Reforming the Euro: Lessons From Four Crises

[Preliminary Draft. Please do not quote. We welcome comments.]

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Preface

In this book, we outline how monetary, fiscal, and financial policies interact; we describe how the euro was set up to control those interactions; we tell the story of how European policies and institutions evolved under the pressure of four crises; we analyze the fragility of the current moment; and we propose ways to fix the architecture of the euro.

The three of us come to this project with very different perspectives and experiences. Cochrane is a senior fellow of the Hoover Institution at Stanford, and was previously a professor at the University of Chicago. He has spent his career studying monetary policy, inflation, and financial markets. He has just published a book on the interaction between fiscal and monetary policy (Cochrane, 2023b). The analysis of the present book does not require that still-contentious fiscal theory of the price level, however. Here, we only use the basic idea that large deficits without credible plans for debt repayment threaten inflation or default. That idea holds in practically all theories of inflation and monetary policy. The unique setup of the euro, with a common currency, member states with independent fiscal policies, and rather limited centralised powers, requires interesting extensions of this standard idea. Cochrane has also previously written a good deal of commentary on European monetary and financial affairs.[2]

Garicano has been a professor at the University of Chicago, IE Business School, and the London School of Economics, where he has now returned. He is also a senior non-resident fellow at Bruegel, the Brussels-based think tank.

[2]Collections at https://www.johnhcochrane.com/news-op-eds-overview/europe and https://johnhcochrane.blogspot.com/search/label/European%20Debt%20Crisis

He participated in two expert groups of economists on the euro crisis, Euronomics[3] in 2011 and The INET Council on the Eurocrisis[4] in 2012. He has written extensively on the eurozone crisis and on the institutional design of the Euro. Garicano served as a Member of the European Parliament from 2019 to 2022, where he was the vice-president of the RenewEurope parliamentary grouping in charge of economic affairs, and worked as a coordinator on the Economic and Monetary Affairs Committee. In this role he led his group in the appointment and parliamentary control of ECB authorities and financial supervisors, and in rule-making in the economic, financial and anti-money laundering areas, including in the (mostly failed) efforts to complete the European Banking Union. He also led the parliamentary group's legislative contribution on the fiscal, financial and political dilemmas that the Economic and Monetary Union faced during the pandemic, and participated as shadow rapporteur on the legislation implementing the Eurobond-financed program launched by the European Union, the Recovery and Reconstruction Facility (Regulation (EU) 2021/241).

Masuch has worked at the ECB from the start of the euro, first as head of the Monetary Policy Strategy Division from 2000 to 2006, then as head of the EU Countries Division from 2007 to 2013, and as Principal Adviser since 2014. During the sovereign debt crisis he coordinated (at staff level) the ECB position on the adjustment programs and country missions and headed the ECB's mission teams (acting in liaison with the European Commission and in cooperation with the IMF mission) that carried out technical analyses and held discussions with the authorities of Greece (2010-2015) and Ireland (2010-2012). More recently, he has been working on EU country surveillance and convergence, on structural policies, and on monetary-fiscal interactions in the euro area.

Despite our different backgrounds, we share a view that the euro and European Union are wonderful institutions. Our book is dedicated to preserving, maintaining, and improving them. We aim to help the ongoing process of European institutional reform.

[3] https://euronomics.princeton.edu
[4] https://www.ineteconomics.org

This book solely reflects our own views. No part of it should be understood or quoted as the opinions of our current or previous employers or other institutions with which we are affiliated.

Stylistically, we aspire to follow examples such as Sargent (2012) and Sargent and Velde (1995), who use dynamic economic theory to interpret historical events and institutions, though without formal modeling. Although there are a few equations in the text, the reader with no technical knowledge can skip them and read the book without loss. Our analysis is primarily economic. We are not legal experts. Although we briefly touch on legal issues, our comments should not be viewed as making legal judgments or critiquing the legal facets of decisions by those making policy.

Our purpose is not to blame people or institutions. We tell a history of decisions that shaped events, modified institutions, and created new institutions, often by setting precedents. In our view, the public servants who prepared and took these decisions were honest, creative, skillful, and well-intentioned. They faced situations unimagined at the creation of the euro. They naturally came up with a patchwork of interventions. Their decisions were, if not the best possible, at least reasonable in the heat of crises. And in the end, the crises were surmounted and the euro survived. We do not claim that we could have done better overall.

Our main theme is not actions taken in crises, but that people and institutions did not clean up in between crises. They did not reestablish a sustainable framework for future monetary-fiscal coordination, or mitigate unwelcome incentives in order to ameliorate the next crisis and make further interventions less likely. That too is an understandable failing, as political momentum for difficult reform is always lacking. But the consequent problems have now built up, so that the ad-hoc system that has emerged is in danger of a serious and chaotic failure. Therefore, now is the time to get over inertia.

Our perspective is novel and, we think, underrepresented in the current economic discourse. Most attention goes to the immediate effects of monetary and fiscal interventions: Should the ECB raise or lower interest rates, should it buy or sell sovereign bonds and how many, and so forth. Fewer analyses

scrutinize the longer-term implications of these and other actions: how they set up precedents, create expectations for what will happen in the future, and mold behavior; how they unwittingly create institutions. We focus on rules of the game and how the rules of the game might be improved, not specific decisions. And we focus on the often-forgotten interaction of monetary, fiscal, and financial-stability policies, where most analysis looks at each policy in isolation, or assumes that fiscal policy will always be responsible and keep debt sustainable and cheap.

We are grateful for many discussions and comments from colleagues, in particular Markus Brunnermeier, Otmar Issing, Atif Mian, Ashoka Mody, Jesús Saa-Requejo, Chris Sims, and seminar participants at the Harvard Business School and the Hoover Institution at Stanford University.

Chapter 1

Introduction and Overview

Monetary, financial, and fiscal policy are always intertwined. Printing money and spending it is both fiscal and monetary policy. It is tempting to finance government deficits or to solve sovereign debt problems by printing money to buy debt. Bailing out banks, or lending in last resort, uses fiscal and monetary resources for financial stability.

Intertwined monetary, fiscal, and financial policies can give rise to incentive problems. Knowing a monetary rescue is available ex post, governments have an incentive to borrow too much ex ante, and bond buyers have less incentive to prepare to bear sovereign default risk. The problem becomes larger, the financial system less able to bear it, and the pressure for a bailout in the next crisis is larger. Monetary and fiscal institutions are built to control these incentives.

We tell the story of how the monetary-fiscal institutions of the euro were set up, how they evolved over time, and how the current situation can be improved. Here, we give a quick overview. Following chapters tell the story in detail, with accompanying economic analysis.

1.1 A Founding Architecture

Controlling the incentives generated by fiscal and monetary policies is even more important for a currency union with multiple member states than it

is for a unitary state. It is tempting enough for a single or federal government such as the US to monetize deficits and pressure the central bank to buy bonds. When member states run separate fiscal policies under a common monetary policy, the incentive is greater for each one to borrow too much, relying on the central bank to stop any problems, as the costs in taxes or inflation are spread to other member states. Consequently, the rules limiting monetary and fiscal interactions in the eurozone were clearer and more restrictive than those in the US.

The euro was set up with a clear-eyed understanding of these monetary-fiscal interactions, and an institutional separation between monetary and fiscal policy.

The euro was founded by the 1992 Maastricht Treaty as a monetary union without fiscal union. Each country retained authority for taxing and spending, and retained responsibility for repaying its own debt. The treaty included a fiscal "no-bail out" principle, that member states or the euro area would not guarantee the sovereign debt of other member states, or provide transfers to this effect. The Treaty established debt and deficit limits for member states.

The Treaty created the European Central Bank, and gave it great independence. The European Central Bank would not buy sovereign bonds, or monetize debts or deficits. Its "primary objective" or mandate was price stability, not macroeconomic stabilization, financial stability, or supporting government debt markets, though many other banks have had those mandates. For the first decade, the ECB held a small balance sheet. The ECB was forbidden by the Treaty to buy sovereign debts, and did not do so. The ECB created new money by lending it to banks against collateral, and counting the loan as the asset corresponding to the monetary liability, rather than by purchasing sovereign debt. It conducted monetary policy by setting short term interest rates at which it borrowed and lent overnight accounts at the ECB. It ignored long-term interest rates in corporate and sovereign markets, and did not try to prop up the values of such debt.

Like all great institutional innovations, the founding framework had a

few unfinished bits. Monetary union needs either fiscal union or a clear understanding that sovereigns can default while staying in the monetary union as companies do. The latter possibility was not even mentioned. The founding framework did not establish how countries could default on sovereign debt within the monetary union. It took no measures to insulate banking and financial systems from sovereign default. It did not set up a crisis resolution body to help avoid sovereign default. The architects of the euro seemed to hope that debt and deficit limits would forever keep countries so far from sovereign default that one could avoid spelling out those impolite eventualities, and the ECB, financial, and fiscal authorities would be spared temptation. In the context of the early 1990s, when sovereign debt troubles of advanced countries seemed to be ancient history, and given the political achievement of bringing so many disparate countries into a union, these are understandable elisions.

1.2 Erosion in Successive Crises

In 2003, however, less than five years after the founding of the euro, Germany and France violated the deficit rules and blocked the prescribed sanctions. Though the near-term effect of this violation was small—they did not have debt crises or require ECB financing—swift violation of the rules by the two central countries of the EU was a blow to the credibility and effectiveness of the fiscal rules, as well, plausibly, of the rest of the architecture separating monetary and fiscal policy. If this promise could be broken, how holy were the other promises and restraints?

Limitations on ECB actions weakened with each subsequent crisis: the financial crisis of 2007-2009, the sovereign debt crisis of 2010-12, its slow-growth zero-bound aftermath, and the events of 2020 to 2023. The latter include the large fiscal and monetary response to the pandemic, the Russian invasion of Ukraine and consequent energy market disruption, and the inflation of 2021-2023.

In the wake of the financial and sovereign debt crises, the ECB made major changes to its procedures to allow a more expansionary monetary policy. With interest rates moving towards zero, these measures were designed to,

and did, increase reserves held by the banking system. But they had fiscal side effects. First, the ECB allowed a more generous use of bonds and bank assets as collateral, including illiquid, non-marketable debt, for loans from the ECB to banks. Second, the ECB moved to fixed-rate full-allotment allocation of reserves: Banks could borrow all they wanted at a stated interest rate. Previously, the ECB had limited how much it would lend at the stated rate. Now the supply of reserves became completely flat, and the quantity of bonds the ECB held in collateral likewise whatever banks offered. Third, the ECB started to purchase covered bank bonds. Fourth, and most importantly, in May 2010 the ECB began to buy bonds of member states, including those in fiscal trouble. The ECB took on default risk, which is consequently shared by all the member states and people of the euro area.

As sovereign debt trouble continued, the ECB viewed that sovereign debt risked turning in to a major financial and economic crisis, potentially including exit of member states from the euro. The ECB viewed that member states and the EU were unable or unwilling to contain events, leaving ECB as the only game in town. To contain the turmoil, President Mario Draghi in summer 2012 uttered the famous "whatever it takes" pledge, to buy as many bonds as necessary from countries in trouble to avoid default, "re-denomination" or euro exit, or higher yield spreads (lower bond prices). This announcement was operationalized via the Outright Monetary Transactions tool (OMT).

As it turned out, the euro did not break up and the financial system did not implode. Most European economies returned to a slow recovery from the two crises. Desiring monetary stimulus, and worried about a "deflation spiral," the ECB lowered interest rates to zero, and in 2015 started to buy sovereign debt from all member states in "quantitative easing." Whether these measures made a difference is still debated. In the end, inflation mostly remained a bit below the ECB's 2% target until 2021, and the recovery remained slow.

There are no atheists in foxholes, and nobody worries about moral hazard in a panic, the sayings go. But ex-post insurance, bailouts, and other crisis-rescue measures lead people and governments to take more risks, expecting such help again in the next downturn. Someone has to mop up that moral

hazard.

Most people recognized that the original explicit and implicit rules and traditions limiting ECB action and separating monetary and fiscal affairs had been broken. Some thought this a fine expansion of the central bank's power to stop crises. But many others worried that something needed to be done to make sure the events did not repeat on a larger scale and restore the separation of monetary and fiscal policy.

Consequently, during and after the sovereign debt crisis, the EU and euro area countries took several important decisions to enhance the institutional set-up. A fiscal compact aimed to re-enforce fiscal discipline. The Greek sovereign debt restructuring strengthened the credibility of the no bail-out principle, and showed that haircuts and "bail-ins" are possible. The European Stabilisation Mechanism (ESM) established a euro area crisis management institution, funded by member states. Political decisions were taken to set up the single supervisory mechanism (SSM) so that shocks including sovereign debt problems could avoid quickly endangering the financial system.

Against this background, the ECB may have expected that Outright Monetary Transactions (OMT) were a mere bridge, buying time for member states to continue individual and joint institutional and structural reforms.

But over time the implementation of these new initiatives fell short. Important reforms such as common deposit insurance and limits on banks' sovereign exposures were put off to another day. The new debt reduction rules failed to bring down high debts, in spite of several years (2014-2019) with positive real growth, low or negative real interest rates, falling unemployment, and a sharp decline in oil prices in 2014 that persisted until 2021. Building sufficient fiscal buffers and implementing micro-economic reforms to boost productivity growth was left for later. Member states did not prepare for future crises and they did almost nothing to unburden the ECB. No clear expressions of self- or externally-imposed limits on ECB actions were implemented.

Bond buying and related interventions massively increased during the huge fiscal transfers of the the pandemic, followed by Russia's Ukraine invasion, and energy market disruptions of the early 2020s. Where President Draghi

calmed the waters with words in 2012, by 2022 "whatever it takes" took more and more.

The consolidated balance sheet of the Eurosystem shows securities held for monetary policy purposes - mainly government bonds - increased from EUR 0.2 trillion in 2014 to almost EUR 5 trillion by mid-2022 - about one third of euro area GDP. Roughly half of the increase happened from 2020 onwards. By end-2023 still EUR 4.7 trillion securities were held by the central bank.

It would be lovely if we could have a few quiet years to sort things out. That is unlikely to be the case. Fiscal stresses are compounding. Government debts have expanded sharply due to Covid and energy related spending and subsidy programs. Member states already face rising pension, health and other social costs. They want to spend more on climate. The Russian war on Ukraine necessitates higher defense spending, and then supporting and rebuilding Ukraine. If Russia partly succeeds with its military aggression, Europe will face even larger longer-term costs.

In mid-2022, the ECB sharply raised interest rates in reaction to high inflation. As we write in early 2024, inflation is easing and the ECB may lower interest rates. But any new bout of inflation will require higher interest rates, and likely more prompt and larger increases. Higher real interest rates mean higher interest costs on large outstanding debts.

A recession or financial downturn will provoke additional fiscal deficits. A larger war in the middle east or with Russia, an invasion or blockade of Taiwan, or a nuclear weapon going off anywhere would likely precipitate economic and financial turmoil, and consequent fiscal stresses for EU member states. And, with government spending in most high debt countries already at roughly half of national income or higher, there is no easy large source of long-run tax revenue to fund these initiatives, or to back issuance of a lot more debt.

Bailouts have limits. Even the ECB's ability to put out fires without substantial inflation or direct fiscal support from member states is limited. And even member states' fiscal capacity to provide such support is limited. One reading of our recent bout of inflation is precisely that Europe already

exceeded its fiscal limit, and people tried to spend extra debt and money while they could. If moral hazard is never checked, if debts build up, if nobody provisions for losses and everybody counts on a bailout, eventually a crisis will come that the ECB is unable to contain. Such a crisis would be monumental.

Limits on central banks' ability to mop up after the fact are thus important so that governments and financial institutions take actions to limit risks, and structure a financial system able to bear risks.

Monetary and fiscal policy are also wisely separated for important reasons of political economy. Central bankers are independent, and not elected. They are thus forbidden the one tool that most reliably raises or lowers inflation: They cannot write checks to people, nor can they confiscate money. For the same reason, debt-buying or lending policies that favour of specific creditors, bondholders or banks can have important fiscal, distributional and social implications that go well beyond those associated with changes in policy rates. When central banks move into such areas, even with the best of motivations, they cannot stay politically independent.

The ECB's large bond portfolio and activist policy entangles it in inherently political decisions. Should the debt of country X be supported if its spreads increase? But not country Y? Which spreads are justified by "fundamentals?" Which fundamentals count? Fear of default is "fundamental" after all, not a technical problem, illiquidity, behavioral bias, or a "dysfunctional" "fragmented" market. Successful sovereign-debt interventions include politically difficult adjustment programs—budget cuts and microeconomic reforms—and debt restructuring in which a lot of people lose money. Can an independent a-political organization stay independent and a-political while involved in such deeply political decisions, hurting or benefiting the pocketbooks of so many powerful constituencies? Can the central bank stay independent if it must pass judgements on the quality and credibility of future economic policies of a sovereign country and its elected political bodies, and based on this, to decide on whether to rescue bondholders, and likely the incumbent government, with public money?

The ECB in 2015 initially structured its quantitative easing purchase

programs to be neutral across countries for just this reason. But as more and more of the ECB's bond buying, lending, and other interventions cross the line to fiscal, economic, and transfer policy, its independence will be fragile.

Independence is not an absolute, but serves practical purposes. Governments set up independent central bank to help the governments avoid the use of monetary policy for short-term political purposes. Losing independence loses this valuable pre-commitment.

The heart of our economic analysis describes this erosion of institutional limits, and our recommendations for how to restore a separation between monetary, fiscal, and financial policy that will control disincentives and lead to a stable and vital euro for the forseeable future, that can weather the shocks that are sure to hit.

1.3 Reform

How should the monetary-fiscal arrangements of the euro be reformed, to control the perverse incentives that have emerged from the crisis-management expedients?

The original architects of the euro, while amazingly prescient, turned out to be too optimistic. They believed that debt and deficit rules plus an independent ECB with a limited mandate would keep debt crises from ever occurring. They did not put in place mechanisms for dealing with sovereign default. To avoid the ECB stepping in again and again, we must complete the structures for which they laid the foundations.

Governments, who are responsible for fiscal policy, not the ECB, must decide whether a country in fiscal trouble receives support, which kind of support, and the conditions of such support. Governments must finance the support and also assess the sustainability of a country's debts, impose any fiscal or economic policy conditionality of support, and decide when an orderly sovereign debt restructuring would be a better solution.

Yes bondholders lose money in an orderly restructuring. In a monetary union without fiscal union, the holders of sovereign debt must occasionally

bear risks. If that is unthinkable, we have fiscal union in which member states guarantee each others debt. Fiscal union is fiscal union, whether achieved directly or via the printing press, and whether constructed thoughtfully or patched together in crisis.

Speed being of the essence in a crisis, the institutions to make such decisions must be in place ahead of time, and ready and able to act quickly. Making it up on the fly, a default of no action, and a requirement for unanimous decisions by all governments will not work. Decisions made on the fly, rather than via well-constructed and limited institutions, also lead to bad incentives to take risks with negative externalities ahead of time. Approval of interventions should at least require only a qualified majority. Intervention could be financed via a crisis-management institution such as the European Stability Mechanism (ESM), to which member states contribute. The EU could also create a new EU institution with its own taxing and debt-issuing power.

The ECB should only purchase European debt issued by or guaranteed by EU Institutions, such as the European Commission, or euro area inter-governmental organisations, such as the ESM. The Eurosystem balance sheet should no longer carry default risks of member states.

Banks that are concentrated in a country, that hold large quantities of that country's sovereign debt, with deposits de facto insured by the same sovereign (the sovereign is also expected to recapitalize the domestic banks) are a recipe for sovereign problems to cause financial problems and to invite ECB intervention or fiscal bail outs. European financial regulation must be reformed to remove this blatant fragility.

Sovereign debt in a monetary union without fiscal union is not risk free. Regulators must assign sovereign debt appropriate risk weights. Sovereign risk must be in the hands of investors and well-diversified financial institutions who can bear risk, not necessarily banks. Banks that do hold sovereign debt must first be able to and then required to diversify their sovereign holdings.

Banks must be de-linked from influence from and protection by national governments. Banks must not be subject to conflicting national regulators, or to pressures from national authorities to buy that nation's bonds or subsidize

its favorite industries. Banks should access a common European deposit insurance and a single European regulatory mechanism. Lender-of-last resort loans to specific banks (Emergency Liquidity Assistance ELA) should become a responsibility of the ECB, which then also needs to be in a position to require recapitalization by issuing new common equity to private investors or resolution by the Single Resolution Board (SRB). Banks must be able to compete and oper ate across the union, thereby isolating a country's economy and in particular financial system from its fiscal problems. Completing banking union as Europe has completed the single market in most other areas would be beneficial. The ECB's monetary policy operations should no longer provide loans to banks at favourable interest rate that imply subsidization relative to market conditions. In particular, the ECB would no longer accept non-marketable claims as collateral for its main refinancing operations and longer-term loans to banks. Subsidization and recapitalization of banks is a government task.

The rather convoluted architecture of the Eurosystem, which retains many historical functions of national central banks, should at last be reformed. National central banks which hold their nation's sovereign bonds, and large ECB loans at risk-free interest rates that finance national balance of payment deficits, replacing private cross-border capital flows and risk sharing are a looming weak point. Moreover, the ECB alone should be in charge of money creation. National central banks may continue to implement monetary policy, but they should no longer be able to create (or withdraw) euros in the context of national, non-monetary tasks such as purchasing (or selling) public or private securities, or foreign reserves.

This set of reforms is consistent with the philosophy of a monetary union without fiscal union. But it is updated to reflect the fact that fiscal troubles will occur and the union needs a plan and institutions for their management.

Many observers advocate a more comprehensive fiscal and political union alongside the existing monetary union. This is, of course, a much larger structural and political change. We think reforms is urgent, as the current trajectory implies large risks of financial, economic, and fiscal instability, and should not await a much larger, more comprehensive, and more contentious unification

project. Thus, we focus on what can be done within the current union. Our reform proposals would not hinder, and might even strengthen conditions that support, the development of a comprehensive fiscal union.

As much as any authors are proud of their work, however, we admit that monetary and fiscal reform are not the most important economic problem facing the eurozone. Stagnant long-term growth is Europe's largest economic problem. Long-term growth comes from increased productivity, increased efficiency, microeconomic reform, increased productive capacity.

Monetary and fiscal polices can encourage (and fail to discourage) "... an open market economy with free competition, favouring an efficient allocation of resources ...," as stated in the ECB's mandate. Fiscal policy is intertwined with growth as well. Long-run growth has suffered from the microeconomic effects of fiscal policy such as the disincentives of high marginal tax rates, insufficiently targeted transfers, and misallocations of fiscal subsidies. Excessive regulations have stifled innovation, investment and productivity growth. Growth stagnation has also contributed to debt problems, and growth would lower deficits and make debt much easier to repay.

But as much as past events such as the Great Depression have monetary and fiscal roots, Europe's current growth stagnation does not stem from the monetary-fiscal troubles we describe. In the end, monetary, fiscal and financial stability arrangements are part of the fundamental framework of good institutions that allow growth to emerge. They can help to avoid future crises, that would drag growth down further. They can remove existing disincentives for national governments to pursue pro-growth agendas. But monetary-fiscal reform is not the fundamental spark needed to revitalize Europe's once fast-growing innovative economies.

We fix what we can.

Chapter 2

Key Economic Ideas

Most policy analysis looks at *actions* and their short-term effects: Should the ECB raise or lower interest rates or buy bonds? But monetary, fiscal and financial policies revolve around what people expect to happen, how they expect governments to behave in the future, and how governments' current actions shape those expectations. Governments can only borrow if people expect them to repay debt rather than default or inflate it away. People take or avoid risks, depending on how much support they expect from the ECB and other authorities in the next downturn.

Thus, we analyze policy as encoded in rules, regimes, institutions, commitments, norms, and traditions, written but also unwritten; reinforced or undermined by repeated past behavior; by an implicit list of how the policy maker will act in many different circumstances.

Three central ideas from contemporary economics underlie that analysis: Monetary-fiscal interaction, time-consistency and pre-commitment, and tax smoothing with state-contingent default.

2.1 Monetary-Fiscal Interaction

Monetary and fiscal policy are always intertwined. Governments are always tempted to print money to finance deficits or to pay off debts. That mechanism is more subtle for the euro, with multiple member states and an

independent central bank that follows an interest rate target. And regular interest-rate policy also has important fiscal effects and constraints.

Balance Sheet

If a member state has trouble borrowing or rolling over debt, the ECB will feel pressure to buy that government's debt. Unlike private banks or regular people, the ECB simply creates new money to buy assets. Such monetization can help governments to finance deficits, forestall default, hold down the member state's interest costs, or prop up the market value of government bonds, which helps banks or other financial institutions that hold the bonds as assets. But it mutualizes default risks and the extra money can cause inflation, which affects all member countries.

In quantitative easing operations the ECB also buys sovereign debts, creating new money, but in this case of all member states. Though the intent is monetary policy rather than directly to support specific sovereigns with fiscal problems, these bond purchases have similar fiscal effects, making it easier for governments to borrow, insulating them from higher credit spreads or roll over risks.

Extra money does not invariably cause inflation. In the event of inflation, the central bank can mop up extra money by selling assets. Knowing that, people are happy to hold money. But if the central bank is unwilling to sell assets, as doing so will mean low bond prices and high interest rates, or if the central bank runs out of assets to sell, because some assets have defaulted or lost market value, the central bank can no longer soak up all extra money. Then, inflation breaks out. And if people see the central bank will be unable to stop inflation in the future, they raise prices and try to spend cash today, so inflation breaks out right away.

To stop such inflation, member states must fill the fiscal gap, by raising tax revenue or cutting spending. There are many mechanisms for such fiscal support. Raising tax revenue or cutting spending can soak up money directly, if governments burn the money. They don't, so in reality we will see other less straightforward mechanisms that achieve the same result.

Most prominently, the fiscal support comes through a reduction in the ECB's profit rebate. The ECB (including the national central banks) normally make a profit, since it pays less interest on its liabilities – cash and reserves – than it earn on its assets. It rebate these profits to member states. When the ECB loses money, it reduces the profit rebates. Member states must then raise tax revenue or cut spending to make up the difference.

Normally, after a loss, the ECB would wait for profits to accumulate internally, rebuilding the value of its assets. But if the ECB needed to soak up cash immediately and cannot or does not wish to sell assets, it must turn to recapitalization from member states, essentially a negative rebate. A recapitalization would also be useful if inflation is breaking out because people see the ECB's assets are much less than its liabilities, and are trying to get rid of euros quickly, just as it can stop any private bank run. In a recapitalization, member states provide the ECB with new assets (via the national central banks). Those resources must come from taxation in excess of spending. If governments borrow to provide the ECB new government debt to sell, the governments must credibly promise future fiscal surpluses in order to sell new debt.

Recapitalizations have happened in other countries. For example in Fall 2022 the UK Treasury was obliged by the government to indemnify immediately the Bank of England for realised losses on its large portfolio of long-term bonds.

Governments might exchange the ECB's troubled or unsaleable assets for more valuable assets. Such schemes are common when central banks bail out private banks in crises. The difference in value ultimately comes from taxpayers.

The euro is fundamentally backed by collective European fiscal policies, and loss or doubt of that fiscal backing can cause inflation and devaluation. ECB-issued money and reserves (deposits held by commercial banks at the ECB) are effectively Europe-wide sovereign debt, and claims on Europe-wide taxes. Eurobonds already exist: they are euros, and euro accounts at the ECB.

Rather than buy sovereign debt directly, the ECB may also create new money and lend it to banks, taking government debt purchased by those banks as collateral. In this situation, the ECB still creates money that helps banks

to finance sovereign borrowing. It appears that the ECB has avoided default and price risk on its own balance sheet. But it has only done so as long as bank depositors and investors bear losses on bank assets, or governments stand ready to bail them out. That possibility can bring bailout pressures on the ECB similar to sovereign debt. Indeed, fear of financial "contagion" seems one of the main reasons the ECB interferes in sovereign markets in the first place, and fear of bank failures following the collapse of the inter-bank market brought the ECB's first big interventions in 2008.

But the seeds of an important idea lie in this structure. The more the ECB's assets are protected from default, from loss of value due to higher interest rate, or from inflation, the more the ECB's ability to mop up money and defend the price level can be insulated from member-state fiscal problems or other problems stemming from losses on the ECB's assets. *Separating* the assets backing the euro from general fiscal surpluses of the member states is the central art of a good monetary-fiscal institutional design.

The treatment of ECB holdings of Greek debt in 2012 offer a good example. In the Greek sovereign debt restructuring, private bondholders received a haircut. They received new bonds worth much less in face value than their initial claims. But the ECB was exempted. Its holdings of Greek bonds paid full value. This exception from an economic perspective is similar to a transfer from taxpayers and bondholders to the ECB, to raise the value of the ECB's assets and its backing of the euro.

By exempting the ECB from Greek haircuts, the EU maintained the euro's backing while the Greek default imposed losses on other bondholders. It is an example how a separate central bank balance sheet is useful, to distinguish surpluses that back currency and reserves from general government surpluses. If governments could restructure and default more generally, and it was clear the ECB would never bear losses, the ECB could hold sovereign debt without compromising the fiscal backing of the euro.

Similarly, if the ECB holds more foreign or indexed debt that does not fall in value with euro area inflation or higher interest rates, its power to control inflation is stronger. We propose below the ECB hold eurobonds, guaranteed

collectively by their own tax stream or collectively by member states. If those are short-term, indexed, and the ECB is legally prioritized in any restructuring, the ECB's assets are safer still.

Interest Rate Targets

Monetary and fiscal policies are also intertwined in the regular business of raising and lowering short-term interest rates.

When the ECB raises interest rates to fight inflation, it also raises the interest costs governments pay as they roll over outstanding debt, and on their new borrowing. Governments must then cut spending, raise tax revenue, issue new debt against credible promises of future surpluses to pay the higher interest costs, or default. This effect is substantial. At 100% debt to GDP ratio, each 1 percentage point real interest rate rise eventually raises the annual deficit by 1 percent of GDP.

There is an interaction between the balance sheet and interest rate policy. Large quantitative easing purchases essentially shorten the maturity structure of government debt, and thereby increase the speed with which governments roll over debt and with which higher interest rates raise government deficits. This subtle mechanism flows through the profit rebate channel. When the ECB raises the interest rate on reserves above the rate that it earns on its assets, it must reduce transfers to member states. The net effect on government finances is just as if the government had issued shorter term debt to begin with, and had to roll it over quickly. The loss appears on government accounts as a lower transfer from the ECB rather than greater interest cost of the debt, but the quantity is the same.

Since the ECB's assets are not perfectly matched to country's debts and since there are yields differences (spreads) between debts of member states that are not shared among national central banks, losses resulting from past quantitative easing in combination with higher policy rates can also have distributional implications across countries. With a small balance sheet, this is a small effect, but as the ECB's balance sheet grows, so does this fiscal effect.

When monetary policy produces inflation or deflation, that has a direct

fiscal effects as well. Unexpected inflation lowers the real value of nominal government debt. The government raises more money in taxes, but pays the same amount to bondholders. Contrariwise, unexpected disinflation raises the real value of nominal debt. Nominal tax revenues fall, but interest payments do not change. Governments must tighten fiscal policy to pay this windfall to bondholders. For example, if a government has sold 100% of GDP debt in a 5% inflation environment, at a 7% nominal or 2% real yield with 10-year maturity, and the central bank afterwards successfully lowers inflation to 2%, then the government must run 5% of GDP surpluses for ten years to pay off the debt, rather than 2% of GDP.

Higher central bank interest rates also increase real financing costs for private households and firms, thereby pushing the economy towards lower growth and possibly a recession. Via the Phillips curve, less economic activity is thought to reduce inflation. That is not an unwanted side effect, that is the central mechanism in the standard economic analysis of how central banks reduce inflation by interest rate rises. But in recessions, governments lose tax revenue and spend more, for anti-recession stimulus and for social programs such as unemployment insurance. Financial troubles in recessions may lead to bailouts, which also raise deficits.

In all these ways, higher interest rates have fiscal consequences, and almost all of them negative. Fiscal policy must tighten to support monetary policy; current or expected future surpluses must rise to pay all these costs. If they do not, the unfunded deficits are an inflationary fiscal force that partially or completely offsets the intended disinflationary effect of interest rate rises. In a wide variety of contemporary models, including new-Keynesian, old-Keynesian, and fiscal theory, an interest rate rise that is *not* accompanied by fiscal tightening (now or in the future) at least to pay for stimulus, interest costs, and bondholder windfalls, *raise* inflation (Cochrane (2023a)) Historic successful disinflations, including 1980, have included fiscal and microeconomic reform that produce larger primary surpluses.

These monetary-fiscal interactions are well known, in and outside the ECB. See, among many examples, European Central Bank (2021), Del Negro

and Sims (2015). They were prominent in the initial construction of the Euro.

Monetary-fiscal interactions are often glossed over in the analysis of monetary policy, because they are less important if there is plenty of "fiscal space," if governments have small debts, live far from the threat of sovereign default, and have build a track record of sound fiscal policy, they can easily raise tax revenue, cut expenditures, and borrow by promising to do so in the future. Then governments can easily offset these fiscal effects of monetary policy. As debts are larger, as governments time and again run higher deficits than announced ex-ante or implied by fiscal rules, as the central bank balance sheet has more government debt, as governments near the boundaries of their borrowing capacity, as tax rates reach the limit at which they generate less long-run revenue, as growth slows, and in moments of sovereign stress, all these monetary-fiscal interactions are more important. The latter situation is more typical of the present moment than it was at the founding of the euro.

2.2 Time-Consistency and Commitment

Why do governments repay debts at all? Once debt has been issued and the proceeds spent, why not default or inflate debt away, rather than raise economically distorting and politically unpopular taxes, or enact politically painful spending cuts and growth-oriented reforms? The answer is, of course, is that without assurance that debt will be repaid, people won't lend to the government in the first place, or they will only lend at higher yields to compensate for the higher probability of default. Governments are tempted to a "just this once" default, which hits only past investments and still promises repayment to new investors, but investors are naturally suspicious that "just this once" quickly becomes a habit.

This is a general problem in economics. The purest tax is a "capital levy:" grab wealth once, unexpectedly, and promise never to do it again. Unlike an ongoing capital tax on profits and rates of return, an unexpected capital levy does not discourage investment decisions going forward. But if people see that possibility ahead of time, they don't invest in the first place and there is less capital to tax. And if a government attempts a "one-time" tax, it is hard

to convince people that a second time is not right around the corner.

Kydland and Prescott (1977) famously inaugurated the modern analytical understanding of this "time-consistency" problem in the context of monetary policy. A benevolent central bank wishes for a small output gap. The bank wishes people to expect little inflation in the future, so that the inflation-output tradeoff today will be more favorable. But when that future comes, the bank will wish to inflate in order to boost the economy. People know that, however, so they expect inflation, worsening the Phillips-curve tradeoff today, no matter what promises central bankers make.

Formally, write the Phillips curve

$$\pi_t = E_t\pi_{t+1} + \kappa x_t$$

where π denotes inflation and x denotes the output gap. Then lower expected inflation $E_t\pi_{t+1}$ lowers current inflation or raises current output. But the same equation at time $t+1$

$$\pi_{t+1} = E_{t+1}\pi_{t+2} + \kappa x_{t+1}$$

means the central bank will wish more left-hand-side inflation to boost output at time $t+1$.

Forward guidance suffers the same time-consistency problem. Central bankers may promise to keep interest rates low in the future, in order to lower today's long-term interest rates and stimulate today's economy. If this guidance is to mean anything, it must mean that the bankers promise to keep rates lower than they will prefer ex post. But who believes that central bankers in the future would inflict a needless inflation or recession, just because they had promised to do so several years previously? Hence, who would believe such a promise ex-ante?

As it turns out, central banks *did* keep interest rates low for an unprecedented year after inflation erupted in 2021. However, it does not appear that they did so to burnish their reputations for keeping forward-guidance promises in painful circumstances. No central bank has explained its slow reaction to inflation in this way. It is more likely that they just misjudged inflation to be a

transitory relative price movement, and felt a response was not necessary. It is also not clear that even if they keep rates low in fulfillment of forward guidance promises that the ensuing inflation has improved rather than damaged their reputations and credibility.

The answer to time-consistency problems is intuitively clear: Governments and central banks must find ways to *precommit*, to set things up ex-ante in a way that raises the costs to them of taking actions that they will prefer ex-post, but whose anticipation leads to bad incentives for other actors. Like Odysseus facing the sirens, they must tie themselves to the mast.

Legal and constitutional limitations, the institutional separation of central bank from fiscal authorities, restricted mandates, separated balance sheets, policy rules (Friedman's money growth rule or Taylor's interest-rate rule), or other formal or informal rules, reputations, norms, and traditions all help to enforce such precommitments.

Many institutions of society can be understood as solutions to precommitment problems. Property rights exist to protect the returns to investment against ex-post majoritarian expropriation; they allow the capital in capitalism to exist.

If a government wishes to borrow, default—either direct or via inflation—must be costly to the government. By taking steps to make default more costly, the government constrains its future self to take on the economic and political costs of higher tax revenues, lower spending, or growth-oriented reform. Only in this way will investors lend the government money to begin with.

Promises alone are not precommitments. Precommitments must be *costly* to break.

Reputation is a precommitment mechanism, frequently considered in the context of sovereign debt. Governments repay debt this time to burnish a reputation for repayment, so they can borrow in the future. Governments abstain from wealth confiscation today so that people will invest and create new wealth tomorrow. Teachers give and grade (ugh) tests so that next year's class will study. But such signaling and reputation-building is fragile. Absent

explicit costs, there is always the temptation to declare an event a once-in-a-century crisis, default, inflate, grab capital, and promise never to do it again. But once in a century crises then seem to happen every few years.

Pure reputation is also a weak mechanism, because multiple lenders have an incentive to forgive too quickly. Once debt has been defaulted or inflated away, after all, the government is a better lending prospect for new investors. Pure reputation only works if governments really are of two immutable types, thrifty or spendthrift, and not defaulting convinces investors of the type. But governments are not immutably anything, and voters change them if they are. Thus, for reputation to be effective, investors and money holders must agree to punish a government ex-post for defaulting by refusing new loans. But each individual lender has an incentive to cheat on collective punishment, which they tend to do. Some countries default over and over again, yet new investors line up quickly afterwards to buy new bonds. Institutions that incur direct and unavoidable costs for breaking promises are thus more effective precommitments. (Eaton and Gersovitz (1981). Aguiar and Amador (2021) summarize and apply the large literature on sovereign default including the reputation mechanism.)

