been falling sharply since peaking in 2022–23. What are the sources of this rapid disinflation? Some credit surely goes to the central banks. Policy rates increased from zero to 5% or higher rather briskly (see figure 4.1, panel B). However, the credit is likely only partial, for several reasons.

First, we know from Milton Friedman that monetary policy works with long and variable lags. Various estimates suggest that an interest rate hike generates a tangible decrease in inflation after 1.5 years or so. Furthermore, nominal interest rate increases have only recently led to positive real interest rates: figure 4.1, panel C, shows that inflation has been above short-term interest rates even when inflation has started to fall. This tightening of monetary policy appears to be quite modest given previous experience. Figure 4.2 plots the time series of inflation and real interest rates during the Volcker disinflation in the 1980s and the current episode. Paul Volcker raised rates to 5% for about five years to conquer inflation. In contrast, the real rate during the current episode is only lately, and modestly, above zero.

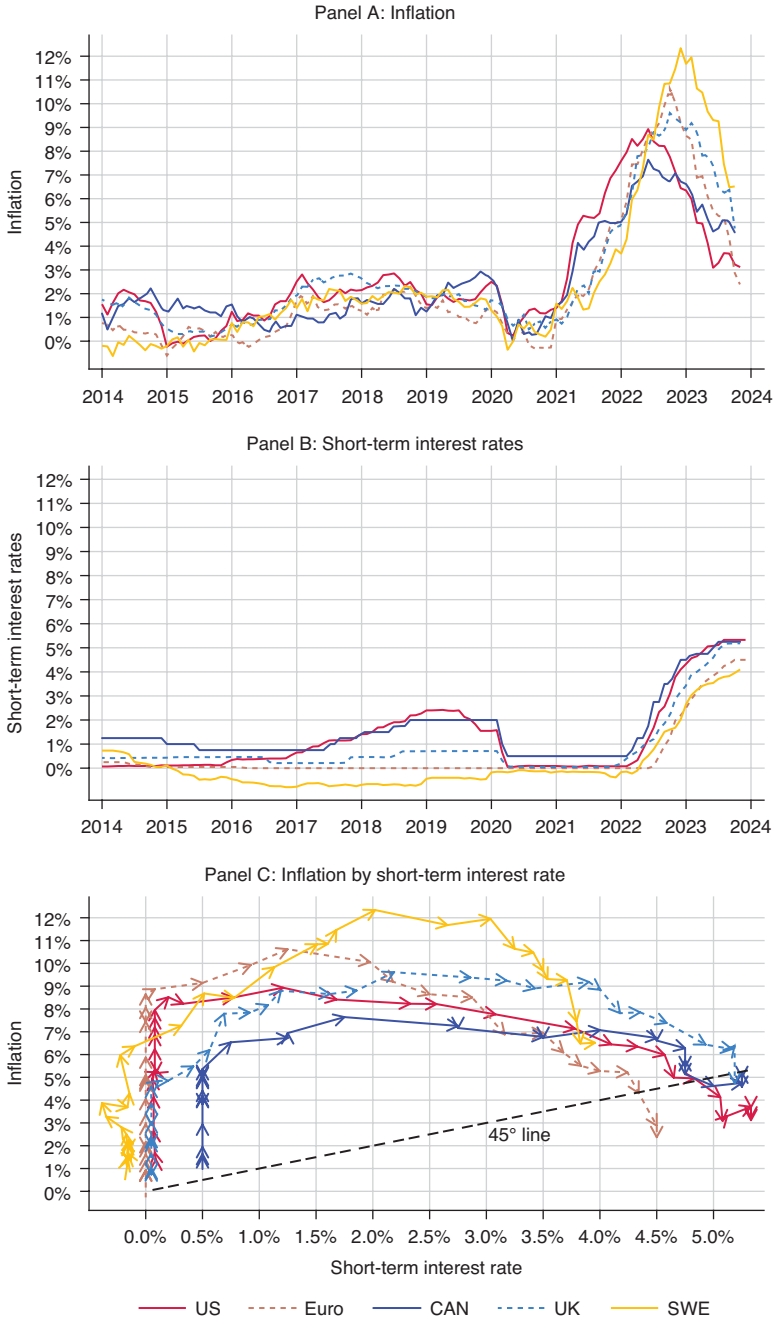

FIGURE 4.1. Dynamics of inflation and interest rates.
Source: Created by the author from publicly available data.

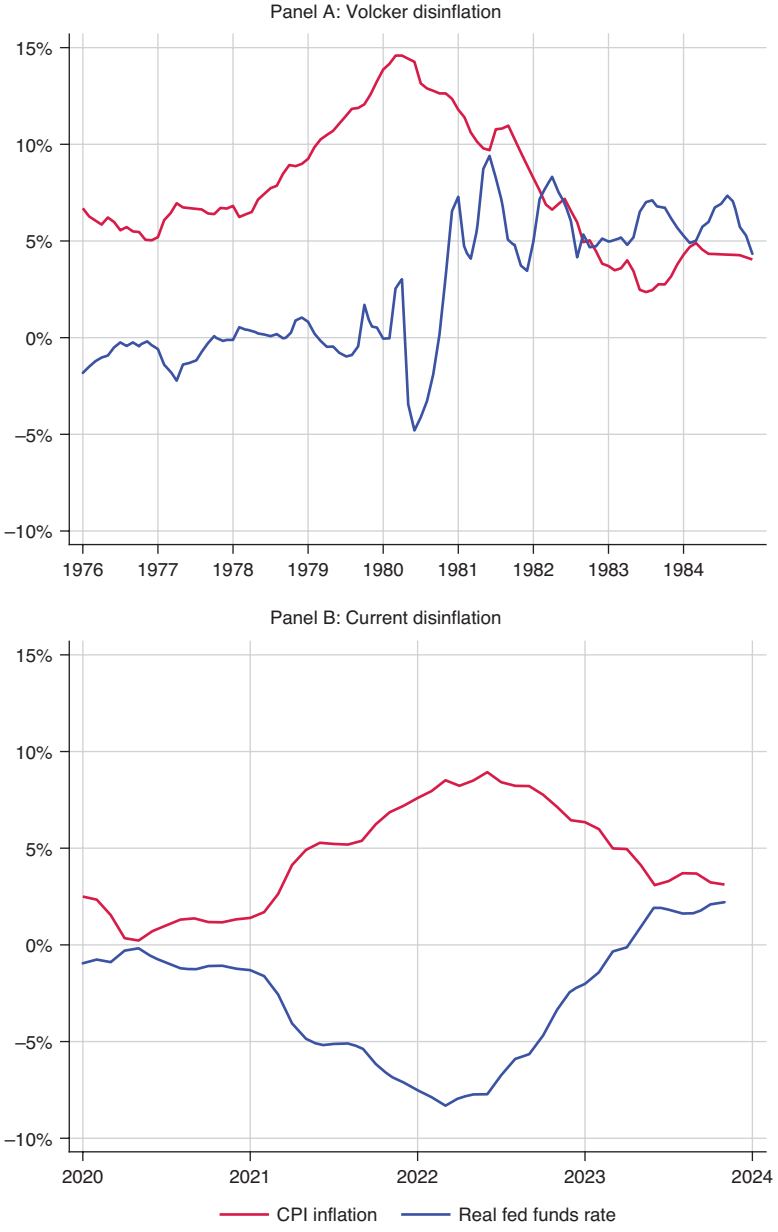

FIGURE 4.2. Dynamics of inflation and real interest rate.
Source: Created by the author from publicly available data.

Second, one should look at the joint dynamics of inflation and other macroeconomic variables to better understand sources of disinflation. To this end, figure 4.3 reports the evolution of the inflation gap (inflation rate [π_t] minus expected inflation [π_t^e]; expected inflation is the average one-year-ahead inflation forecast in the University of Michigan consumer survey) and the unemployment gap (unemployment rate [UE_t] minus the natural rate of unemployment [UE_t^*] estimated by the Congressional Budget Office). Red arrows show the dynamic when inflation is rising, while blue arrows describe the evolution when inflation is falling. Again, we compare the Volcker disinflation (figure 4.3, panel A) and the current episode (figure 4.3, panel B).

The Volcker disinflation is a textbook case. Inflation increases are vertical shifts in the $(\pi_t - \pi_t^e, UE_t - UE_t^*)$ space. These shifts are consistent with cost-push shocks, that is, upward shifts in the Phillips curve. To disinflate, Volcker created a great deal of slack in the market. At that stage, $(\pi_t - \pi_t^e, UE_t - UE_t^*)$ is moving down and to the left. One can interpret these dynamics as movements along the Phillips curve. In contrast, the current episode has movement along the Phillips curve when inflation is rising and a downward shift in the Phillips curve when inflation is falling. We do not have "Volcker" data for the eurozone in the 1980s, but the current experience in Europe is very similar to the US experience (see figure 4.3, panel C).

These dynamics suggest that a chunk of disinflation in the euro area and other advanced economies was due to forces beyond the reign of monetary policy. While these forces are welcome developments, this also means that central banks are not fully in control, and falling inflation can turn into rising inflation or stubbornly high inflation. Unfortunately, the balance of risks for the eurozone is such that these scenarios could be more likely than many observers think.

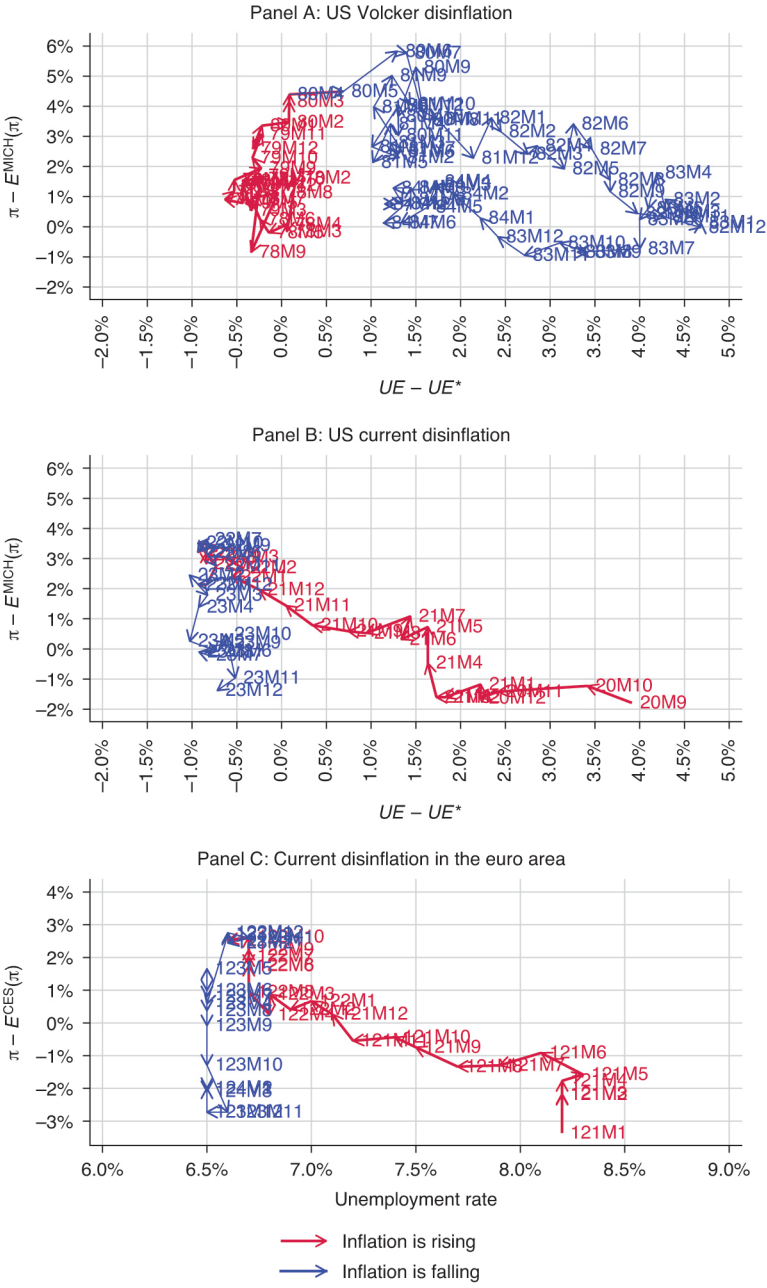

FIGURE 4.3. Dynamics of inflation and unemployment gaps.
Source: Created by the author from publicly available data.