As originally envisioned, the ECB would not intervene in sovereign debt markets. Sovereigns, knowing this, would pay their debts. Investors, knowing this, would provision for losses and not expect ECB intervention. Money holders, knowing this, would not fear inflation.

The trouble is, if a sovereign or financial crisis does emerge, internal and external pressure on the ECB to intervene is immense. If the limits on intervention are not ironclad, the ECB likely will intervene. But everyone knows that, so an imperfect pre-commitment is not credible, and incentives are distorted anyway. Thus, to be effective, a pre-commitment must ensure that the ECB *cannot* intervene ex post. The most effective pre-commitments are formal, and legal, including mechanisms that enforce laws.

The architects of the euro did not write such stringent limitations, and wisely. They likely did not intend ironclad rules that could never be broken no matter how severe the crisis. They likely intended a strong tradition of restraint, but an escape clause, offering a sort of strategic ambiguity: Rules

and traditions against intervention that are tough enough to provide good incentives, but leaving enough residual flexibility so that the ECB can intervene in rare but extreme circumstances. As it did.

(We are not lawyers, and we offer no opinion whether some crisis interventions were illegal, counter to the Treaty, or violate formal rules governing the ECB, member states, and the EU. Even laws only impose finite costs.)

But the strategic ambiguity that may have served at the founding has now been lost. Frequent and routine intervention is now widely expected. The architects of the euro did not, naturally, think several steps ahead how to restore strategic ambiguity in the wake of several large and unexpected crises. This is, properly, a job for their successors.

We can see these forces at work in the history of interventions. Interventions came bit by bit, under an acronym-laden proliferation of special programs, often initially explicitly announced as temporary, and using a complex and novel terminology, with terms such as "smooth functioning of the monetary transmission mechanism" or "fragmentation or dislocation in sovereign debt markets." In part, by this approach the ECB tries to communicate that sovereign debt intervention is consistent with Treaty mandates. In part, the ECB depicts each newly announced tool or intervention as a special and temporary exception to the rules. Doing so tries to put moral hazard back in the box and convince people interventions won't happen again.

But actions speak louder than words. As we can see by the increasing size of interventions, via the dismantling of previous external and self-imposed limits, and in the accumulation of large sovereign debts in the ECB's asset portfolio, verbal efforts to restore a regime without expected interventions have not worked. Instead, the emergency patchwork has evolved into a new set of implicit institutions and expectations that bond purchases, price supports, and targeted lending are now part of the standard toolbox.

Moreover, the effort to contain moral hazard after taking exceptional action was limited. The ECB has not vowed "never again." It has not said "we will not intervene in the next crisis to prevent sovereign default. Get ready to handle bond losses." It has not announced limits to what the next acronym-

labeled program may do. Nothing in public statements of the ECB suggests anything other than pride in having staved off disaster and readiness to do so again.

The end result blurs the distinction between monetary and fiscal policy. It runs counter to the original intent as described by the Treaty, to strong promises by the leading politicians at the time of the introduction of the euro, and to the initial design of the ECB's strategy and operational framework. And it risks setting us up for chaos when a next, larger, crisis erupts, and the ECB's powder runs dry. So, the effort to precommit against arbitrary intervention, and contain the consequent moreal hazard, must be reinvigorated.

However, since the ECB cannot and should not completely pre-commit not to intervene no matter how extreme the next crisis, the pre-commitments it can offer will be more effective if the pressure to act and the costs of not acting are lower. That means fiscal and economic reform in member states, so that they are out of perpetual trouble. That means financial reform, so that insolvent sovereigns can default or restructure debts without a financial crisis. And it requires the construction of crisis-management tools outside the ECB, so that the ECB is no longer the only game in town.

2.3 Doom Loops

Sovereign debt is vulnerable to a "multiple equilibrium" or "doom-loop" scenario: A country has a lot of debt. If the interest rate on its debt is low, the country can run enough primary surpluses to service the debt. However, if the interest rate on its debt rises, then the country can no longer service the debt, and a default or rollover crisis breaks out. If investors believe there will be no default, they charge a low rate and no default happens. If investors start to worry about default, the interest rate rises and the default breaks out. Expectations of default can be self-confirming. Like a bank run, either equilibrium can emerge, quickly, and in response to what seems like trivial news or no news at all.

Short-term debt is a particular gasoline on this fire. The more the government rolls over short-term debt, the more quickly higher interest rates

feed into the budget, and the more quickly a doom loop can emerge. Long-term debt offers insurance against the doom loop. But, as all insurance requires a premium, long-term debt typically must pay a slightly higher rate.

It feels unfair. The country does not plan to default. It issues debt when rates are low, and feels it can repay that debt rates remain low, consistent with economic forecasts. When credit spreads rise, if the government does not default, the higher interest rates appear to be just a transfer from taxpayers to bondholders who are suddenly raising prices for no reason. The country and advocates for intervention complain about dysfunctional, irrational, or fragmented markets, illiquidity, contagion, market power, and collusion. That the country could have insured against the event by locking in low interest rates via slightly more expensive long-term debt gets forgotten in this morality play.

These issues pervade discussion of ECB management of sovereign debt problems. A "whatever it takes" commitment such as ECB President Mario Draghi issued in 2012 is an attempt to cut off a perceived self-fulfilling doom-loop equilibrium. If successful, the ECB doesn't actually have to buy any bonds.

Whether and under what conditions such multiple equilibria are real, and if so whether that possibility applies to countries such as Greece in its crisis, is contentious however. A doom loop is possible, but it is also possible that a country simply becomes unable to pay its debts. Investors, seeing trouble ahead, run now. In an uncertain world, higher yields reflecting actual risks of default are "fundamentally" justified. It is difficult for a central bank to distinguish multiple-equilibrium-driven yields from fundamentally-driven yields in real time. Who really knows what the 10 to 20 year stream of fiscal surpluses looks like? Illiquidity is hard to tell from insolvency in sovereigns as much as in bank runs. And proclaiming multiple equilibria and dysfunctional markets is always tempting to justify intervention and the hope that intervention will be costless. Borrowing less, maintaining spare fiscal capacity, borrowing long-term, not playing with fire in the first place, remains a robust but unattractively expensive solution.

Whether doom loop or fundamentally driven, however, sovereign crises are primarily roll over crises, not funding crises. The government cannot find new lenders to pay old ones, or cannot pay sharply higher interest costs on its debts. Only very rarely, and not in the history of the EU sovereign debt crises, has it happened that crises break out because governments are unable to pay interest costs, to borrow to finance new spending. Thus, much more long-term debt, even perpetuities, are an important part of an architecture to reduce sovereign debt problems in the eurozone.

2.4 Central Bank Independence and Mandates

Modern central banks enjoy a great deal of independence from the governments that set them up, have specific mandates from their governments, and rules limiting the tools they may use. The ECB's mandate is price stability. The US Federal Reserve has explicit mandates for price stability, employment, and legal authority for financial stability. Both follow a short-term interest rate target and face legal and self-imposed limits on the assets they may buy and sell.

Central banks are created by governments. Independence, mandates, and tool limitations are mechanisms for the governments to pre-commit, to avoid time-consistency problems, and to avoid some moral hazards.

At the simplest level, governments know they will be tempted to goose the economy, especially ahead of elections. By creating an independent central bank to control monetary policy, the government tries to pre-commit itself to forswear this temptation. An independent bank, plus a rule that the Treasury may not issue money, is also a pre-commitment against monetizing debts and deficits. It helps fiscal authorities to pre-commit to repay debts, and thereby to be able to borrow in the first place. An independent central bank with rules limiting asset purchases, also pre-commits the government against lending to favored industries or constituencies, or printing money for subsidies.

Independence must come with limited authority, a limited mandate, and a limited set of tools. For example, central banks are prohibited the one tool that is most surely effective in combating inflation or deflation: They may not

print money and send it to people or businesses, and they may not confiscate money from people or businesses. The former is a fiscal transfer, the latter a tax. To create money, central banks must either buy an asset, or lend money against collateral, counting the loan as a corresponding asset. Yes, such central bank operations have fiscal consequences, but nothing as clear as monetary gifts or seizures. Why? Taxes and transfers are the most political of decisions. They must be reserved for politically accountable representatives. So, if central banks are to be a valuable precommitment, they must be independent. But if they are to be independent, they must forswear the most effective tool for controlling inflation.

Central banks are often asked to stablilize business cycles. This is formalized in the US Federal Reserve's "maximum employment" mandate, and the ECB's secondary mandate to support the general economic policies of the EU. But central banks may not set wages or prices, modify labor laws and regulations, transfer incomes, subsidize industries, modify tax rates and social program incentives, offer Keynesian fiscal stimulus, or pursue any of the hundreds of other government interventions that are plausibly more effective for employment, growth, and other economic goals than setting the overnight interbank lending rate or exchanging bonds for reserves. While moving interest rates has political and distributional consequences, but far less than those of direct interventions.

There are often strong limits on what financial transactions central banks may pursue. Central banks can set interest rates, and lend to banks. But they are often forbidden to buy stocks or to buy corporate bonds, or they must buy an index rather than seem to favor one issuer over another. They may be restricted to setting short-term interest rates and not long-term rates.

A mandate such as price stability (or exchange rate, employment, and so forth) offers guidance on what the government wants the central banker to do. But the same mandate thereby includes an implicit, and sometimes explicit, statement of what the central bank may *not* do. No matter how important a social, economic, environmental, or political problem may seem, no matter how much a printing press, subsidized lending, or bond-buying might solve that

problem, the limited mandate says that in return for independence, the central bank may not act on its own to address that problem.

Even in pursuit of the mandate's central goals, the central bank is limited in its tools. The dangers of inflationary finance and cross-country subsidies in the EU led the founders of the euro to forbid the ECB from buying government debt in the primary market. The ECB was only allowed to lend newly created money to banks against adequate collateral. Over the decades, other central banks have had rules against buying government debt, as a bulwark or direct pre-commitment against inflationary finance. Such central banks "rediscounted" private bills, i.e. lent money only against short-term *private* securities.

In the modern era the US Federal Reserve has been restricted, outside emergencies, to *only* buying government (generalized to government guaranteed) securities, lest it take on credit risk, and lest it subsidize particular issuers. But even buying Treasury debt leads to the temptation to finance deficits. Consequently, the Fed may not buy debt directly from the Treasury, and must buy debt at market prices.

Central banks can be too powerful and too independent. Not all central bankers dislike inflation. Some central bankers may be too friendly to the financial industry. Other central bankers may indulge their own policy preferences, subsidizing industries or constituencies with low-interest loans or directing bank lending via central bank regulatory authority. Many of the limitations on central banks flow from this simply fact.

Independence is a means to an end, not an intrinsically worthy characteristic. The independent central bank is a precommitment device for a government, to follow policies that the government wishes in the long run. Simply devolving power to an independent central bank, immune from political pressure, does not automatically give the government pre-commitment to follow the government's desired policies. Independence is thus not absolute. In addition to mandates and legal limits, Officials are appointed by governments, must report to governments, and are either periodically reappointed or face term limits. And politically accountable bodies should from time to time consider

if the central bank mandate, tool set, limited independence, and oversight are working well. Does "price stability" really mean 2% inflation forever? What limits on asset purchases should be enshrined in law?

2.5 Tax Smoothing and State-Contingent Default

Well managed government debt confers great advantages. It is not optimal for governments to always run balanced budgets. Governments should borrow in times of recession, pandemic, war, or other shocks. In good times, they should slowly repay debt and build the capacity to borrow again. Government should borrow to finance productive public investments, as private companies borrow to build factories. (We emphasise truly productive, and investments that are actually investments. Both words are frequently misused.) Debt allows "tax-smoothing" (Barro (1979)): It is inefficient to finance a war or other crisis with very high taxes, that return to normal lower rates after the crisis is over. It is better to partially finance the crisis with debt, which is repaid by a long period of slightly higher taxes. The economic distortions of taxation rise approximately with the square of the marginal tax rate. A long period of low tax rates thus damages the economy much less than a short period of very high tax rates. Countries win wars, or better survive major crises, that are able to borrow more, credibly repay, and not destroy their economies via taxation.

It is also not optimal for governments to forswear all inflation or default. In a rare and severe crisis, a government *should* default on part of its debt or inflate it away, even though that policy will raise the interest rate the government pays in good times. A very rare capital tax can have some of the same benefits as a just-this-once capital tax, since it only gives a small disincentive to investment. Lucas and Stokey (1983) explain that by engaging in "state-contingent default" in bad states of nature, the government smooths distorting taxes across *states of nature* as well as over time.

This result has important lessons for the euro. It is not optimal to

structure the euro so that it *never* inflates, or the ECB *never* intervenes, or sovereigns *never* default. If the probabilities of such events are small enough, then the moral hazards they produce are also small, and utter catastrophes can be avoided in the rare events.

The trouble, of course, is that once-a-century crises seem to happen every few years. Just how much spending each "crisis" really requires is not obvious. Lucas-Stokey state-contingent default can be a fig leaf for habitual inflation and default. Rare state-contingent default works best if it is limited to observable states and clearly necessary spending in those states. It works best when people clearly do not expect default in most circumstances, and are arranging their affairs to weather default. We are clearly past that point.

If a government chooses partial default over higher distorting taxes or painful spending cuts, whether that default should come from explicit default or inflation represents another interesting tradeoff. Explicit default has important financial costs. It can fall on a narrow class of investors, and in particular banks, which may then have a hard time intermediating new credit to other parts of the economy. Inflation hurts a wide class of people, and implements a transfer from all savers to borrowers as well as public debts. Inflation also distorts the economy given that prices are somewhat sticky, and some prices are stickier than others. Examining the sticky-price case, Schmitt-Grohé and Uribe (2004) find that an optimal fiscal policy involves very little state-contingent default via inflation. The "non-distorting" inflation tax on capital ends up distorting the economy a great deal though sticky prices.

One may argue the particular quantitative result, but our point is that there is a tradeoff, and it is not obvious that inflation is less harmful than explicit default, especially default refers to a well-oiled debt-restructuring mechanism with appropriate conditionality and a financial system that is not hostage to sovereign restructuring.

If a countries never explicitly default, then there must be occasional bursts of high inflation, as we saw in 2021-2022. Beyond the concerns of nominal bondholders, the transfers between savers and borrowers, and financial troubles of explicit asset write-downs, one must acknowledge a more nebulous

but real reduction in the trust and utility of the euro and the ECB in such a system. All of these theories presume that the events are widely understood, and there is merely a technocratic decision of how to devalue nominal bonds. But that is not at all how inflation vs. restructuring operate. In a default or restructuring, it's clear those who lose are those who took risks in pursuit of rewards, and it is clear what events motivate the losses. If the cost is spread through an inflation, whose cause is always nebulous to the general public and misdirected by much spin, it feels like institutions—the ECB, and the euro itself—are failing, rather than a well-managed technocratically managed optimal state-contingent default.

2.6 Lender of Last Resort and Financial Crises

Bank failures and financial crises pose a challenge to central banks similar to those of sovereign debts. Central banks are tempted to keep banks from defaulting on debts just as they are tempted to keep governments from defaulting. And it's not just a temptation: Historically, support such as lender-of-last resort authority along with and financial or banking regulation have been explicit tasks of central banks. The ECB was unusual in being set up without a financial stability mandate, though it has evolved to financial stability functions over time, especially after the 2008 financial crisis and in fears that sovereign problems would spill over to the financial system.

Banks are prone to runs, which is why central banks and financial regulators are often tasked to intervene.

But just as with sovereigns, insurance ex-post leads to moral hazard ex-ante. Central bankers and financial regulators have wrestled with insurance vs. moral hazard for over a century. In our view, the moral hazard of expected financial rescue has now also built up to unsustainable levels. Everyone expects a rescue ex-post, leading to too much risk taking and leverage ex-ante and thereby making intervention even more likely.

Runs

A bank run breaks out when depositors and holders of similar assets run to get cash simultaneously. Since the bank doesn't have enough cash on hand to satisfy everyone, the bank can fail. Runs can happen when the bank is *insolvent*, when its assets are not valuable enough to satisfy creditors. Runs can also happen when banks are just *illiquid*, unable to sell assets quickly enough to raise the necessary cash. Bank runs can represent a multiple-equilibrium phenomenon. If nobody else runs, you don't run. If everyone else is going to run, you should run too (Diamond and Dybvig, 1983).

Bank runs are not that easy to get going. The bank must fund itself with large amounts of run-prone liabilities such as uninsured deposits: The liabilities promise that depositors can always get the full value of their investment, instantly rather than in a few days or weeks, payable in cash or bank reserves not bank assets; creditors are paid first-come first-serve incentivizing a run, and failure to pay shuts down the bank. The bank must also face difficulty in getting cash to satisfy its running depositors: It must be unable to borrow from other banks, to sell assets, or to sell additional equity, including selling the whole bank to another bank or new investors.

Prohibitions on interstate and branch banking in the US made runs worse. If a small town bank in Nebraska failed, Chase, based in New York, could not buy the assets and keep it running. Such limitations are past in the US. Full banking union in the EU and easing of regulations limiting bank ownership would be useful for this reason, allowing easier private recapitalization of troubled banks.

Since the Great Depression, individual bank deposits have been insured, limiting this source of runs. However, large deposits are uninsured and can and do run. More importantly, the financial system features large amounts of uninsured deposits and deposit-like and run-prone short-term debt including commercial paper, repurchase agreements, and derivatives contracts. We write "bank" for brevity, but the points apply to the many bank-like financial institutions and run-prone liabilities of today's financial system. Duffie (2010) is a superb exposition of the mechanics of a run at a modern large dealer bank.

The list of requirements for a run is a useful reminder that we do not have to live with recurrent crises. Financial crises are centrally driven by the run-prone nature of bank *liabilities*. Bank assets—diversified portfolios of loans and bonds—are far safer than those of industrial corporations. If banks funded their investments with equity (stock) which offers no right to get your money back, or long-term debt which does not promise money until a later date, they would not suffer runs or ever require central bank support. Bank regulation is slowly and painfully moving to greater amounts of capital for this reason (Admati and Hellwig (2024), Cochrane (2014)).

Systemic Runs

An individual or local bank run is not a macroeconomic problem, however. A macroeconomic problem only occurs when a run spreads to multiple banks. A financial crisis is really by definition a simultaneous run on many banks, or a systemic run. The words "systemic" "risk to the financial system," "contagion" and so forth are widely over-used, so it's understanding what the issue is — and isn't.

Gorton and Metrick (2012) describe the mechanism of a modern systemic run in detail, emphasizing the run on repurchase agreements that broke out in 2008. Debt and especially short-term debt is "information-insensitive." When the issuer is far from insolvency, the value of debt does not vary with the issuer's health, unlike equity whose value goes up and down constantly. As a result, short-term debt holders like bank depositors do not do much monitoring of bank's health. Consequently, deposits and short-term debts are very liquid, and trade as money. If you try to give me bank deposits in a check, or sell me a short-term bond of a bank, I don't worry you know something I don't know. But if there is even a rumor that a bank may be in trouble, people start to worry that someone trying to sell them the bank's short term debt knows something, and it suddenly becomes illiquid. Short-term debt holders do not specialize in monitoring bank health, so when they worry they just dump the debt.

And when they hear news that one bank is in trouble, they don't look carefully at another similar bank's books, they just dump that bank's debt

too. A systemic run on all banks develops. This is one concrete meaning of "contagion."

In a systemic crisis, people want to hold cash, and not uninsured bank deposits and similar short-term debt. But there isn't enough cash to go around. The financial system as a whole does not have enough cash to make good on all the short-term promises to deliver cash.

Macroeconomic Consequences

Bank runs can be socially costly as well as unpleasant to bank creditors. Widespread runs are associated with economic depression, as in 2008 and going back historically including the Great Depression and the banking panics of the 19th century and before.

There are several mechanisms for this economic damage. In a monetarist analysis, the surge in money demand against a fixed or insufficiently elastic supply leads to deflation and depression, as argued by Friedman and Schwartz (1963) for the Great Depression.

If a bank fails and a new bank or other set of equity investors is not able to quickly buy up the assets, infuse cash, honor its debts, and keep its operations going, then the bank is no longer able to make new loans and the individual and institutional knowledge of the bank is lost. Bernanke (1983) and Bernanke and James (1991) argue that the depth and persistence of the Great Depression was due in part to the failure of banks, leaving nobody around who could take deposits and make loans.

In the "financial accelerator model" (Bernanke, Gertler, and Gilchrist, 1996), the financial system relies on investors who swoop in and buy assets at low prices in bad times. But if investors are themselves borrowing, then they can be constrained when the value of their assets falls in a downturn, and unable to provide cash just when it is most important – and profitable – for them to do so. Prices fall more.

Central Banks

For over a century, governments have responded to the threat of systemic runs with with an expanding set of policies, usually located in the central bank: lender of last resort support to banks, deposit insurance and related short-term debt guarantees, extensive bank risk regulation, monetary expansion including low (now zero) interest rates, easy lending against looser collateral, and now asset purchases designed to raise the value and liquidity of bank assets. Each of these measures has ex-ante moral hazards.

The Bank of England evolved the lender of last resort function in the 19th century. The US Federal Reserve was founded to be lender of last resort and to "provide an elastic currency" following the 1907 crash. Setting interest rates and worrying about inflation came much later.

A lender of last resort stops a bank run by providing cash, against collateral, to banks that are having runs. The central bank takes collateral that private lenders are not willing to take during a crisis. Central banks also lend to financial institutions that take even worse collateral, and encourage such lending via low interest rates.

The central bank has key advantage as lender of last resort that it can print money. It has what it takes, in potentially unlimited quantity, to stem nominal defaults. Even the largest private bank, clearing house, or bailout fund eventually runs out of cash, and thus invites a run or "speculative attack."

The lender of last resort naturally risks becoming the lender of first resort, i.e. inviting moral hazard. Anticipating lender of last resort support, banks may not invest in adequate high quality and liquid assets that they can sell or borrow against in bad times; banks may issue insufficient equity and raise funds instead from too much short-term debt and deposits; investors may too quickly invest in bank debt at too low rates.

Famously, Bagehot (1873) proposed that, during financial panics, the central bank should lend freely but at high interest rates and only against good collateral to contain that moral hazard. In practice, central bankers have followed only the first, "lend freely," of Bagehot's rules. They quickly lower

interest rates, and lend at low or even subsidized rates. They expand collateral criteria to include riskier and illiquid assets, and offer more money against the same collateral. Following the SVB run, the US Fed even allowed banks to borrow the face value of assets, not the lower market value. In crises the ECB lowered collateral requirements and provided large amounts of loans to banks at favourable rates. Following the pandemic it even lent at rates below the deposit rate. Lending at subsidized rates amounts to recapitalization, a gift to shareholders. In the financial crisis and in 2020, central banks went beyond anything Bagehot imagined, including large-scale asset purchases and direct recapitalization of big banks. Central banks try to offset moral hazard instead with bank regulation and self- or legally imposed limitations on crisis interventions.

Central banks today also aggressively address the macroeconomic facets of systemic runs. Greater money demand does not meet a fixed supply. Central banks promptly lower interest rates and "inject liquidity." Monetarist scarcity of the means of payment is not likely an important economic problem.

Central banks clearly feel the crisis-stopping value of these measures is worth the moral hazards. But as each crisis has been larger than the last, financial moral hazard has evidently grown. As with sovereigns, that induced fragility makes intervention more likely in the next crisis.

Farhi and Tirole (2012) is a contemporary theoretical analysis of the moral hazard posed by lender of last resort operations. Brunnermeier (2015) calls the result "financial dominance," paralleling the concept of "fiscal dominance." Monetary policy can be subservient to financial fragility as it can be subservient to sovereign default. Farhi and Tirole advocate an analogue of central bank independence as a precommitment against excessive intervention, "independence with respect to the financial industry."

Summary

Bank rescues, like sovereign bailouts, can help to stem financial crises after they break out, but they induce moral hazard and additional fragility, when people expect them. Large interventions to bail out the financial system

are also fiscal implications of monetary policy. The extra money so created either causes fiscal transfers or inflation.

Limitations and regulations, both external and self-imposed, attempt to control moral hazards, and do so imperfectly. But in banking as in sovereign debt, today everybody expects a bailout. While the interventions of 2008 at least led to attempts to stiffen regulation and precommit against interventions, the bailouts of 2020 and 2023 show that effort failed, and this time there is not even an apology. Financial system participants expect routine interventions in any crisis. And the definition of "crisis" has become so nebulous as to almost mean "somebody somewhere might lose money."

Yet as with sovereign debt, it is not evident that even the ECB has the resources to stop a next larger crisis, at least without large inflation. An ideal bailout is one that nobody expects. The worst possible bailout is one that everyone expects, but does not come.

2.7 Monetary Union without a Political Union

In a monetary union without political and fiscal union, the above considerations on fiscal and monetary policy interactions, revolving around credibility, time consistency, default, and inflation, become complicated by the division of decision-making authority.

A new time consistency problem

Before any union, sovereign governments make their own, separate, tax and spending decisions, and they remain responsible for their own national debts. The ideal monetary union without fiscal union preserves these aspects of fiscal independence under a common currency.

The EU has already breached this characterization, and taken on some aspects of a transfer union. But these are limited, so it is useful to think through how a monetary union without fiscal union can work.

A new time consistency problem arises if these countries join in a monetary union, leading to a new form of moral hazard (Chari and Kehoe, 2007).

A benevolent monetary authority (the ECB) has an incentive to inflate away nominal debt when there is fiscal trouble. This temptation leads to a "free rider" or "moral hazard in teams" (Holmstrom, 1982) problem. The fiscal authority in each country recognizes that more unbacked debt of all members will lead to higher inflation for all. But it alone enjoys the full benefit of its own higher debt, while the inflation cost is diluted to everyone. A race to the bottom can result. When fiscal transfers are on the table, there is a similar incentive for each country to take on too high debt or delay reforms, and when getting in to trouble calling on its neighbors to help.

This "free rider" problem can be solved with precommitments: If the central bank is not *able* to help ex-post, if other countries are not *able* to offer fiscal transfers ex-post, countries have the incentive not to get in to trouble ex-ante. This idea underlies the founding commitments of the euro, including restrictions on ECB authority and the no-bailout clause. Aguiar et al. (2015) study this situation, showing how debt ceilings and other precommitments help to avoid moral hazard.

But the same tension as motivates state-contingent default remains. Ex-post, one wishes a bailout "just this time." Failing to alleviate the current crisis just to contain moral hazard of the next one is a difficult case to make, if there is any decision about it. Governments and central banks do not like to bind themselves so they really *cannot* act. And then they will act. And then people know that ahead of time.

Indeed, there is always some crisis so severe that governments *should* break the rules. So despite the beauty of ironclad and inviolable precommitments, we will always be in a fuzzy middle where the precommitment makes intervention costly, to contain moral hazard, but not impossible; where precommitments allow "just this once" exceptions, but somehow limit them and quickly reestablish faith that it won't happen routinely.

Redenomination risk

Sovereign member states can also decide to exit the monetary union. This event is called "re-denomination risk" to bondholders. (See Constâncio

(2018).)

A government with an unsustainable fiscal position faces an unpalatable menu of options: explicit default, cutting spending, increasing tax revenue, or growth-enhancing reforms that offend powerful constituencies. A country in a union cannot choose implicit default via inflation. But it can introduce of a new national currency, exit the union, default by redenominating its debt in overvalued national currency rather than euros.

Debt promised euros, so this substitution of currencies likely constitutes legal default. But it may be legally easier.

Default via redenomination, like default via inflation, also carries over to private debts, which the government may have backstopped. For example, if a country's banks are stuffed with sovereign debt, then a sovereign default means the banks cannot repay the euros those banks have promised to depositors. Redenomination can, and historically does, therefore extend to bank accounts and private debts in the country.

Abandonment of the gold standard in the 1930s is a legal and economic precedent. Countries including the US and UK left the gold standard, abrogating both private and sovereign promises that bondholders could demand repayment in gold. Again in the 1970s, the USA abandoned the remaining Bretton Woods gold clauses, breaking the right of foreign central banks to receive gold in place of dollars. Greece and Italy, for example, were urged by some people to exit and devalue during the euro crisis.

The effect of redenomination hinges on the legal question whether and which public and private debts that promise euros can be repaid in new local currency, and what court has power to do anything about a sovereign's decision to do so. An attempt to redenominate debt is likely to lead to legal chaos.

Redenomination also creates financial instability: The moment people start to anticipate such an event, all debtors in the country, not just of the sovereign, face a significant risk premium, causing the country's growth to drop, impeding new lending or rolling over loans, and aggravating the initial situation (De Grauwe and Ji, 2013). Short term debts will not be rolled over,

people will pull money out of banks, so a crisis will break out in anticipation of redenomination. Despite the pundits who see redenomination and exit as a low cost way to escape debts, in fact an orderly restructuring of sovereign debt inside the monetary union may well be less costly and chaotic than an exit.

Thus, a good monetary union adds costs to such exit and redenomination. It is also in the country's interest to accede to such precommitment costs, as that precommits to repayment and thereby lets the country borrow more easily. When Greece or Portugal joined the euro, their borrowing costs plummeted. They had renounced, or at least made much more costly, the previous habit of inflating away debt and devaluing the currency in bad times. They had made inflation and redenomination more costly ex-post, and reaped the ex-ante benefits of ample new borrowing at low rates. They overdid the borrowing and the ex-post costs came to bite, but how costly they were proves the point that it was valuable to sign up for such costs as an ex ante precommitment.

Summary

Monetary union without fiscal or political union should be simple. Countries share a common currency. Countries that cannot repay their debts default just like companies. National banks that fail or bank depositors get support, if at all, from the national government, using the fiscal resources of their country. Europe operated for centuries on common currencies of gold and silver coins in this way.

From the founding of the euro, however, it was not clear that joining the euro meant countenancing sovereign default or purely national financial system support. The latter is infeasible in an economic union that includes free trade in financial services.

Chapter 3

The Design of the Economic and Monetary Union

The initial design of Economic and Monetary Union (EMU) was set out in the 1992 Treaty of the European Union, known as the Maastricht Treaty. The Treaty reflected many of these economic issues, applied to a currency union and free market in goods, but without fiscal union, banking union, or political union.

With the monetary union, eleven (now 20) European Union (EU) member states gave up their separate currencies in favor of a common currency managed by a new European institution, the European Central Bank (ECB). However, fiscal and many other economic and financial and banking policies were and are still made by independent member states. The European Union has almost no taxing rights, and does relatively little spending.

The architects of the Euro well understood the incentive for a country to spend and borrow too much, and then pressure the ECB or other member states to bail it out. If each person orders their own wine at a dinner where the guests split the bill, the bill can mount quickly. Moreover, if banks are loaded with government debt, default is more costly, raising pressure for monetization or bailout. (Sims (1999) provides a good contemporary economic analysis of the fiscal foundations of the euro.)

To address these risks, the architects of the EMU envisioned a separation of monetary and fiscal policies. The ECB was to be in charge of monetary policy. Member states were in charge of their fiscal policies. Member states foreswore inflation and devaluation. Countries were supposed to borrow moderately, to repay their debts, and to ensure sufficient fiscal space for bad times.

The EMU was thus set up with an independent central bank, given a primary mandate to focus on price stability alone, and that would not buy or otherwise support sovereign debts. A fiscal "no-bail-out" principle that member states would not intervene directly accompanied this monetary no-bail-out principle. Member states agreed to debt and deficit limits in order to join the euro. Many rules, traditions, norms, and writing built the founding philosophy on these structures. Well-run national banking regulation would keep banks out of trouble, and remove the troublesome question of ECB intervention.

But suppose that these guides are insufficient, and a country cannot borrow, roll over, or repay its debts? That eventuality was a bit glossed over in the design of the EMU. Would sovereigns really default, haircut, or restructure debts, just as corporations do and sovereigns borrowing in foreign currency do? In joining the EMU, did member states really and fully give up the privilege of printing money to avoid nominal default? Should banks and bank regulators really think of sovereign debts of European countries as having default and roll over risks? (The answer to the latter, in practice, is no: Bank regulation still treats sovereign debt as uniquely risk free.) If sovereign default could not be countenanced, just how would it be avoided?

Clearly it was hoped that debt and deficit limits, the apparent precommitment not to intervene, together with a revived fiscal and economic responsibility, would make such impolite questions irrelevant. Given the benign macroeconomic environment of the late 1990s, how little anyone thought about monetary-fiscal interactions or large-scale bank failures in advanced countries at all, and in the desire to bring quite different countries together, it was natural to gloss over unpleasant questions about remote events.

The clarity and depth of the EMU founders' vision is impressive. But like all founding documents, they could not write rules for every eventuality

of a new system. The EMU would have to evolve, fill in the cracks, and adapt the founder's vision to new eventualities. Alas, the implementation of the founding vision was imperfect, the unfinished parts remained unfinished and caused trouble, and the structure weakened as it evolved over the years. This process, its consequences, and how to reestablish a more functional EMU constitutes our central story.

3.1 Fiscal Rules: The Triple Lock

Three central provisions separate monetary and fiscal policy in the EMU: A prohibition on monetary financing of sovereign debts, limits on debt and deficits, and a "no-bail-out" principle that member states shall not support others' debts by fiscal means. Together these form a "triple lock."

Prohibition of Monetary Financing

The EU treaties restricted the ECB's ability to buy government debt or conduct similar quasi-fiscal operations. Article 123 of the Treaty on the Functioning of the European Union says:[1]

> Overdraft facilities or any other type of credit facility with the European Central Bank or with the central banks of the Member States (hereinafter referred to as 'national central banks') in favour of Union institutions, bodies, offices or agencies, central governments, regional, local or other public authorities,.. shall be prohibited, as shall the purchase directly from them by the European Central Bank or national central banks of debt instruments.

The article prohibits the "direct" (i.e. primary market) *purchase* of sovereign debt by the ECB from the issuing country. The article also prohibits the European Central bank from *lending* to Member States' governments. With these two prohibitions, the treaty was taken to forbid monetary financing of sovereign debt.

[1] https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX%3A12008E123%3AEN%3AHTML

In addition to this formal and legal restriction, the ECB initially also elaborated internal policies against sovereign purchases, described below.

The treatment of sovereign debt on central bank balance sheets varies widely. The US Federal Reserve is required to hold *only* sovereign debt on its balance sheet, so that it will not take on credit risk. In the post WWII era it was required to buy government debt and to hold down the rate on that debt. The different circumstances of a unitary government vs. a currency union, different concerns about financing a fiscal inflation vs. taking on credit risk, and a different fiscal environment motivate opposite restrictions

No Bail-out

Article 125 of the EU Treaty, sometimes called the "no bail-out clause," also specifies that member states and their creditors will not be bailed out by the union or by other member states:

> The Union [or] ... A Member State shall not be liable for or assume the commitments of central governments, regional, local or other public authorities, other bodies governed by public law, or public undertakings of another Member State, without prejudice to mutual financial guarantees for the joint execution of a specific project.

Limits on Debt and Deficits

The architects of the EMU recognized that there would still be a temptation to bailouts and monetization if sovereign default loomed. They also included limits on debts and deficits so that countries were less likely to get in fiscal trouble in the first place.

The 1992 Maastricht Treaty set limits, called "reference values," for fiscal deficits, equal to 3% of gross domestic product (GDP), and debt, equal to 60% of GDP. These reference values were not hard limits to be met every year. The deficit ratio could be exceeded, if "the excess over the reference value is only exceptional and temporary and the ratio remains close to the reference value." The debt ratio could be exceeded if it "is sufficiently diminishing and approaching the reference value at a satisfactory pace."

The 1997 "Stability and Growth Pact" (SGP, Regulation (EC) N° 1466/97), to which all Euro members are automatically members, added detailed procedures to ensure that countries stay within debt and deficit limits. The Pact consists of two main procedures or "arms." Under the "preventative arm," member states must submit each year their stability program to the European Commission, in which member states set out their budgetary policies and objectives. These programs are examined by the Commission, which may issue recommendations to countries that risk excessive debt or deficits. Under the "corrective arm," countries that do not comply are subject to a procedure that may lead to sanctions and fines. (See article 126 of the Treaty on the "Excessive Deficit Procedure.") Both recommendations and decisions were to be taken by the European Council of governments at the recommendation of the Commission, hence preserving a lot of political discretion. Undefined "exceptional circumstances" may also apply, and the deadline for closing the deficits may be prolonged in "special" circumstances. So, these were far from automatic rules.

The original 1997 Pact was amended many times, first to give it more flexibility, then to make it more binding. As the Stability and Growth Pact is not part of the Maastricht or EU Treaty, such changes were not as politically difficult as a Treaty amendment would have been, since those require referenda in some member states. But it likewise does not enjoy as much force.

The debt and deficit limits, designed to reduce pressure on the ECB and member states for bailouts, also embed a clever implicit fiscal-monetary co-ordination. The 3% deficit limit was defined for the overall budget balance, including interest payments on the debt, not just primary deficits. This feature means that governments with larger debts and higher interest rates must automatically reduce spending or increase tax revenue. Moreover, it forces member states to provide fiscal support for monetary policy. If the ECB raises interest rates, countries are supposed to pay the consequent higher interest costs on their debt by higher tax revenue or less spending.

What if Fiscal Rules Fail?

We apparently have a triple commitment: The ECB shall not print money to finance deficits or bail out debts; member states shall never borrow

enough money to get in trouble in the first place; and member states shall not be obliged to bail each other out directly.

However, one may also regard the need for three prongs as an admission that none of them is adequately strong on its own. If debt and deficit limits are sufficient to keep a country out of fiscal trouble, then we don't need rules against fiscal or monetary bailouts. If the precommitment against bailouts and monetization is firm, if the countries in big trouble default just like companies, then there is no need to limit borrowing. Borrow what you want, default when you can't repay, *caveat emptor*. Placing limits on debts and deficits recognizes that the ECB and EU will be tempted to and able to ignore rules ex-post.

The rules are also not ironclad, and wisely so. There is always a large enough shock for which one must bend rules and worry about moral hazard later.

A major piece of unfinished business, in our view, is that the Maastricht Treaty did not include any mechanisms to address fiscal trouble should it actually arise despite these arrangements. The Treaty implicitly assumed that the triple commitment together with the signatories' good will would ensure no country would ever get in trouble. By contrast, the Bretton Woods fixed exchange rate regime included creation of the IMF, designed to manage debt and balance of payments problems.