After Russia invaded Ukraine on February 24, 2022, Europe could successfully decouple from Russian energy, but war-related risks were not eliminated. Many European businesses are still dependent on Russia. For example, Raiffeisen Bank, a systemically important Austrian financial institution, generates more than 50% of its profit in Russia. One can expect that these businesses likely face significant future losses, as Russia can seize their assets to pay for the war. The Black Sea is a major route for grain exports, not only for Ukraine but also for Russia (~70%). If these routes are disrupted (for example, in April 2022, insurance increased by a factor of ten and made commercial shipping infeasible), food prices are likely to soar. Russian oil refineries, depots, and terminals continue to catch fire, which may drive energy prices up again. In addition to potential increases in commodity prices, the shooting war creates immediate security risks for Eastern Europe (Russian drones and missiles occasionally fly into the European Union airspace) and beyond (Russia occupies a huge nuclear power plant in Zaporizhzhia and an accident can pollute much of Europe). Furthermore, Russia creates instability in the European Union by weaponizing refugees, spreading disinformation, and interfering with political processes. If the Cold War is any guide, defense spending in Europe can increase by 50% or even double. Public finance could be further strained if the flow of refugees returns to or exceeds the level observed in April 2022 (Germany alone spent more than 20 billion euros on Ukrainian refugees in 2022–23). This expansionary fiscal policy can again ignite inflationary fears. In general, one may be concerned that the "Korea discount" can be applied to Europe as well, and so the cost of doing business in Europe could get higher.[1]

These developments may seem to be low-probability events, but the job of central banks is to think the unthinkable and be prepared for negative scenarios. Russian aggression in Ukraine turned into

a war of attrition that may be hard to contain. As a result, the European Central Bank and other central banks on the continent should hope for the best but prepare for the worst.

Note

1. The Korea discount refers to a lower price-earnings (PE) ratio of Korean stocks relative to their global peers. For more details, see Romain Ducret and Dušan Isakov, "The Korea Discount and Chaebols," *Pacific-Basin Finance Journal* 63 (October 2020): 101396.

5

Monetary Policy in a Sustainable Union

Luigi Bocola

This chapter focuses on understanding how sustainability considerations—which I will define more clearly below—interact with the price-stability mandate of the European Central Bank (ECB). As discussed by John Cochrane and Luis Garicano in chapter 2, a key institutional feature of the European Monetary Union is the coexistence between a single monetary authority and many independent fiscal policies. Aside from being independent, fiscal policies have also been quite different across countries, leading over time to heterogeneous fiscal positions in the euro area—with some countries characterized by very high levels of public debt and others by quite sustainable public finances. Starting in 2010, the high-debt countries have faced quite volatile interest rate spreads and occasional debt crises, with all the negative spillovers that these events have on their economies and on the whole union.[1]

When you put together these institutional features, a crude way of thinking about the conduct of monetary policy over the past fifteen years is that the ECB has tried to keep inflation at its target, and at the same time has tried to "preserve the euro," using the words of Mario Draghi, by making sure that these occasional debt crises do not lead to financial meltdowns or disorderly exits from the union. For lack of a better term, I am going to refer to these considerations as *sustainability constraints* for the union.

What I want to discuss is to what extent these sustainability constraints interact with the price-stability mandate. When we think

about this question, there are two possible angles. On the one hand, fiscal shocks in high-debt countries may make this sustainability constraint more relevant and force the ECB to take policy actions that are not necessarily consistent with price-stability considerations—think about all the bond-purchasing programs designed over the years to reduce the volatility of sovereign spreads. On the other hand, the presence of these sustainability constraints may affect the response of the ECB to more traditional shocks. For example, when facing a negative supply shock, the ECB may not want to raise rates as much as they should for price stability, because increasing interest rates will have negative spillover effects on the public finances of high-debt countries and potentially tighten the sustainability constraints.[2]

In what follows, I will present some data to assess how these different types of shocks affect the ECB's ability to deliver price stability. Specifically, I'm going to look at two different event studies. The first will be the formation of the Italian government in 2018, which I will interpret as a direct shock to sustainability constraints. The second will be the liftoff event in the summer of 2022, which will fall squarely in the second type of shocks discussed earlier. My reading of this data will be that the European Monetary Union was able to manage the first type of shocks much better than the second type.

Before going there, let me give a brief explanation of the data that I will be using. In order to understand how the monetary stance of the ECB changes when sustainability considerations come into play, we need to have data on a monetary instrument—say, nominal interest rates—and an outcome—say, inflation. Rather than using realized data, I will be assessing the monetary stance of the ECB using expectation data. Specifically, I will use the expectation of future nominal interest rates and future inflation that are implied by the term structure of nominal and inflation-protected bonds.[3]

In Bocola et al. (2024), we use this data to test for the stability of the US monetary reaction function post-2020. The basic idea can

be illustrated with a simple example. Suppose that the monetary authority follows a Taylor rule,

$$i_t = \overline{\imath} + \psi_\pi \left(\pi_t - \overline{\pi}\right) + \epsilon_t,$$

where i_t denotes the nominal interest rate, π_t inflation, $\overline{\pi}$ the inflation target, and ε_t an independent and identically distributed monetary shock. Taking expectations of both sides of the above relation k years from now, we can restate this relationship in the *expectation space* as

$$E_t[i_k] = c + \psi_\pi E_t(\pi_k).$$

We can then use the above relation, coupled with high-frequency bond market data on expected future nominal interest rates and expected future inflation, to learn what bond market investors in any given day t are thinking about the monetary stance—which in this example is parameterized by ψ_π.