By making no preparations to allow explicit sovereign default or haircut without endangering financial stability or the currency union, the treaty left an impression that sovereign default is somehow specially unthinkable. Together with bank regulation that treats sovereign debt as risk free, high-yielding sovereign debt then ended up on the balance sheet of important commercial banks, so worries of bank failure as well as less concrete worries of "contagion" and nebulous financial calamity accompanied the prospect of sovereign default, haircuts, or restructuring.

At a minimum, the option of sovereign default—debt restructuring, bondholder haircuts—is needed to better negotiate other parts of rescue packages and to contain moral hazard in which bondholders and regulators count on bailouts.

This is not blame: The treaty included an impressive architecture, and it is natural for its architects to assume that additional fail-safe mechanisms would be included later. Including a resolution mechanism would also have been politically awkward. Bretton Woods was not created in a union of equals.

The architects of the euro surely felt that if the unthinkable happened and a debt crisis did break out, European institutions including the ECB would muddle through somehow, perhaps breaking some rules along the way, as they did. But then they would sit down and create mechanisms to prevent a recurrence. Procedures would evolve over time with experience, as did those of the IMF. As we will describe below, that process started, but then was abandoned. This is crucial elaboration and reform step that we urge.

The lesson of the European sovereign debt crisis seems clear: The EMU needs a good institution that can promptly offer temporary fiscal support. Any ECB participation must leave out implicit fiscal support. The institution must be able to require "conditionality," to require structural adjustment: more effective taxes, restrained spending, and pro-growth microeconomic policies. It must also be able to impose debt restructuring, bondholder haircuts, as part of the package or if conditionality fails. If default is unthinkable, then the country can more easily refuse or renege on conditionality terms. The European banking and financial regulatory system must be insulated from such restructuring. Such a mechanism could also have eased pressure on the ECB to buy stressed country bonds.

3.2 Monetary Union without Banking Union

The EMU was also conceived and introduced as a monetary union without comprehensive banking union. There was no common banking regulation, no common supervision, and no common deposit insurance. Each remain functions of the National Central Banks. To this day, the common market and free trade provisions which are the backbone of the European Union do not extend fully to banking, and the banking market remains fragmented across countries. Member country regulators and politicians place obstacles in the way of European-wide consolidation, as some informal control of the national

banking systems remains politically attractive. National regulators demand "ring-fencing" of liquidity and solvency at the national level, limiting banks' ability to use resources in one country to address problems in another. As a consequence, there are still rather few true pan-euro area banks, which can provide for private cross-border risk sharing (Maragopoulos, 2021). Imagine how much less disruptive failure of a Spanish bank, say, would be if it were just a branch of a european-wide bank, whose assets were a diversified portfolio of private and sovereign debts throughout the union, which could draw on resources throughout the union, which could easily issue widely-traded equity, and which could rely on a well-developed ECB lender of last resort, or if the Spanish bank could be bought and quickly recapitalized by such an instutution.

The Treaty also did not include concrete cooperative rules and procedures to address a banking crisis in one or more member countries, so that national fiscal authorities, banking regulators, and supervisors could act jointly with the aim of stabilizing, recapitalising or winding down banks in trouble and avoid beggar-my-neighbour behaviour.

Dealing with a banking crisis and failing banks was fully left to national fiscal authorities, national central banks, and national regulators. Even the lender-of-last resort function ("Emergency Liquidity Assistance," ELA) was assigned to *national* central banks, who would decide how to offer such support and alone assume the financial risks. What bearing such risk means is also a good question. Just what happens if one national central bank in the Eurosystem fails is another unsettled question.

The treaties are silent on this function. ELA is undertaken under a generic provision in Article 14.4 of the Statute of the European System of Central Banks: "National central banks may perform functions other than those specified in this Statute unless the Governing Council finds, by a majority of two thirds of the votes cast, that these interfere with the objectives and tasks of the ECSB" (Xanthoulis, 2019), (European Central Bank, 2011).

The resulting system is one in which banks are European in life, but national in death, and sovereign crises spill over in to national banking systems. This oversight may simply have resulted from the general lack of interest

in advanced-country financial stability issues in global central banking circles before the financial crisis. It also may have resulted from a political desire to keep bank regulation at a national level, as fiscal policy was kept at a national level.

The lesson of the 2008 financial crisis and the sovereign debt crisis is that such national compartmentalization is harmful. Individual states can run out of resources to support national banks that are even partly open to union wide business, as Ireland found out. Commingling sovereign and baking risks in individual countries makes crises much worse. It may have seemed sensible to the architects of the euro that countries, which were not going to get in to sovereign trouble due to debt and deficit limits, could easily handle troubles of their individual banks. It was natural for them not to envision that banking crises could engulf a country, or spill from country to country, and that the same sovereign that is supporting banks could be in trouble. Now we know otherwise.

3.3 Currency Union Without Fiscal or Banking Union

Contrary to the popular proverb, a currency union without fiscal union or banking union is perfectly possible, so long as it is clearly understood that member states default if they cannot repay their debts, just as private firms and individuals do. If sovereigns cannot be allowed to default, it's a fiscal union.

Companies, even large ones, may participate in the euro zone. If they get in trouble, they default. Bond holders lose money. The world does not end. The companies are not kicked out of the currency zone, or forced to create their own new currency. In the previous centuries-long continent-wide monetary union, based on gold coins, sovereigns defaulted. It was not pleasant, but it was possible. That sovereigns must in the end be allowed to default occasionally is an inescapable conclusion of a monetary union without fiscal union. (Admittedly, even large companies are increasingly bailed out by fiscal authorities and by central banks, but the point is that default is possible.) The

Treaty's fault is being silent on the issue, allowing an expedient ambiguity. But that ambiguity proved costly.

The proverbs also suggest that monetary union with fiscal and banking union would be a panacea. But the no-bailout clause reminds us that this is not the case either. Fiscal union consisting only of an agreement to share fiscal "risks" among independent sovereigns who set tax and spending policies is no more sustainable than monetary union with 20 separate buckets standing ready to receive money from the common printing press. Fiscal union consisting of most taxes and spending decided at the union level has its own problems.

3.4 The European Central Bank

The ECB was designed to manage the common currency. Its primary mandate is price stability, which it has interpreted as a 2% inflation target. Its main instrument is the short term interest rate. It was designed to stay out of sovereign debt support and, largely, banking regulation. It was granted great political independence to help it resist pressure for action outside its mandate.

A politically independent central bank with a limited mandate is a classic institution by which a government or union of governments precommits against the temptation to inflate away debt, to finance fiscal deficits, to bail out a government in fiscal trouble, to direct credit to politically popular constituencies, to transfer resources among member states, or to temporarily goose the economy with low interest rates or a bit of inflation. The ECB was set up exactly in this way and to these ends.

The Price Stability Mandate

Article 127 (1) of the Consolidated version of the Treaty on the Functioning of the European Union[2] sets forth the ECB's official legal mandate.

> 1. The primary objective of the European System of Central Banks (hereinafter referred to as 'the ESCB') shall be to maintain price stability. Without prejudice to the objective of price stability,

[2] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A12016E127

> the ESCB shall support the general economic policies in the Union with a view to contributing to the achievement of the objectives of the Union as laid down in Article 3 of the Treaty on European Union. The ESCB shall act in accordance with the principle of an open market economy with free competition, favouring an efficient allocation of resources, and in compliance with the principles set out in Article 119.
>
> 2. The basic tasks to be carried out through the ESCB shall be:
>
> — to define and implement the monetary policy of the Union,
>
> ...

The mandate is as important for what it omits, and thereby precludes, as for what it includes. The ECB's primary mandate does *not* include employment, macroeconomic stability, cross-country variation in economic conditions, a primary role in financial regulation, or support for sovereign debt, except as these might be incidentally important to price stability.

This mandate has had a powerful effect, at least on ECB communications. The ECB has been careful to phrase all of its innovations and interventions as necessary in the pursuit of price stability, or of "monetary policy transmission" necessary for it to stabilize prices.

The ECB's price-stability mandate contrasts for example with the US Federal Reserve mandate which explicitly includes "maximum employment" as a separate objective. Employment varies across member states, so emphasis on employment might have led to policies that help some states at the expense of others.

The ECB's narrow mandate was also a part of the general consensus on the superiority of pure inflation targets that emerged in the early 1990s. Economists and central bankers recognized that monetary "fine tuning" of the real economy is not generally successful. Inflation targeting reforms in New Zealand, Canada, and Israel proved remarkably successful in stabilizing inflation with little macroeconomic pain.

To an Inflation Target

A mandate is not carved in stone, and these brief words leave plenty of room for interpretation. The mandate evolves by the continual dialogue between ECB, EU, and public. The ECB itself was central in the founding of the monetary union, by interpreting, elaborating, and implementing its mandates and legal foundations, by carefully setting precedents, and by explaining and propounding this founding philosophy.

In particular, the ECB was left to interpret just what "price stability" means. In October 1998, the ECB provided a quantitative definition of its objective as follows: "Price stability shall be defined as a year-on-year increase in the Harmonised Index of Consumer Prices (HICP) for the euro area of below 2%. Price stability is to be maintained over the medium term."

The ECB also stated that monetary policy would have a "forward-looking, medium-term orientation," given that there exists "short-term volatility in prices which cannot be controlled by monetary policy.[3]

To understand what this means consider two alternatives. The ECB might have chosen to target average inflation over some "medium term," say two years. Then, if inflation were 3% in year one, the ECB would try to bring inflation down to 1% in year two, so that inflation averaged 2% over the period. The ECB's "forward-looking" objective means the opposite: It will ignore the 3% overshoot and still try to keep inflation at 2% going forward.

As a second and deeper alternative, the ECB might have interpreted "price stability" to mean just that – stability in the level of prices. Or the ECB might have interpret it as a target for the level of prices that grows 2% per year. In either case, periods of excess inflation would be followed by periods of low inflation or slight deflation to restore the price level to its target path. The ECB does not interpret "price stability" to mean stability of prices.

Few complain, as few complain about the US Federal Reserve's similar interpretation of its "price stability" mandate. And an *inflation* target that

[3]ECB Press Release, "A stability-oriented monetary policy strategy for the ESCB, 13 October 1998." https://www.ecb.europa.eu/press/pr/date/1998/html/pr981013_1.en.html

forgets about past errors was the standard interpretation of such targets in the 1990s and the common academic and central bank understanding of policy. Still, the treaty authors, like the authors of the US Humphrey – Hawkins act of 1978, chose the words "*price* stability" not "*inflation* stability" for a reason.

In subsequent years, the ECB's inflation target has drifted upwards, to focus on 2% inflation, with inflation below 2% also seen as undesirable.

Following the 2003 evaluation of its monetary policy strategy, the ECB clarified that it would aim at inflation rates "below, but close to" 2%.[4] This new aim was broadly understood to be in the range of 1.7-1.9%.

There were three motivations for this slight rise in the effective inflation target. First, the ECB worried that since interest rates cannot easily go below zero, any deflation might "spiral" out of control. This worry about inflation below 2% was to dominate ECB monetary policy in the 2010s. Second, an inflation target biased upwards towards 2% addresses measurement bias in the price level. Like all price indices, the HICP does not perfectly adjust for better quality goods. Getting a better quality good at the same price is an increase in purchasing power, so no measured inflation is actually a bit of deflation. Third, a Europe-wide HICP ignores inflation differentials within the euro area. The ECB views that deflation is a worse problem than inflation. Prices and wages may be more sticky in the downward direction than the upward direction, and downward price adjustments carry larger short-term economic costs. If deflation in, say, Spain is matched by inflation in, say, Germany, the ECB would prefer that both countries experience a bit more inflation.

Following the ECB's second strategy review, in mid-2021 the ECB announced a new symmetric inflation target of 2%, implying slightly higher inflation than the previous aim of below but close to 2%. This review followed 10 years of below-target inflation, zero or negative interest rates, and persistent fear of a deflationary spiral. The ECB felt that the asymmetry of a 2% upper bound in the original definition of "price stability" made it more difficult to move inflation upwards towards 2%. Inflation is driven, in part, by expected inflation. If people believe that inflation can never be higher than 2%, but can

[4] https://www.ecb.europa.eu/press/pr/date/2003/html/pr030508_2.en.html

be lower than 2%, their inflation expectations will be systematically lower than 2%. The ECB's move was thus part of a larger strategy to increase inflation back up to the 2% upper bound, without the ability to move interest rates down any more, by managing expectations. This strategy, like the US Fed's move to "flexible average inflation targeting" in the same period, suffered in retrospect from unlucky bad timing, as the problem of the day soon turned to inflation well above target, not deflation.

The ECB was clear from the outset that its monetary policy must focus on price stability in the euro area as a whole, and thus would not address cross-country inflation differentials, support specific individual countries' economies, sovereign debts, or their banking systems. Following the 2003 evaluation of its monetary policy strategy, the ECB (European Central Bank, 2003a) stressed:

> In any currency area—be it a currency union or a single country—monetary policy cannot and should not try to reduce inflation differentials across regions or cities. Instead, depending on the sources and causes of the inflation differentials, regional remedies may be needed...

The ECB on Economic Policy and Monetary-Fiscal Separation

The ECB also expounded that the narrow functions of the central bank requires that member states take up other functions. Time and again the ECB stressed that sound national fiscal and economic policies, including national structural reforms, were crucial for member states to prosper and reap the benefits of monetary union. This separation of responsibilities was expressed in speeches from ECB Board Members and articles in the ECB's Monthly Bulletin and also enshrined the ECB's design of the monetary strategy and operational framework. In this way the ECB attempted to pre-commit against intervention, and to guide expectations of people, governments and markets consistent with the original intent.

Wim Duisenberg, who became the first President of the ECB in June

1998, stressed already in early 1998:[5]

> . . . the option of using monetary and exchange rate policy in the event of country-specific problems . . . with the aim of reducing the burden of financing a high level of government debt will no longer be available. . . . The absence of a monetary policy oriented to the economic situation in individual member countries puts even greater premium on removing rigidities, particularly in product and labour markets. These markets should be flexible enough to allow wages and prices to be adjusted quickly. Such flexibility would be needed to avoid increased unemployment should local economic conditions worsen—due, for example, to an asymmetric shock or a relatively weak local productivity increase.

Duisenberg's plea for microeconomic flexibility was not heeded.

In another important ECB Bulletin article (European Central Bank, 2003c) the ECB also wrote about the relationship between monetary policy and fiscal policies in the euro area. Here, the ECB explicitly stressed the importance of both monetary and fiscal no-bail-out principles:

> . . . the "no bail-out" clause, which stipulates that neither the Community nor any Member State is liable for or can assume the debts incurred by any other Member State (Article 103),. . . imposes further incentives on the part of national fiscal authorities to preserve budgetary discipline. In this respect, high government debt cannot be inflated away, nor can a government that does not stick to the rules rely on being eventually bailed out by other governments. Thus, in the current institutional framework, individual governments cannot shift part of the burden of high government debt to other parts of the euro area. In this way, it also ensures that unsound fiscal policies in one country will tend to lead to higher risk

[5] Wim Duisenberg, "EMU - How to grasp the opportunities and avoid the risks," 22 January 1998. https://www.ecb.europa.eu/press/key/date/1998/html/sp980122.en.html.

> premia for the debt of that country and not for the debt of other countries. This in turn increases the incentives for fiscal discipline at the national level.

The last sentences are particularly important: Well before the 2008 financial crisis, the ECB anticipated in public that countries could have sovereign debt problems, that such problems would lead to higher yield spreads, that those derive from "fundamentals" not "fragmentation" or "dislocation," and that fiscal or monetary intervention to stop rising yield spreads would lead to moral hazard, silencing important market signals and pressures on governments to follow better policies. The ECB made clear that it it should not be expected to prop up debt of individual member states by buying debt, either to forestall restructuring or to hold down yield spreads.

Beyond Price Stability

The ECB's mandate is not solely focused on "price stability," and additional roles have spring up over time.

As quoted above, the mandate also includes that the ECB shall "support the general economic policies in the EU." That clause includes the proviso "without prejudice to the objective of price stability," indicating that price stability comes first. The ECB should not trade off inflation for any other policy goal. Still, this language allows the ECB a substantial role in general economic policy, including fiscal policy or policy with fiscal characteristics, that is unusual for independent central banks.

It also adds that "The ESCB shall act in accordance with the principle of an open market economy with free competition, favouring an efficient allocation of resources." This is an interesting proviso, as it seems to fear that the general economic policies of the EU might someday contravene that principle, and at least constrains the ECB not to support such policies. For example, it seemingly rules out increasingly popular industrial policies, credit-allocation policies, protectionist or "place-based" policies.

Before the financial crisis, sovereign debt crisis and large-scale asset purchases, including corporate bond purchases, these provisions may have seemed

like harmless boilerplate, but now they matter.

With the 2003 strategy review, the ECB also announced a concern for employment stabilisation independent of its primary mandate(European Central Bank, 2003b).

> . . . in the case of some . . . economic shocks (e.g. of a cost-push nature) . . . it is widely recognised that a gradual response of monetary policy is appropriate to avoid unnecessarily high volatility in real activity. Thus, the medium-term orientation . . . helps to avoid introducing unnecessary volatility into the economy and embodies a concern for and a contribution to the stabilisation of output and employment.

This move too might fall under a concern for general economic policies, though the ECB did not make that claim.

By and large the ECB seems to prefer to justify its actions as necessary for price stability, and to preserve the "monetary transmission mechanism" in the pursuit of price stability, even when the goals seem transparently to support EU economic policy.

For example, explaining its climate initiatives, the ECB writes:[6]

> Higher temperatures, storms or droughts – but also deforestation, soil erosion or pollinator losses – can push up prices and ultimately inflation. Price and financial stability can only be preserved if climate and nature are stable.

Even at the cost of confusing the price level and relative prices, the ECB prefers to motivate its climate initiatives in terms of price and financial stability mandates rather than support for EU policy. (See also section 3.1 of the 2021 policy review[7], which frames climate policy as deriving from price and financial stability mandates.)

[6] https://www.ecb.europa.eu/ecb/climate/our-climate-and-nature-plan/html/index.en.html

[7] https://www.ecb.europa.eu/home/search/review/html/ecb.strategyreview_monpol_strategy_overview.en.html

Similarly, announcing the €750 bn Pandemic Emergency Purchase Programme, the ECB said the purpose was[8]

> to counter the serious risks to the monetary policy transmission mechanism and the outlook for the euro area posed by the outbreak and escalating diffusion of the coronavirus, COVID-19.

One sees only the penumbra of the general economic policy mandate in "the outlook."

These observations are not criticism. The ECB's mandate evolves over time, in part as the ECB announces and interprets its mandate, and others accept that reinterpretation. Currently, the ECB justifies its actions predominantly through a narrow view of its mandate — monetary transmission, price and financial stability rather than support for general economic policies — together with a rather expansive view of what forces impinge on monetary transmission and price and financial stability, and anyone's technical and scientific understanding of how those forces operate and what policy can do about it.

The Balance Sheet

As a reminder, central banks issue currency and reserves, accounts banks hold at the central bank. (We often use "reserves" to refer to all accounts that banks hold at the central bank.) Banks may freely exchange reserves for cash, so together those form the stock of government-provided money. Central banks balance those liabilities with assets.

The ECB initially did not buy and sell government or other debt for monetary policy purposes, i,e., to create or extinguish new money. Instead, it created new money and lent it to banks. The loan counts as the asset against the liability of newly created money. Like the universe, central bank money can indeed spring from nothing. ECB loans to banks are called refinancing or repurchase operations, since the ECB lends against collateral. As Bindseil et al. (2017) explain:

[8] https://www.ecb.europa.eu/press/pr/date/2020/html/ecb.pr200318_1~3949d6f266.en.html

> ...the ECB decided before 1999 that the Eurosystem would initially not have holdings of securities for monetary policy purposes, which it referred to as "permanent operations", because securities once purchased may be held for a long period until they mature, and because permanent operations were considered less neutral towards capital markets. Hence, it decided that it would use credit operations, which it also referred to as "temporary operations" because they would have relatively short terms of usually one day (marginal lending facility), one week (main refinancing operations) and three months (longer-term refinancing operations).

This structure, unusual for contemporary central banks, respected the Article 123 prohibition on monetary financing quoted above, and represents another good case of the ECB interpreting and elaborating on the founding principles.

The ECB's primary tool of monetary policy was to raise and lower the interest rates it offers on such credit operations. The ECB established a "corridor" for short-term rates. The upper bound of the corridor is the rate at which banks can borrow from the ECB under the marginal lending facility (MLR), and the lower bound is defined by the rate at which banks can deposit funds at the ECB's deposit facility (DFR). The corridor was wide, 2 percentage pionts, in the early 2000s, but has narrowed to 0.75 percentage points over time.

In the initial years, the Eurosystem consolidated balance sheet remained small. Excess reserves (reserves beyond those necessary by minimum reserve requirements) were negligible in size. In part, the deposit rate was below the lending rate, so banks had an incentive to minimize borrowing and simultaneously holding reserves.

In the December 31 2000 balance sheet,[9] for example, the Eurosystem's total liabilities were €835 billion, which included €125 billion bank reserves. This was backed by €117 billion gold, a charming historical relic, €274 billion foreign currency investments, €269 billion loans to banks (credit institutions),

[9] https://www.ecb.europa.eu/pub/annual/balance/html/all_balance_sheets.en.html

and a paltry €26 billion of securities of euro area residents denominated in euro (see Figure 3.1). Much of that debt was inherited from member state central banks in the transition to the euro, rather than the result of ECB purchases to create euros.

Two decades later in December 2021, the balance sheet[10] had expanded by a factor of 10 to €8,566 billion, with a substantial amount of government debt held as assets. The actions underlying this balance sheet expansion capture much of the monetary policy side of our story, quantiative easing via large-scale sovereign debt purchases. At the end of 2021, the ECB's assets included €2,202 billion "long-term refinancing operations," in which it lends new euros to financial institutions against collateral for several years, and €4,886 "securities held for monetary policy purposes," mainly government debt, but also corporate bonds purchased with newly created euros. The liabilities included €1,544 billion currency, €4,294 "Liabilities to euro area credit institutions related to monetary policy operations," essentially bank reserves. Capital plus reserves of the Eurosystem at the end of 2021 were €109 billion. The "revaluation accounts" of €555 billion can be seen as buffers that belong to national central banks. They capture unrealised gains on gold and foreign currency investments. In the event of mark-to-market losses, the revaluation accounts absorb those losses. By contrast, security holdings are booked at amortised costs, not market values. Therefore unrealised losses on bond holdings stemming from the increase in market yields since end 2021 are not visible from the published balance sheet.

Originally, the ECB controlled the size of its balance sheet closely. The ECB specified an interest rate, and offered a fixed amount of funds to lend at that rate. Banks wishing to borrow from the ECB only received a "partial allotment" of the funds they requested. This system discouraged banks from borrowing from the ECB in order to finance other investments.

Shortly after the collapse of Lehman Brothers in September 2008, the ECB switched to "full-allotment" procedure, lending any amount banks wish

[10] https://www.ecb.europa.eu/pub/annual/balance/html/ecb.eurosystembalancesheet2021~f9edd2ff57.en.html

	2023-W50	2022-W52	2021-W52	2001-W52	2000-W52
Assets					
Total Assets	6,987,406	7,955,797	8,566,372	814,662	835,065
Gold and gold receivables	613,311	592,898	559,373	126,801	117,073
Claims on non-Euro area residents in foreign currency	507,615	523,217	500,090	264,607	258,688
Claims on Euro area residents in foreign currency	14,192	20,418	24,554	25,200	15,750
Claims on non-Euro area residents in euro	15,045	14,126	12,982	5,736	3,746
▸ Lending to euro area credit institutions denominated in euro	502,721	1,324,347	2,201,882	203,597	268,648
Other claims on euro area credit institutions denominated in euro	27,010	31,063	26,553	487	578
▸ Securities of euro area residents denominated in euro	4,905,674	5,102,194	4,886,484	27,981	25,958
General government debt denominated in euro	20,984	21,589	22,168	68,729	57,671
Other Assets	380,855	325,945	332,287	91,523	86,953
Liabilities					
Total Liabilities	6,987,406	7,955,797	8,566,372	814,662	835,065
Banknotes in circulation	1,556,572	1,572,033	1,544,386	278,110	371,370
▸ Liabilities to euro area credit institutions related to monetary policy operations denominated in euro	3,725,215	3,998,889	4,293,938	142,595	124,642
Other liabilities to Euro area credit institutions in euro	36,201	78,303	76,674	34,757	305
Debt certificates issued	0	0	0	2,939	3,784
Liabilities to other Euro area residents in euro	259,795	564,639	757,066	50,902	57,038
Liabilities to non-Euro area residents in euro	232,679	540,725	709,957	9,446	10,824
Liabilities to Euro area residents in foreign currency	17,327	11,681	14,106	2,525	807
Liabilities to non-Euro area residents in foreign currency	4,228	4,719	2,729	20,458	12,414
Counterpart of special drawing rights allocated to IMF	180,715	181,121	178,834	6,967	6,702
Other liabilities	250,246	302,728	324,596	78,073	73,452
Revaluation accounts	604,185	586,384	554,814	125,309	117,668
Capital and reserves	120,242	114,577	109,272	62,581	56,059

Figure 3.1: Eurosystem consolidated balance sheet at the end of various years. Source: https://data.ecb.europa.eu/publications/ecbeurosystem-policy-and-exchange-rates/3030616

to borrow at a fixed rate.[11] The reserves supply curve became completely flat. This encouraged balance sheet expansion, and encouraged banks to borrow from the ECB in order to invest in sovereign and corporate debt that the ECB could not buy directly.

This policy differs from that of the US Federal Reserve, which since 2008 targets the interest paid on overnight reserves, but also fixes the supply of reserves and the size of the balance sheet. (The more recent policy of offering reverse repo contracts whereby money market funds may lend to the Fed up to a limit allows some endogeneity to the US Fed balance sheet.) The Federal Reserve does comparatively little lending to banks, and its lending rate is not a main instrument of policy. Also unlike the US Fed, which only offers overnight reserves, the ECB has moved to longer-term deposits and lending. We do not mean these comparisons as critical of the ECB, but simply to point out that other regimes are possible. In fact, the Fed has by some analyses erred in letting the balance sheet shrink too much causing Treasury market volatility. The simplicity of the ECB's procedures and the fact that it automatically avoids such trouble are facts in its favor.

Financial Responsibilities

The ECB was initially not even tasked with a primary role in financial stability, bank regulation, or to be the lender of last resort backed by the printing press. These tasks are common to many central banks. But at the founding, bank regulation was supposed to remain a national affair. The reasons for this separation are likely as much political as economic. A "financial stability" mandate emerged later, largely through the ECB's interpretation of its role.

Article 127 (1) of the Consolidated version of the Treaty on the Functioning of the European Union[12], quoted above, continues,

> 5. The ESCB shall contribute to the smooth conduct of policies

[11] https://www.federalreserve.gov/monetarypolicy/files/fomc20100805memo02.pdf

[12] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A12016E127

> pursued by the competent authorities relating to the prudential supervision of credit institutions and the stability of the financial system.
>
> 6. The Council, acting by means of regulations in accordance with a special legislative procedure, may unanimously, and after consulting the European Parliament and the European Central Bank, confer specific tasks upon the European Central Bank concerning policies relating to the prudential supervision of credit institutions and other financial institutions with the exception of insurance undertakings.

The ECB was not completely insulated from bank regulation, however. The Treaty allows that the ECB "shall contribute to the smooth conduct of policies pursued by the competent authorities" which means national central banks and regulators. Just what "contribute to" and "smooth conduct" means is obviously and deliberately elastic. The Treaty furthermore included an option that "prudential supervision" of the banking system could be at some point be assigned to the ECB.

The issue of how much bank and financial regulation the ECB could pursue was controversial. During the negotiations of the Maastricht Treaty, Germany opposed the inclusion of Banking Supervision as a task of the ESCB. Article 127(6) was a compromise. See Chapter 10 in Lastra (2015).

Over time, the ECB's financial stability and supervisory role expanded both formally and by precedent. In 2012, in the wake of the financial and sovereign debt crises, the Single Supervisory Mechanism was agreed to, based on this Article 127 (6) process. It was created as a new arm of the ECB and began its operations in November 2014. The ECB's larger and larger interventions in markets rather obviously had an aim of financial stability, sometimes labeled as such and sometimes described as easing "monetary policy transmission."

3.5 The Institutional Structure of the ECB

The full monetary authority is the European System of Central Banks (ESCB), or "Eurosystem," consisting of the ECB and National Central Banks (NCBs). The latter still operate. Following common usage, but with some imprecision, we use the word "ECB" to refer to the entire Eurosystem unless a distinction is important.

The ECB is owned by the National Central banks, not by the EU, and the National Central Banks are in turn largely owned by member states.

Decision Making Bodies and Independence

The Governing Council of the ECB decides monetary policy. The Council consists of the six Members of the Executive Board of ECB, including President and Vice-President, and the Governors of the National Central Banks of euro member states. The Board prepares the meetings of the Governing Council. More than 3,500 staff from all over Europe work for the ECB in Frankfurt am Main, supporting the work of the Board.

Board Members are appointed by the European Union Council after consulting the European Parliament, which holds hearings with the candidates.[13] Board members serve for 8 years and cannot be reappointed. The governors of the national central banks are appointed by the respective national governments, without consultation of the European Parliament. Board members and national bank governors can only be removed from office in the event of incapacity or serious misconduct. Only the European Court of Justice can force an executive board member to retire.[14]

The board members consequently have great independence once appointed. The Statues of the ECB (European Central Bank, 2011) also formalize its independence:

[13] https://www.consilium.europa.eu/en/european-council/role-nominations-appointment/, also article 283 of the Treaty on the Functioning of the European Union, https://eur-lex.europa.eu/legal-content/en/TXT/?uri=CELEX:12016E283

[14] Article 11 of the Protocol on the Statute of the European System of Central Banks.

> In accordance with Article 130 of the Treaty on the Functioning of the European Union, when exercising the powers and carrying out the tasks and duties conferred upon them by the Treaties and this Statute, neither the ECB, nor a national central bank, nor any member of their decision-making bodies shall seek or take instructions from Union institutions, bodies, offices or agencies, from any government of a Member State or from any other body. The Union institutions, bodies, offices or agencies and the governments of the Member States undertake to respect this principle and not to seek to influence the members of the decision-making bodies of the ECB or of the national central banks in the performance of their tasks.

Independence is a means to an end, pre-commitment, and not an absolute. One might argue indeed that the ECB has too much independence and not enough accountability. There is little to stop the ECB if it chose to pursue quixotic policies. economic policies. Whether the ECB should have more independence or more accountability is an important issue for the political-economic side of EMU structural reconsideration. We do not explore the issue as it falls outside our expertise.

National Central Banks

National Central Banks (NCBs) did not disappear with the creation of the euro. National Central Banks implement monetary policy tasks decided by the Governing Council of the ECB. Operations are decentralised. Only tasks and functions of NCBs regarded as essential to the single monetary policy were shifted to the EU level. National central banks remain "financially independent" institutions, though the meaning of this independece is muddy. They also continue to carry out national tasks under national legislation. See Article 14.4 of the Statute of the ESCB and of the ECB (European Central Bank, 2011):

> National central banks may perform functions other than those specified in this Statute ... Such functions shall be performed on

> the responsibility and liability of national central banks and shall not be regarded as being part of the functions of the ESCB.

These functions include, for example, emergency lending (ELA) to commercial banks, the purchase of securities or the acceptance of government deposits or deposits from other central banks and international institutions (Deutsche Bundesbank, 2016).

The ECB is formally owned by the national central banks, who contribute capital. The "capital key" describes the shares of the national central banks in the overall capital of the ECB. This share is proportional to the share of population and GDP, equally weighted. The capital, about €10 bn, is per se financially insignificant (see Table 3.1), but has important consequences: Profits resulting from the Eurosystem's monetary policy — resulting primarily from the higher interest charged on loans to banks than paid on deposits and cash – are distributed according to each National Central Bank's capital key. Sovereign debt purchase programs are also made in proportion to the capital key. So the "capital" of the ECB has nothing to do with the present value of payments that a share in the ECB generates. It is largely an accounting device to apportion the fiscal consequences of ECB monetary policy across member states.

Eurosystem purchases of sovereign debts, however, are held by the respective National Central Banks, and profits or losses from those and other assets held by National Central Banks, even if for monetary policy purposes, are not shared (da Costa and Silva, 2023).

Thus, national central banks derive their income from three different sources: (i) their share in the overall (pooled) monetary income based on monetary policy operations, (ii) monetary policy assets/liabilities on their own balance sheet that are not risk/income shared and (iii) net financial assets that are not related to monetary policy. From this overall income they cover their operational costs. National laws prescribe whether and under which conditions a national central banks should use profits to increase its capital. The remaining profits are distributed as dividend to the national treasury. This is the final step by which Eurosystem operations end up as fiscal resources or drains to

member state governments.

3.6 National Central Banks and Recapitalization

Again, sovereign debts are held by the respective national central banks, not the central ECB. Thus, in the event of sovereign default or other problems, national central banks would first eliminate profit rebates to their treasuries. National central banks could fail, if their depositors (commercial banks) saw not enough assets to back claims and ran. If the national central bank threatened failure, then they would need to demand recapitalization from their respective member states. Then, member states would have to raise tax revenues or cut spending, now or in the future, in order to plug the hole in the central bank balance sheet.

As with many other rare scenarios, the euro area does not have a clear procedure for recapitalization of the national central bank. The Treaty does not require member states to guarantee positive capital of their national central bank. It is silent about recapitalisation of national central banks following large losses. There is no established euro area wide criterion, rule or process for recapitalization. Recapitalization depends on specific national laws and policy decisions by national governments. Though national governments would be expected to recapitalize their national central banks, there is also a lot of income and risk sharing between national central banks and the ECB, so it is not in fact clear who will end up recapitalizing the Eurosystem as a whole. Finally, a country that defaults on its bonds is not likely to be in a strong position to recapitalize its national central bank.

3.7 Summary

In sum, the initial EMU design aspired to a separation between monetary and fiscal policies. Fiscal policies, in line with fiscal rules, would always stabilise debt at low levels. In extremis countries would default, though that was implicit. Monetary policy would ensure price stability unhindered by fis-

cal pressures. Bank regulation and lender of last resort or other banking crisis management was left largely to member countries, in a still-fragmented banking system.

However, monetary and fiscal policy are always intertwined. The initial architecture of the euro included walls between fiscal and monetary policy to limit the resulting pressures. Those included debt and deficit limits, a clear prohibition of monetary financing, and the fiscal no-bail out principle. Companies, banks, and even member states that are in trouble need to adjust or default rather than receive fiscal or monetary bailouts, without even temporary assistance.

There was also a contradictory view: Sovereign default or bank failure are unthinkable events that must be prevented at all costs, rather than prepared for and accepted as the cost of monetary union. This view was not easily and directly visible from what was written in the Maastricht Treaty. But it was rather reflected in the gaps, in what was missing, and not explicitly prepared for or regulated in the Treaty. The second premise is so far dominant, and perhaps it was not mentioned because it seemed so obvious that nobody needed to mention it. Over time this view may increase pressures to "solve" debt and other problems with inflation.

And indeed, during the run-up to the first two crises, complacency and myopia prevailed, leading politicians undermined fiscal rules and the gaps in the Treaty were not addressed, to the contrary they were allowed to influence behaviour of banks and investors in a way that weakened the original design and contributed to the depth and costs of the subsequent crises.

Chapter 4

Stress builds in a quiet decade

The first years of the euro were years of economic and financial quiet, especially compared to the following years. Yet it was also a time in which stresses in the euro's design started to build up.

Contrary to the founding vision, governments ran large deficits. France and Germany breached debt and deficit limits. Greece, Italy and a few other countries used the low interest rates generated by joining the euro to borrow, financing a consumption boom of imported goods. Some of those deficits were financed by a build up of Target2 balances inside the ECB.

4.1 Debt and Deficits

On February 12, 2002, only three years after the introduction of the euro, and in the wake of the recession of the early 2000s, a number of countries breached the 3% of GDP deficit rule, including the two largest economies, Germany and France.

The European Commission recommended that the Council of Ministers of Economics and Finance Ministers (Ecofin) issue a warning to Portugal and Germany about their deficits. The Council voted to ignore the recommendation. A few months later, on November 2002, the Commission started a procedure against Portugal, whose deficit in 2001 reached 4.1% of GDP, and the following year the Commission tried to start a procedure against Germany

and France. This effort did not succeed: In November 2003 the Council of Economics and Finance Ministers decided to ignore the Commission recommendation, and it suspended the procedure, directly contravening the relevant fiscal rules (Chang, 2006).

Observing the ineffectiveness of the debt and deficit-control procedure, the European Commission tried to revise the rules. But both French President Jacques Chirac and German Prime Minister Gerhard Schroeder argued in favor of a softening of the rules.

The final compromise, reached in March 2005, added more flexibility to the pact, among other provisions by allowing countries to borrow in recessions, with slow repayment in normal times. It replaced actual deficits with "structural" fiscal balances derived from estimates of potential GDP, and it extended deadlines for correcting such deficits, up to 5 years in case of major events. Looking at structural deficits is reasonable in principle, as countries should borrow in recessions and repay in good times. But it suffers the obvious pitfall, that potential output, output gap, and thus structural balances are hard to estimate in real time and easy to be optimistic about. Recessionary falls in GDP often have a permanent as well as a transitory component.

The ECB criticised the changes to the corrective arm that were placing "greater emphasis on flexibility and discretion in subjecting countries to the excessive deficit procedure and in requiring prompt corrective action." In rather strong terms by central banking standards, [1]

> In the view of the Governing Council of the ECB, changes to the corrective arm entail risks of weakening the SGP [Stability and Growth Pact]. That is why it had recommended not to modify the corrective arm and expressed its serious concern about these changes in its statement of 21 March 2005.

The Bundesbank was even more outspoken:[2]

[1] "The reform of the Stability and Growth Pact," ECB Monthly Bulletin, August 2005, https://www.ecb.europa.eu/pub/pdf/mobu/mb200508en.pdf

[2] "The changes to the Stability and Growth Pact," Deutsche Bundesbank,

> The outcome of these decisions [of the European Council] will jeopardise the aim of achieving sustainable public finances in all EU member states participating in monetary union. ... A particular worry from the perspective of a central bank is that public finances which are not lastingly sound make a stability-oriented monetary policy difficult.