Figure 5.1 reports this data for the US economy. In panel A, we have a dot plot of $E_t[i_k]$ against $E_t(\pi_k)$ for two different samples, January 2017 to December 2019 and August 2020 to February 2022. Each dot in the figure corresponds to a specific day in these two windows. First, we can see a very strong relationship between these two variables, consistent with what the simple Taylor rule described earlier. Second, we can see that the slope of this relationship becomes much flatter postpandemic. If we do this analysis more systematically over the 2000–2022 sample, we see in panel B that for almost twenty years the estimates of ψ_π were remarkably stable over time, and then dropped in the post-COVID-19 period. In Bocola et al. (2024), we argue that this finding is consistent with the introduction of the flexible average inflation targeting and a shift toward a more dovish policy stance by the Federal Reserve.

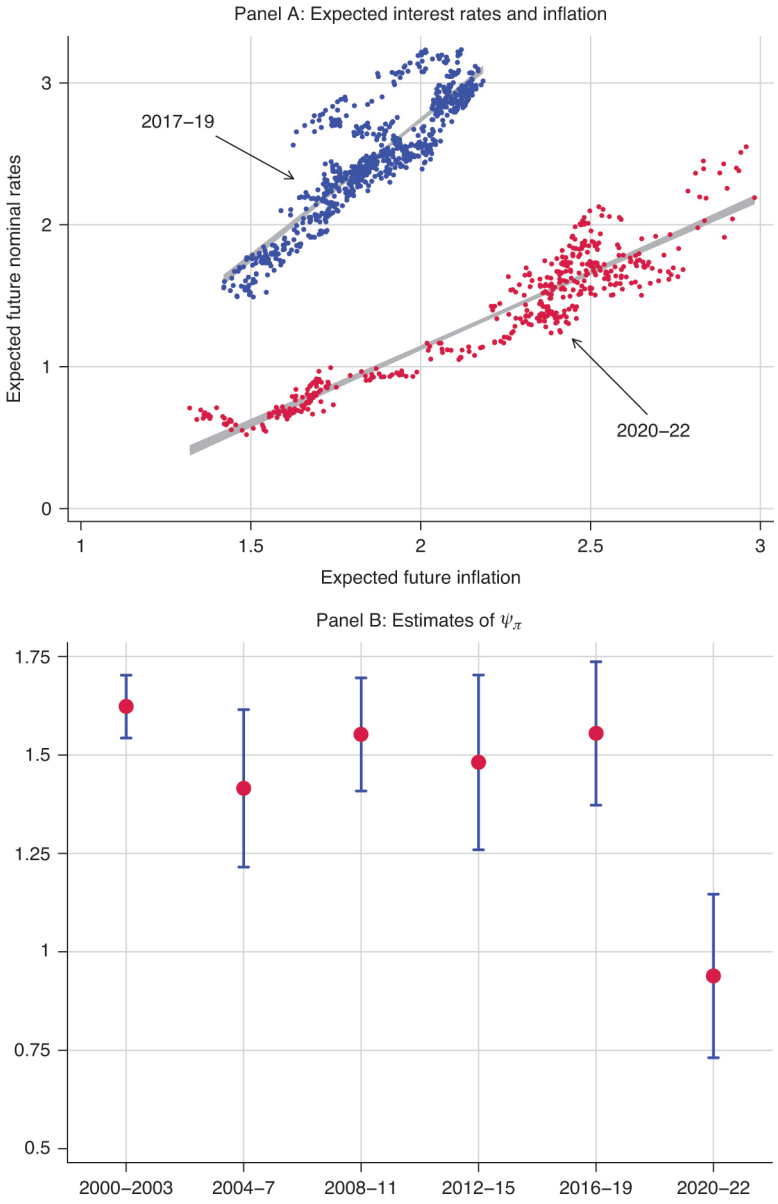

FIGURE 5.1. Market-based expectations of nominal interest rates and inflation in the United States.

Notes: Panel A shows a scatterplot of daily market-based expectations of average nominal interest rates and average inflation over a ten-year horizon for two subsamples, 2017–19 (blue dots) and 2020–22 (red dots). Panel B reports estimates of ψ_π computed using the same data in different subsamples for the 2000–2022 period.

Source: Bocola et al. (2024).

Consider now performing the same analysis for the euro area. Figure 5.2 reports the results. We still estimate a striking and stable positive relationship between expected nominal interest rates and expected inflation, and a substantial reduction in the slope coefficient post-2020. Could such a reduction in the sensitivity of nominal interest rates to inflation be related to private sector worries of tighter sustainability constraints for the monetary union, perhaps due to the large observed increase in public debt after 2020?

To explore this question, I will start with the first event study, the formation of the Italian government in 2018. For those who are not familiar with these events, the 2018 elections in Italy resulted in a major political stall. You had three main players: the Five Star Movement, a center-right coalition of parties, and a center-left coalition, each with roughly one-third of the votes. In that landscape, none could govern independently. After two months of major political uncertainty, the Five Star Movement began talks to form a new government with a faction of the center-right coalition, the League, on a platform that was markedly anti-austerity/anti–EU establishment. During this period, we observed major volatility in Italian sovereign spread—a proxy for the likelihood of a debt crisis in Italy—mostly driven by political news about the likelihood that this coalition would be formed and what its policies would be (see, for example, Martin, Allen, and Politi 2018). I am going to think about this as a shock to the sustainability constraint of the euro area.

To explore the implications of this type of shock for euro-area inflation and nominal interest rate, I estimate by ordinary least square the relationship

$$\Delta E_t[x_k] = a + \beta \Delta spr_t + e_t,$$

where x_k is variable x in year k. Panel A of figure 5.3 reports the regression line when using daily revisions in expected future inflation on the left-hand side of the above equation, alongside a scatterplot of

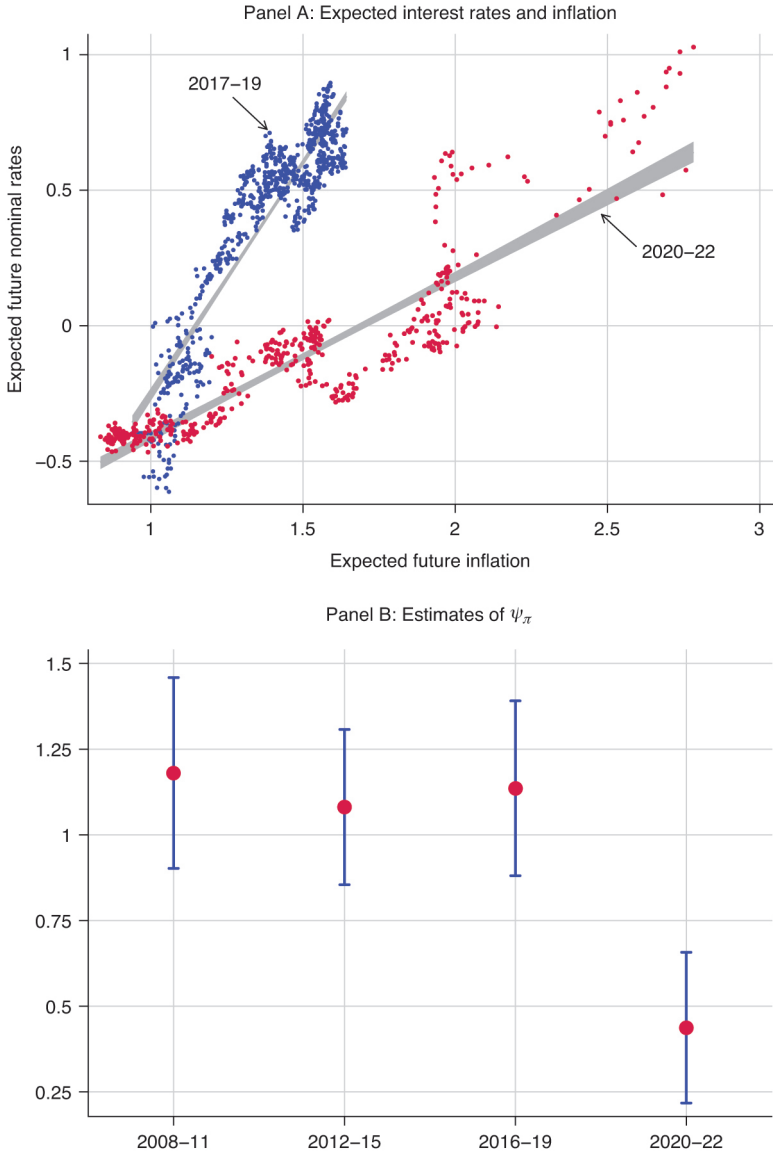

FIGURE 5.2. Market-based expectations of nominal interest rates and inflation in the euro area.

Note: This figure replicates figure 5.1 using euro area data. Expected nominal interest rates are computed using overnight indexed swap (OIS) rates while expected future inflation is computed using inflation-linked swap (ILS) rates. These contracts are denominated in euros and have a ten-year maturity.

Source: Figure by the author based on Bocola et al. (2024), using data from Bloomberg.

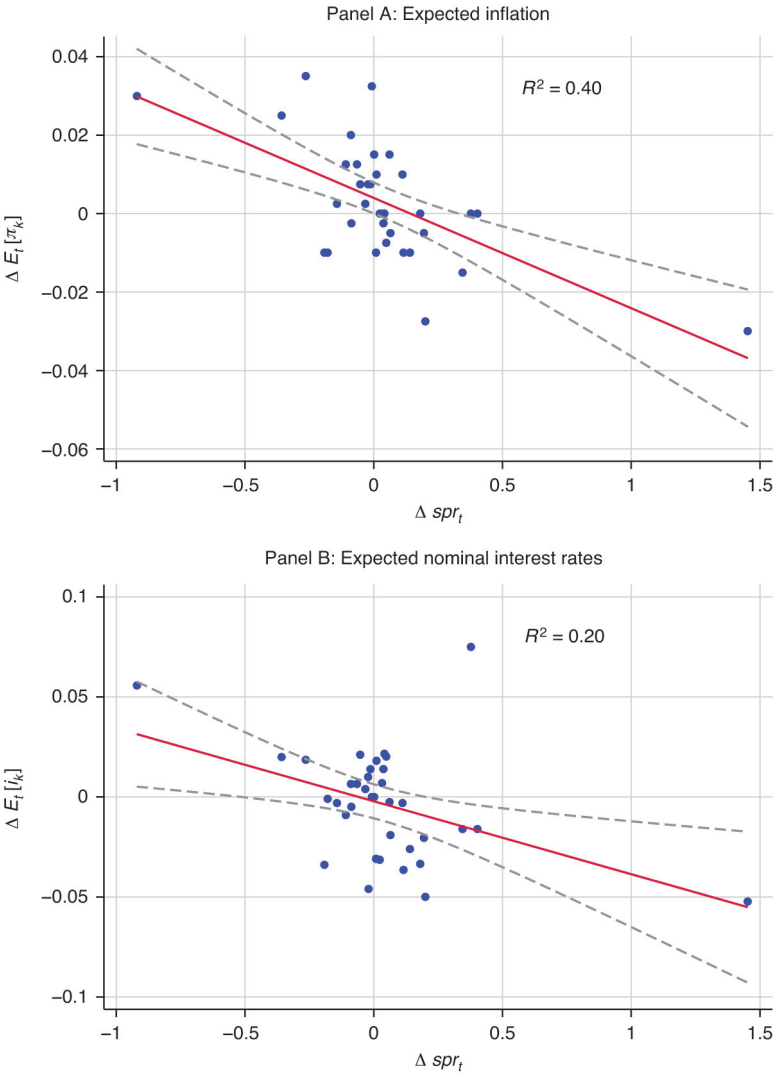

FIGURE 5.3. The regression of daily changes in Italian sovereign spreads on daily changes in expected future inflation and expected future nominal interest rates.