One may object that 3% of GDP is a tight deficit limit, and countries fighting crises have borrowed and repaid more than that. But the promise was made, and at the first occasion when the rules became inconvenient for the two largest members of the euro area the promises were broken, suggesting what new promises might be worth.

In the meantime, the peripheral countries in the euro area were reaping, and to some extent squandering, the benefits of monetary union. By joining the euro, they had effectively precommitted that they would no longer inflate or devalue their way out of the next crisis but instead face the high costs adjustment or default. Therefore, they would stay out of such crises to begin with; bond investors did not need to fear inflation and devaluation; capital and goods could flow freely out as well as in and did not have to fear nationalization or export and capital controls. Investors and banks became willing to lend across borders without requiring a hefty interest-rate premium to guard against these possibilities, to governments, to companies, and to individuals.

The Greek state, which adopted the euro in 2001, for instance, saw the interest of its 10 year bond drop from 22% to 3.6% between 1994 and 2003. Facing much lower interest rates and an abundant credit supply, people, businesses, and governments borrowed heavily. Not all borrowing went to capital investment, but also to support consumption. That is not necessarily bad: A country that has become suddenly a good place to do business will borrow to finance capital investment for that business, but can also borrow to consume a bit today of tomorrow's bounty.

In the event, in several countries borrowing to finance consumption, con-

Monthly Report, April 2005, https://www.bundesbank.de/resource/blob/706528/f741454b9a581fdef80f847a169ca888/mL/2005-04-changes-stability-data.pdf

sumer durables, and residential housing (also a consumer durable, really) was, at least in retrospect, overdone relative to productive investments that would eventually repay loans. Porsches went South, paper promises went North.

Some research suggests that failure to reform was tied to low interest rates and strong capital inflows in the early 2000s (see Fernández-Villaverde, Garicano, and Santos (2013) and Gopinath et al. (2017). Market expectations that EU institutions and member states would likely avoid sovereign default even in case of insolvency reduced the chance that weak country fundamentals would lead to increased sovereign credit risk premia and cross-country interest rate spreads and thus removed an important force for needed reforms. Hence misaligned incentives may have not just led to a lack of financial and fiscal safety nets, but may have contributed to governments in the euro area failing to confront the longstanding need for structural and micro-economic reforms.

The ability to borrow at very low rates set off a "soft budget constraint" mentality in governments. Governments, like many households, focused on low debt service costs rather than the stock of debt to be repaid. Countries abandoned efforts to reduce future primary deficits, and also abandoned effort to introduce growth-enhancing but politically costly reforms (Fernández-Villaverde, Garicano, and Santos, 2013). Greece, for example, abandoned in 2001 a plan to reform the pensions to make them sustainable. Portugal saw public debt grow from 51.2% percent of GDP to 92.4% in the 10 years to 2010. In Spain, the inflow of investment was channeled by the semi-public Savings Banks, the Cajas, providing the financing needed to fuel real estate projects, often run by developers and local politicians that sat on the boards of the Cajas. Ireland financed a huge real estate boom. In Portugal and Greece the government itself channeled large amounts of new debts.

The attitude that low interest costs allow government largesse is not unique to these countries and period. Deficits and debts around the world ballooned in the late 2010 zero-bound era, with prominent economists and government officials opining that interest rates less than growth rates ($r \leq g$) mean one need not worry about debt and deficits in the US, UK, and Japan and overall Eurozone. Households also often focus on monthly payments when

borrowing to finance cars or houses.

Challe, Lopez, and Mengus (2019) document empirically that those countries that were net recipients of capital over the decade experienced a significant decline in the quality of their institutions, larger than other European or OECD countries. As they argue, governments with easy access to credit cannot commit to not bailing out domestic residents. If the government can borrow and not worry about repayment, why should its citizens do so?

In sum, even in the relative quiet period before the financial crisis, some of the institutions or safeguards intended to ensure the separation between fiscal and monetary policy and limit moral hazard were weakened. Fiscal rules were being ignored by the largest member states. And if France and Germany won't obey the rules, why should Greece, Italy and Spain do so?

Bank regulation increased the building stress. Bank regulators held firmly to the second of our above inconsistent views, that sovereign default was an unthinkable disaster. Therefore, it would not happen. Ignoring centuries of history, they assigned zero risk weight to bank holdings of sovereign debts of countries in this brand-new currency union and did not in any way address this elephant in the room during the first decade of the euro. Zero risk weights, and zero concern by regulators, distorted incentives of banks, offering an easy way to increase leverage and share prices by buying risky public bonds without any need to hold more capital. In this way, bank regulation gave another green light to governments to borrow, and helped to reduce the interest rates at which they could do so. If the regulators treat it as risk free, why should banks not keep their exposures or even help "their own" government to by buying their bonds, no matter how highly indebted the country? If it's risk free, even a small interest rate spread seems an arbitrage, and that regulatory treatment makes it hard to resist pressure to buy sovereign debt.

It is also interesting that the national central banks of the Eurosystem apparently increased their own holdings of debt securities issued by euro area governments between end 2004 and end 2009 by about Euro 194 billion.[3] [4]

[3] See Breakdown of Eurosystem aggregate balance sheet.ECB Website.

[4] Historical data source with slightly different aggregates: ECB Monthy Bulletin, Sta-

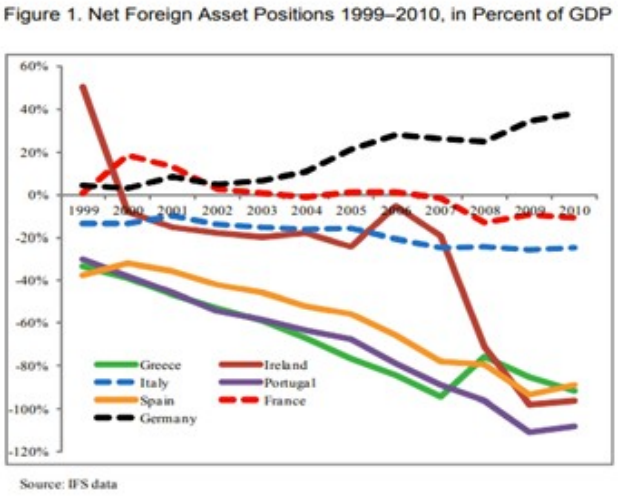

Figure 4.1: Net International Investment Position of selected countries. Source: Chen, Milesi-Ferretti, and Tressel (2012)

This was not part of the official ECB's monetary policy. The ECB only started purchasing debt from three crisis countries in May 2010. It was thus likely part of the "national tasks" of national central banks which are covered by the agreement on net financial assets (ANFA). In any case, it is not excluded that some national central banks in this way might have provided signals and incentives to market participants that lowered default risk premia, well before the sovereign debt crisis began in 2010.

Increasing debts supported larger current account deficits, as shown in Figure 4.1. Prices diverged across the euro area, and with them effective real exchange rates. (With a common currency the nominal exchange rate is one. But if prices are twice as high in one country as another, one can think of that as a real exchange rate of 2:1.) These events, together with high debt-financed private and government consumption are often called macroeconomic "imbalances."

tistical Annex, Aggregate balance sheet of area MFIs, Eurosystem, column 7, Holdings of securities ..., general government.

They did not go unnoticed. But in spite of repeated warnings from the ECB – not least from ECB President Trichet in hearings at the European Parliament and meetings of the finance ministers of the euro area member states or "Eurogroup" — these growing imbalances were largely ignored by governments of euro area countries, until it was too late to address them during good or, at least, relatively calm times. For example, already in November 2005, President Trichet told[5] the European Parliament:

> No significant progress has been made in fiscal consolidation, and the outlook for countries with excessive deficits is a matter of great concern, as there is a high risk of commitments for this year and the next not being met. ... In some euro area countries, wage developments have substantially and persistently exceeded labour productivity growth, leading to relatively strong and sustained increases in unit labour costs, higher inflationary pressures and losses in competitiveness.

4.2 Balance of Payments adjustment and the ECB

Adjustment without Nominal Devaluation

Outside a currency union, a banking crisis, elevated risks of sovereign default, or a roll-over crisis can result in currency devaluation. The East Asian crises of the late 1990s are a classic example. Loans to banks or governments denominated in the domestic currency become worth less via devaluation of that currency rather than by explicit default.

A change in fundamental forces of international trade and investment can be accommodated by the same mechanism. High relative goods prices in a (home) country are a signal that it is a good time to import goods to that country either for consumption or investment, exporting financial assets (claims on the home economy) in return. High wages can signal that a country is productive, and is a good place to produce some goods to trade for imports. A high

[5] https://www.ecb.europa.eu/press/key/date/2005/html/sp051121.en.html

nominal exchange rate can provide these signals. When fundamentals of the home country deteriorate and it is no longer a good time to import goods and export capital, the price of goods in the country, no longer scarce, falls relative to other countries. When the country is less productive, its wages, in terms of imported goods, fall. A nominal devaluation can implement such a relative price and wage changes quickly without changes in the posted prices and wages within the home country. A devaluation also quickly devalues long-term nominal assets that are denominated in domestic currency which foreigners may have bought to finance previous trade.

Nominal devaluation is not possible, however, for individual countries in the euro area. Indeed, the precommitment against nominal devaluation that came with monetary union was precisely what let some countries borrow large amounts from foreign investors at low rates, import more goods and run trade-deficits in the first place, especially during the first decade of the euro. Members of a currency union can still devalue in real terms, through lower prices and nominal wages, often called "internal devaluation." Such real devaluation via falling prices is usually thought to be more painful and to take longer. A sudden end to imports can also be economically disruptive. However, nominal devaluation has the same effect on all wages and prices, where "internal devaluation" adapts to the differences between traded and non traded goods and services, and to the sectoral shocks that cause the change in the first place. Nominal devaluation is followed by such relative price changes. Historically, such devaluations have not been economic panaceas either.

Country Fundamentals and Balance of Payments

As monetary union came without political and fiscal union, the balance of payments of individual member states still play a major role. In case of sub-optimal economic policies in country X, or adverse shocks such as higher import prices for energy interact with pre-existing structural weaknesses, the economic fundamentals of country X worsen relative to other member states. Investors will ask for higher risk premia to compensate for increased sovereign or bank risks and withdraw their short-term loans. This will make it more costly for the country to finance current account deficits and roll over outstanding

private and public debt. A bank-sovereign doom-loop might result, if domestic banks have a large exposure of towards the sovereign. This could trigger an additional outflows of private funds. Under current banking regulation the single supervisor (SSM) cannot prevent excessive sovereign exposures. It is mainly up to regulators and national governments and to address these risks, or to recapitalise domestic banks, if this is regarded necessary.

Such balance of payment problems normally require difficult policy adjustments by the national government. If fiscal, structural and financial sector policies are not credibly improved, capital will continue to leave the country and (net) imports will have to decline - people will have to reduce consumption. Relative wages and prices will have to fall. If this is delayed, unemployment will increase more strongly. Such balance of payment problems provide an important signal for the public and powerful incentive for the government of country X to adjust and improve its policies. Moreover, banks, knowing that such deposit outflows may happen, will have an incentive to ex-ante limit their risks - e.g. by reducing maturity mismatch and sovereign exposure - and strengthen their capital buffers.

The ECB and private cross-border risk-sharing

However, such signals and incentives may be weakened as private cross country financing of trade deficits, or private capital outflows, in the euro area can be replaced by central bank target2 loans. Theses are cross-border loans provided by the ECB to member states via their national central banks without risk premia and without collateral exchanged between the ECB and national central banks.

Such target2 balances already started to emerge before the Lehman collapse. For example, in August 2008, target debt of the national central banks of Belgium were EUR 56 billion, Greece EUR 16 and Ireland EUR 15 billion. A few months later, by end 2008, such liabilities towards the ECB had sharply increased and stood at EUR 104 billion for Belgium, EUR 35 billion for Greece and EUR 44 billion for Ireland.

In certain cases, target liabilities can provide an early indication of

stress building up in the domestic banking system. For example, if sophisticated and/or well-informed investors see increasing banking and/or sovereign risks in country X, they can reduce their exposure to such risks by withdrawing their deposits from banks in country X and bringing them to banks in country Y. If the ECB provides additional loans to banks in X, the private capital outflows are replaced by target2 loans.

Target2 loans can also emerge from trade flows. Suppose a bank in Portuguese imports a car from Germany. You would expect that the private Portuguese purchaser directs her bank to send euros to the Portuguese central bank, which sends euros to the German central bank, which sends them to the exporter's bank account. However, the central banks do not actually request a private sector payment of euros from Portugal to Germany. They transfer euro claims aiming each other. The Portuguese central bank agrees to owe the euros to the ECB, which then owes euros to the German central bank.

AS the examples shows, such target2 balances are not just an accounting phenomenon, they are real loans provided by one national central bank via the ECB to another national central bank that finance cross-border flows of goods (or assets). The creditor central bank holds a highly liquid valuable claim on the debtor central bank.

Chapter 5

First Crisis: The Global Financial Crisis

The first decade of the Euro was quiet. Inflation stayed close to the 2% upper bound of the ECB's inflation target range. But in several euro area countries, private or public debt stocks and macro-economic stresses were mounting, and institutions were starting to deteriorate, both at the European level and in some member states. When the Global Financial Crisis hit Europe, the repercussions for the Eurozone initially appeared relatively mild. But in fighting this crisis, governments and the ECB started down a path from which they would eventually find it increasingly hard to extricate themselves.

Sometimes stresses build, are addressed and fade away. No institution is perfect, no set of rules can foresee every event. Sometimes institutions hold together anyway. Sometimes, however, the system fails dramatically. Such was the case in the twin crises of the 2007-2012 era. While the fiscal-monetary interactions underlying the euro design on the monetary side were at least well considered, few people had worried about the faults of financial and banking regulation, as they did not worry in the US and other countries. That proved a costly oversight.

5.1 The ECB as a Lender of Last Resort to Banks

German and French banks under pressure

The repercussions of the Global Financial Crisis that started in the United States in the Spring of 2007 began to be felt in Europe shortly afterwards. The first ones to suffer them were European, particularly German, banks exposed to losses in the US mortgage or asset-backed security markets. IKB, a German lender, had set up and guaranteed an affiliate to invest in US mortgage backed securities. On July 29, 2007, a large state-owned bank (KfW) recapitalised [1] IKB, in effect a bail out with taxpayer money. Other German banks including WestLB and Sachsen LB, both owned by regional governments, found themselves in similar trouble. In the end, taxpayers bore the losses, as the banks' creditors were bailed out. BNP Paribas, a large French bank, froze withdrawals from some investment funds in August 9, 2007. Banks that were regarded as fragile began to have problems borrowing in commercial paper and inter-bank markets.

Seeing the financial system at risk, the ECB introduced the "fine-tuning" operations (FTOs). Under this program, the ECB provided a fixed amount of funds,€95 billion outstanding at its peak, at a variable rate that cleared the market, in exchange for a wide schedule of marketable and non-marketable securities (Runkel, 2022a).

As a result of these operations, borrowing from the Eurosystem started to replace the unsecured inter-bank market for banks that were in trouble, or that were considered as fragile by the market. Banks paid rates for financing from the ECB that did not reflect market assessment of their riskiness. Such borrowing allowed the creditors of these banks to take out their deposits without losses.

How such policy fit in with the ECB's mandate to conduct monetary policy in pursuit of price stability was a tricky question. In a press conference

[1] https://www.wsj.com/articles/SB118670471880693703

in September 2007, President Trichet rationalized this financial intervention by evoking for the first time the "separation principle:"[2] These loans to banks were not, indeed, monetary policy stance interventions, i.e. they did not aim at a loser monetary stance. Nor, however, were they directly lender-of-last-resort functions to stop bank runs per se. Rather, they were justified as interventions to maintain the transmission of monetary policy, to preserve the functioning of the interbank market, and ensure that the ECB could use its interest rates to address too high inflation (or "upside risks to price stability").

The Irish banking crisis

Following the (in retrospect) relatively peaceful interlude between Spring 2007 and the Spring 2008, the US financial crisis exploded over the summer and fall of 2008. After a summer of large failures, most notably Lehman Brothers, a "run on repo" broke out in October 2008, in which short-term financing via repurchase agreements dried up. A severe recession broke out, and real estate values began to fall around the world, so that mortgage lending losses spread from the small US subprime market to real estate and banks everywhere.

In Europe, emerging local real estate crises had a larger impact eventually than international exposure on the overextended lenders of Ireland and, later, of Spain. Initially, the hardest hit countries in the EU were Latvia and Lithuania (see Figure 6.1). At the time, however, they were outside the Euro.

The three major Irish Banks, Anglo-Irish, Bank of Ireland, and Allied Irish, had used short-term lending, including from international banks and financial institutions, to fund long-term mortgage loans and securities investments.Their combined balance sheet was 500% of Irish GDP.[3] The Irish banks faced a sudden and massive outflow of this funding, for example from US money market funds that were no longer willing to invest in the banks' asset-backed certificates of deposit. On September 30th, 2008 the Irish Government guaranteed all the liabilities of the six largest Irish banks for 2 years, including bank bonds; a total of €440bn of liabilities (Tooze, 2018, p. 189)

[2] "Introductory Statement " by JC Trichet, September 6, 2007.

[3] Figure in the official "Ireland: Request for an Extended Arrangement-Staff Report", December 17, 2010.

. Some banks, particularly Anglo-Irish, turned out to be insolvent, not just illiquid. Thus guaranteeing the banks' debts, rather than painlessly stopping a multiple-equilibrium run, put a major dent in the finances of the Irish state, handing resources from Irish taxpayers to bank creditors.

The insolvency of Irish banks was due in part to the collapse of Irish housing market and construction sector, and the associated recession. These internal disruptions resulted in large losses of the banks on their loan books, including loans to highly indebted developers and mortgage loans. The sharp fall in property prices also strongly reduced collateral values.

The Irish and Icelandic bank crises reveal a central problem of international banking. If banks in a small country take short-term international deposits to finance long-term illiquid, in part international investments, to the tune of multiples of that country's GDP, they can exceed the country's ability to backstop the deposits with government provided deposit insurance or bailout guarantees. This is not entirely the story of the Irish case but it is an important possibility that design of the European financial system, with a common currency but local banking systems, regulation, and deposit insurance, must consider.

The Irish banking crisis also reveals a clear failure of national bank regulation and supervision, which allowed such huge amounts of short-term debt to finance longer-term and less liquid assets.

Although some EU countries including the Netherlands, Italy and France thought the moment called for an EU rescue fund, the German government turned down the idea, insisting each country deal with its own problems. The latter attitude ignored just how many German citizens and institutions were invested in Irish banks and thus were bailed out by the guarantee of the Irish state.[4] There would not be any agreement on common European rescue initiative for another one and half years, when the common financial support to Greece was agreed.

Even though the German government objected to Ireland's unilateral action, after heavy deposit withdrawals at Hypo Real Estate (which had a

[4] "France, Germany clash on financial rescue", Reuters, October 2, 2008.

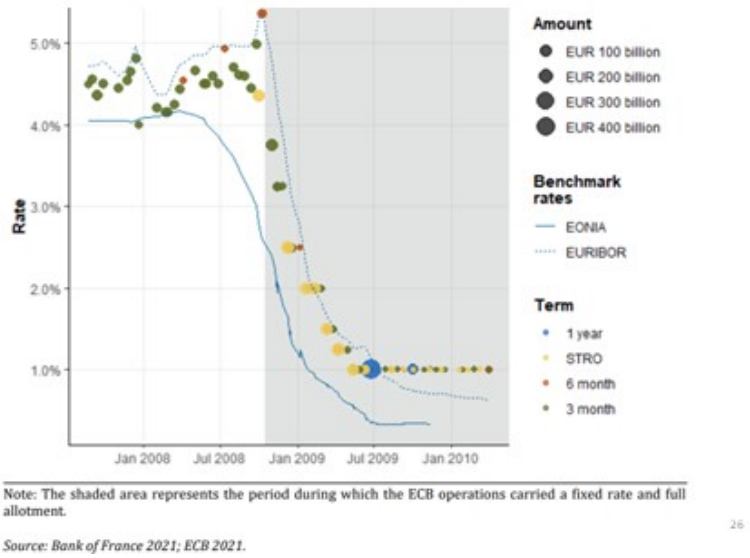

Figure 5.1: Interbank Rate and Full Allotment Credit Support Operations. Source: Runkel (2022a)

major exposure to Ireland via a subsidiary, and whose private bailout was failing), German Chancellor Angela Merkel declared in early October 2008 that all deposits of German banks were also guaranteed.[5] Other countries, such as Denmark, followed. For the ECB, such political and fiscal support for bank depositors was helpful in the short term, as it reduced pressures for large central bank loans or asset purchases to prop up banks. However, the German guarantee was just a political declaration. It did not provide any concrete collateral that the ECB could accept for lending operations to banks. The banks did not receive any money, capital, transfers, securities, or explicit, legally sound guarantees from the government. So it was not fully clear what would happen in case of a major bank run or solvency crisis, and where exactly the money would come from to stop it.

[5]New York Times, October 6, 2009. https://www.nytimes.com/2008/10/05/business/worldbusiness/05iht-hypo.4.16708030.html

5.2 Policy responses to the Lehman collapse

Fixed rate full allotment and expanded list of eligible collateral

The tensions were increasingly felt in the European interbank market. On October 15 2008, the Interbank Funding Rate, EURIBOR,[6] increased above 5% (see 5.1).

The ECB stepped in to provide further support to banks by greatly expanding the list of securities eligible as collateral, in both short and long-term refinancing operations, including low-rated, non-marketable private securities.[7] For the first time, these operations were generally full allotment. Banks could obtain any amount of funds, limited only by the amount of eligible collateral, at a fixed rate. Also, starting May 2009 the ECB expanded the program to include one-year "Long Term Refinancing Operations" at attractive rates, and continuing the expanded collateral policy.[8]

With the combination of these policies, the ECB ended up creating excess liquidity and lending large sums to Eurozone banks, some of which in turn used the money to buy sovereign bonds. Euro area banks (more precisely: monetary and financial institutions, MFIs) held EUR 1460 billion government debt securities in September 2008 (see Figure 5.2). They increased such holdings by EUR 356 billion by December 2009 (and by a total of EUR 445 billion by April 2010, the month before the ECB itself started to purchase sovereign debt of stressed member states).

This was a quite advantageous trade for the banks. Given that the ECB was accepting non-marketable collateral, in particular weaker banks could borrow at more favourable conditions than from the market. They could lock in long-term low-rate loans from the ECB, use the proceeds to purchase higher-yielding government bonds, and use the bonds as collateral for the loans. "Full

[6] The Euro Interbank Offered Rate was the daily reference rate based on average unsecured lending rates offered by banks to other banks. It was published by the European Money Markets Institute.

[7] https://www.ecb.europa.eu/press/pr/date/2008/html/pr081015.en.html

[8] https://www.ecb.europa.eu/press/pr/date/2009/html/pr090507_2.en.html

	2010-04	2009-12	2008-09
Assets			
Total assets	24,578.33	23,813.68	23,836.01
▼ Loans to euro area residents	11,875.70	11,805.68	11,811.68
General government	1,055.50	1,021.11	1,004.04
Private Sector[1)]	10,820.19	10,784.57	10,807.64
▼ Holdings of debt securities issued by euro area residents	3,404.23	3,321.88	2,678.84
General government	1,905.06	1,816.32	1,460.14
Private Sector[1)]	1,499.17	1,505.56	1,218.70
Holdings of equity and non-MMF investment fund shares	826.41	813.10	875.37
External assets	5,122.82	4,809.19	5,601.02
Fixed assets	226.01	228.66	211.71
Remaining assets	3,123.17	2,835.17	2,657.42

Figure 5.2: Consolidated balance sheet of euro area MFIs. EUR billions; outstanding amounts at the end of period. Source: ECB. Note: Data refers to the changing composition of the euro area. (1) Private sector refers to euro area non-MFIs excluding general government. See: https://data.ecb.europa.eu/publications/money-credit-and-banking/3031820

allotment" does not just allow banks to borrow against existing collateral; it allows banks to finance new investments, using the new investments as collateral for the borrowing. Normally, this spiral is limited by capital. Banks must get some of their funding for risky investment by issuing equity, not just by borrowing the funds. But borrowing from the ECB to buy sovereign debt required no addditional bank capital, as the sovereign bonds have no risk weight in such capital-adequacy regulation.

The main danger to this "carry trade" profit would be if the sovereign bonds defaulted. If the assets had longer maturity than the 1 year ECB financing, then there was also some risk that financing rates would rise. In both cases, since financing was provided to keep banks from losing too much money, it would have been natural to expect further support from the ECB or fiscal authorities.

In the end, in spite of periods with large risk premia on some sovereign bonds, neither default nor higher interest rates materialised, so this was a terrific deal ex post for the banks. That is, except for those banks that bought Greek bonds maturing after the Greek default in Spring 2012, whose troubles were to spark the next great intervention.

Banks also tended to buy bonds of their own sovereigns, sometimes encouraged to do so by their national regulators and governments. Consequently, Italian and Spanish banks ended up holding a large amount of Italian and Spanish bonds in this trade. That concentration of assets meant that defaults on those bonds would greatly imperil Italian and Spanish banks and thereby the Italian and Spanish economies. This trade, using the balance sheets of the banks to buy up government debt, lower its financing costs, and thus provide fiscal support – contributed to the sovereign debt crisis, by deepening and accelerating the linkage between the balance sheets of the sovereign and of its banks.

The resulting increase in "liquidity" (see Figure 5.3)— borrowing against collateral via fixed-rate, unlimited-allotment lending—effectively replaced a large part of the short-term unsecured inter-bank market, and especially so for banks perceived as weak or fragile by markets.

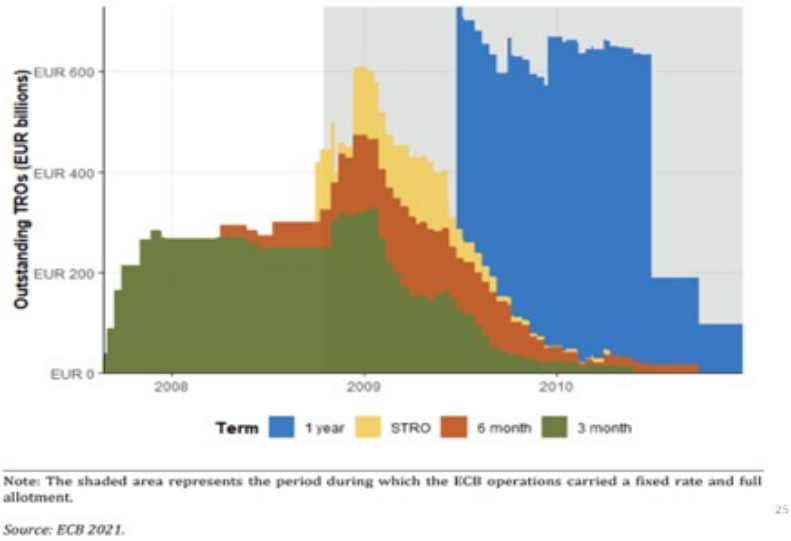

Figure 5.3: Outstanding refinancing operations (Aug 9, 2007-April 1, 2010). Source: Runkel (2022b)

The immediate banking crisis seemed largely over in Europe by spring 2009 as in the USA. Despite much agonizing about why didn't we see mortgage risk brewing, official Europe seemingly paid little or no attention to brewing sovereign risk. The financial crisis and its immediate aftermath in 2009 was notable for the absence of major institutional or structural action to deal with large and increasing public debt, current account deficits (importing more than exporting, financed by borrowing), unit labor cost differences across country and large differences in net international investment positions of the member states – borrowers and lenders.

More damning, with the wake up call that systemic banking crises *can* happen in the contemporary era; that such events are vital considerations for today's policy not just economic and financial historians; with the real-estate horse just out of the barn in spite of immense regulation designed to close those barn doors; Europe's governments and financial regulators still did *nothing* to address risky sovereign debt on bank balance sheets. That sovereign debt risks, macroeconomic, and international imbalances would magically vanish of their

own accord under the euro, despite the historical evidence to the contrary, seems strangely optimistic.

The ECB's Balance of Payment Support to some member states

Bank regulation, supervision, structure and thus banks' balance sheet risks differed a lot across member states. The excess liquidity created by the ECB thus ended up providing balance of payment support to member states with major banking sector weaknesses. In a sense the ECB effectively stepped in with public money, where national authorities (governments, bank regulators and supervisors) had failed to ensure resilient, well capitalised banks. As weak banks (and later troubled sovereigns) looked riskier, more likely to default, savers and investors increasingly withdrew their bank deposits and tried to sell government debt and private investments, in order to move their funds to less risky economies—the so-called "flight-to-safety." When many people try to sell or withdraw their funds, the value of investment in stocks bonds, and real estate falls, making the banks even more precarious. This capital flight must necessarily have as a counterpart a sharp turn of the country's current account. The country can no longer import as many goods as before by selling capital or borrowing money from abroad. Indeed, if the country is to redeem securities and wholesale cross-bolder loans at full value, to allow capital to "fly," it must now export more goods and services (relative to imports). The capital and current accounts always balance.

But such a switch from net importer to net exporter in a short time is hard, especially without massive changes in prices, rise in import prices and reductions in prices charged abroad for exports. It is so hard that governments often choose default or devaluation instead.

In similar cases outside a monetary union, the IMF often is called upon to provide financing, and it is understood that the financing supports a slower adjustment from net imports to net exports. IMF rescue packages usually come with conditions (embedded in an adjustment program) to reform budgets, clean up banks, and adopt growth-enhancing reforms, and in particular export-

enhancing reforms. Absent an euro area body able to provide fiscal financing against conditionality, into the breach stepped the ECB.

The Eurosystem, by offering large scale loans to banks collateralized by sovereign debt and also non-marketable private debt, and by buying debt outright, thus effectively provided net loans to countries facing financial (and later also fiscal) troubles (via the national central bank bank and the domestic banking system) so the countries could continue to finance imports. The alternative road that was not taken, or only delayed, loans by other member states—would have had similar basic economic (but not political) effect. It's interesting that states which normally like to promote exports are not willing to go quite the distance to providing the money that buys the exports. But obviously the knowledge that it can't go on forever was a stronger influence.

Initially, as can be seen from target2 balances, at the end of 2008, the ECB has already provided substantial balance of payment funding to Ireland, Belgium and Greece, via the national central banks.

By mid-2009, the target2 debt of the national central banks of Ireland vis-a-vis the ECB had already increased to almost 100 billion Euro. The target2 debt of Greece at that point, a few months *before* the Greek debt problems were made public by the new government, was already 45 billion Euro - perhaps some sophisticated investors had had a closer look - and then shot up to 83 billion Euro by April 2010, shortly before the Greek EU/IMF adjustment program was agreed (see next Chapter). At this stage, in contrast, the Italian central bank still had positive target2 balances, i.e. a net claim on the ECB (see Figure 5.4 and Section 4.2 for the explanation of the meaning of these accounting balances.)

	2010-04	2009-06	2008-12
European Central Bank	-6.71	69.02	234.89
Austria	-26.64	-26.65	-35.70
Belgium	-32.80	-55.94	-104.23
Cyprus	-9.04	-8.87	-6.54
Finland	6.03	4.99	5.20
France	-52.55	-50.21	-117.68
Germany	213.68	171.05	115.29
Greece	-82.60	-44.72	-35.35
Ireland	-41.82	-98.79	-44.36
Italy	43.92	73.59	22.92
Luxembourg	55.94	33.97	42.12
Malta	-0.73	0.23	-0.66
Netherlands	17.71	-1.47	-18.79
Portugal	-33.79	-13.66	-18.95
Slovakia	-14.15	-14.99	-
Slovenia	-2.56	-3.71	-3.57
Spain	-35.74	-35.26	-34.99

Figure 5.4: Target Balances euro billion. Outstanding amounts at end of period. Individual TARGET balances of euro area NCBs are not provided for dates before the accession of their countries to the euro area. Source: ECB

Chapter 6

Second Crisis: The Sovereign Debt Crisis

During the sovereign debt crisis, a resolution method was worked out, and successfully applied in form of EU/IMF financial assistance programs to Greece, Ireland, Portugal and Cyprus. This method was refined over time and finally put on a sound institutional basis (ESM Treaty). In that method, (i) a country could obtain crisis financing (at concessional interest rates) from other member states, but (ii) in return for "conditionality," a commitment to a program of fiscal and economic reforms, and (iii) a sovereign debt restructuring was possible in which bond holders took some losses. The latter was applied (to Greece in 2012, too late, but successfully). Such a regime removes pressure on the ECB to intervene. Spain also received financial assistance, but the conditionality was more narrow, mainly focusing on the financial sector, and the IMF was an observer, but not involved with its own financing and conditionality.

However, the emergence of this crisis management regime came only after a deep sovereign debt crisis, with a large ECB intervention. Sadly, it does not seem to be ready for use again in the larger sovereign debt issues that loom after the pandemic and energy crises. One of our main recommendations is that this mechanism needs strengthening.

The sovereign debt crisis manifested itself most clearly in the bond mar-

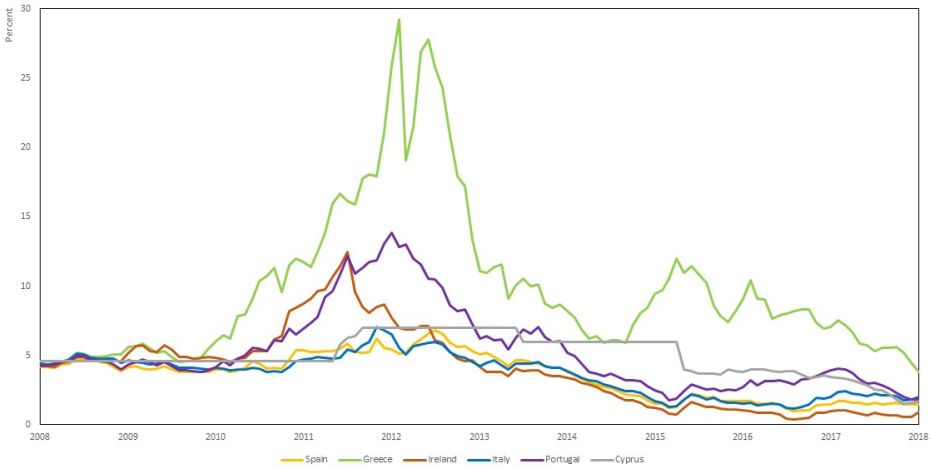

Figure 6.1: 10 Year Bond Rates in Euro Zone between 2008 and 2018. Source: ECB

kets, with the yields on Greek bonds moving above 10% in 2010 and reaching almost 30% at shortly before its debt restructuring (see Figure 6.1). Yields on Irish and Portuguese government bonds also increased strongly during 2010 and moved above 10% in 2011.

The shortcomings of the framework for monetary union (EMU) enshrined in the EU Treaties discussed above now became apparent and added to the costs of the crisis. The Treaty had neither foreseen any process, nor formed any institution, that could provide sovereign financial assistance loans, and impose conditionality on such loans to a sovereign facing a fiscal crisis. Neither were there rules or procedures on how the debt of a country in a fiscal crisis could be restructured in a predictable orderly manner.

6.1 The Crises in the program Countries and Italy

Greek Crisis: From State Debt to Banking Crisis and the First Bail-out

In October 2009, shortly after George Papandreou with his PASOK party had won the elections in Greece, the new Finance Minister Giorgos Papaconstantinou announced in an interview with Reuters that the fiscal deficit in 2009 would not be 6% of GDP, as previously thought, but likely more than 10%. Later, after some cleaning up of the statistics, the official deficit for 2009 was revised upward to above 15%.

Bond markets initially did not react strongly. However, over time, more bad news emerged. Fitch (Oct. 22 and Dec. 8, 2009) and Standard and Poor's (Dec. 16, 2009) downgraded Greece's bond ratings. Statements from the German government reduced hope for a bail-out, for example Angela Merkel, in a 17 Dec. 2009 speech at the German Parliament:[1]

> I also say with regard to individual countries with very high deficits: each individual member state is responsible for healthy public finances.

Bond investors started to lose patience. In January 2010 the yield on 10-year Greek government bonds (GGBs) moved above 6.5%, about two percentage points higher than early October 2009. (See Figure 6.1.)

While the German government was concerned about the domestic politics and moral hazard consequences of a bailout (see Mody (2018, p. 236-242)), the ECB was strongly opposed to any default, haircut, or burden-sharing with private bondholders. In the end this "no credit event" or "no default" view of the ECB, which was supported also by the US administration (Mody, 2018, p. 236-242), prevailed for about two more years.

[1] "Ich sage auch mit Blick auf einzelne Länder mit sehr hohen Defiziten: Jeder einzelne Mitgliedstaat ist verantwortlich für gesunde öffentliche Finanzen. https://dserver.bundestag.de/btp/17/17012.pdf

On 11 February 2010, the Heads of State and Government of the EU signaled that the Greek crisis had entered a new phase. Governments were considering financial assistance to Greece.[2]

> "We invite the Ecofin Council to adopt ... recommendations to Greece based on the Commission's proposal and the additional measures Greece has announced. The Commission will closely monitor the implementation of the recommendations in liaison with the ECB and will propose needed additional measures, drawing on the expertise of the IMF. ... Euro area Member states will take determined and coordinated action, if needed, to safeguard financial stability in the euro area as a whole. The Greek government has not requested any financial support."

The rhetoric from the Heads of State and Government bears striking similarities to the standard language of IMF financial assistance and programs. In spite of the negative in the last sentence, a financial assistance cum adjustment program with IMF involvement was only a matter of time.

ECB President Trichet of the ECB made a subsequent statement that confirmed that a new and specific form of monetary-fiscal policy interaction in the sovereign debt crisis was in the making. In particular, President Trichet made clear he had agreed on an active role of the ECB in potential future program negotiations and monitoring with Greece:

> I confirm that the ECB will work with the European Commission in monitoring the implementation of the recommendations by Greece and will work with the European Commission on proposals for necessary additional measures.

By stressing the need to "safeguard financial stability", President Trichet made clear that he was expecting financial assistance without a bail-in of private sector creditors holding (large) claims on banks or the Hellenic Republic.