Note: Panel A shows daily revisions in expected future inflation, and panel B shows nominal interest rates, with daily revisions in Italian sovereign spreads for the months of May and June 2018, along with the regression lines in each plot. Expected future inflation and nominal interest rates are computed over a five-year horizon using the data described in the note of figure 5.2. Italian sovereign spreads are defined as the interest rate differential between an Italian and a German zero-coupon bond with a residual maturity of five years. Both variables are expressed in percentage points.

Source: Figure by the author, using data from London Stock Exchange Group.

the underlying data. Panel B of the figure reports the same information when we instead use daily expectations of future nominal interest rates as a left-hand-side variable.

There are two main takeaways from the figure. First, news about the Italian political landscape was quite predictive of inflation expectations and nominal interest rates for the euro area—with an R^2 in the 0.2–0.4 range at the daily frequency. Second, we can see that following an increase in the likelihood of an Italian default (an increase in spreads), expectations of future inflation and of future nominal interest rates fell, with nominal interest rates being more reactive.[4]

My reading of this evidence is that financial markets view an isolated debt crisis in the eurozone as a negative demand shock for the union, and they expect the ECB to accommodate these shocks. Accordingly, inflation expectations for the euro area do not move much despite the sizable movements in Italian spreads. In this sense, these direct shocks to the sustainability constraint do not appear to present major interferences with the price-stability mandate, at least when they are affecting only one country, as in this example.

I will now look at a different type of event, the liftoff of the summer of 2022. In figure 5.4, panel A, the red line plots the expected nominal interest rate over the next five years for the euro area and sovereign spreads for a subset of euro-area countries. On June 5, the ECB decided to end net purchases of sovereign bonds under an important pandemic program and to increase the policy rate. Following that decision, we can see sovereign spreads in Italy, Greece, and other countries increasing. Shortly thereafter, the ECB held an emergency meeting in which they partly reversed that decision on the bond-purchasing program and introduced the Transmission Protection Instrument (TPI).

A possible interpretation of this episode is that the ECB became more dovish toward inflation because increasing interest rates would make public debt less sustainable for countries in the eurozone—a case in which sustainability constraints interact

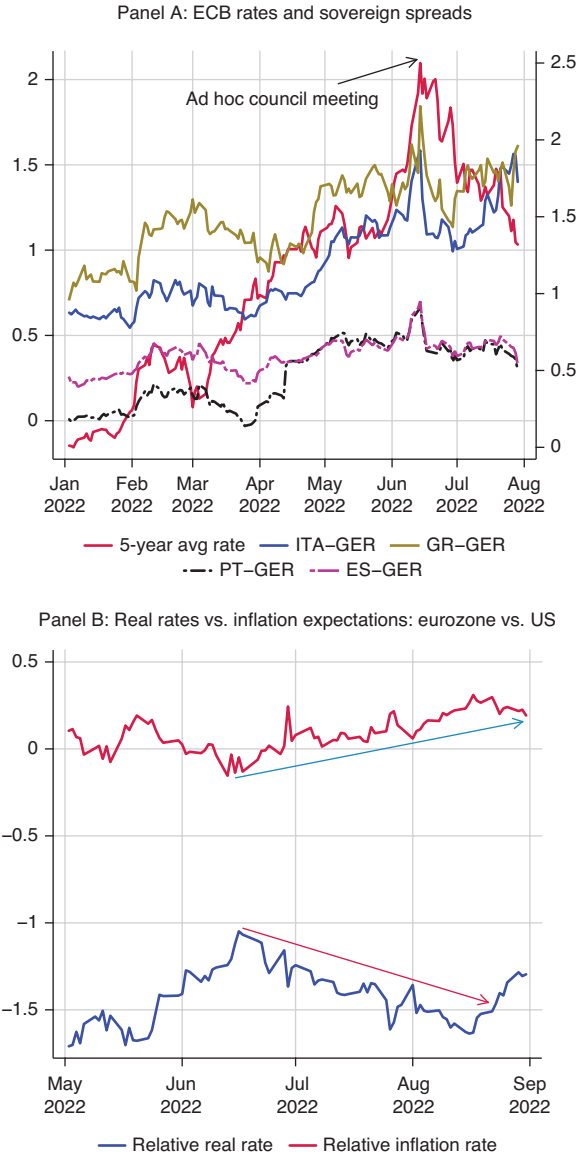

FIGURE 5.4. The expected nominal interest rate (%) over the next five years for the euro area and sovereign spreads for high-risk euro area countries, with a residual maturity of five years.

Note: The red line in panel A reports yields on a zero-coupon bond (left *y*-axis), while the remaining lines report the yield differentials between a zero-coupon bond issued by a selected euro-area country and Germany (right *y*-axis). The blue line in panel B plots the yield differential between inflation-protected bonds in the euro area and in the United States, while the red line reports the differential in expected inflation in the euro area and in the US computed using inflation-protected bonds.

Source: Figure by the author, using data from Bloomberg and London Stock Exchange Group.

meaningfully with the price-stability mandate. This interpretation is consistent with the behavior of bond prices. Indeed, from figure 5.4, panel B, we can see that after June 15 of 2022 expectations of future nominal interest rates by the ECB fell relatively more than their US counterpart, despite the fact that inflation expectation in the euro area increased by more than in the US.

To conclude, aside from price stability, the ECB wants to avoid disruptive debt crises and keep the monetary union sustainable. These two objectives may clash at times, leading to a trade-off. The ECB has designed institutions, such as the TPI, over time to ameliorate this trade-off. These institutions appear to have worked, especially when considering idiosyncratic shocks to high-debt countries. However, there are still areas of concern, especially during tightening cycles: the fact that you have countries with public debt well in excess of 100% of GDP in the European Monetary Union is bound to constrain the ability of the ECB to act swiftly by raising rates when facing inflationary shocks. These concerns are, in my view, amplified by anemic growth and the already high level of taxes and political difficulties in cutting spending—factors that make it unlikely that we will observe major reductions in debt-to-output ratios in most euro-area countries going forward.

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Notes

1. There is a large body of literature documenting large negative spillovers of sovereign risk to private sector firms during the European debt crisis. See, for example, Corsetti et al. (2012); Bocola (2016); Bottero, Lenzu, and Mezzanotti (2020); and Arellano, Bai, and Bocola (2024).
2. See, for example, Wolf and Zessner-Spitzenberg (2021) for a recent analysis of the nexus between interest rate and public debt sustainability in the euro-area context.
3. In what follows, I will assume for simplicity that the expectation hypothesis holds, so that we can read market-based expectations from yields of nominal and inflation-protected bonds. See Bocola et al. (2024) for a discussion of the role of risk and liquidity premia for this type of analysis.
4. The point estimate of β is −0.037 for nominal interest rates and −0.028 for inflation.

GENERAL DISCUSSION

MICHAEL BORDO: This was great. So we have about fifteen minutes or so for Q and A. I will take my prerogative as chair and ask a question and then we will go around the room. And when you raise your hand, please identify yourself. In 1999, Europe created a monetary union, but it did not create a fiscal union. And that has been a source of difficulties, at least ever since the global financial crisis. The question I have for people on the panel is: What is the likely path forward to creating a monetary fiscal union like the US had, like Alexander Hamilton envisaged?

LUIS GARICANO: Yes, the moment was very promising. We responded to COVID by issuing common debt. I was in parliament then, and I thought this would indeed be the Hamiltonian moment for Europe, with the first large bond issuance in Europe, 750 billion. But in fact it was half a step, because, yes, we put the debt issuance in place and we have spent it, but we didn't decide how to fund it. We did the easy part. The revenue side was forgotten. The politicians' view of the time was: let's put this issuance in place, and we'll find the money later. Right now, let's just get this thing going. Remember the bicycle metaphor: Europe is always falling forward and building in each crisis. But of course finding this money now is more difficult than anticipated, because we are facing all of these problems Yuriy mentioned and we have to find the money for defense and all the rest.

My view in that sense is that we wasted a very good opportunity to take that first Hamiltonian step you're talking about. And the fact is that the recovery plans have not entirely run well—think of the Italian budget deficit, a consequence of the "Superbonus," where basically the Italian government pays 110% of your house

renovations, so that you have an incentive for your home builder to make a renovation as expensive as possible because both of you can split that extra money. So the fact that this didn't work very well and that we didn't put the revenue in place probably means that a fiscal union is further away than it was before the crisis. And I am not very optimistic about the political will; the resistance in Europe to this as societies age is becoming stronger.

BORDO: Okay, does anyone want to jump in on that, or I can move to the next question?

SEBASTIAN EDWARDS: Thank you. Sebastian Edwards from UCLA. Very interesting panel. I have a question about CBDCs [central bank digital currencies]—an issue addressed by all panelists—and currency substitution. In the eighties, Michael Bordo wrote some great work on currency substitution. We are going to hear about Argentina later today. So, once CBDCs are around and there are digital euros backed by the ECB [European Central Bank] or digital dollars or digital loonies, why would Argentinians hold any pesos?

And one of the things that we learned from Milton Friedman is that in order to undertake monetary policy in an effective way, the demand for money has to be stable and predictable. There is a lot of early empirical evidence in his famous book with David Meiselman. So the question is: what are the implications of launching CBDCs in the advanced countries for Asia, Africa, and, mostly, Latin America? And I think that that's still something that hasn't been addressed, and I would be very interested in the panel's opinion. Thank you.

MARKUS BRUNNERMEIER: This is a big issue for the emerging economies. And that's why they were very afraid of others' digital money and they developed their own CBDCs to prepare for the case in which their citizens don't use their own currency anymore. The central bank loses the power to conduct monetary policy. You lose your monetary sovereignty. Of course you can

still outlaw others' currencies; for example, nobody in Argentina can hold a digital euro by law. However, such laws cannot easily be enforced. Overall, emerging countries are most threatened when it comes to losing the unit of account role of their official currency. That's why initially when the whole wave came, the emerging markets were the first ones to set up CBDCs, just a defensive measure to protect their unit of account in order to be able to conduct monetary policy. This was a valid concern.

VOLKER WIELAND: Maybe two brief questions to Luis and Klaus [Masuch]. First, it seemed to me that the ESM [European Stability Mechanism] worked reasonably well. It did require the backup of the member countries for funding. You propose a stronger European financial institution, a fiscal institution, and you propose to change the voting rights. But then where would that institution get its funds? For example, in Germany the Federal Constitutional Court clarified that in order for such an institution to be able to call on the German budget to increase the capital of the ESM, you need a parliamentary vote. This approach worked, right? But if you want to do away with this requirement, don't you need some extra funding directly, say, some taxation powers?

The other question concerns the TPI [Transmission Protection Instrument]. It seems to me with the OMT [Outright Monetary Transactions], the ECB was much better protected because they required the country to request an ESM program. But now the ECB itself preferred to create a new program which does not rely on that. Klaus talked about this a little bit, but could you give us the reason why the ECB wanted to have this additional flexibility and give up on the backing of an ESM program?

KLAUS MASUCH: Volker, thanks a lot. That's of course a key question. The setting up of the ESM improved the situation in the sense that it took the burden from the central bank and moved it to the fiscal authorities that created the ESM as a crisis-management

institution. So that was a good development. The ESM got capital from the member states, but you could read in the press that it may not have enough firepower if a big country has to be funded by the ESM. What we suggest is certainly that member states will have to fund the European fiscal institution, which could be intergovernmental like the ESM.