[2] https://www.consilium.europa.eu/media/21428/20100211-statement-by-the-heads-of-state-or-gover pdf

The exclusion of any losses, via an upfront sovereign default, haircut, restructuring, or bail-in of large bank deposits, reduced immediate financial stability concerns, but it also increased longer-term risks for the ECB. Would there (always) be enough financial assistance from member states and the IMF to finance the Greek government and possibly to recapitalise Greek banks, if debt restructuring was excluded? Would euro area fiscal authorities and the IMF resist putting pressure on the ECB to monetize excessively high debt, or to provide central bank loans to banks holding sovereign debts? Would they thereby delay bank recapitalisation, and bank shareholder losses? Would they allow banks to continue buying national government bonds? And, of course, what did the precedent set for Greece mean for other teetering and larger sovereigns?

It still took a couple of months until all euro area governments were convinced to use the resources of their taxpayers to make holders of Greek government bonds whole. In March 2010 the German Finance Minister Schaeuble still floated the possibility of Greece exiting the euro area.

In April, however, in an interview with *Der Spiegel*, it became clear that he had changed his mind. He rejected the application of the "no bailout" principle, and endorsed the view (wrong in our view) that a sovereign default is the same as default of a large, leveraged and central financial institution: "We cannot allow the bankruptcy of a euro member state like Greece to turn into a second Lehman Brothers. Greece is just as systematically important as a major bank" (see Mody (2018)). This central change in mentality, or reinforcement of the mentality that sovereign default would bring unthinkable calamity proved powerful in the years ahead, despite the later successful Greek restructuring.

On April 11, European governments and the IMF announced that they would set up a financial rescue package and that "the Commission, in liaison with the ECB, will start working on Monday April 12th, with the International Monetary Fund and the Greek authorities on a joint program . . . " [3]

On May 2, 2010 the Eurogroup and the IMF approved financial assistance loans to Greece of in total €110bn, but subject to conditionality en-

[3] https://www.consilium.europa.eu/uedocs/cms_data/docs/pressdata/en/ec/113686.pdf

shrined in an adjustment program.

It is important to remember that the Greek debt crisis, like most debt crises, initially was primarily a rollover crisis. Governments borrow new money to fund ongoing deficits, to pay interest on outstanding debt, and to pay principal of maturing debt. Greece was not trying and failing to borrow a large new amount, but mainly borrowing new money to pay off principal of maturing debt. A few months or even a year of Greek interest costs and deficits are not large compared to Greek or EU resources. Rolling over the principal is. Financial crises are always and everywhere about short-term debt, the saying goes, and no less for Greece.

Upfront debt restructuring—where creditors get new debt that has longer maturity, pays a lower coupon than market rates, with a lesser principal amount and market value than originally promised—was excluded, mainly due to fears of "contagion" and "financial instability."

Where is the "contagion"? At best, investors learn from a restructuring that Germany and other member states or the ECB are not going to bail out Greece, so the chance of them bailing out Italy is lower. At worst, it is a paternalistic view that investors are easily frightened children.[4] Does "financial instability" or "crisis of the financial system" just mean that someone somewhere might lose a lot of money on risky investments that have so far yielded great returns? How is that now a government concern?

There was one concrete and genuine concern: Despite a huge financial and banking crisis in the rear-view mirror, some German, French, Dutch, Belgium and Greek banks were loaded up with Greek debt, carrying zero regulatory risk weight, right under the eyes of national regulators. A Greek restructuring would have led immediately to a taxpayer bailout of some of those banks. From this perspective, the statement by the German Finance Minister on April 2010[5] that "Greece is just as systematically important as a major bank" makes

[4]For the contemporaneous perspective of one of us on this point, see Cochrane, "Contagion' and Other Euro Myths", *Wall Street Journal*, Dec. 2, 2010.https://www.wsj.com/articles/SB10001424052748704594804575648692103838612

[5]https://www.telegraph.co.uk/finance/financialcrisis/7608361/Germany-warns-of-Lehman-crisis-if-Greece-defaults.html

some sense. Greece is not the bank, Greece is the mortgage-backed security. And the banks have additional loads of Italian, Portugese, Spanish and Irish debt too. If so, however, the statement admits a major failure of the architects of the euro and and even larger failure of banking regulators. Perhaps in the 1990s one can forgive an attitude that major financial crises are relegated to the distant past or emerging markets, but two years after banks threatened to collapse from real estate investments, did it really take that much imagination to look around and worry what other large investments might cause trouble?

Lack of upfront restructuring meant that the planned fiscal adjustment had to be larger. What bondholders do not pay, beyond any fiscal transfers or ECB monetization, Greek citizens have to pay. And they would do so quickly. Governments borrow, planning to repay over decades. But any consolidation program repays debts much more quickly. Faster repayment is often needed to re-establish credibility that had been squandered by past governments. Taxpayers, recipients of social transfers, and public wages in Greece were thus confronted with a severe fiscal consolidation program.

At the same time, banks and investors holding Greek government bonds maturing in the course of the following two years, before early March 2012, were fully bailed out, mainly with the help of financial assistance funds provided by the euro area member states and the IMF. In addition, the ECB's "Security Market Purchase" program (SMP) allowed bondholders to sell their longer-term bonds to the ECB at higher prices than would have been available from private market participants without SMP intervention. Those who sold Greek bonds to the ECB avoided large losses associated with the subsequent debt restructuring in March 2012.

Greece Again: The Only Sovereign Debt Restructuring (So Far)

Only a few months after the Greek fiancial assitance program had been agreed, during a summit in Deauville, France in October 2010, French President Sarkozy and German Chancellor Merkel put sovereign default firmly on the

table.[6]

> France and Germany consider that an amendment of the Treaties is needed.... The establishment of a permanent and robust framework to ensure orderly crisis management in the future, providing the necessary arrangements for an adequate participation of private creditors and allowing Member States to take appropriate coordinated measures to safeguard financial stability of the Euro area as a whole.

This was not a final EU decision, however, and met with strong resistance from some member states, the ECB, and the financial industry. Although the Treaty change was supported by the European Council (Oct. 28, 2010), it was never implemented.

(The summit was contentious also for other features. President Sarkozy and Chancellor Merkel proposed a security opening to Russia, [7]

> Mrs. Merkel said Saturday that a goal of the summit was to improve cooperation between NATO and Russia, ... "for the Cold War is over for good."

They also proposed strong sanctions for countries that miss debt and deficit targets,[8] including "confiscating EU voting rights." And, politically, France and Germany gave the impression they could decide EU policy on their own.[9]

From October 2010 until mid-2011 the ECB resisted any explicit default for Greece, more politely termed "sovereign debt restructuring." All in all, after Deauville, another year-and a half of intense discussions and large uncertainty followed, that was detrimental to confidence, political stability and growth in

[6] Franco-German Declaration, Deauville – Monday, October 18th, 2010. https://www.eu.dk/~/media/files/eu/franco_german_declaration.ashx?la=da

[7] https://www.nytimes.com/2010/10/19/world/europe/19iht-summit.html

[8] https://www.reuters.com/article/uk-france-germany/eu-countries-to-cut-budgets-or-face-sanctions-idUKTRE69H46520101018

[9] https://www.ft.com/content/56984290-df96-11df-bed9-00144feabdc0

Greece. The eventual substantial restructuring of Greek sovereign debt was finally politically agreed in autumn 2011 and implemented in March 2012.

The operation was successful from a technical point of view, but too late to stem the steep recession that took hold in the Greek economy, in part caused by uncertainly and confidence losses related to the delayed debt restructuring. The default also came too late to save EU taxpayers much money. Many creditors had by that time redeemed their bonds at face value, paid by financial assistance loans from euro area member states, received full value for maturing short-term bonds, or sold their bonds to the ECB. All of these protections diminished the debt relief that could be achieved with a given haircut. Similarly, the capital of Greek banks was wiped-out which led to a recapitalization by the state, which further reduced the benefits of the sovereign debt restructuring for taxpayers.

Though the remaining private bondholders received a haircut, the ECB's Security Markets program (SMP) holdings were made whole, as the ECB holdings of Greek bonds were carved out and treated separately.

The restructuring of Greek bonds did have a negative impact on market prices of bonds of other countries that the ECB had bought, in particular Italian and Spanish bonds. That is in a sense good news: it signals that at least some perceived "contagion" between sovereign yields is simple assessment of default probability, not some mysterious market malfunction. It signaled that default can happen.

The key problem with the Greek restructuring was that it came so late and after so much indecision. In its Ex-Post Evaluation (EPE) of Exceptional Access under Greece's 2010 Stand-By Arrangement (SBA), the IMF staff concluded:[10]

> ... not tackling the public debt problem decisively at the outset or early in the program created uncertainty about the euro area's capacity to resolve the crisis and likely aggravated the contraction in output. An upfront debt restructuring would have been better

[10] https://www.imf.org/external/pubs/ft/scr/2013/cr13156.pdf

for Greece although this was not acceptable to the euro partners. A delayed debt restructuring also provided a window for private creditors to reduce exposures and shift debt into official hands. As seen earlier, this shift occurred on a significant scale and limited the bail-in of creditors when PSI eventually took place, leaving taxpayers and the official sector on the hook.

Greece: the crisis in 2015

Late 2013 and 2014 saw a few positive economic developments for Greece. Afterwards, in 2015, another episode of the Greek crisis emerged and interupted the recovery. A new government, elected in January 2015 on a platform which was hostile to the adjustment program, provoked a large deposit flight from Greek banks. The Eurosystem put in a place a large set of loans to Greek banks that covered the outflows, and as a consequence Target2 debt, which had declined a lot until 2014, increased strongly. In the Summer of 2015, the Government called a referendum on whether a new adjustment program should accepted. A clear majority of the population rejected. The ECB announced it could not increase the Emergency Liquidity Assistance loans. Without a credible adjustment program the Greek collateral would no longer be adequate. This required the introduction of capital controls by Greece. The Greek government eventually turned around and accepted a new program.

[XXX TO BE COMPLETED XXX]

Ireland: From Bank Insolvency to Sovereign Debt Crisis

In the course of 2010, the European sovereign crisis moved on to Ireland. The root of the crisis was different than in Greece. Rather than years of borrowing to finance consumption, Ireland's problems stemmed from its banking crisis, and the way that initial crisis had been addressed. Over the years of the banking crisis, 2007 to 2010, combined funding from deposits and debt securities of Anglo Irish and Irish Nationwide building society (INBS) — both of which would eventually be nationalized and merged to form the Irish Resolution Banking Corporation — fell from €96 billion at the end of 2007 to €23 billion at the end of 2010 (Whelan, 2012). Starting March 2009, the Central

Bank of Ireland agreed to provide "Emergency Liquidity Assistance" (ELA) loans to both of these institutions against collateral that did not qualify for the usual Eurosystem repurchase agreements. By the end of 2010, these two entities owed €24.3 billion to the Eurosystem and €28.1 billion in ELA debts to the Central Bank of Ireland. ELA would eventually reach €40bn in 2011 (Whelan, 2012). (Eurosystem's loans are repurchase agreements against collateral on ECB terms, while ELA loans are by the National Central bank (unless vetoed by 2/3 of ECB Council) against non-standard collateral and at its own risk.) Between August 2010 and early December 2010, deposit outflows from the entire Irish system accelerated. Total customer deposits in its main six banks dropped by 20% (McQuinn, Woods et al., 2012).

The deposit guarantees provided in 2008 turned into a massive liability for the Irish state. The total cost of the bank bailout for Ireland, including particularly the nationalization of Anglo Irish in 2009 and of Allied Irish in December 2010, was staggering: €64 billion, or 40% of Irish GDP. (See Whelan (2012) for an excellent discussion of the Irish bailout.) In particular the Anglo Irish rescue was clearly not a case in which deposit insurance bridged a multiple-equilibrium run of illiquidity, or stopped a "doom-loop" of self-confirming expectations, but a simple bailout of an insolvent bank, benefiting in the end depositors and bondholders.

Most of these bailouts were decided *before* the financial assistance and the associated adjustment program had been agreed by the Irish government, the Eurogroup and the IMF. One cannot say that the Irish government was counting on European funds rather than its own taxpayers to finance the bailout.

Irish debt rose from 27% of GDP in 2007 to 82% of GDP in 2010, and would top out at 130% of GDP in 2012-2013. A fateful decision by the government had turned a private problem – the insolvency of substantial parts of the Irish banking system, into a public one – the insolvency of the Irish state. (One may regard banks as always guaranteed by their governments, at least implicitly, and thus only semi-private. In that view, however, bank liabilities several multiples of GDP are a guarantee that the government cannot afford,

and international banking an obvious uncontrolled moral hazard.)

On November 19th, 2010, ECB President Trichet sent a secret letter to the Irish Finance Minister, urging him to ask for a financial assistance program from the euro area and the IMF.[11] The ECB had understandable reasons to do so. The Eurosystem was providing large amounts of loans to Irish banks, including loans with collateral that the ECB would not accept for normal monetary policy operations under Emergency Liquidity Assistance (ELA). The ECB is only allowed to provide loans to *solvent* banks and against *adequate* collateral. At the time, the solvency of banks had to be assessed, and was confirmed, by the national supervisor. This assessment was not the responsibility of the ECB. However, the quality of collateral was increasingly in doubt due to rising concerns about the solvency of the Irish state, which provided guarantees for collateral that banks provided to receive ELA. In this situation, financial assistance from euro area governments and the IMF and a credible adjustment program that would ensure the solvency of the state and recapitalise viable banks was the only promising way to allow the Eurosytem to continue providing loans to Irish banks.

In November 2010, the EU and the IMF, together, provided a loan of €67.5bn, conditional on an adjustment program involving stabilizing the financial system and a sharp adjustment in the government´s finances worth 8 points of GDP. No restructuring was contemplated, however.

Portugal: A Bust without a Boom

Portugal had some key similarities with the other euro-crisis countries: a large increase in both private and public debt (the stock of net foreign assets was -101% of GDP by 2007, with a change in 8 years of -78.5% points of GDP), high wage growth, and loss of competitiveness. Banks again were crucial: in Portugal they channelled around 50% of this debt (Reis, 2013), i.e. Portuguese banks took foreign deposits and lent them out in Portugal. As in Greece, old age pensions played an important role. The entirety of the increase in government

[11] The Irish Times published in 2014 the full text of the secret letter: https://www.irishtimes.com/business/economy/jean-claude-trichet-letter-to-brian-lenihan-1.1989801

expenditure was accounted for by retirement pension increases. But, in many ways, Portugal had been on a class of its own during the first decade of the Euro, as had been already pointed out in 2007 by Blanchard (2007): it saw virtually no growth, including productivity growth and employment growth, during the first decade of the Euro. Uniquely, its construction sector contracted. As Reis (2013) points out, "Portugal in the 2000s experienced neither a housing boom like Spain and Ireland, nor as rampant an increase in public debt as Greece, nor does it suffer from Italy's chronic political instability." Reis (2013) argues that Portugal's problems resulted from the combination of an inefficient banking system and a large inflow of capital. In short, Portugal used foreign borrowing to finance imports of consumption goods.

When these capital flows started to decrease, private financing for the current account deficit was replaced by public, and the corresponding Target2 balances took over (Reis, 2013). Rather than pay for imports with money borrowed abroad, much funneled through Portugese banks, the Portugese central bank simply owed the corresponding euros to the foreign central banks. (Section 4.2 explains Target2 balances in more detail.) As international creditors abandoned the country, Portugal's public finances collapsed, due to the high structural deficit, severe recession and the efforts to prop up its banks. Some of the largest banks, Millenium, Banif and Banco Espirito Santo eventually were rescued in 2012, 2013 and 2014 for a total of almost €10bn. Portugal's 2009 and 2010 deficits were 9.9% and 11.4% of GDP. Public Debt grew by 50% of GDP between 2008 and 2012 (Reis, 2013).

The perilous situation of the public sector, in turn, worsened the solvency of the banks, for whom Portugal's bonds where 23% of their assets (according to the European Banking Authority's 2010 stress tests[12]). Portugal became a classic case in which the domestic banking system is hostage to government default.

As the situation became untenable, Portugal agreed on May 16, 2011 to a €78bn bailout, in exchange for a commitment to cut its deficit, recapitalise

[12]https://www.eba.europa.eu/risk-and-data-analysis/risk-analysis/eu-wide-stress-testing/eu-wide-stress-testing-2010

its banks and undertake 223 structural reforms. The conditions of the bailout were to be enforced by the Troika of the European Commission (EC), the European Central Bank (ECB) and the International Monetary Fund (IMF). Again, Europe chose a bailout, with some conditionality, but no restructuring.

In spite of the bailout, Portugal's interest rates kept rising until January 2012 peaking at 13.85%. The bailout did not immediately restore private investor's confidence on the ability of Portugal to eventually repay its debt. As of September 2011, no one was really sure that Portugal would not default chaotically or even withdraw from the euro.

Spain: The Savings Banks Sink the Economy

In Spain, the crisis originated entirely in the semi-public credit sector. In 2011 bond markets increasingly realised the dire situation of Spanish semi-public, "Cajas" (Savings Banks). They had borrowed heavily and invested in their local housing booms. The housing market collapsed. The Cajas were also poorly governed, involving a complex web of influence between developers, politicians and lenders (Cuñat and Garicano, 2009). Their collapse led to a "vicious cycle of failing banks, unsustainable fiscal deficits, rising borrowing costs, contracting output, rapid job loss, and severe financial market turmoil" (IMF, 2014). Being small, local, badly governed, and not traded in stock markets, private recapitalization – selling new equity, finding new equity investors, or selling the whole bank to new investors – of the Cajas was essentially impossible.

As the Spanish government confronted its inability to rescue a very large, Madrid-based group of Cajas (Bankia), the Eurogroup (the group of euro area finance ministers) accepted on July 20th, 2012 a request from Spain for a program to finance the rescue of its savings banks with support of up to €100 billion. The Memorandum of Understanding agreed included (Baudino, Herrera, and Restoy, July 2023): "the conduct of an asset quality review and stress test for the large majority of banks in Spain; the recapitalisation, restructuring and/or resolution of weak banks; and the transfer of problem assets to an asset management company", as well as the performance of "a burden-sharing exercise that imposed losses on junior bank creditors — mostly retail

investors — and a downsizing of the banks requiring public support. Sector-wide conditionality involved several measures to strengthen the regulatory and supervisory framework." To ensure the burden sharing took place, restructuring plans could only be approved by the European Commission (according to the new State Aid Banking Communication) after burden sharing had been implemented, though only by subordinated debt holders and not bond holders or depositors. This has been estimated to have reduced the cost of the restructuring plans by approximately one fourth (Lienemeyer, Kerle, and Malikova, 2014).

The IMF participated, but only by providing expertise and technical support, not by providing loans. In contrast to the other programs, Spain did not request, and the Eurogroup did not demand, a full macroeconomic adjustment program. (The Memorandum did require Spain to[13] "comply fully with its commitments and obligations under the EDP and the recommendations to address macroeconomic imbalances within the framework of the European Semester," and its "Progress in meeting these obligations under the relevant EU procedures will be closely monitored in parallel with the regular review of program implementation," but these are parallel and not new conditions.) Consequently, there was no detailed conditionality for financial help on fiscal and structural polices, but instead only financial conditionality concerning the banking system and notably the governance of the Spanish savings banks: the old Cajas could not have controlling interests in credit institutions, and their boards would have to be subject to fit and proper tests. From the Memorandum:[14]

> "The Spanish authorities will prepare by end-November 2012 legislation clarifying the role of savings banks in their capacity as shareholders of credit institutions with a view to eventually reducing their stakes to non-controlling levels. Furthermore, authorities will

[13]Spain: Memorandum of Understanding on Financial-Sector Policy Conditionality, July 20, 2012. https://ec.europa.eu/economy_finance/eu_borrower/mou/2012-07-20-spain-mou_en.pdf

[14]Spain: Memorandum of Understanding on Financial-Sector Policy Conditionality, July 20, 2012. https://ec.europa.eu/economy_finance/eu_borrower/mou/2012-07-20-spain-mou_en.pdf

> propose measures to strengthen fit and proper rules for the governing bodies of savings banks and to introduce incompatibility requirements regarding the governing bodies of the former savings banks and the commercial banks controlled by them."

Italy: The Bail-out that Wasn't

Italy was the largest of the Euro member countries which faced substantial increases in sovereign financing costs due to market concerns about its debt sustainability. The Italian treasury bill rate[15] peaked in November 2011 at 6.4%. Its 10 year bond rate spiked to 7.05% while Germany's was 1.87%. But Italy was unwilling to ask for an adjustment program. On November 4, 2011, at a G20 summit in Cannes, Italy was confronted by firm pressure to request financial assistance and enter an Euro Area/IMF adjustment program.[16] A week later, Prime Minister Berlusconi stepped down and Mario Monti became Prime Minister of a so-called "technocratic government."

Initially, the Monti government implemented far-reaching fiscal reforms, including major changes to the pension system. These even burdened workers close to their retirement age, by changing the basis of pensions from the end of career salary to total amount paid, and by raising the pension age.[17] The reform also increased real estate taxes and introduced several structural reforms, including in the labor market.

Monti's reforms eventualy passed into law in December 2011. Italian interest rates fell (see Figure 6.1), with the Treasury Bill rate bottoming out at 1.13% in March 2012. Italy ran small primary surpluses until the Covid recession. Its main problem remained a large stock of debt.

Italian bond prices then dropped (yields rose) significantly again in the run-up and the aftermath of Greece's restructuring, in which remaining Greek bondholders took haircuts. In June 2012, the Italian Treasury Bill rate rose

[15] See https://fred.stlouisfed.org/series/INTGSTITM193N.

[16] Patrick Wintour and Larry Elliott, *The Guardian* Fri 4 Nov 2011, "G20 leaders press Italy to accept IMF checks on cuts program," https://www.theguardian.com/world/2011/nov/04/g20-italy-imf-checks-cuts

[17] https://www.reuters.com/article/us-italy-monti-reforms-factbox-idUSBRE8B90ZA20121210

back to to 3.39%. The 10 year rate rose from a low of 5.04% (to Germany's 1.83%) to 6.0% (Germany 1.2%) in July 2012.

The Greek debt restructuring was *intended* to increase the credibility of the no bail-out principle and reduce the probability of a future monetary or fiscal bailout that would have made bondholders whole. From this perspective, higher Italian interest-rate spreads were largely fundamentally driven. With less chance of foreign rescue, the probability of default increased. However, from the perspective of the Italian government it was "bad luck," and seemingly unfair: an exogenous event that increased fundamental default risks and thereby counteracted the positive effects of reforms and fiscal consolidation initiated by the Monti government. Monti lost the next election in February 2013.

Cyprus: Depositor Bail-in to Avoid a Sovereign Default

Cypus' troubles started in mid-2011. From October 2011 onward, two large Cypriot bank received Emergency Liquidity assistance from the Central Bank of Cyprus (CBC), effectively financed by the ECB. The Greek debt restructuring in March 2012 resulted in further losses of Cypriot banks, also via their branches in Greece.

The Cypriot government requested financial assistance from the euro area and the IMF on 25 June 2012. However, it took nine months of negotiations, bank balance sheet assessments, and political uncertainty, until the Cypriot authorities finally reached agreement with the Eurogroup and IMF.

On 19 March 2013, the Cypriot Parliament rejected an adjustment program that had been agreed by the Eurogroup. This resulted in a first post-OMT [Outright Monetary Transactions, ECB purchases of sovereign debt; see Section 6.3] challenge for the ECB.

In March 2013, Cyprus experienced a spiraling banking crisis. The Eurosystem at the time had large exposures to the under-capitalised Cypriot banking system, mainly via emergency liquidity assistance (ELA).

The Cypriot banks were clearly insolvent; value of assets less than value of liabilities. Without a program that would include a significant losses by

depositors ("burden-sharing" or "bail-in"), only a large bail-out would save the banks. But, like Ireland, Cyprus did not have the fiscal capacity to do that. Any bank bailout would raise further the risk of a sovereign default. With undercapitalized and insolvent banks, the ECB could no longer offer Emergency Lending Assistance to Cypriot banks either.

Against this background, on March 21, the Governing Council took the following decision on Emergency Liquidity Assistance requested by the Central Bank of Cyprus:[18]

> The Governing Council of the European Central Bank decided to maintain the current level of Emergency Liquidity Assistance (ELA) until Monday, 25 March 2013. Thereafter, Emergency Liquidity Assistance (ELA) could only be considered if an EU/IMF program is in place that would ensure the solvency of the concerned banks.

On 25 March the Eurogroup accepted a somewhat revised adjustment program,[19] provided that unsecured deposits in two large banks were "bailed in" to finance the resolution of Laiki bank and the recapitalisation of the Bank of Cyprus.

Cyprus received a €10bn bailout in exchange for a IMF/EU program. There was no bail-in of government debt holders. So pressures on the ECB to create new money in order to purchase bonds, lend to, or otherwise assist the finances of a stressed country could not be ruled out. But that program involved a significant "bail-in" of bank deposits, i.e. losses to many depositors, and the closure of Cyprus' largest bank, which helped to avoid a sovereign default.

Two nostrums pervade opinion about the euro: That sovereign default or restructuring is an unthinkable calamity, and that any bank depositor ever losing any money is an unthinkable calamity. Greece proves the first wrong, and Cyprus proves the second wrong. Those lessons seem not to sink in.

[18] https://www.ecb.europa.eu/press/pr/date/2013/html/pr130321.en.html

[19] https://economy-finance.ec.europa.eu/publications/ex-post-evaluation-economic-adjustment-program-cyprus-2013-2016_en

All of these crises emphasize the interrelated problems of banks and sovereigns. Banks are loaded up with undiversified sovereign debt, so a sovereign default means a banking crisis. Banks are encouraged to do so by zero risk weights. If banks even had internationally diversified sovereign debt portfolios, with conventional equity buffers, much of the problem would be alleviated. Better yet if sovereign debt were held directly by investors rather than via bank deposits, in diversified mutual funds. International and pan-european banks are a good thing, but banks are guaranteed by domestic sovereigns, who like Ireland and Cyprus may not have the resources to effectively guarantee deposits.

The problems remain. As one sign of continuing banking malaise, market price-book valuations for European banks fluctuated during the following decade broadly around 50% even in good times. That is, investors assessed the true capital of those banks as 50% below the accounting capital, on which regulators were basing their assessments of capital adequacy.

Clearly, de-linking banks and sovereigns is a critical part of reforming the euro. We return to this issue in Chapters 10 and 11.

6.2 The ECB's Securities Market Program

On May 10 2010 the ECB introduced the Securities Market Program (SMP). The SMP mainly consisted of discretionary purchases of sovereign debt of specific stressed countries — initially Greece, Ireland and Portugal, and starting summer 2011, also Spain and Italy. By mid 2012 the ECB had bought about €210 billion in public bonds from the five countries. The SMP program represented a remarkable U-turn by the ECB, since only three days before President Trichet had publicly stated that the ECB would not purchase any sovereign debt. The ECB press release offered the following explanation of the program:[20]

> "The objective of this program is to address the malfunctioning of securities markets and restore an appropriate monetary policy

[20] https://www.ecb.europa.eu/press/pr/date/2010/html/pr100510.de.html

> transmission mechanism. ... In order to sterilise the impact of the above interventions, specific operations will be conducted to re-absorb the liquidity injected through the Securities Markets program. This will ensure that the monetary policy stance will not be affected."

The ECB justified the need to remedy market "malfunction" and, most of all, to ensure monetary policy "transmission." The ECB's mandate is monetary policy, not fighting sovereign default per se. "Sterilization" and "liquidity injection" mean that the ECB will either sell other bonds or reduce its lending to banks so that the overall quantity of reserves (base money) does not rise.

The program proved extremely controversial. Juergen Stark, the German member of the ECB executive board, resigned in 2011 in protest over his belief that the program constituted monetary financing and, hence, a breach of the EU treaties.

These actions also positioned the ECB at the heart of discussions about the stabilisation and recapitalisation of the banking system and even on structural reforms. (See also Brunnermeier, James, and Landau (2016).) The ECB tried to use its new Securities Markets Program to informally impose conditionality on countries, i.e. to force fiscal and structural reforms. This was signalled in the 10 May 2010 press release on SMP (as quoted in footnote 20 above):

> "In making this decision we have taken note of the statement of the euro area governments that they "will take all measures needed to meet [their] fiscal targets ... in line with excessive deficit procedures" and of the precise additional commitments taken by some euro area governments to accelerate fiscal consolidation and ensure the sustainability of their public finances."

The ECB stepped up its pressures for fiscal and structural reforms. This was done through secret letters sent on August 5th 2011 (i) from Presidents Trichet and Draghi (at the time President of Banca d'Italia) to Prime Minister Silvio Berlusconi, and (ii) from President Trichet and Bank of Spain Governor Miguel

Angel Fernández Ordoñez to Prime Minister of Spain Rodriguez Zapatero, outlining the reforms that were to take place in exchange of the ECB starting to include public bonds of these two countries in its selective sovereign bond purchases (SMP) program.[21]

We can understand why the ECB acted in this way, feeling the pressure of the crisis on its shoulders, with no appropriate action from member states in sight. The ECB was exposed to risks resulting form its liquidity provisions to stressed country banks (providing money with government debt and non-marketable private assets as collateral) and directly from the ECB's public debt purchases (under SMP). And, perhaps more importantly, once again the ECB saw itself as the only agent with the ability and tools to act quickly enough to avoid sovereign default, which it feared for the effect of such default on financial markets and economies. From public statements in the context of the Greece debt crisis it appeared that ECB wanted to avoid sovereign debt restructuring, consequent losses for banks, and the associated financial stability risks almost at any cost.

Still, with such letters, the ECB was stretching its mandate, giving advice to, and even trying to impose a kind of conditionality on fiscal and political authorities in stressed member states. Perhaps acceptance by a powerful central bank of a limited mandate (say, price stability and to ignore sovereign default) must come with the existence of some other set of institutions that the bank can trust to handle issues that the bank has the power to influence.

Like many improvisations in the heat of a crisis, the effort runs into the classic problems of discretionary policy. If countries fail to reform, and threaten again to default, and if they figure out how much the ECB wants to avoid default for its own reasons, then the ECB's threat to withhold more funds is not credible. Would the ECB really countenance default ex post, if countries failed the conditionality conditions? Effective conditionality needs

[21]By the summer 2011, Italy and Spain had not agreed to a comprehensive adjustment program with euro area and IMF financing and monitoring, as Greece, Ireland and Portugal had done before. Spain officially asked for a financial assistance from the euro area via the ESM only 25 June 2012, and refused to accept wide-ranging conditionality beyond the reform of financial market institutions. Italy never asked for it.

pre-commitment that the ECB will do things that it will not want to do ex post, a rearrangement of the situation so that sovereign default is not so damaging to the ECB's interests, or the effective arrival of a cavalry which will impose conditionality by other means.

The justification for the intervention also relied on the so-called "separation principle." President Trichet had explained this in his Summer 2010 Jackson Hole speech:[22]

> This puts in perspective the separation that central banks are making between their policy interest rates and monetary policy stance — namely the standard measures — and, in particular, the full allotment mode in the supply of liquidity, the longer term refinancing of commercial banks by the Central Bank or the purchases of securities — namely the set of non-standard measures. The monetary policy stance is always designed to deliver price stability in a medium and longer term perspective. The non-standard measures have a clear purpose: ensuring that the standard measures themselves are transmitted as effectively as possible despite the otherwise abnormal functioning of some markets. All the non-standard measures taken during the period of acute financial market tensions ... are ... by construction, temporary in nature.

More simply, President Trichet was trying to categorize buying sovereign bonds of selected stressed countries to compress sovereign *spreads*, and large scale lending to banks, as a separate activity from setting interest rates in order to lower the *level* of all long-term interest rates. However, the ECB's mandate is price stability via monetary policy, so the justification for "separate" non-standard measures is again the idea that elevated sovereign spreads in Italy and Spain and markets that are somehow "malfunctioning" affect the ECB's ability to control inflation in the EU via the ECB's interest rate and general bond buying policies.

[22] https://www.ecb.europa.eu/press/key/date/2010/html/sp100827.en.html

In spring/summer 2011 the ECB (i) increased policy rates from 1% to 1.25% in April and to 1.5% July to reduce inflation, while around the same time (ii) starting SMP purchases of Italian and Spanish governments bonds to lower their sovereign spreads. Since the latter is also an expansionary Quantitative Easing operation, one may also understand the former as a form of sterilization, or an instance of the "separation principle."

6.3 Whatever it Takes

The End of the Sovereign Debt Crisis

On November 1, 2011 Mario Draghi replaced Jean Claude Trichet at the helm of the ECB. As soon as he took office he shifted the position of the ECB, by reversing course on interest rates,[23] bringing them down from 1.5% to nearly zero by Sept 2014. He also announced an ambitious 3 year non-standard Long-Term Refinancing Operation program starting in December 2011. Under this program,[24] banks could borrow for at a fixed 1% interest rate, with a wider set of collateral including stressed country sovereign debt, and with a longer duration than the 3 year limit that held until that point. These actions continued the trend to replace the inter-bank financing market with the ECB's lending, as González-Páramo (2011) noted.

Thus encouraged, European banks, particularly Spanish and Italian ones, engaged actively in the "Sarkozy trade:"[25] take out cheap loans from the ECB to buy high-yield sovereign bonds, with no risk weight. Italian banks bought €45.6 billion in the first two months of 2012, Spanish banks €38.7.

In the Greek crisis, Greek debt put French and German banks at risk. Now Italian and Spanish risks became concentrated in Italian and Spanish banks. Rather than spreading risk around the EU, a default would now crater the defaulting country's own financial system. The prospect is if anything even

[23] https://fred.stlouisfed.org/series/ECBMRRFR

[24] https://www.ecb.europa.eu/press/pr/date/2011/html/pr111208_1.en.html

[25] "Forget 'Zou Bisou Bisou,' 'the Sarkozy Trade' Is the Hot French Export." by Petar Eavis, March 28, 2012, *New York Times* https://archive.nytimes.com/dealbook.nytimes.com/2012/03/28/forget-zou-bisou-bisou-the-sarkozy-trade-is-the-hot-french-export/.

more frightening to the ECB. Stuffing banks with concentrated positions in shaky sovereign debt is never a great idea. Banks become hostages against sovereign default.

Thus, in spite President Draghi's loosening, the Euro crisis entered a new and potentially devastating phase in the first half of 2012, with Italy hovering on the verge of default. Many feared that such a default would lead to a chaotic breakup of the Euro. Default and re-denomination risks pushed up Italian yields. The restructuring of Greek debt in March 2012 may also have increased market pressures on Italian debt, by making haircuts more thinkable and full bailout less likely. In contrast to Spain, however, Italy still rejected a euro area (ESM) adjustment program, raising the chance of a disorderly default or euro exit.

In response to the deteriorating crisis, in a conference in London on July 26th, 2012, Mario Draghi made what became his most famous pronouncement: "Within our mandate, the ECB is ready to do whatever it takes to preserve the Euro. And believe me, it will be enough." This speech is widely seen as the turning point of the eurozone crisis, with many crediting Draghi for saving the Euro.

A "whatever it takes" commitment, such as the one made by Draghi, has the potential to cut off an acute crisis, whether a self-fulfilling doom-loop equilibrium or even a simple insolvency, if people believe the commitment. In turn, that belief requires that agency offering the commitment, the ECB here, has the will and the means to actually do whatever it might take. Many banking and foreign exchange crises have not been stopped by pronouncements, as people did not believe the firepower or the will was there. In the case of the ECB, the firepower of the printing press is evidently enough to buy all outstanding Italian debt if needed. And Draghi convinced markets that the will was there too.

OMT Design: Attempting Precommitted Conditionality

President Draghi´s new policy was implemented via the "Outright Monetary Transactions" (OMT) program, as announced by the Governing Council

of the ECB in August 2012, and approved in September 2012. The ECB would buy public short-term debt bonds in the secondary market, in almost unlimited quantities, provided the issuing country committed to an adjustment program with the European Stability Mechanism (ESM)—the fund that EU countries had set up only months before to bail out countries—and ideally also with the IMF as well, in order to provide "strict and effective" conditionality.

The aim of the program was to reduce the chance of default, re-denomination, or euro exit, and with that the yield premium being charged against those risks. Again, the ECB said its motive was to restore monetary policy transmission channels, not to stop default or exit, but like most observers we regard the former as the primary actual purpose and the latter as a fig leaf nod to the ECB's mandates.

Conditionality aimed to limit the risk that, should the ECB actually have to buy large quantities of bonds, Italy and Spain would actually have the means repay those debts. It also aimed to limit moral hazard of issuers and bond investors to ignore the market signals and issue or buy even more debt under a perpetual "whatever it takes" guarantee. An ideal conditionality imposes the same conditions that the country would have to work out itself to reassure bondholders.

Farming out conditionality to the ESM and the IMF is a way to try to precommit that the ECB *could* not extend the guarantee if countries didn't do their part and a new crisis erupted. Having a third party impose a condition is a clever precommitment device. In the words of Mario Draghi:[26]

> The conditionality associated with the program to which governments and the European authorities agree is a crucial element in being able to preserve monetary policy independence. It is important in providing the ECB with adequate assurance that interventions supporting sovereign debt bond prices do not mutate into financial subsidies for unsustainable national policies in the medium term.
>
> By way of drawing a parallel between OMTs and our standard

[26] "The euro, monetary policy and reforms", speech given on 6 May 2013.

> liquidity operations: as the credit provided to banking counterparties cannot be, and must not be, interpreted as an injection of capital into failing banks; in the same vein, under OMTs, in compressing the premium for the risk of redenomination, the ECB cannot and does not intend to provide financial support to governments which reinstate solvency conditions which have not already been approved ex ante.

The Governing Council of the European Central Bank decided in September 2012 that an ESM program with "strict and effective" conditionality was a necessary pre-condition for activation of country-specific bond purchases by the ECB. The country would commit to a package of reforms and fiscal targets. The program would have to be agreed by the Board of Governors of the ESM (comprising the euro area finance ministers) and be negotiated and then monitored by the EU Commission with the ECB acting in liaison with the Commission. The IMF was also invited to join the program and its financing. In 2016 the ECB announced it would limit the scope of its involvement in program discussions and monitoring to "macro-critical developments, headline fiscal targets and sustainability issues." The reform program would be supervised by the "Troika" formed by representatives of the European Commission, the European Central Bank, both reporting to the euro area finance ministers (Eurogroup), and the IMF.

Moreover, an explicit fiscal backing by Euro area governments would be included in the conditionality deal. This could take the form of[27] "a full EFSF/ESM macroeconomic adjustment program or a precautionary program (Enhanced Conditions Credit Line), provided that they include the possibility of EFSF/ESM primary market purchases." The participation of the ESM, an intergovernmental organization, was intended to give the member countries the necessary "skin in the game" to demand reforms from the member state in trouble in line with the agreed commitments. It also allowed the European Central Bank to more credibly threaten to stop supporting a country via OMT purchases, since it would not be alone in making the decision and there was

[27] ECB, Technical features of Outright Monetary Transactions

another source of financing. Most of all, the *fiscal* backstop helped to separate the monetary policy aspects of the intervention—temporary lender of last resort, backstop liquidity provider, etc.—from the messy question of providing just enough fiscal support (i.e. gift) to allow a fiscal and economic transition of "fundamentals." This steps also helped the ECB to more clearly stay within its mandate, to maintain price stability without monetary financing of sovereign debts.

However, the fiscal commitments were intentionally a bit vague. They specified that a program and mechanism would be there, but not how much fiscal support could be provided. This tension recurs. Explicitly unlimited fiscal guarantees can bite, as they did to Ireland. But a limit tempts markets to speculative attack larger than a limit. Limits care sometimes important to keep the political coalition supporting the program in line, as not all members want to sign an unlimited guarantee. Specifying a mechanism but not a limit makes it easier to invoke the mechanism in a crisis, leaving its size to be negotiated later.

If not perfect, these features of the OMT are a substantial improvement relative to the previous SMP program and show the institutions of the EU learning from experience.

Of course, the fiscal support of the OMT package left behind the philosophy, if not the letter of the no fiscal bail-out commitment. On the bright side, as fiscal transfers became more likely, monetization became less likely. The ECB could more credibly maintain that it would not monetise or inflate away debts, but only provide temporary "liqudity" to "stabilize" interbank and bond markets. The Greek bond haircut and bail-in of large bank deposits in Cyprus in 2013 also contributed to make debt monetization less likely. But whether monetary or fiscal, the combined vision of no sovereign purchases, no bail outs, and no fiscal transfers was over, with just the balance between the two and how to contain the moral hazard that fiscal or monetary transfers unleash still on the table.

In sum, "whatever it takes" is often interpreted as a Mosaic commandment, words alone that made a flood recede. In fact, a complex mix of con-

ditionality and fiscal backstop allowed President Draghi to pledge potentially unlimited bond purchases, without immediately creating risks of high inflation, unsustainable public finances, and invitation to exploit the offer by bond issuers and purchasers. These kept the waters from rushing back even higher. By requiring an ex-ante agreement by euro area member states to provide financial assistance loans in exchange of reforms, the ECB reduced the risk that the central bank bond purchases would "mutate into financial subsidies for unsustainable national policies," (in the words of Mario Draghi's speech on May 2013 quoted above) which would have violated the prohibition of monetary financing.

6.4 Fiscal-institutional reforms

During the sovereign debt crisis, in particular in 2011-12, the EU and Member States decided on, or announced, new reforms aimed at (i) strengthening fiscal discipline and rules, (ii) ensuring an early correction of country-specific imbalances, (iii) implementing an effective new crisis management mechanism (ESM) including detailed procedures for adjustment programs monitored by the so-called Troika, and (iv) strengthening euro area-wide banking regulation and supervision.

These institutional reforms, and further measures under discussion at the time, were a promising move in the right direction and raised expectations that the EU and its member states would continue along this path of reforms and thus would correct the initial shortcomings of the Treaty and the deterioration of institutions and incentives observed so far. The reforms attempted to re-establish key elements of the original design of monetary union described above, and to plug its missing holes, by creating a mechanism to address a sovereign debt crisis and insulating the banking and financial systems from sovereign restructuring.[28]

However, after 2012/13 and in particular during the second half of the

[28]For an early overview and assessment of the of the proposed changes based on the European Commission's package of legislative proposals and the recommendations of the Van Rompuy Task Force see The reform of economic governance in the euro area – essential elements", Monthly Bulletin, ECB, March 2011.

2010s the implementation of the new rules and institutions often fell short of expectations, announcements or promises made by political leaders during the sovereign debt crisis. Moreover, during the pandemic and the high inflation period, forces pulling in the opposite direction further gained strength and increasingly dominated, undermining incentives for sound national policies and EU/euro area reform. Importantly, at the height of the debt crisis on 29 June 2012, at a Euro Summit, Heads of State and Governments from all euro area member states had made a promise as the the first sentence of their statement:

> "We affirm that it is imperative to break the vicious circle between banks and sovereigns"[29]

Sadly, even more than a decade later the euro area is still far away form having implemented the institutional reforms that are necessary to achieve this crucial objective.

Reforms aimed at strengthening of fiscal rules and ensuring early correction of country-specific imbalances

Between 2011 and 2013, in the wake of the euro crisis, the EU revisited the debt and deficit rules three times, but this time in the opposite direction compared to 2005, with the "six pack," the "Fiscal Compact" and the "two pack."

This burst of reforms had two aims. The first was to correct so-called "macroeconomic imbalances" such as large current account deficits and competitiveness problems of individual euro countries, through a Macroeconomic Imbalance Procedure. The second was to increase market confidence in fiscal policies by strengthening the debt and deficit rules and tightening budgetary surveillance. This would be accomplished, among other means, by introducing new balanced budget rules in national legislation, by making sanctions for excessive deficits more automatic, by requiring a qualified majority of countries to block Commission proposals for sanctions, and by introducing a new debt reduction rule. The latter required that the gap between the government

[29] Euro Area Summit Statement, 29 June 2012

debt-to-GDP ratio and the Treaty reference value of 60% of GDP would need to fall by one-twentieth per year, on average. And member states decided on a fiscal compact that included an ambitious debt reduction rule to achieve the 60% reference value within 20 years.[30]

In spite of of all these reforms, compliance by the member states remained low and sanctions did not work. Three large member states with high debts in 2013 totally failed to even come close to fulfilling the requirements of the new debt rule even during good times with increasing employment and very low interest rates. On a given year, a given country was as likely as not to be following the rules, according to the data of the European Fiscal Board (EFB), an independent institution within the EU. The EFB found that successive reforms have made the rules more complex and opaque:

> "The sources of unnecessary complexity include: (i) an excessive reliance on unobservable indicators; (ii) badly timed use of flexibility encouraging pro-cyclical fiscal policy; (iii) a tendency towards postponing fiscal adjustments to the outer years of the stability and convergence programs."

The EFB also found that

> "During the first five years of the macroeconomic imbalance procedure, the number of EU countries experiencing macroeconomic imbalances gradually rose from 12 to 19,"

without the Commission launching any excessive imbalance procedure.

The European Stability Mechanism, program conditionality and the Troika

To deliver financial assistance loans, member states set up the European Financial Stability Fund (EFSF) in June 2010, via a separate international

[30] A Fiscal Compact for a Stronger Economic and Monetary Union, ECB Monthly Bulletin, May 2012.

treaty outside of the EU. This fund was originally intended as a temporary backstop with a lending capacity of €440 billion through a company based in Luxembourg — a "Special Purpose Vehicle." The EFSF issues were backed by joint and several guarantees of the Euro area Member states. The EFSF was limited to back-to-back lending, with a liquidity buffer: It would borrow money in financial markets, and with the money it would provide assistance to Member States. In July of 2011, its lending capacity was increased to €724bn.[31] Through the crisis it would provide a total of €175.3bn as its portion of the bailouts of Greece, Portugal, and Ireland.

In October 2012, this crisis mechanism was made permanent, and became the European Stability Mechanism, or ESM.[32] The ESM received instruments and powers broadly similar to those of the IMF: to make loans, with conditionality on macroeconomic performance and on the enactment of budget and structural reform. Unlike the IMF, the ESM can issue securities, which are joint and several liabilities of EU members according to the capital key. The ESM had an authorized capital of €704.8bn, of which €80.5bn was paid-in and the rest, €624.3bn was committed callable capital. Aiming for a triple A rating, the maximum lending capacity was restricted to €500 bn.[33] Despite the abundance of resources relative to lending, it failed to obtain the highest credit rating. Between 2010 and 2018, both mechanisms together (ESM and EFSF) provided €295 billion in loans to Ireland, Portugal, Greece, Spain, and Cyprus.

From the beginning, some observers doubted whether the ESM had received sufficient capital and guarantees from governments of member states to be able to provide the amount of financing that could be required in case one or two larger members states required financial assistance, to forcefully stem a run or speculative attack, or large-scale country-specific bond purchases if the EU wished to forestall a default. Specifically, the funding needed for a program for Italy or Spain could run at over €1tn, and some, for example

[31] See https://www.esm.europa.eu/sites/default/files/2016_02_01_efsf_faq_archived.pdf

[32] https://www.esm.europa.eu/about-us

[33] https://www.esm.europa.eu/sites/default/files/20180530esmfactsheet.pdf

Gros and Mayer (2012), argued that "even the ESM might not be able to raise at very short notice the huge sums that might be required to prevent a breakdown in the financial system." Kapp (2012) calibrated the necessary size of the fund at somewhere between one and two times the proposed size. Though the "committed callable capital" of €624.3bn is impressive, member states don't have that level of spare cash sitting around. They would have to borrow, during what would surely be a chaotic time in bond markets.

In addition to limits on the ESM's *ability* to stop a default, there is always the question whether it would *choose* to do so. A country might reject conditionality, or fail on its conditionality promises. The EU might effectively decide, as it did in Greece, to let partial default happen.

There is a point to a limited size of a bail-out fund. The EU, with highly indebted member states, faces a similar dilemma as regulators of highly levered banks. If the EU commits that no government bondholder shall ever lose money, it faces moral hazard: bondholders have no incentive to monitor governments, and governments have less incentive to borrow and spend responsibly. The EU can try to patch up those incentives with debt and deficit limits and conditionality, as regulators try to patch up deposit insurance with asset risk regulation and capital requirements. But that is an imperfect remedy for moral hazard. Limiting the size of a bailout fund, rather than "whatever it takes" and insisting on conditionality can be seen as efforts to remedy moral hazard, by limiting the EU's commitment. But they do so by threatening to allow default, which means there are some events in which default will still happen. The limits can alternatively be seen as buying some credibility. Perhaps people believe the EU can ride to the rescue with €700bn but not more.

The sovereign debt crisis had shown that countries could at some point require difficult economic adjustments and even sovereign debt restructuring. Aid to the four EU/IMF program countries came with strict conditionality. Conditionality also was a crucial element of the design of the new crisis management framework enshrined in the European Stability Mechanism (ESM) Treaty. "Effective and strict" conditionality imposed by governments of member states (not the ECB) via the ESM enshrined was a key pillar of the Outright

Monetary Transactions designed by Mario Draghi in summer 2012. The ESM Treaty was an important step forward towards completing EMU, ensuring the credibility of the no-bail out principle and removing pressures on monetary policy. All this provided important incentives to many member states to improve their economic policies. Unfortunately, for a some countries, in particular the largest ones, such incentives turned out not to be very long-lasting and effective.

The *nature* of conditionality has been contentious, as the IMF's conditions for supporting countries in fiscal trouble has been contentious. The right combination of spending cuts, tax reform, microeconomic liberalization, social program reform and other interventions to get an economy moving again and a government solvent will always be contentious. By supporting conditionality, we do not necessarily cheer each element of the particular programs, and we especially do not require the reader to endorse each program. The point is that there is a clear *mechanism* that can impose conditionality, address the moral hazard of fiscal transfers, arrange the fiscal transfers, and monitor the conditions. It is understandable that some governments regard ESM adjustment programs as creating too much stigma and troubles. This should induce them to implement solid policies that enhance potential growth and fiscal space at an early stage, so as to avoid the risk of a crisis where a program, and possibly a debt restructuring may be needed.

The decisions on financial assistance based on conditionality enshrined in adjustment programs were mainly taken by the finance ministers of the euro area and the IMF Executive Board. The programs were monitored and supervised by a so-called "troika", formed by the EU Commission, the ECB and the IMF. As is the case with the IMF internationally, the perception by citizens of the Euro Area of the adjustment program is a crucial issue, since that country must enact and support the program for a number of years. Fiscal consolidations and structural reforms are seldom politically popular, and conditionality makes the foreign supervisors a convenient target for criticism. Such was the case with the troika.

The obvious counterargument is, "If you don't want our money, go ahead and default." Moreover, the political decisions were taken by the finance

ministers, both in meetings of the Eurogroup and, after its establishment, in the Board of Governors of the ESM. The troika was only a "technocratic" instrument in charge of analysis, discussion with authorities, and monitoring of implementation. However, it was understood by citizens in program countries that the euro countries that provided the financial assistance loans were in part also protecting their own bondholders, banks, and economies, and anxious to avoid default for their own benefit. A retort might have been, "OK, we will default. Have fun explaining another bank bailout to your voters." The perception of a North-South political tussle, Southern austerity to repay debt to Northerners, remained, and undercut political support and thus the durability of structural adjustment and conditionality promises.

Like other institutions forged in the heat of battle, the ESM and the troika reflect a worthy attempts to balance the various incentives, moral hazards, and unintended consequences of other possibilities. Still, we think the mechanism can be improved substantially. We discuss improvements below.

Reforms of banking regulation and supervision

At the same time that it endorsed the rescue of Spain's financial system with European financing, the European Council agreed on June 29, 2012 on the need to break the "vicious circle between banks and sovereigns" by setting up a Single Supervisory mechanism (SSM) under the umbrella of the ECB. One year later, on June 27 2013, it further agreed to "complete the Banking Union" to ensure financial stability. The Banking Union was meant to consist of three pillars: a single Europe-wide, banking supervisor; a single resolution mechanism avoiding state-run bailouts of insolvent banks; and a single deposit insurance.

The single supervisor (SSM), was indeed established on November 3, 2013, and was fully operational by November 4, 2014. Prior to assuming its supervisory role, the EU agreed that the ECB would undertake a comprehensive assessment of the 130 main banks in the Eurozone. This was published on October 26, 2014. The change in supervision together with the asset quality review reduced pressures on monetary policy by providing incentives for banks to improve the resilience of their balance sheets and hence strengthen

the banking system.

But Banking Union was never fully completed. As we will discuss in Chapter 10.5, Banking Resolution, was put in place in paper, but not really activated; a European Deposit Insurance (EDIS), has never passed the stage of a legislative proposal. Moreover, no progress at all has been made on reducing the incentives for banks to concentrate their lending on their own sovereigns.

6.5 ECB Purchases of Member-State Government Debt

Above we discussed central bank purchases of default free public debt. This assumption may be a good approximation for the US Fed. However, in the euro area, the debt of the member states of the euro zone carries default risks. Given the large heterogeneity of economic fundamentals, default risks can differ significantly across countries. Purchases of national sovereign bonds thus pose specific challenges and risks for the ECB, which can go well beyond those faced by a central bank in a single (federal) state, such as the US Fed or the Bank of England.

There is a major difference between the ECB's bond purchases and those of the Federal Reserve. The Fed (i) purchases Federal Treasury debt that is considered de facto free of default risk and (ii) does not include the debt issued by individual US States in its key QE programs. The central bank's monetization has effects on the economy, financial system, and fiscal policy, by affecting the markets for debt rather than the quantity of money. Viewing central bank liabilities as short-term eurobonds rather than as "money," an exchange of risky long term member state debt for reserves does have an effect, where an exchange of hypothetical risk free short-term government debt for reserves would not have an effect.

Government bond purchases, and the promise or expectation of purchases, raise bond prices and lower yields. For the ECB, an important mechanism is that such purchases reduce the expected probability of the member-state's default, and thus lower the yield that investors demand to cover the

probability of default. This can create similar effects and incentives as country-specific bond purchases. And it places a large quantity of possibly risky long-term sovereign debt on the central bank balance sheet.

For the ECB one can distinguish two types of public debt purchases by the Eurosystem. First, *selective or country-specific* purchases, where the ECB focuses its purchases one or a few member states that face fiscal troubles with the aim to reduce so-called fragmentation risks and ensure a smooth transmission of monetary policy. To achieve this aim, such country-specific purchases need to cap or lower country specific credit or liquidity risk premia and spreads in sovereign bond yields.

Second, purchases from all euro member states in proportion to their capital key (a form of *quantitative easing, QE*), which mainly aims to lower term-premia in longer-term bond yields of all euro countries, thereby boost aggregate demand in the whole euro area and increase inflation towards the target. QE-type purchases do not aim at propping up public finances of high debt member states by lowering default risk premia in their yields, though this may be a side effect. Indeed, the more bonds the Eurosystem holds, or is expected to hold in the future, of country X, the less likely market participants may regard a sovereign debt restructuring of country X, given fundamentals.

Irrespective which concrete mechanism is at work to lower bond yields, purchases and the expectation of purchases can stem a default, doom-loop, or other sovereign crisis.

However, nothing is free in life. Support that lowers the default premium of some member states in the end relies, and causes a contingent burden, on the fiscal space or resources of other member states. Even if the central bank buys bonds, lowers yields, stems the crisis, and in the direct aftermath does not lose money due to default, the bank exposes its balance sheet to default (and interest rate) risks. If the rescue did not work out, it would have cost a lot. There is a tendency in all government finance and the associated accounting rules to regard backstopping debts or writing options as "free," and congratulating ones self when it works out to be free ex post. But luck eventually runs out and (implicit) debt guarantees eventually come knocking. This can happen

even if the government does not increase its debt in reaction to the central bank purchases or put option.

When the ECB buys sovereign bonds of member states on its own balance sheet - as was the case with the (selective) securities market program (SMP) that began in May 2010, the default risk is transferred to euro area-wide taxpayers and / or money holders. The bulk of the public bonds under subsequent QE-type purchase programs (that began 2015 and 2020) have been purchased by the respective national central bank.

Beyond doom loop mechanics, bond purchases that lower yields allow a government to reduce its funding costs. In the Eurosystem, purchases by national central banks of sovereign bonds whose yields exceed the rate that central banks (are expected to) pay on deposits (i.e. reserves), or on intra-Eurosystem target2 liabilities, effectively allow the respective member state to borrow at a low central bank rate. High-yield countries can thus effectively finance a part of their debt at a low ECB rate rather than the much higher market rates. Thereby, a member country with relatively high debt and weak economic fundamentals, and thus higher spreads, can benefit from the credibility of the overall Eurosystem, which in part is based on expected fiscal backing of the overall Eurosystem from member states with better fundamentals. The resulting quasi-fiscal transfer towards country X might also distorts the latter's incentive to borrow less in the first place, or speedily to repay debt. In this case, debt may increase faster and fiscal space be eroded more than without (expected) central bank purchases. The next adverse shock or crisis would then more likely cause higher insolvency risks and a fundamentally justified increase in spreads. If the willingness or ability of other member states to provide fiscal transfers to, or bail out, the country in trouble is limited, there might at some point only the choice between explicit default or high inflation.

Yes, national central banks keep the default risk of their sovereign debt assets and there is no existing provision that national central banks would be exempt from haircuts, as the ECB proved to be for Greece. In case of sovereign default of country X, the losses of its NCB would reduce the overall debt relief from debt restructuring, *if* the treasury of X would fully indemnify

(recapitalise) its national central bank. However, a government in default or leaving the euro is unlikely to make good the national central bank's losses on that government's bonds. In this case, a part of the losses of the national central bank of X may indirectly fall on other member states.

As discussed above, recapitalisation of the Eurosystem (more precisely national central banks) remains an open issue. There is no article or rule in the EU treaty that defines a minimum amount of capital of the national central banks participating in the euro area, or a minimum below which the national central bank cannot pay interest earnings (dividends/seigniorage) to its government.

Chapter 7

Kicking the Can Down the Road 2013-19

The period 2013-2019 proved to be a calm between two storms. The period might have led to a careful rethinking of the institutional structure of the Economic and Monetary Union, since the flaws and lacunae of the previous one were so laid bare. And indeed, the "Troika" programs, led Portugal, Ireland and Greece to enact structural reforms, and their economies steadily improved. But in Italy and Spain and other non-program countries, microeconomic structural reform was largely left for some day in the vague future, resulting in sclerotic growth rates. And with the exception of the launch of the Single Supervisory Mechanism on November 2014, the EU also did not, in this calm period, address the shortcomings in the design of Economic and Monetary Union. This failure left monetary policy more and more exposed in fighting subsequent crises.

7.1 Asset Purchases (QE)

At the end of 2014, with the worst of the eurozone crisis behind, Eurozone inflation declined to nearly zero. The ECB lowered the main refinancing rate to 0.05% on September 14, 2014,[1] and eventually to zero on Mar 16 2016. Lowering interest rates below zero — requiring depositors to pay — is difficult

[1] https://fred.stlouisfed.org/series/ECBMRRFR

and controversial for many reasons. Facing this "zero lower bound" in traditional interest rate channels, and still concerned about deflation risks, the ECB turned to asset purchases, buying bonds in return for newly created reserves.

As discussed above, if and how such "quantitative easing" works was, and remains controversial. For our story, we do not need to take a stand on this issue. The ECB thought QE would stimulate the economy, it thought that the economy needed stimulating to move inflation higher towards its aim, so the ECB started buying.

Originally, the ECB only bought[2] covered bonds (Third Covered Bond Purchase program CBPP3) and asset-backed securities (Asset Backed Securities Purchase program ABSPP). These securities include collateral, which protects the ECB against credit risk. In 22 January 2015, the ECB announced the Public Sector Purchase Program (PSPP), which would purchase sovereign debt, and consolidated the three programs into the Asset Purchase Program. In 2016, the ECB also announced that it would start buying corporate debt, and announced the Corporate Bond Purchase Program. The bulk of the purchases (85%) were public securities under the PSPP, amounting eventually to around €2,500 billion. In addition, large scale lending to banks at favourable interest rates was extended. These are the counterparts to "Quantitative Easing" undertaken in the US and UK. Net purchases on all of these programs were briefly ended in January 2019, but they were reactivated in Draghi's last governing council meeting at the helm of the ECB on September 2019.

Most government bonds purchased under this program (and later ones, including the Pandemic Emergency Preparedness Program PEPP) were acquired by national central banks, which normally bought the public bonds of "their" government. Thus interest income was not shared. As a result, national central banks of countries with high sovereign yields made significant profits, which they distributed to their treasuries.

The question of whether the asset purchase programs are legal was raised again. Buying sovereign bonds en masse would once have seemed a clear violation of the ECB's mandate. In its decision on the legality of the Public Sector

[2] https://www.ecb.europa.eu/mopo/implement/app/html/index.en.html

Purchase program (PSPP) (Weiss[3]), the European Court of Justice (ECJ) ruled the program was legal and in so doing established important precedents.

Unlike Outright Monetary Transactions (OMT), which were meant only for countries that were a part of an adjustment program with the European Stability Mechanism (ESM), the PSPP was a program for the purchase of debt securities throughout the euro area. Whereas OMT was designed to lower yields and the probability of default – a fiscal event – on the debt of specific countries, the PSPP was intended to combat a deflationary environment in the context of the zero lower bound affecting all members of the single currency. It thus fell more clearly into its general monetary policy effort directed at the price stability mandate, regardless of wether it may have had fiscal side effects.

But monetary policy *intent* alone did not automatically make the program legal. The ECB has a mandate to focus on price stability, but also restrictions on what tools constitute "monetary policy" to that end. Dropping money from helicopters or confiscating money from Europeans' pockets would also influence the price level, but these are tools that clearly exceed the ECB's mandate.

The ECJ concluded that the PSPP was legal even though it involved buying sovereign bonds, due to the fact that in its implementation the ECB imposed on itself important limits. These were many, but two are most relevant.

First, the ECB's purchases of sovereign debt followed each country's share of the capital of the European Central Bank or, hen dealing with the OMT, were linked to an ESM program with strct conditionality to limit moral hazard. Capital contributions are trivial in economic terms, but they are set by a "key" based on GDP and population (see Figure 7.1). Thus, the ECB bought bonds in proportion to the economic and demographic size of each country, not arbitrarily, nor did it de-incentivise countries from conducting sounds budgetary policies.

Distribution by capital key has been crucial in many economic policy negotiations in the EU. To name a few examples, it also determined the capi-

[3] https://curia.europa.eu/juris/document/document.jsf?docid=208741&doclang=EN (2018)

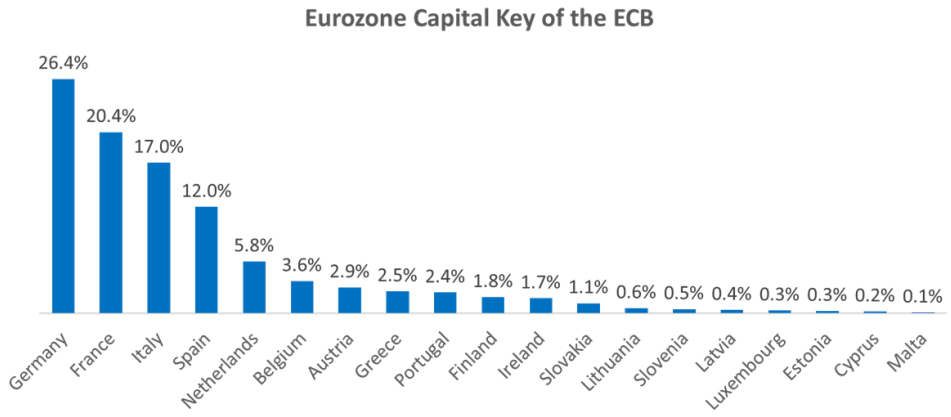

Figure 7.1: Capital Key. Source: ECB

tal share (and voting rights) of each Member State in the European Stability Mechanism; it has been crucial in many discussions on the establishment of an EU safe asset (other than euros and ECB deposits), including the Commission's proposal for sovereign bond-backed securities; and it has featured in many proposals around the regulatory treatment of sovereign exposures.

Buying in proportion to a capital key follows a principle of "market neutrality" whereby the ECB aims to raise or lower all bond yields, not to raise or compress spreads between bond yields.

A second important self-imposed limitation to the ECB's asset purchase programs is that the ECB's purchases must respect issuer limits. In its original PSPP announcement, the ECB set two upper limits: the PSPP could not entail the purchase of more than 25% of any specific issuance, nor more than 25% of the total outstanding debt of the given country. The rationale ECB should never be in a position that it holds so much of a given sovereign issuance that it has significant bargaining power as a bondholder in the event of the sovereign´s bankruptcy.

In its revision of the PSPP, this figure was eventually extended to 33%. The new limit was set at 33% because, as a part of the ESM treaty, countries had to set up common rules for the restructuring of sovereign debt, and these included a 33% limit on collective auction clauses. Such clauses determine the

percentage of bondholders that must accept a restructuring before all other bondholders are obliged to accept it. In this way, in any sovereign debt restructuring that is accepted by more than 66% of bondholders (in holdings) must be accepted by the rest. If the ECB were to hold more than 33% of any country's debt, it would necessarily be the deciding vote on any restructuring.

The ECJ decision emphasized the importance of these issuer limits. However, the Court did not validate that the ECB had chosen the right figure of 25% or 33%. The Court only specified that any issuer limit should prevent the ECB from owning the totality of any given issuance or issuer. Under this looser interpretation, many have argued that the ECB should again increase its issuer limit. For example the Bank of Japan has a 50% limit.

The ECB soon found that the two limits can contradict each other. Respecting the capital key of the ECB inevitably led to the ECB buying more than 33% of the sovereign debt of many countries with low levels of debt, like the Netherlands and Luxembourg; and almost Germany. As a result the ECB decided to give priority to the first capital key rule even if it meant buying larger fractions of those country's bond issues. As we will see later, this contradiction shaped the ECB's response to the pandemic.

7.2 Subsidised Loans to Banks

Initially it was firmly understood that the ECB should not subsidise or recapitalise weak banks. Any such actions were a responsibility of national fiscal authorities, and would violate the separation of fiscal and monetary policies and the prohibition on monetary financing.

ECB President Mario Draghi made this principle clear when explaining the aim and design of the ECB's Outright Monetary Transactions (OMTs) in 2013:

> By way of drawing a parallel between OMTs and our standard liquidity operations: as the credit provided to banking counterparties cannot be, and must not be, interpreted as an injection of capital into failing banks; in the same vein, under OMTs, in compressing

> the premium for the risk of "redenomination," the ECB cannot and does not intend to provide financial support to governments which reinstate solvency conditions which have not already been approved ex ante.

However, later, during the period of persistent low inflation, large scale lending to banks started to involve incentives (bonuses) that effectively allowed banks to obtain large funds from the central bank at below market rates, and later partly even at financing costs below the interest rate at which banks could deposit such money at the ECB.

To secure such subsidised loans in Targeted Long-Term Refining Operations (TLTRO), first implemented in the second half of 2014, banks had to fulfil certain thresholds. Primarily, they needed sufficiently strong lending to the non-bank private sector, excluding mortgages. However, such thresholds were relatively easy to fulfil for most banks.

In this way the ECB indirectly provided risk-free arbitrage profit opportunities to banks. The resulting balance sheet costs are eventually shifted to taxpayers via lower future central bank profits and thus lower future dividends paid to governments.

The saving grace is, perhaps, that the subsidy applied fairly evenly to all banks, rather than being directed at the weakest banks or banks of a particular country.

On March 7 2019 the ECB decided to launch a new series of quarterly targeted longer-term refinancing operations (TLTRO-III), starting in September 2019 and ending in March 2021, each with a maturity of two years. "These new operations will help to preserve favourable bank lending conditions and the smooth transmission of monetary policy." These loans to banks (TLTROs) were part of a package that to provide "significant monetary policy stimulus" and that "will support the further build-up of domestic price pressures and headline inflation developments over the medium term."[4]

[4] https://www.ecb.europa.eu/press/pressconf/2019/html/ecb.is190307~de1fdbd0b0.en.html

At an ECB Press Conference following this decision (7 March 2019) a journalist asked: "The TLTROs are also kind of subsidies for banks, especially for weak banks. A lot of these banks are paying dividends to their shareholders and bonuses to their senior managers. Do you think this fits together with the subsidies?". President Draghi replied "... if there were no subsidies, then nobody would take up the TLTROs." He further explained:

> The issue is not whether there is a subsidy or not; there is a subsidy. The issue is whether the TLTRO fulfils monetary policy objectives and helps the transmission of monetary policy. We believe it has always done that, it's been very effective, as a matter of fact, in reactivating the banking sector in the eurozone and in transmitting ... the better lending conditions to firms and households, to the private sector in the economy. I think that's the yardstick of successful TLTRO.

Given that the duration of TLTRO loans to banks are up to 3 years, with interest costs to banks calculated from past deposit rates and "as low as 50 basis points below the average interest rate on the deposit facility over the period from 24 June 2020 to 23 June 2022" banks also had an incentive to delay the repayment of TLTRO loans to the ECB, when interest rates on the deposit facility started to increase. This happened in the course of 2022.

7.3 2016-2019: Inflation Remains Low Despite Asset Purchases

In spite of a massive expansion of the Eurosystem balance sheet, inflation remained stable and mostly lower than the ECB's target of close to, but below 2%. Some economists conclude from the episode that quantitative easing really has no significant effect on inflation after all; a liquidity trap is a liquidity trap; once we are satiated in reserves adding more does nothing; and whatever declines in long-term bond yields central banks were able to achieve reflect exactly the "segementation" that keeps those from affecting the rest of the economy. Others see that even more QE should have been attempted.

During and after the sovereign debt crisis, the ECB had been calling upon fiscal authorities to restore sound public finances, especially in countries with high public debt.

With inflation lower than the target, and the ECB's interest rate and asset purchase tools seemingly ineffective, thoughts naturally turned to fiscal expansion. The ECB naturally did not want to call on high debt countries to reverse course and get in trouble again. And the ECB did not publicly call on countries with fiscal space to help with fiscal expansion, even to compensate for countries that the ECB was asking to cut down on debt. While President Draghi in August 2014 did call in general for fiscal authorities to support demand, this was the exception.

In autumn 2020, ECB President Lagarde, looking back, acknowledged the potential importance of fiscal policy:[5]

> When central banks have to use balance sheet policies extensively, there is an inevitable strengthening of the interplay between monetary and fiscal policies.[...] Indeed, one explanation for the superior inflation performance of the United States relative to the euro area in recent times is that monetary and fiscal policies were more aligned. From 2013 to 2018, fiscal policy in the euro area tightened by around 2.5 percentage points of GDP, compared with a loosening of around 0.8 percentage points in the United States. ECB analysis for the euro area finds that, while monetary policy was supporting inflation during this period [2013-18], it was being offset by demand headwinds.

[5]Lagarde, Christine, The monetary policy strategy review: some preliminary considerations. Speech at the "ECB and Its Watchers XXI" conference, Frankfurt am Main, 30 Sep. 2020. https://www.ecb.europa.eu/press/key/date/2020/html/ecb.sp200930~169abb1202.en.html

Chapter 8

Third crisis: The Pandemic

The COVID-19 Pandemic starting in early 2020 led to huge monetary and fiscal policy responses. The Pandemic was an *economic* crisis, not just a public health crisis. Authorities feared financial and economic meltdown, motivating immense policy responses.

Fiscal policy saw large deficit-financed spending, mostly transfers to people and businesses in the member states, as well as guarantees for loans to firms. It also saw a major fiscal innovation at the EU level: the issuance of joint European debt to finance cross-border fiscal transfers (Next Generation EU, NGEU), agreed in 2020.

Monetary Policy included a large expansion of ECB bond purchases (Pandemic Emergency Preparedness program, PEPP) with more flexibility for the ECB to purchase debt issued by member states with high interest-rate spreads. Purchases were made with newly-created euros in the form of reserves (deposits) that banks hold at the central bank.

8.1 Monetary Response

In March 2020, a week after the first COVID-related lock downs in Italy, the US Federal Reserve cut interest rates from 1.5% to 0. In its March 12th meeting, the Federal Reserve also announced $1.5 trillion balance sheet expansion including $600bn in asset purchases on the same day. On March

10th, the Bank of England announced a 0.25% rate cut and a new funding scheme for Small and Medium-Sized Enterprises (SMEs).

The European Central Bank did not change policy rates in its March 12 meeting. Unlike in the US, the ECB had not raised rates, and its deposit facility rate was unchanged at -0.5% since September 2019. There wasn't room for much further lowering. However the ECB announced new Long Term Targeted Refinancing Operations for bank, which ended up amounting to almost €400bn, and proposed to increase the existing Asset Purchase program (APP) of €120bn to be spent throughout 2020. While there was flexibility on the monthly purchases and the distribution of the purchases across the different asset classes, including the Public Securities Purchase Program (PSPP), the cross-country distribution of the such bond purchases remained bound by each country's capital key.[1] As in the US, these purchases amounted to instant monetization of the majority of the government borrowing during the pandemic and its aftermath. Figure 8.1 summarizes the time series of ECB asset purchase programs.

The ECB also strongly encouraged fiscal authorities to implement an "ambitious and coordinated fiscal policy response . . . to support businesses and workers at risk." It saw its own role in supporting "liquidity and funding conditions for households, businesses and banks and . . . [helping] to preserve the smooth provision of credit to the real economy." It anticipated that the pandemic "will slow down production as a result of disrupted supply chains and reduce domestic and foreign demand, especially through the adverse impact of the necessary containment measures."

Although the ECB emphasized full flexibility in the Asset Purchase programs (APP), its initial intention, as outlined by President Lagarde, was for the purchases to focus on private sector assets rather than supporting sovereign borrowing as was the case in the US. In the press conference following the Governing Council meeting, Lagarde reacted to a question on how the ECB would respond to higher government bonds spreads:

[1] Christine Lagarde, Luis de Guindos March 12 2020, Introductory Statement, Press Conference, https://www.ecb.europa.eu/press/pressconf/2020/html/ecb.is200312~f857a21b6c.en.html.

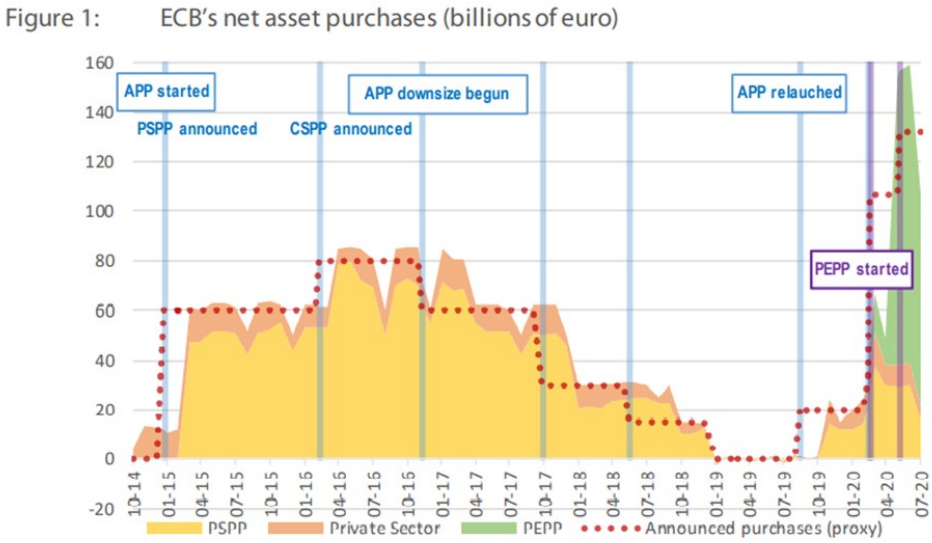

Figure 8.1: Pandemic Emergency Purchase Program.

> ... more debt issuance coming down the road depending on the fiscal expansion ... will be determined by policymakers. Well, we will be there ... using full flexibility, but we are not here to close spreads. 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.

"We are not here to close spreads"—perhaps the antithesis of "do whatever it takes"—led to the single largest daily yield increase in Italian sovereign debt in history, revealing suddenly just how much continuing expectation of ECB intervention was keeping Italian and other spreads low in the first place.

President Lagarde quickly issued a correction in a CNBC interview the same day,[2]

> I am fully committed to avoid any fragmentation in a difficult moment for the euro area. High spreads due to the coronavirus impair

[2] https://www.ecb.europa.eu/press/pressconf/2020/html/ecb.is200312~f857a21b6c.en.html

> the transmission of monetary policy. ... 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.

The choice of language is revealing. Market "fragmentation" became quickly a new word to justify tamping down on sovereign credit spreads. The obvious explanation that spreads were kept down by ECB purchases and the implicit whatever-it-takes promise seems apparently too contentious to be said out loud. For the ECB to tamp down spreads to facilitate sovereign borrowing is also too contentious, even in the sort of crisis in that some sovereign borrowing is clearly necessary.