But you are right, our proposal is that there is a qualified majority voting. That means that decisions can be taken swiftly, which is needed in a crisis, and which requires moving away from giving every single country a veto right. We see this as allowing an unburdening of the central bank. If the fiscal institution is not strong enough and cannot act quickly, there will always be an argument that the central bank is much quicker, can much faster decide and act. And before I hand it over to Luis, on the Transmission Protection Instrument, which was needed in the view of the central bank to ensure that the expected increase in monetary policy rates is transmitted smoothly across the whole euro area, I think markets understood that the TPI was designed to help the ECB to get interest rates up significantly without triggering undesirable differentials in yields.

GARICANO: The difference between TPI and ESM is exactly as you're saying. When [Mario] Draghi announced "whatever it takes," he demanded fiscal backing, so that the member states would be on the hook, and also demanded conditionality. This means that the ECB is protected because the ECB can say, well, you're not doing the right thing; I withdraw my support and then member states are on the hook. The difference is that now, with TPI, there is no fiscal backing, member states are not on the hook, and there are no conditions. So basically, if the member state that is receiving this support for their bonds doesn't actually behave and continues doing crazy stuff, the ECB doesn't really have the possibility of getting out because it's going to create a financial crisis. The ECB is now on the hook.

Why did they do that? I think it's politics. When Draghi was president—this was during the whole sovereign crisis—he had a lot of power and he was able to persuade governments: if you want me to support you, you're going to have to create this institution, the ESM, and accept these conditions. When the crisis period that was discussed in two of the panel's papers started, there was no political strength to do the same. Member states just thought, okay, ECB can do it, let ECB do it.

ATHANASIOS ORPHANIDES: We hear about all of these difficulties with the incomplete project in Europe, and it is very useful to hear proposals. But many of the proposals require cooperation by governments and other institutions and so forth. Since this is a conference on monetary policy, I thought I would ask a specific question about one of the issues that the ECB could fix on its own and improve the functioning of the euro area. That is a known vulnerability that has not been addressed very well in recent years. It's very simple. We need to look at the plumbing of how policy works. The ECB is the only central bank on the planet that relies on credit rating agencies to determine the collateral eligibility of government debt. This is a known source of fragility. It has created multiple episodes of crisis in the past. And we have this wonderful experiment with the pandemic that Luis mentioned. The ECB suspended the use of credit ratings for government debt during the pandemic, and this wonderfully stabilized government bond markets.

And then, unfortunately, for reasons that have not been explained or mentioned in the policy review documents that the ECB has completed since then, in the spring of 2022 the governing council announced that it would return to the pre-pandemic collateral framework with full knowledge that this would create instability. And, of course, the instability came. I was interested in the case study of the TPI, but of course the TPI was introduced in order to partially solve a problem that the

ECB had created just a few months earlier by reintroducing the reliance on credit rating agencies for government debt.

So I ask this to those of you who have proposed solutions for the ECB: isn't this a fairly easy thing that the ECB could fix on its own? What is the justification for current practice? And Luis, I understand politics is part of the answer, but when we're talking about an independent central bank, I don't think that's a satisfactory answer.

GARICANO: You got rid of my get-out-of-jail card! I think that the rating agencies are a very bad solution. We saw it during the financial crisis. The problem is that I don't think a better solution has been found in Europe that avoids political interference. Using volatility or other similar measures would probably be preferred.

But I think it's a question of what we can agree on as different countries that's not manipulable by all of us and that is external to us. That kind of external instrument hasn't been found apart from the credit rating agencies, which, I agree with you, have been followers, creating procyclicality and all these problems that you're mentioning. I agree with you, it's not a satisfactory solution, but I think the absence of any collateral framework would be worse, or the absence of any guide to the collateral framework would be worse. So yes, I guess politics is the answer.

STEVEN DAVIS: Thank you. My question is directed mostly to Luigi. As I understand it, the ECB took upon itself the sustainability constraint, and it did so at least as far back as the Greek sovereign debt crisis in 2010, 2012. The ECB could have taken a different response to that crisis—in particular, it could have facilitated a temporary or permanent exit of Greece from the eurozone. Of course, that would've involved some sovereign default and a major banking crisis inside Greece, and perhaps beyond. But all of the difficulties, the lack of fiscal discipline that you mention and that have come up before, they flowed from the ECB's decision to self-impose the sustainability constraints. Those constraints have

grown more challenging, more encumbering over time. They've evolved into new ways for political leaders to avoid fiscal discipline. So I just would like to get your response to that perspective.

LUIGI BOCOLA: I agree with you that the sustainability constraint is partly self-imposed, and I believe that this was a rational calculation of the ECB chairman during the 2010 to 2012 sovereign debt crisis. Many often forget that the sentence next to "we will do whatever it takes" in the famous speech by Mario Draghi was "to preserve the euro." And I believe that, in the mind of Draghi, preserving the euro meant that there is no possibility of an exit by any of its members: the moment you have the possibility of exit, the monetary union becomes merely a fixed exchange rate regime, and this creates all sorts of problems for the countries that are in it.

This was quite tangible at the time because financial markets were pricing the possibility of an exit not only for Greece, but also for other eurozone countries. So, what you are saying is probably right: the ECB decided to place this "sustainability constraint" on themselves, and they decided to do so because they wanted to preserve the euro.

MASUCH: Two points on sovereign default. First, our proposal—John, Luis, and myself—is to make it possible to default inside the monetary union without triggering a major financial crisis. The missing parts of the treaty and the secondary legislation meant that there was no possibility of an up-front debt restructuring in Greece in early 2010. And that added a lot to the economic and social costs of the Greek crisis. For two years bondholders had to be repaid in full, and thus all the adjustment burden fell on taxpayers, recipients of social transfers, and workers. So these missing parts of the treaty can have high costs.

Second, exit from the euro area is a very bad solution and should be excluded. But then you need to have the option, in an extreme case, to have an orderly sovereign debt restructuring within the euro area.