The weight of precedent seems heavy: the ECB might feel it minimises legal risks, if it justifies large scale purchases of sovereign debt with the need to facilitate "transmission" of monetary policy. So fragmentation and transmission must be the words of the day.

On March 18th, after a late-night call of the Governing Council, the ECB announced the Pandemic Emergency Purchase Program (PEPP, short: pandemic program) with an initial endowment of €750bn, to be implemented immediately, and a "no limits´´ pledge by Lagarde: "Extraordinary times require extraordinary action. There are no limits to our commitment to the euro."

The pandemic program (PEPP) was "established in response to a specific, extraordinary and acute economic crisis, which could jeopardise the objective of price stability and the proper functioning of the monetary policy transmission mechanism."[3]

The ECB stressed that it "will ensure that all sectors of the economy can benefit from supportive financing conditions that enable them to absorb this shock. This applies equally to families, firms, banks and governments." The explicit mentioning of "governments" in it promise to ensure supportive financing conditions, which was not included in the statement after its previous regular meeting a few days before, is one of the innovations to monetary-fiscal

[3] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32020D0440

interaction in reaction to the pandemic.[4] This pandemic program announcement brought spreads down again. The program differs from previous efforts in several key properties:

1. The pandemic program was not limited to a particular type of security.

2. While the ECB announced that the "benchmark" for purchases of sovereign debt would still be the capital key, it allowed itself deviations from this benchmark:

   > ... purchases under the new PEPP will be conducted in a flexible manner. This allows for fluctuations in the distribution of purchase flows over time, across asset classes and among jurisdictions.

   This "flexibility" clearly allows the ECB more room for monetizing debts and squashing spreads of countries in more trouble than others.

3. Under the pandemic program, the ECB would also start purchasing Greek sovereign debt, reversing a previous ECB decision, not to purchase debt below investment grade (Credit Quality Step 3), unless the sovereign issuer is in an ESM adjustment program, that had been considered necessary to protect the ECB from investment losses.

4. The ECB also removed the limitation that it could by no more than 33% of the debt of any particular issuer.

Why did the ECB create a new program rather than use existing ones? Largely, because the ECB wished to breach the self-imposed limits of those programs.

The OMT (Outright Monetary Transactions) program was a targeted instrument for specific countries having problems financing existing debt. In

[4] Press Release, "ECB announces €750 billion Pandemic Emergency Purchase program (PEPP)", 18 March 2020,https://www.ecb.europa.eu/press/pr/date/2020/html/ecb.pr200318_1~3949d6f266.en.html.

the pandemic, the ECB wished to help all governments to issue new debt at low rates.

Moreover, the existing purchase programs were bound by the capital key and included issuer and issue limits. The ECB desired "flexibility" to purchase bonds from particular states and potentially in larger quantities. In the official decision (March 24, 2020) the ECB stated:[5]

> A flexible approach to the composition of purchases under the PEPP is nonetheless essential to prevent current dislocations in the aggregate euro area sovereign yield curve from being translated into further distortions in the euro area risk-free yield curve, while also ensuring that the overall orientation of the program covers all jurisdictions of the euro area.

Unlike the OMT design, the ECB saw no need to ask fiscal authorities to impose conditions on the benefiting countries. This is natural, as issuing new debt cheaply is different from heading off a roll over crisis. The ECB may also have followed the prevailing view of fiscal and monetary authorities around the world, that now was no time to worry about how debts will be repaid, especially with the experience of a decade of intractably negative real interest costs that nobody thought would ever end.

With the PEPP "flexibility," however, the ECB allowed itself to buy sovereign bonds from countries with high interest rate spreads, with no capital key limitation. The goal of spread compression and the goal of helping countries to issue debt to finance pandemic spending became inseparable.

As a result, the PEPP seems to have displaced earlier programs. Euro member countries have little incentive to borrow via the European Stability Mechanism (ESM). As a later Italian Prime Minister, Georgia Meloni said in a press conference in 2022[6] : "I fear the fund will never be used" as the conditions are "too stringent."

In sum, in these six days in March 2020, almost all the previous re-

[5] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32020D0440.
[6] https://www.euronews.com/next/2022/12/29/italy-esm

straints on bond buying came off, and we saw a significant further blurring of boundaries between fiscal and monetary policy. The ECB's U-turn on communication, from "we are not here to close spreads" to "no limits" (the announcement of new purchase program almost without limits), and the strong financial market reactions to those announcements clearly revealed how crucially important expectations about future ECB purchases of sovereign bonds are for bond yields and thus the funding costs of euro area member states, especially those with with high debt, default spreads, and significant debt sustainability risks.

The constant innovation of new programs with steadily looser limits leads one to wonder just what the point of self-imposed limits was. In part, the motivation was surely to stem moral hazards, to try to dissuade markets and governments from expecting support beyond the limits. But with limits breached over and over again, most observers surely concluded that if the ECB finds a limit inconvenient ex post, it will just invent a new program with looser limits In part, the limits may have been internal, for the ECB to persuade itself that bond buying was going to be a limited emergency response to particular situations and not a regular practice. Perhaps buying debt with ever loosening limits was just a slow boil-the-frog process of finding out how much bond buying the ECB can get away with politically, without fighting too many court battles. Surely, a bit of all three.

A clear lesson is that while institutions such as the ECB can invent crisis-fighting tools on the fly, institutions are never very good at inventing durable precommitments to contain their own future actions on the fly.

It is also interesting that an innovative central bank policy, clearly aimed at supporting expansionary fiscal policy, still has to be clothed in terms of price stability and monetary policy "transmission." Our point is not legalisms. Clearly, the ECB will continue intervening in debt markets. Indeed, helping the sovereign to issue debt at low rates, in part by promoting a liquid market and trading sovereign debt for money, and establishing mechanisms that help the sovereign commit to repayment were central purposes of the Bank of England on its founding in 1694. Central banks have been at it ever since with greater or lesser success. We can read this little history as the ECB discovering such

a purpose, despite a treaty with quite different aims, but not yet in a clearly defined and systematic way that controls the moral hazards that lie scattered around conjoined monetary and fiscal policies. Clearly, there must be some mechanism in the reformed EMU to deal with sovereign defaults. But the habit of having to repeat a fanciful story — "fragmentation" and "transmission"— when we all know that this hides a crucial part of the policy impact, to stay within today's legal or political limits, impedes a lot of serious thinking and open debate about what the true problems are and how one might fix them.

8.2 Fiscal Response

Shortly after the ECB's pandemic program was decided, the European Union put together a fiscal response of a similar size to the initial PEPP: the Next Generation EU (NGEU). No existing European legislation provided for a fund like this. The member states unanimously authorized the EU Commission to issue bonds to borrow up to €750 billion (€800 billion in 2022 prices) on behalf of the European Union, to be repaid by 31 December 2058 at the latest. This was the first major issuance of explicit European Union debt.

A portion of these funds would finance existing EU programs. But the main component of these funds was the Recovery and Resilience Facility (RRF), worth €723 billion in 2022 prices, provided to directly finance "reforms and investments" in the member countries, with European Union approval.[7] The "reforms and investments" are geared to

> make their economies and societies more sustainable, resilient and prepared for the green and digital transitions, in line with the EU's priorities; [and] address the challenges identified in country-specific recommendations under the European Semester framework of economic and social policy coordination. The RRF is also crucial for implementing the REPowerEU plan – the Commission's response to the socio-economic hardships and global energy market disruption caused by Russia's invasion of Ukraine.

[7] See https://commission.europa.eu/business-economy-euro/economic-recovery/recovery-and-resilience-facility_en for a map of all the funds and their distribution.

Part of the funds – up to €385.8 billion– would provide *loans* to member countries, which were supposed to be eventually repaid by the receiving country. In addition, *grants* of up to €338 billion were predominately allocated to countries with high debt and/or with relatively low GDP per capita. Repayment of EU debt issued to finance these grants is to be covered by future contributions from Member States and potentially new EU own resources.

To finance the plan the EU agreed to increase the ceiling allowed for the total EU budget (the so-called "own resource" ceiling) from 1.20% to 1.4% of Gross National Income, as well as an additional temporary increase of 0.6% of GNI to cover the liabilities in connection with the EU borrowing, until 2058 or when the liabilities are repaid. Hence, adding both increases, the EU total ceiling (or "headroom" in EU parlance) increased from 1.2% to 2% of the European Union GNI.

To repay all these liabilities, the EU decided on one new own-resource, a small plastic levy (estimated revenue: €7bn per year). Beyond that, the EU has declared its desire to come up with new own-resources, including a Carbon Border Adjustment Mechanism, a digital tax, a tax on the Emissions Trading System, and a Financial Transactions Tax. However, so far these taxes remained an intention and the EU has not specified how concretely revenues to pay back bondholders will be raised or how they will be distributed across EU member states.

As a result, this bond issue is not the harbinger of a European fiscal authority. The EU did not put in place its own taxation to finance repayment. EU member states did not agree, beyond plastics, to shift sovereignty over concrete taxes or tariffs to the EU. They also did not agree to a concrete legal obligation for each member state to pay back a defined share of the debt issued and spent by the EU Commission. The bonds are to be repaid by "contributions" of member states, which are not defined ex-ante. The Commission states[8] "The EU budget headroom hence serves as a guarantee that the EU will be able to make repayments under any circumstances," but expenditure "headroom" does not state where the money comes from. Many observers (and at least one of

[8]See the investor relations page of the EU Commission.

us) long for Europe to come to institutional arrangements reminiscent of those that emerged in the 1790s in he US, for the EU to become at least somewhat a "United States of Europe." In fiscal affairs, Alexander Hamilton, the first treasury secretary, arranged that the US Federal Government would take on state debts from the revolutionary war, and have the taxation power to repay those debts. Dysfunctional Articles of Confederation, in which member States supported the federal government via contributions, were replaced by the Constitution, which among other (!) provisions gave the Federal government power to tax and spend on its own authority. The NGEU/RRF bond issue is a long way from that set of fiscal institutions.

The vagueness about how debt will be repaid also created a statistical gap. The new "EU debt" issued to finance the grants does not appear in the official debt figures of the EU member states, though they have a collective specified duty to repay EU bonds. The aggregated debt of all EU member states thus omits €390 billion of their promised contributions to pay off EU debt.

Chapter 9

Fourth Crisis: Inflation and war

In spite of several crises, low growth, and adverse shocks during the first two decades of the euro, inflation was low and measures of medium-term inflation expectations were stable. See Figure 9.1.

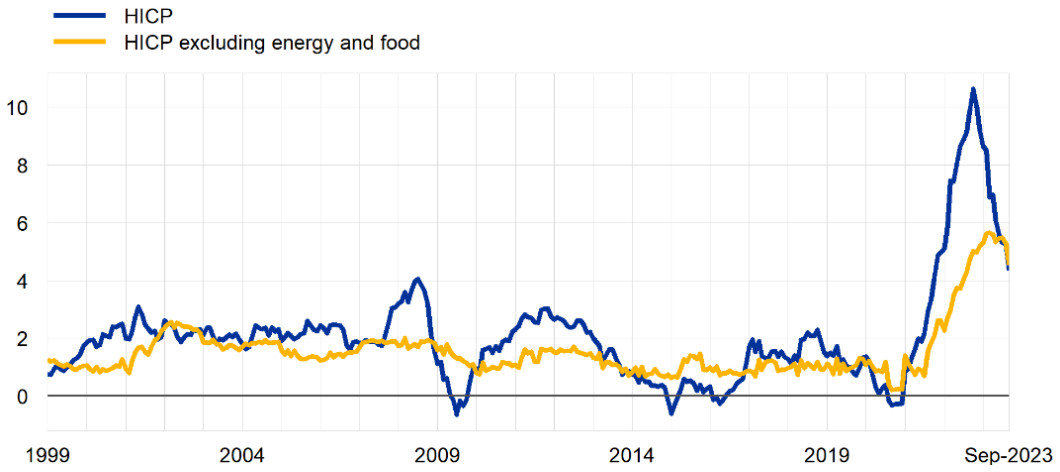

Figure 9.1: Inflation in the euro area - HICP and HICP excluding energy and food. Annual percentage changes. Latest observation: Sept. 2023

Over the first nine years from 1999 to 2007, HICP (Harmonized Index of Consumer Prices) inflation mostly was relatively close to the ECB's 2% upper bound. This was a remarkable achievement given a new monetary union among (initially) eleven fiscally sovereign member states, which had very different

inflation histories and economies.

During the financial and sovereign debt crisis inflation was more volatile, broadly in a range between zero and 4%, but still on average around 2% and following a normal boom-bust-recovery pattern.

From early 2013 onwards, inflation declined to around zero in 2015/16, but gradually came back to around or slightly below 2% in 2017/18. Whether in truth because or despite negative interest rates, forward guidance, and quantitative easing, it is natural to view the outcome as a success for the ECB.

In 2020, the first year of the pandemic, HICP inflation fell again to around zero. As in 2008, this is a remarkably small decline given the magnitude of the economic collapse.

"Core" inflation excluding energy and food barely budged from the 1-2% range the whole time. Given that inflation is measured to at best a one percentage point accuracy, these small movements are not particularly meaningful. Obsession over tenths of a percent is usually misplaced.

9.1 Inflation Returns

Inflation then returned with a vengeance starting in early-mid 2021.

The timing was particularly unfortunate at the ECB. After a decade of worrying about low inflation and the effective lower bound on interest rates, and during the reduction of inflation during the Covid economic contraction, the ECB embarked on a systematic policy review. The review was launched in January 2020 and announced[1] on July 8 2021. The central objective of the new policy framework was to *increase* inflation. The ECB raised the target to symmetric around 2%, rather than the original definition of price stability (announced in 1998) that was initially understood as a band from 0 to 2%, or the subsequent bias to the top of that band ("close to but below 2%", announced in 2003), and the ECB promised to tolerate even higher inflation on occasion. Since expected future inflation is a primary determinant of today's

[1] https://www.ecb.europa.eu/press/pr/date/2021/html/ecb.pr210708~dc78cc4b0d.en.html

inflation, much of the point of such an announcement is to raise expectations and thereby stimulate aggregate demand and increase inflation immediately.

> The Governing Council considers that price stability is best maintained by aiming for a 2% inflation target over the medium term. This target is symmetric, meaning negative and positive deviations of inflation from the target are equally undesirable. When the economy is operating close to the lower bound on nominal interest rates, it requires especially forceful or persistent monetary policy action to avoid negative deviations from the inflation target becoming entrenched. This may also imply a transitory period in which inflation is moderately above target

The announcement also featured an "ambitious climate change action plan," a new focus of ECB policy.

The ECB's policy review to some extent mirrored the US Fed's contemporaneous policy review that had resulted in "flexible average inflation targeting." Also with an eye to increasing inflation and with zero bound worries in mind, the Fed committed to reacting slowly to any inflation that would emerge. If believed, this framework would lower expectations of future rates, lower long-term rates, and thereby stimulate the economy and raise current inflation. If one is critical of the ECB, at least one should recognize that the same ideas pervaded central banking circles globally, with the Fed having even gone further than the ECB by announcing that its was seeking "to achieve inflation that averages 2 percent over time." [2]

But, with the advantages of hindsight, we can see that inflation had started to increase significantly. The new strategies were beautifully constructed defenses against hypothetical zero bound deflationary spirals. But the threat was already advancing on the opposite front.

Figure 9.2 plots inflation and the ECB policy rate through this episode. The inflation graph is the one-year growth rate of the price level, as is customary

[2] https://www.federalreserve.gov/newsevents/pressreleases/monetary20200827a.htm

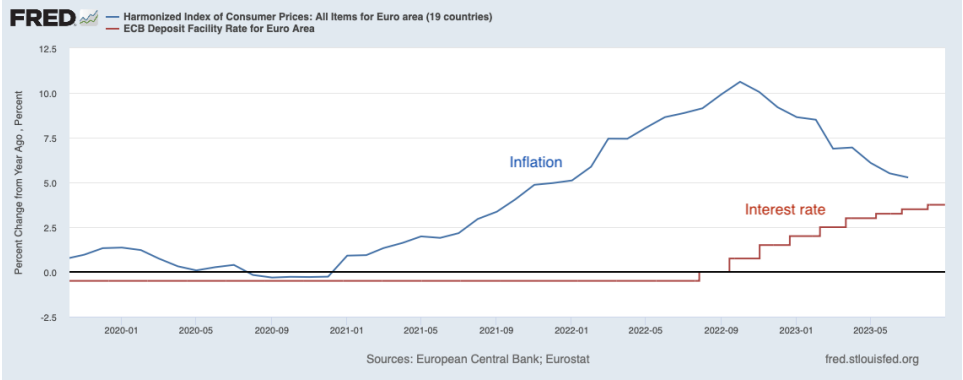

Figure 9.2: Inflation and interest rate in the post-pandemic era. Growth from a year earlier in harmonized prices, all items, total for euro area, and ECB deposit facility rate. Source: Eurostat and ECB.

to reduce noise, but thereby lags actual (change from a day ago) inflation by about 6 months. One year growth rates turn a hockey stick into a smooth s shape.

One can see the normal cyclical pattern of inflation that declines in the recession and returns to normal early in the recovery. But then inflation starts to rise in the first quarter of 2021. The same pattern holds in the US. Year-on-year inflation breached the 2% target in mid 2021, with higher monthly rates. By December of 2021, inflation had increased to 5%, then 6.1% in the first quarter of 2022, and kept rising.

The episode is remarkable for two other features. First, the ECB like other central banks let inflation surge for a whole year before starting to raise policy rates Even in the inflationary 1970s, central banks never waited a year to respond to higher inflation with higher interest rates. The year was spent with stories of "transitory" "supply shocks" and other reasons to believe inflation would swiftly go away on its own without ECB intervention.

Second, inflation did ease, and much more on its own than any conventional analysis would have predicted. The peak of inflation coincided neatly with the ECB's liftoff of interest rates above zero. But conventional monetary theory holds that inflation keeps rising until interest rates are persistently higher than inflation, causing a substantial recession, and then via the Phillips

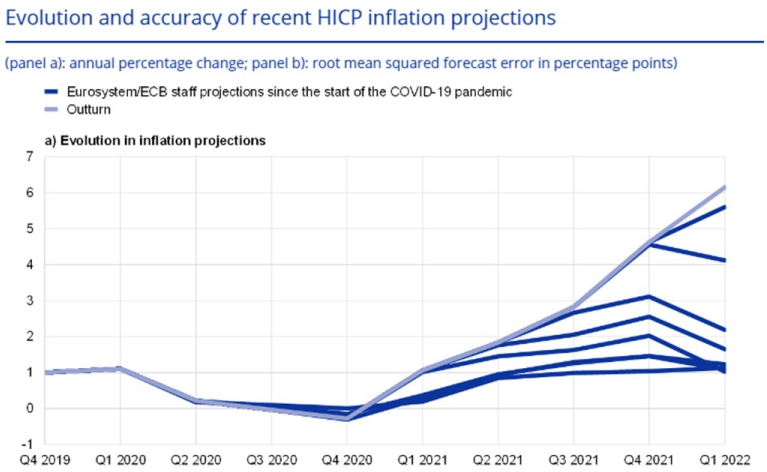

Figure 9.3: ECB Staff inflation forecasts and realizations.

curve lower inflation. Nothing of the sort happened. The conventional view that interest rates must exceed inflation before inflation can come down is simply wrong in this episode.

Figure 9.3 plots ECB forecasts vs actual inflation. At every date until the end of 2021, both central banks forecast relatively fast and painless (no high interest rates, no recession) reversion of inflation to around 2%. One year later, in, December 2022, the ECB projected an HICP price level for 2024 that was about 12% higher than what it had forecast for 2024 a year earlier, in December 2021. One can describe central bank (and private) forecasts quite closely as a quarter of momentum followed by quick AR(1) reversion to 2%.

Here too, one should not rush to criticize the ECB. Inflation also caught by surprise the US Federal Reserve, survey expectations of market participants, professional and institutional forecasts, and forecasts implied by bond prices. Many people thought inflation was carved in stone at around 1% to 1.7%. It's hard to believe that trends that have gone on for 20 years can break so suddenly. If data or events were being ignored or if the understanding of inflation was wrong, those errors were common to most central bankers and policy analysts.

9.2 Responding to Inflation

Inflation surged, starting (in retrospect) in early 2021. The ECB, like the US Fed and many other central banks, responded hesitantly, not budging the deposit rate even up to zero until July 2022 when inflation was over 8%.

Yes, bond buying declined. In December 2021 the ECB announced an end to net purchases under its Pandemic Emergency Purchase (PEPP) program by March 2022, as the pandemic was over and the economy recovering in the V-shape fashion expected of a supply shock. But this action was a move towards normalisation, not a tightening response to inflation.

Overall, looking at policy rates and shorter term market rates, the ECB maintained its accommodative monetary stance for 2021 and the first half of 2022 while inflation kept rising. This stance included negative interest rates, moderated but continued net purchases under the asset purchase program, an extension of the reinvestment horizon for the PEPP until end 2024, announced in December 2021, and still generous lending or "liquidity provision" to banks (Targeted Long Term Refinancing Operations, TLTRO). Moreover, in March 2022 the Governing Council communicated[3] that it would "assess the appropriate calibration of its two-tier system for reserve remuneration," in which it offers lower interest on some reserves than others, so that "the negative interest rate policy does not limit banks' intermediation capacity in an environment of ample excess liquidity." Translation, while some reserves (deposits at ECB) pay a higher rate than others, the ECB worries that banks are sitting on reserves rather than lending to the private sector. The announcement is a hint that lower rates might soon apply to all categories of reserve deposits.

Why did the ECB wait so long? Like the Fed, the ECB may have felt this policy stance necessary given its past forward guidance promises to keep interest rates low even after inflation rose to and somewhat above target, promises designed to combat (then) low inflation and deflation risks. Having promised to keep rates low in the face of inflation somewhat above target, the ECB may have felt its credibility would be undermined by reacting too quickly.

[3]Press Release, Monetary Policy Decisions, 10 March 2022. https://www.ecb.europa.eu/press/pr/date/2022/html/ecb.mp220310~2d19f8ba60.en.html.

More broadly, a slow reaction is consistent with the new policy framework, in which the ECB tolerates above-target inflation to counterbalance below-target inflation, and acts with a "medium-term orientation," bygones are bygones, and only really worries if long-term expectations might become "unanchored." For example, in March 2022, with inflation at 7.4% and the Russian invasion of Ukraine in full flow, the ECB's Governing Council's language was still broadly consistent with that long-stated forward guidance:

> . . . the Governing Council expects the key ECB interest rates to remain at their present 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.

The ECB also mentioned here that "fiscal measures, including at the European Union level, would also help to shield the economy." In assessing fiscal policy, ECB was still worried about lack of demand not excess stimulus, though inflation was surging.

But a larger part of the explanation for the ECB's unusually slow reaction to inflation is that in March 2022 the ECB seemed to see the inflation surge as largely due to temporary factors, such as base effects, supply bottlenecks, and energy price shocks, price rises confined to specific sectors (relative price changes) that would quickly go away on their own even without higher interest rates. The "medium term" orientation philosophy ignores such "transitory" factors, where a strict inflation target or price level target would wish to fight against all kinds of inflation.

We saw this belief that inflation would swiftly go away without contractionary monetary policy in the sequence of forecasts shown in Figure 9.3. For example, the ECB's March 2022 projections[4] for annual headline inflation were still reassuring: 2.1 per cent inflation in 2023 and 1.9 per cent in 2024.

[4]Press Release, Monetary Policy Decisions, 10 March 2022, https://www.ecb.europa.eu/press/pr/date/2022/html/ecb.mp220310~2d19f8ba60.en.html.

> The Governing Council sees it as increasingly likely that inflation will stabilise at its two per cent target over the medium term. . .

The ECB began to weaken its language in April[5] 2022, citing "flexibility:"

> The Governing Council stands ready to adjust all of its instruments within its mandate, incorporating flexibility if warranted, to ensure that inflation stabilises at its 2% target over the medium term.

Note still the "medium term" orientation which allows substantial further inflation in the short term.

Inflation rose further to 8.6% in June 2022, and showed no signs of abating. Moreover, market-based measures of inflation compensation, which reflect inflation expectations, had risen significantly, suggesting that investors were losing confidence in the ECB's ability and will to control inflation. Options markets indicated larger probabilities of higher inflation, in addition to changes in expected inflation. Using new estimators of market inflation expectations, Hilscher, Raviv, and Reis (2022) find that "In June 2022, market participants assigned a probability of more than 50% to an annual inflation rate above 3% over a five-year horizon."

Faced with this situation, the ECB decided to act. It became clear to the ECB that monetary policy had to turn: quantitative easing had to stop, and interest rates needed to rise. In its June 9th 2022 meeting, the ECB announced that it would end its Asset Purchase program (APP) by September 2022, though reinvestments of maturning bonds under the Pandemic Emergency Purchase program PEPP would continue. Most of all, the ECB announced that it would start raising key interest rates from July 2022 onwards. The ECB also abandoned forward guidance promises to keep rates low, and replaced them with a more flexible and state-contingent communication strategy.

[5]Press Release, Monetary Policy Decisions, 14 April 2022. https://www.ecb.europa.eu/press/pr/date/2022/html/ecb.mp220414~d1b76520c6.en.html

The ECB stated that[6]

> The Governing Council undertook a careful review of the conditions which, according to its forward guidance, should be satisfied before it starts raising the key ECB interest rates. As a result of this assessment, the Governing Council concluded that those conditions have been satisfied.

9.3 Sources of Inflation's Surge and Easing, and Lessons

How central banks failed to see inflation while it was overrunning the front lines is finally attracting some soul-searching. See for example Chahad et al. (2022) and Levy (2024) for the US. Maybe the models are wrong. Maybe there are shocks that central banks have overlooked. Maybe inflation is inherently unforecastable. We need to know. If we do not understand what went wrong, there is no way to fix policy mistakes, process, data collection, modeling, or fiscal-monetary policy institutions to avoid a repetition.

The source of this unexpected inflation has been contentious and is not yet settled. Many politicians rounded up the usual suspects: Greed, monopoly, profiteering. More serious analysis varied on the effects of supply shocks, energy price shocks, war, monetary policy, and fiscal policy.

The surge of inflation is clearly not due to monetary policy action. The ECB's policy rate was unchanged. A decade of zero to slightly negative rates before the pandemic did not create 10% inflation. If one wishes to blame monetary policy, it must be for failing to react to a shock that comes from elsewhere.

Supply Shocks and Monetary Response

There were, credibly, supply and terms-of-trade shocks. The pandemic was a supply shock: An economy under lockdown can't produce much. There

[6]Press Release, Monetary Policy Decisions, 9 June 2022. https://www.ecb.europa.eu/press/pr/date/2022/html/ecb.mp220609~122666c272.en.html.

wasn't inflation immediately, in part likely because the raging pandemic was also compressing demand: People didn't want to spend much time and money in restaurants, hotels or airplanes so as to reduce the risk of being infected. Another possible explanation for low inflation in 2020 is a statistical mismeasurement: prices of contact intensive services were not adjusted for the fall in quality which the health risks implied.

Post-pandemic global supply chain bottlenecks and energy supply disruptions are more likely causes of the post-pandemic inflation emerging in 2021.

But supply shocks alone are not a complete story for inflation, however, as the pandemic points out. First, for prices to rise, demand must be there as well.

Second, a supply shock alone gives a transitory rise in a price *level*, not a transitory rise in the inflation *rate*. If car factories close, the price of cars rises. But when the factories open again, the price of cars falls back to where it was. A period of car deflation follows the car inflation. We have seen a rise in *inflation* that seems finally to be easing, but no commensurate deflation bringing the price level back where it was.

Third, supply shocks per se only imply changes in *relative* prices. If the economy can produce fewer cars or TVs, then the price of cars or TVs must rise relative to restaurant meals and to wages. But the latter could fall rather than the former rise. How does a relative price shock raise all prices and wages?

The resolution to all three problems is simple: A supply shock translates to general inflation, and a permanent rise in all prices, only when and because the shock is *accommodated* by monetary and fiscal policies, which alone determine the level of all prices and wages, i.e. the value of money. We focus first on monetary accommodation as that is the usual story.

Facing a relative price shock, higher energy, say, the central bank can choose whether to have higher energy prices or lower prices of everything else. Since central banks expect price and wage cuts to be more damaging than rises, they choose a higher overall price level. The central bank lets other prices rise too, so that higher energy costs can feed through to higher costs of goods that

use energy. This is the standard analysis of the 1970s energy price shocks for example. By leaving interest rates at zero in the face of inflation approaching 10% the ECB and other central banks accommodated the supply shocks, let them spread throughout the economy, and provided the necessary demand.

This accommodation need not have even been a conscious decision. It is a natural result of the "rules" or framework announced by the ECB and other central banks. The ECB follows an inflation target, with a "medium term orientation;" it tries to react to "demand" but not, or less so, to "supply" shocks; it reacts strongly only if long term expectations are in danger of no longer being "anchored;" and it lets "bygones be bygones," meaning that it does not try to remedy past undesired inflation or deflation, it does not bring the price level back, but rather simply aims to get future inflation, the rate of change of prices, back to its 2% target no matter what the price level. So, if inflation initially and unexpectedly rises, the ECB will normally not try to push inflation back to 2% within a quarter or year, and especially so if it sees a "supply" shock like energy behind the inflation. It will only be concerned to bring inflation back in the "medium term," by which time the price level will have risen more than 2%. And the ECB will be in no hurry to do that either, so long as its measures of medium- and longer-term inflation expectations remain unchanged, or "anchored" in central bankerese, at the inflation target. And all this is for understandable reasons. In the ECB's view of the world - an that of most other central banks, pushing the price level back down to its original level after a supply shock - say permanently higher prices for energy - would cause higher unemployment due to sticky wages and prices. (Here we describe verbally how typical models work, in which a supply shock causes inflation in the context of a central bank following an interest rate target. The policy rule matters to the result as much as the shock.)

Fiscal Policy

The second main story for the burst of inflation comes from fiscal policy. The underlying shock, of course, was the pandemic, so fiscal policy like monetary policy is a response or accommodation rather than a bolt of lightning in the blue.

The pandemic and subsequent energy price rises brought forth an unprecedented deluge of government spending, financed by new borrowing. As Figure 9.4 illustrates, between end 2019 and end 2022, combined nominal government debt of the (then) 19 EU Member States of the euro area increased by about €2.3 trillion. This is a 20$ rise in debt, and almost 20% of the aggregate 2019 GDP [of €11.9 trillion.

(This figure includes debt held by the ECB, and thus includes money created by the ECB in bond purchase programs, but it does not include new money lent by the ECB. We do not intend this discussion to be critical of pandemic spending. A locked down economy needs some government support. Whether it was done efficiently or not is a political debate for another day. Our only question is the extent to which this spending caused inflation.)

Suggestively, as shown in the right hand panel of Figure 9.4, the price level started rising soon after, and also rose 20%. This rise implies that the price level overshot by almost 12% the price level that would have resulted if the ECB had met its 2% target in these years. Approximately 12% of the outstanding longer-term public debt has been inflated away, equivalent to default with a 12% haircut.

There are two channels to explain the relation between fiscal policy and inflation: a keynesian one and a fiscal theory one. We proceed to briefly explain them.

1. Keynesian Analysis

Traditional Keynesian ISLM analysis offers one channel by which this fiscal expansion can cause inflation. In this view, deficit spending has a multiplier effect on aggregate demand. When aggregate demand exceeds supply or "potential," the price level rises. A roughly 20% of GDP fiscal stimulus in three years is surely larger than any reasonable remaining insufficient-demand output gap as of 2021. Larry Summers famously made this case for the US in a series of Op Ed pieces in 2021-2022.

In this standard Keynesian analysis, the central bank can and should offset excess fiscal stimulus by promptly raising interest rates. Thus, in this

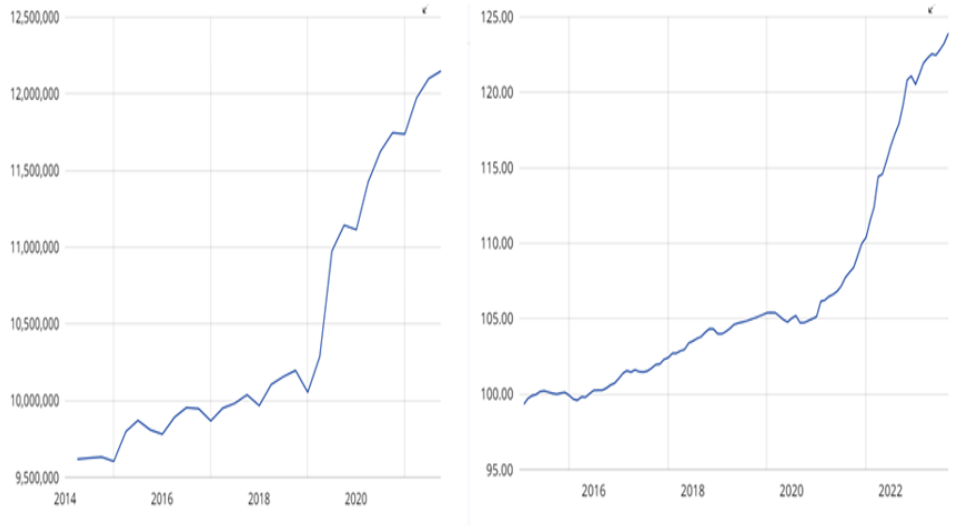

Figure 9.4: Nominal public debt and HICP price level in the euro area. Left panel: Public debt in the euro area (Millions of Euro). Right panel: HICP price index (2015=100).

view the ECB, like other central banks, made a serious mistake by first encouraging fiscal stimulus, and then not raising rate promptly with the stimulus itself, and certainly a few months later when inflation rose.

In this view, it is puzzling that central banks did not pay attention to the stimulative effects of the massive Covid fiscal expansion, and indeed encouraged it by buying and monetizing so much debt, and keeping down interest spreads. It only takes a back of the envelope to compare deficit spending with any reasonable guess of the GDP gap to realize there was too much spending.

If this is the story for inflation, and we do not wish a repetition in the next crisis, central banks need to pay more attention to *fiscal* shocks and more carefully coordinate monetary and fiscal policy. If all it takes is deficit $\times 1.5$ relative to GDP gap, there is very little excuse for bank forecasters and policy makers to have been so surprised by inflation. Yet to date the ECB has basically been silent on the possibility that a massive fiscal expansion was the central driving force of inflation that otherwise seemed to come from nowhere.

2. Fiscal Theory Analysis

Fiscal theory of the price level offers a different analysis of how the large fiscal expansion caused inflation. In this theory, inflation occurs when the government issues debt without a convincing plan to repay that debt. Debt is like stock in the government. When people hold more debt than they think the government will repay, they try to get rid of the debt by spending it, driving the price level. The process stops when debt is inflated away to the real value that people believe the government can and will repay. Cochrane (2023b) and Cochrane (2022) explain, and apply this theory to explain the surge and easing of inflation after the pandemic fiscal expansion.

Keynesian analysis looks at the *flow* of deficits as the driver of aggregate demand, and expected repayment is not central to the analysis. Fiscal theory looks at the *stock* of debt relative to expected repayment. A flow deficit may cease, but debt above expected repayment continues to be inflationary.

It is crucial in this story that people do not trust new debt to be repaid. It is difficult to measure that expectation independently, just as it is difficult to measure a decline in dividend expectations that underlies a stock price decline, but several features of the Covid expansion, especially as compared to earlier non-inflationary borrowing, are salient.

In and following 2008 there were long discussions of how debt would be repaid, including "austerity" to pay down debt in Europe. In 2020-2022 politicians showed little concern for that question, or at least offered little public assurance to bond investors. The NextGenEU program discussed above is a good example: Debt was issued with no plan for repayment.

Indeed, during the pandemic and the energy price shocks most European politicians did not signal that they would plan to finance the much higher deficits by higher future taxes or spending cuts. To the contrary, such policies were largely ruled out. Some politicians, addressing the issue at all, pinned hope on structural reforms and public investment, the latter requiring still more borrowing. For example, at the end of 2021 the French President and the Italian Prime Minister wrote together:[7]

[7]Mario Draghi and Emmanuel Macron, "The EU's fiscal rules must be reformed", *Finan-*

> ... We must deepen the reform agenda and accompany these transformations with large-scale investment in research, infrastructure, digitisation and defence. ... There is no doubt that we must bring down our levels of indebtedness. But we cannot expect to do this through higher taxes or unsustainable cuts in social spending, nor can we choke off growth through unviable fiscal adjustment. Instead, our strategy is to curb recurrent public spending through sensible structural reforms. And, just as the rules could not be allowed to stand in the way of our response to the pandemic, so they should not prevent us from making all necessary investments.

About a year later on November 28 2022, with inflation in the euro area moving to around 10% Reuters reported:

> Germany's Finance Minister Christian Lindner said ... he expects the country's debt to GDP ratio to climb to around 70% after the energy crisis but said the government would not raise taxes. 'Germany is already a maximum tax country,' he said at a tax forum.

More generally, comparing the outset of the pandemic to 2007, debt to GDP ratios were higher, fiscal space was smaller, Europe had been through sovereign debt crises showing the limits of many countries' borrowing ability, fiscal rules against future debt and deficits were much less credible, and largely suspended from 2020-2023. The "general escape clause" of fiscal rules had been triggered due to the pandemic crisis. MMT, $r < g$, "secular stagnation," and "debt doesn't matter" captured the zeitgeist. During the early 2020s, the EU, ECB, and member states all also announced ambitious climate expenditures, also to be financed by more borrowed money. But since substituting green for brown energy produces less carbon dioxide but no more tax revenue, that spending also adds to unfunded debt expansion.

2008 was also followed by 15 years of negative real interest costs on debt, which lower debt as effectively as primary surpluses. There is little prospect

cial Times, December 23 2021.

today of real interest rates going down unexpectedly by an *additional* 2-3 percentage points.

Fiscal theory says that unbacked debt raises the price level until the real value of debt declines to match what people think the government can and will repay. That the price level rose by about half as much as the debt expansion (Figure 9.4) suggests people believe about half of the fiscal expansion will be repaid by future taxes in excess of spending. Barro and Bianchi (2023) look across 37 OECD countries, and find that cumulative inflation in this episode is roughly half the size of the fiscal expansion, indicating that expectations of half repayment are the general rule.

A second puzzle is that inflation eased, despite interest rates far below the inflation rate and without a recession. Conventional monetary doctrine says that inflation once started will spiral away until interest rates rise substantially above inflation, and only by causing a recession, reducing inflation via the Phillips curve. The early 1980s stand as the classic case. Cochrane (2023b) and Cochrane (2022) also show that easing of inflation without high interest rates is natural in the fiscal theory, in response to a one-time fiscal shock, and for the same reason. Once a one-time fiscal expansion has been inflated away, inflation stops, even if the central bank does nothing. Interest rate policy smooths but does not fundamentally alter that prediction. Thus, the fact that inflation eased with interest rates still far below inflation is a strong argument in favor of the fiscal theory mechanism.

In this way, the fiscal theory view is kinder to the ECB. Inflation would have come no matter what the ECB did, and would have eased no matter what the ECB did. Raising interest rates sooner might have lowered inflation initially, but at the cost of a more persistent inflation. ECB monetary policy could not have stopped inflation.

How can we avoid a repetition? If we are not to repeat bouts of inflation with every fiscal expansion, the EU needs stronger institutions that guarantee debts will be repaid and not monetized. The original EU had such institutions, and our book emphasizes that they must be rebuilt.

Some of those institutions involve the ECB, such as the prohibition

on buying sovereign debt. Even in fiscal theory, repaying debt with money, or with debt that pays less than market interest, causes inflation, and expectation of that event causes inflation sooner. Expected default also causes inflation, however, so limits on monetization are not enough on their own. The fiscal theoretic perspective warns us that inflation can erupt from unbacked fiscal expansion, even with an ironclad commitment against monetization, and even with the most hawkish central bank. The fiscal as well as monetary institutions of the EU matter centrally to avoiding inflation.

Synthesis

It is likely that all of these mechanisms played a role in the rise of inflation and its easing. There were supply shocks, energy shocks, and biggest of all a pandemic with associated lockdowns. None of these is inflationary per se, but they induce monetary and fiscal accommodation and expansion which are inflationary. There was monetary accommodation, in the form of an unprecedentedly slow interest rate reaction to inflation and in the form of enthusiastic monetization of newly issued debt. There was an immense fiscal expansion. It featured large Keynesian flow deficits, particularly powerful since so much was direct transfers of money to people and businesses. It also featured an increase in sovereign debt with little to no concrete plans for eventual repayment of that debt. Fortunately, all three stories give roughly similar lessons for institutional reform if we wish to avoid repetition of the episode, though with different emphasis on interest rate policy, bond buying policy and limits, and EU fiscal policy institutions.

The easing of inflation despite no period of high real interest rates, and no recession, unlike the disinflation of the early 1990s, poses a more severe puzzle. ECB fans may well cheer how wonderfully effective its policy is, that the mere beginning of rate rises to positive numbers, while inflation rages at 8%, was enough to turn the tide and produce a "soft landing." But did the ECB truly stop the tide with such small actual rate rises, or did it jump in front of the parade as it neared the finish? Fiscal theory, strongly, and Keynesian fiscal stimulus and supply-shock stories, to a lesser extent, say inflation would have eased on its own. The latter are less clear: In some versions, inflation

once started would spiral away without higher interest rates; in others it would go away on its own as in fiscal theory married to rational expectations. Still, because or despite remains a somewhat open question. Much casual analysis suggests a signaling effect: By raising rates, the ECB signaled its commmitment to do whatever it takes, even repeat 1980 if need be. That commitment lowered expected inflation, and lower expected inflation eases inflation today through the forward-looking Phillips curve. But there are few formal models of such far-reaching effects, and many central banks have had to fight much harder in the past, as in the early 1980s. A faith that small interest rate rises can stem any future inflation should not be unquestioned.

9.4 Fiscal-Monetary Interactions Return: TPI and "Flexible" Purchases

As soon as the ECB started to raise interest rates, a long-feared (by us and some other observers) monetary-fiscal interaction emerged: Higher interest rates mean higher sovereign debt-service costs. It was still a time of fiscal stress, especially for high-debt countries. Pandemic-era fiscal programs were still operating, governments were spending more on energy subsidies and the war in Ukraine, and most wished to borrow further for public investment and climate plans. In the fiscal theory reading, inflation revealed that the EU was already at the limit, where further borrowing without some new long-run repayment plan just causes inflation. At 100% debt to GDP, each 1% higher real interest rate is 1% of GDP greater deficit. and 1.6% of GDP for 160% debt-to-GDP Italy. Who will pay? The money must come from higher tax revenues or lower spending, and if not those will come by inflating away or defaulting on existing debt. As higher interest rates push a country closer to doom-loop default, its interest rate or spread rises further still. Fear of this effect may have been part of the ECB's reluctance to raise interest rates more strongly and swiftly in the first place.

Indeed, the ECB's rate rise triggered a sharp increase in sovereign bond yields, especially for high-debt countries. Yields and interest costs already rose in the first half of 2022, as bond investors anticipated higher policy rates.

Yield spreads rose as well, in particular on Greek and Italian sovereign bonds, consistent the view that higher baseline interest costs have multiplied effects on riskier sovereigns with larger debts. Apparently, after years of large-scale sovereign purchases and "whatever it takes," markets were still counting on ECB support, so with the winding down of sovereign purchase programs, bond investors were nervous about financing large Euro-wide budget deficits with the customary ECB put option in doubt.

After the 9 June 2022 announcement of a likely increase in interest rates at its next regular meeting in July, spreads between Italian and German debt widened further. The yield on 10 year Italian bonds rose to 4.17% on June 14th.

The next day, the Governing Council of the ECB surprised markets by holding a non-scheduled, ad-hoc meeting. After the meeting, the ECB reiterated its pledge to "act against resurgent fragmentation risks," and announced that it had decided to[8]

> . . . apply flexibility in reinvesting redemptions coming due in the PEPP portfolio, with a view to preserving the functioning of the monetary policy transmission mechanism, a precondition for the ECB to be able to deliver on its price stability mandate. . . . accelerate [staff work on] the completion of the design of a new anti-fragmentation instrument . . .

Markets got the message: The ECB was back, and yes indeed we are here to lower spreads. Spreads on Italian bonds immediately fell after the announcement.

Spreads rose again in early July 2022 due to heightened political uncertainty in Italy. Following the news of Mario Draghi's resignation as Italian Prime Minister on July 15 2022 the spread between Italian and German bonds reached 2.19%, a level that, according to some market participants, in the past

[8]Press Release, Statement after the ad hoc meeting of the ECB Governing Council, 15 June 2022, https://www.ecb.europa.eu/press/pr/date/2022/html/ecb.pr220615~2aa3900e0a.en.html.

had led to ECB verbal intervention.[9]

Prospects for a fiscal mechanism to support Italy did not materialize. Member states were unable to agree on a new joint fiscal instrument to protect states hit hardest by the war and its energy consequences, who were also however suffering from interest costs on decades of high debts and unresolved structural deficits.

The ECB found itself in a dilemma: On one hand, it had to raise interest rates and reverse Quantiative Easing purchases to contain inflation and preserve its credibility. On the other hand, higher interest rates and bond purchase abstention could trigger a sovereign debt crisis, financial instability, or simply crimp new government borrowing to face the challenges of energy disruption and potential military expenditures. All of the past efforts to contain moral hazard had failed. Markets still depended on whatever it takes promises, and governments were in the second decade of debt troubles.

The ECB tried to address this dilemma by reactivating the "separation principle," raising policy rates and trimming net asset purchases to tighten the monetary stance amid high inflation, but at the same time lowering yield spreads on sovereign debts of vulnerable countries via "flexibility" in PEPP re-investments, i.e. focusing purchases even more on the troubled states.

More importantly, the ECB announced yet a new contingent debt purchase program. On July 21, 2022 the ECB announced the "Transmission Protection Instrument" (TPI). This program allows the ECB to buy bonds in a way that more clearly provides quasi-fiscal support to a Eurozone member state in trouble. While increases in overall interest rates would be inevitable, the ECB hoped to contain default or crisis spreads in Italy and other highly indebted states, and give investors confidence that this "ECB put" would prevent another Greek-style crisis.

This instrument was materially different from the Outright Monetary Transactions (OMT) program announced ten years previously. Most of all, the

[9]See "Italian economy Italian debt market flashes warning as Draghi government teeters", Financial Times July 15, 2022. https://www.ft.com/content/f01e3706-515c-4cb9-91e6-d53739767926.

new TPI does not require the "strict and effective" conditionality demanded by the Governing Council of the ECB as a precondition for OMT activation. The Member State in trouble does not need to agree on an adjustment program with the European Stability Mechanism ESM, the Commission, and possibly or with cooperation of the IMF. [10] As such, the mechanism constitutes a significant threat to the fiscal monetary separation, as we discuss next (see Chapter 10.3).

[10]ECB Press Release, "The Transmission Protection Instrument", 21 July 2022, https://www.ecb.europa.eu/press/pr/date/2022/html/ecb.pr220721~973e6e7273.en.html.

Chapter 10

Is the status quo sustainable?

10.1 The Erosion of Monetary/Fiscal Separation

Individuals had to take difficult decisions in crisis times. In the heat of the moment, we do not claim we could have done better. But the accumulation of crisis measures has now evolved into a new set of *implicit* institutions that blur the distinction between monetary and fiscal policy. Emergency policy actions and announcements created expectations about implicit state guarantees and ex-post bailouts which over time tend to increase financial instability and fiscal risks.

If there is a fault, then, it is an institutional fault. Each time, the pressure of events having passed thanks to the patchwork that got us through the storms, nobody got around to declaring the patchwork a patchwork, an emergency response to a bad situation that is undesirable from a longer term and institutional perspective, and itself an impetus for reform. Rather, controversial actions taken in the last crisis were declared a great success. The natural incentive of administrations to procrastinate on the difficult construction and maintenance of good institutions once the crisis seems over is part of the problem.

Fiscal and monetary institutions are precommitments that limit the

scope of action ex post in order to give better incentives ex ante. Such institutions are always hard: if the precommitments are binding, then ex-post one regrets the limitations. If the precommitments are loose, then they don't effectively stem moral hazard, i.e. really get people to take seriously that inflation or bailouts will not come save them and they'd better make other arrangements.

The Treaty framework included an essential tension. If sovereign debt is not going to be monetized or bailed out by cross-country fiscal transfers, sovereigns must default. But the system was not set up to countenance sovereign default, in a similar way to how corporate default is commonplace. Debt and deficit limits were supposed to limit the chance of defaults, but they quickly proved insufficient.

In part as a result of that tension, but in part as a general unwillingness (rightly or wrongly) ex-post to follow through on painful ex-ante promises through a sequence of crises, this original design and intent has undergone a major reversal.

In the sovereign debt crisis and afterwards, national governments and the Eurogroup / EU Council several times failed to solve a fiscal or financial crisis with fiscal measures, financed by member states, or by allowing bondholders to lose money via haricut, restructuring, or partial default. The ECB thus had to choose between either sitting idle, risking costly financial instability, crisis, or even disorderly default or euro exit, or taking actions that went against the original intent and design of EMU and blurred the line between monetary and fiscal policy.

A first major deviation from the original institutional intent, in particular the commitment that monetary policy would not aim to address country-specific problems or economic differentials across countries, was the essentially unconditional purchase of Greek, Irish and Portuguese sovereign bonds by the ECB announced in May 2010 and extended to Italian and Spanish government bonds in summer 2011. The German Finance Minister at the time, Wolfgang Schäuble, publicly acknowledged some years later:[1]

[1]Financial Times, 6 Oct 2017, "Wolfgang Schäuble warns of another global financial crisis."

> Mario Draghi always said the ECB can never replace what the member states should do. But as long as the member states don't do it, the ECB must do what it can, within the framework of its own limited mandate...

Several times, the ECB stepped in to the breach. Each time, the ECB's interventions have calmed the storms and helped to forestall financial and macroeconomic downturns. However, such measures were typically continued, or expected to be used, also after the acute financial crisis risks had vanished. The programs gradually got larger and larger, the self-imposed limits weaker and weaker, the breathing space for fiscal and structural reform not used, and markets and sovereigns all became accustomed to ECB support for sovereign debt.

European Union Member States did agree some important institutional improvements during the sovereign debt crisis. However, large-scale asset purchases in the quantitative easing period, and in particular the massive fiscal expansion and inflation resulting from the pandemic and war undercut this progress. The effective constitution of EMU and the ECB changed over time, and with it expectations and incentives of financial markets and governments.

Large scale purchase programs by the ECB helped to keep yields and sovereign spreads low. That was the point of stimulus by quantitative easing. It was a deliberate policy by the ECB to raise inflation towards the upper end of the 2% upper limit that was in place until mid-2021. Spreads fell again when this program was surprisingly resumed in 2019, after it had been ended in 2018.

Fiscal rules were applied loosely. Member states and the Commission have become increasingly reluctant to use a European Stability Machanism (ESM) program when a member state is in fiscal trouble. This goes so far, in Italy's case, as to refuse to ratify the new ESM treaty. A key reason seems to be that an ESM adjustment program was increasingly seen as creating political tensions between member states and "stigma" for the crisis country. Furthermore, conditionality based on an ESM program largely vanished from the evolving institutional design of EMU and the support operations and an-

nouncements implemented by the ECB since early 2020. Finally, as we discuss below, in Section 10.5, the Bank Recovery and Resolution Directive has failed in most cases to achieve its stated aim of bailing-in private investors and creditors of failing banks rather than burdening taxpayers.

The substantial and unconventional fiscal and monetary support in response to the pandemic seem to have increased the expectation of governments and markets that other member states and especially the ECB will provide help to troubles countries without an ESM program and thus without a possible bail-in of private investors.

While larger and more flexible ECB bond buying and bond price support contributed to reduce risks of fiscal crises in the short term, it has again limited incentives of governments to reduce high debt, to implement politically difficult growth-oriented reforms, or to address the financial fragility that makes sovereign default or restructuring so scary to policy makers.

The current state involves large ECB asset holdings, flexible purchase programs, and implicit commitments to use them. These include not only expected ECB sovereign bond purchases and perceived caps on cross-country spreads, but also assumption of private sector risks, for example via large scale asset purchases that shifted duration and credit risks from banks and other financial firms onto the balance sheets of the ECB. As with the large scale asset purchase program, these were in fact clearly motivated by monetary policy towards the ECB's inflation target. Regardless of original intent, however, the policies have long term fiscal and credit-allocation effects.

Otmar Issing, who served in Executive Board of the ECB from 1998-2006 as chief economist, warned presciently of mis-guided incentives in 2015 (Issing, 2015):

> Ultimately, if the costs of poor national policies are increasingly borne by other European states, there is little reason for one to expect that certain governments will finally fight tax evasion, stem corruption and overcome the vested interests that are blocking reforms. [...] It remains in the first place a national responsibility to implement badly needed structural reforms."

We turn next to the widespread consequences of this moral hazard for (1) fiscal sustainability; (2) structural reforms; (3) the construction of Euro-wide institutions and (4) private financial intermediation in the Euro area.

10.2 Fiscal Risks for Monetary Policy

A surge in public debt

Joining the EMU has not, as originally envisioned, pressured countries to lower debt and deficits. Of the 12 countries that joined the euro area by 2001, two decades later only three—Ireland, Luxembourg and the Netherlands—are below the reference value for debt of 60% of GDP enshrined in the Maastricht treaty (see Figure 10.1). In contrast, 11 of the 15 EU countries that joined the euro area at a later stage, or not at all, are adhering to the debt limit. This evidence seems consistent with our theme that increasing blurring of the fiscal/monetary separation in the euro area has undermined incentives for sound fiscal policies.

But the impact of the institutional changes on incentives to run prudent fiscal policies is different across countries. In particular, size matters: some countries seem to be *too-big-to-discipline*. Already in 2002 and 2003, the two biggest countries, Germany and France, turned against the EU Commission and actively undermined the fiscal rules. A famous quote of the President of the EU Commission between 2014 and 2019 (and as such, the person in charge of the enforcement of the fiscal rules), Jean-Claude Junker, cleanly illustrates this point:

> Asked why the Commission, on several occasions, had turned a blind eye to French infractions, Juncker admitted candidly in an interview with the French Senate television Public Senate that it did so "because it is France."[2]

This asymmetric impact or application of the rules matters. In the past two decades, public debt in three of the four largest member states, has surged

[2] EU gives budget leeway to France 'because it is France' - Juncker

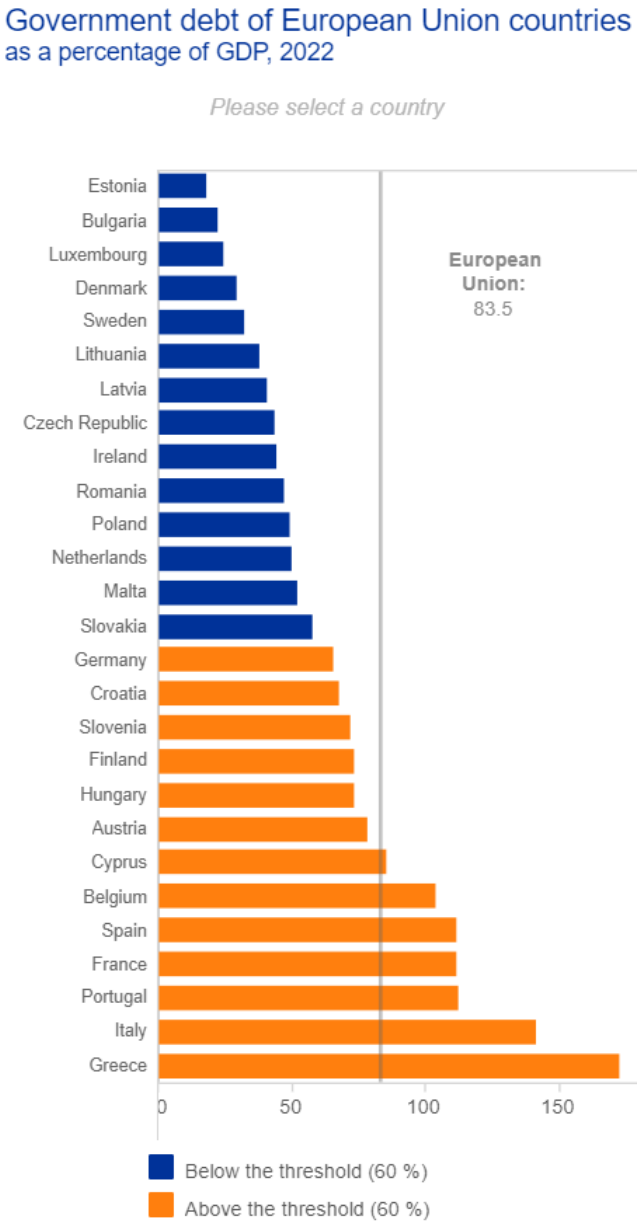

Figure 10.1: General Government debt in EU countries in percent of GDP, 2022. Source: (ECB)

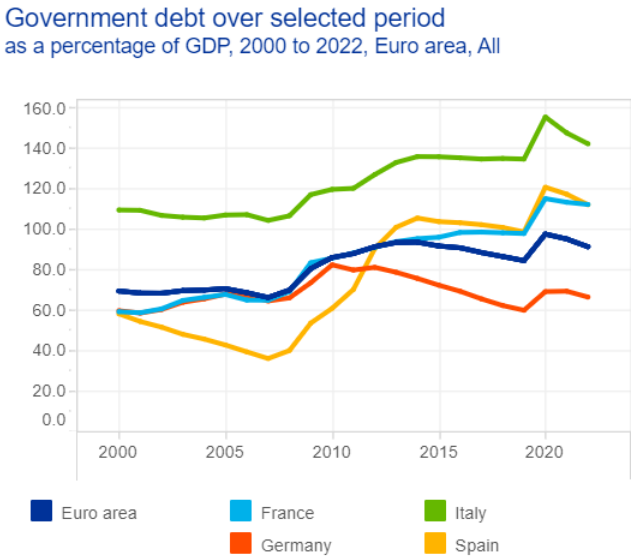

Figure 10.2: General Government debt in the euro area and France, Germany, the Netherlands, Italy and Spain - 2000-2022. Source: (ECB)

and is now not only in Italy, but also in France and Spain well above the aggregated euro area debt-to-GDP ratio (See Figure 10.2, also recall Figure 9.4). On the other hand, conditionality, where it applied, does seem to have worked to bring down debts. During the euro crisis, all the three middle-sized countries which the ECB in May 2010 had included (in addition to Greece that just had entered program) in its selective bond purchase program (SMP) had subsequently entered a full EU/IMF adjustment program. The program, together with institutional changes including the fiscal compact (see Section 3.1) increased pressures on governments for fiscal consolidation and reforms, in particular in the four countries under an EU/IMF adjustment program. These countries in 2022 had lower deficits than the euro area average - a sharp contrast to the sovereign debt crisis. Given the size of its sovereign debt problem, due to bailing out its banks, Ireland is noteworthy for having brought debt down.

On the other hand, neither Italy nor Spain were part of an IMF/EU adjustment program. In the Summer of 2011, the ECB had also included Italy and Spain in the SMP. Italy subsequently rejected an EU/IMF program, and

Spain in 2012 entered an ESM program that narrowly focused on the financial sector, without specific fiscal and structural reform, nor financial assistance and conditionality from the IMF. France, Italy and Spain all had higher deficits than the former EU/IMF program countries and the euro area average in 2022. (see Figure 10.3).

Apart from reduced incentives for fiscal discipline resulting from the weakening of fiscal rules, two more reasons led to the debt accumulation.

First, EU governments and the EU grappled with four "once-in-a-century" crises, and the buildup of sovereign debt in the last three decades largely occurred in these episodes. However, one cannot chalk up the entire rise in debt to bad luck, not least given that several EU member states, and others just outside like Switzerland, still have low debt levels. Of course, higher deficits in a crisis are good stabilisation policies - provided they are funded by future primary surpluses. However, the spending to fight the crises has often been poorly targeted, extending beyond the most vulnerable to broader groups and sectors. This pattern, evident in the responses to the Covid and energy crises, and earlier during the Global Financial Crisis, supported a wider array of private firms, banks, and asset prices than what was necessary for systemic stability. "Financial stability" does not mean that nobody in the financial sector ever loses a lot of money. Such measures not only increased public debt but often also fostered moral hazard in debt markets and increased inequality as ordinary taxpayers paid for bail-outs of creditors and shareholders.

More importantly perhaps, temporary deficits in a crisis should be countered by structural surpluses in stable times to manage debt and prepare for future shocks. However, many highly indebted states failed to capitalize on good times to build economic resilience, instead continuing to rely heavily on borrowing.

Second, while the theoretical channels connecting monetary policy to low real (not just nominal) rates are contentious, there is no question that governments faced a decade of very low and often negative real interest rates until 2021, with a willing buyer of debt in the central bank. However, the large high debt countries did not use such favourable terms to decisively lower their

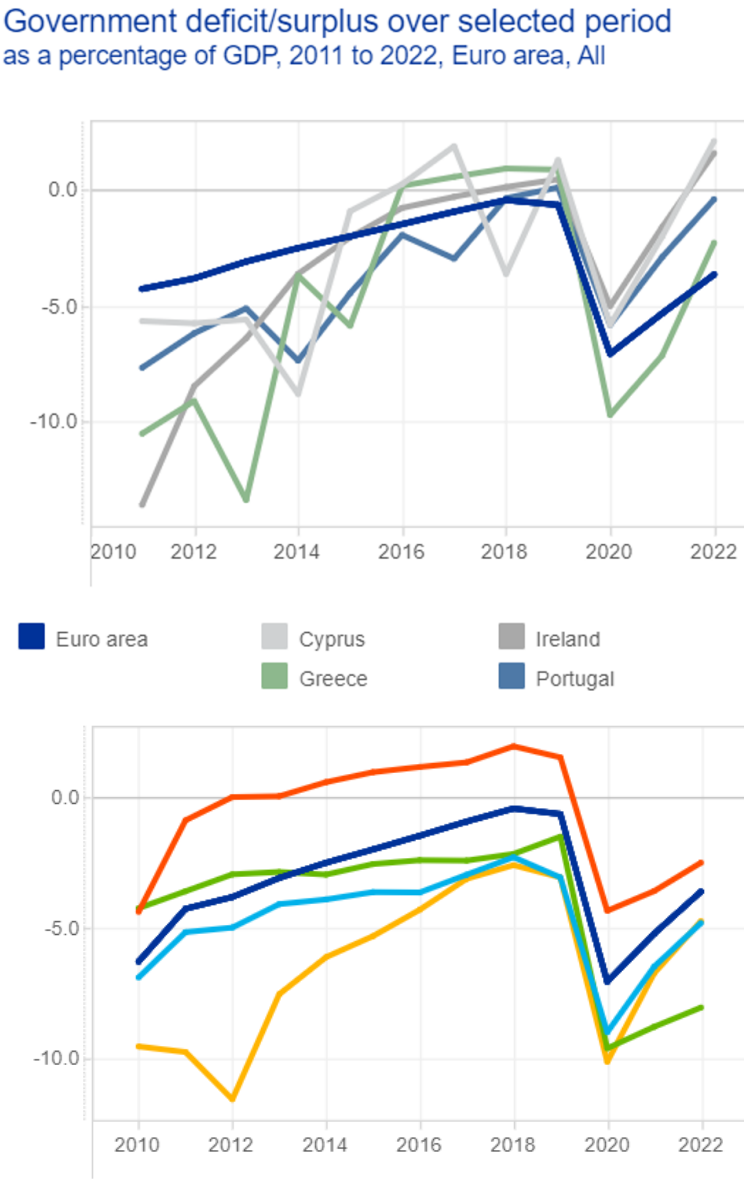

Figure 10.3: Budget deficits in former EU/IMF program countries: Greece (light green), Ireland (dark grey), Portugal (blue), Cyprus (light grey), and in the Big4 euro area countries: Germany (red), France (blue), Italy (green), Spain (yellow) and euro area (dark blue), 2010-2022. Source: ECB.

debt-to-GDP ratios. Low long-term bond yields, with easy terms for borrowers both public and private was the central banks' intention, implemented via large scale bond purchase programs. These surely reduced pressure for fiscal reforms and debt repayment.

New Fiscal Rules

The EU Commission, recognizing the inadequacy of existing debt and deficit limits, proposed a new fiscal framework on April 26, 2023. A revised proposal was adopted by the EU Council on December 21, 2023. It maintains the Maastricht Treaty's 60% debt and 3% deficit ceilings, but significantly alters the Stability and Growth Pact (SGP).

The new rules (partially subject to negotiation with the European Parliament) introduce country-specific adjustment paths, determined through a debt sustainability analysis by the Commission and negotiated bilaterally with each member state. The paths involve a net expenditure target, excluding interest payments until 2027, over a 4 to 7 years horizon (the latter if the government commits to reforms and investments improving growth and sustainability). By the end of the period, debt must be on a downward path or at prudent levels, as assessed by stochastic debt sustainability analysis.

Two safeguards are included: a debt sustainability safeguard ensuring debt reduction over the adjustment period, and a "deficit resilience safeguard" mandating fiscal adjustments beyond the 3% treaty limit to a 1.5% GDP margin.

On the positive side, the new rules prioritize adaptability to individual states' conditions and focus on net spending growth and a debt anchor based on debt sustainability analysis is economically sound. They encourage structural reforms and investments aligning with EU objectives.

However, we are doubtful about the possibility of implementing this framework in a credible and time-consistent way, given its lack of consideration of the political incentives of the actors involved. The main reason the previous rules failed is that there was no institution able to implement them against the will of the member states–particularly the large member states. This concern

increases with the new rules.

First, they rely explicitly on bilateral negotiations with the Commission, which raises the risk of political pressure, especially from larger member states or others capable of threatening vetoes on crucial decisions. Is any Commission President going to stand up to German or French governments bent on increasing spending?

Second, the expenditure targets and reform commitments are supposed to be implemented over 7-year horizons, which go significantly beyond any realistic political horizon. What are the incentives of a government to stick to promises for reforms and consolidation plans it made several years ago, if they ex post appear politically too costly? How can a promise of an incumbent government to implement an important but politically difficult labour market, tax, or pension reform say six years ahead be honoured, if a new government with different priorities and commitments is elected before this deadline? Will the Commission then want to be seen to go against the outcome of a democratic election and insist that a policy is implemented that the majority of voters have just rejected? Fines or similar sanctions that would need to be imposed by the EU Council did not work in the past and most likely will not work in the future. When the Commission is trying to save a country in financial distress, it is not likely to levy substantial fines and penalties. And for a country to feel market discipline, the market must be able to express itself via higher bond yields and reduced demand.

Third, plans normally assume nothing very bad will happen. Surely at some point over a 7 year adjustment period and the following 10 years, some new "shock" will hit, justifying a new exemption and starting all over again. Promises about the future that are too painful to implement today tend to be deferred once the future turns in to today.

Fourth, member state buy-in could be increased by the involvement of the national Independent Fiscal Institutions. Despite initial plans for the Commission to include this, member states have made this role voluntary.

Fifth, the framework's fiscal targets for individual countries are very sensitive to small changes of technical assumptions and model parameters. This

means that there is a large degree of discretion on the side of the Commission, which might be used to ensure that the concrete fiscal targets look feasible and a high probability of debt sustainability can thus be confirmed. For example, one parameter is the probability that the stochastic debt sustainability analysis leads to a constant of falling debt-to-GDP ratio. How can one say whether say 80 or 90% is a sufficiently high probability? Another risk are overly optimistic assessments of the long-term potential growth and the growth impact of future reforms. The complex calculations and modeling assumptions are easily adjustable, creating ambiguities in terms like "adjustment period" and "planning horizon," potentially leading to loopholes. Furthermore, the specified safeguards on excessive deficit and expenditure growth lack precise metrics, challenging effective enforcement.

Finally, in spite of the clear lessons from the sovereign debt crisis and the associated sovereign-bank doom-loop, the EU Commission and Council, have not implemented a convincing contingency plan for an orderly debt restructuring. As a consequence, the new fiscal framework misses a credible incentive or enforcement mechanism.

In sum, this reform of the fiscal rules is unlikely to lead to a significant increase in the sustainability of public debt by itself.

Are Europe's debts sustainable?

The debt-to-GDP ratio grows at the real (after-inflation) interest rate, less the real GDP growth rate, and less the difference between tax revenues and government spending (the real primary surplus) as a fraction of GDP,

$$d\left(\frac{b_t}{y_t}\right)/dt = (i_t - \pi_t - g_t)\frac{b_t}{y_t} - \frac{s_t}{y_t},$$

where b is the real value of debt, y is GDP, i is the nominal interest rate, π is inflation, g is the GDP growth rate, and s is the real primary surplus, tax revenue minus spending, not including interest payments. (We abstract from long-term debt here. That changes the dynamics but not the basic long-run message.)

All four components of the dynamic public debt equation have been moving lately in the wrong direction, i.e. increasing risks to debt sustainability. By the close of 2022, the aggregate public debt to GDP ratio of the Eurozone had surged to 91.5% of GDP, a significant climb from the 80.4% recorded in 2019, and would be higher still if a part of it had not been unexpectedly inflated away during 2021-23.[3] That the debt rose so much in four unexpected crises – times of large primary deficits s_t – warns us that future crises, by definition unexpected, rather than regular forecastable structural deficits, pose a substantial risk to public finances.

The real interest rates governments must pay on their debt $i - \pi$ are rising (See Figure 10.4, left panel). The real interest rate was negative for many years in the 2010s, with low or slightly negative nominal rates and small but positive inflation. But this era of persistently negative real interest rates is likely to be over. (This is a large economic question, involving many explanations real, monetary, and financial for the era of low rates. We don't belabor the argument with a summary here. It's enough to say that with inflation-fighting and debt sustainability questions now in the forefront, it is at least quite possible that a quick return to negative real rates is not something to count on.)

The sharp rise in inflation starting in 2021 led to a period of very negative ex-post real returns, with inflation π greater than the nominal interest rate i. The cumulative inflation wiped several percentage points off the debt to GDP ratio. But inflation can only unexpectedly wipe out debt. Expected inflation forces an equal rise in the nominal interest rate.

Risk premiums, including cross-country spreads (see Figure 10.4), for some sovereigns would rise unless held down by expectations about ECB measures, both in the form of country specific purchases (TPI) and a rather moderate pace of quantitative tightening. For debt sustainability, i is the interest rate a country pays, not the ECB deposit rate. Just how long the ECB can and will suppress risk premiums in interest rates is a key question for how long debt

[3] 20 countries. Source: Eurostat. https://ec.europa.eu/eurostat/databrowser/view/GOV_10DD_EDPT1__custom_6049020/default/table

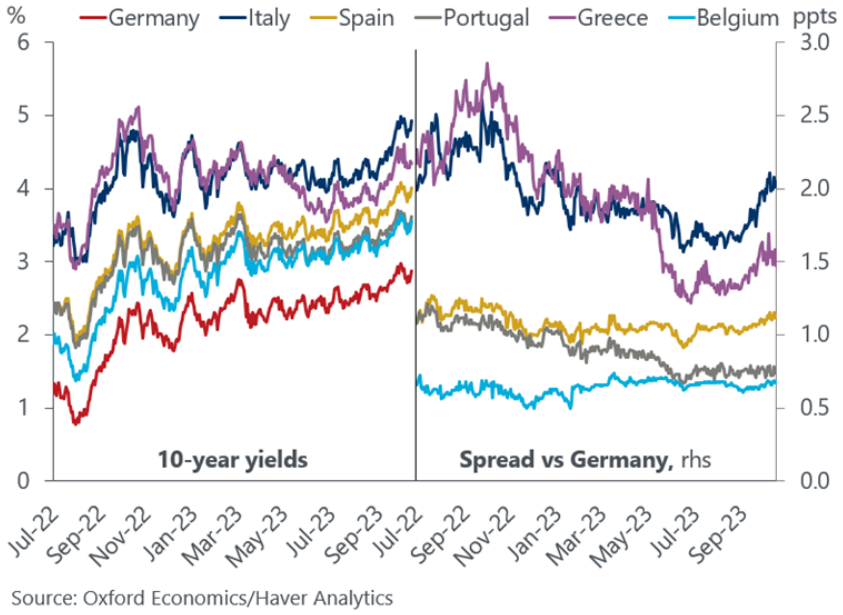

Figure 10.4: Euro area: 10-year government bond yields and spreads. Source: D. Kral, Oxford Economics

remains sustainable, at least unless governments with high debt implemented decisive efficiency and growth enhancing reforms.

Growth g has been sluggish in many euro member states, especially in countries like Italy that also have high debts b/y and pay higher interest rates i. Debt to GDP is a convenient statistic, but what really matters to government finances is debt relative to tax revenue. Taxable income growth is sluggish. Over the past decade, taxable income growth has limped along at an average of roughly 1.3% per year. In the Euro area (20 countries) growth between 2011 and 2019 was only once over 2%, in 2017.[4] There is little reason to think that taxable income growth will accelerate in Europe over the next decades, at least without a revolutionary change in "structural" microeconomic policies.

Future primary deficits s are likely to be larger even than those pre-Covid. There will be increased demands for spending, and many countries are already spending half or more of GDP. Security is now on the front burner.

[4]Source: Eurostat. https://ec.europa.eu/eurostat/databrowser/view/tec00115/default/line?lang=en.

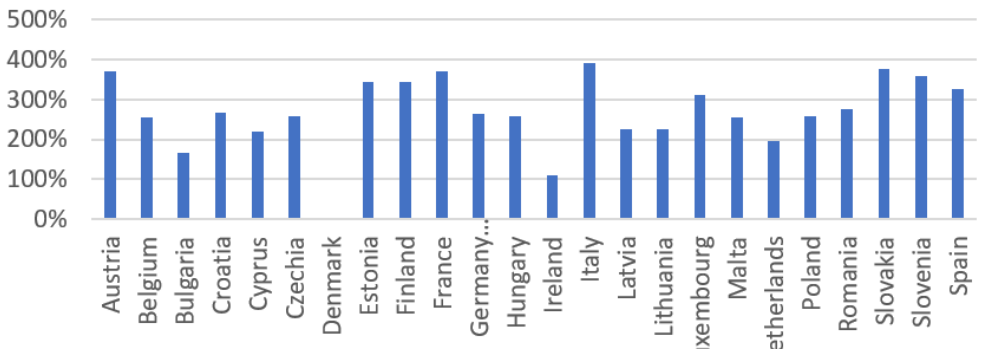

Figure 10.5: Accrued-to-date pension entitlements in social insurance. (Eurostat, last available (2018)

Friend-shoring or re-shoring of sensitive goods is expensive. Defense funding will inevitably rise in the wake of the Russian invasion of Ukraine and ongoing threats. Countries are now serious about reaching or exceeding the 2% of GDP NATO defense expenditure target.

Public Debt Dangers

Aging. The regular demands of a welfare state in an aging society are already troublesome for debt sustainability, and will continue to grow. Pension promises are very hard to reverse, especially in an old society, and the European Commission estimates that by 2050, one in three Europeans will be over the age of 65. The combination of poor growth, aging and low birth rates, and expansive welfare states poses a significant threat. For instance, Eurostat data from 2018 places the implicit pension liabilities of France and Italy at nearly 4 times GDP (see Figure 10.5). Over decades, something has to give.

In the past, pensions were lower, people didn't live as long after retirement, and pensions were subject to policy adjustments and economic reforms, albeit difficult and politically costly ones. With the retirement of baby boomers, pension claims have de facto assumed an almost super-senior status that takes precedence over other fiscal responsibilities. France's turmoil over raising the pension age to 64 rather than 62, with a remaining life expectancy well in the mid-80s, is a sign of this difficulty.

Pensions at least promise a quantifiable and forecastable amount of money. Health care keeps getting more expensive, because it keeps getting better.

Green Transition Climate policy and the energy transition will require enormous new spending. The European Green Deal Investment Plan[5]

> ... will increase funding for the transition, and mobilise at least €1 trillion to support sustainable investments over the next decade through the EU budget and associated instruments, in particular InvestEU.

The new era of competition with the US on green industrial policy subsidies could open the spigots further. The energy disruption following the Russian invasion of Ukraine emphasized the need for more resilient supply of conventional energy as well. "In 2021, the EU imported more than 40% of its total gas consumption, 27% of oil imports and 46% of coal imports from Russia, according to the EU Commission.[6] It is a strategic imperative for Europe to diversify its energy supplies. Germany's swift construction of a natural gas terminal is a good example. Energy transition and security requires investment, either from public funds or private funds that are not used to pay taxes or buy debt. Energy - in particular natural gas and electricity - is expensive in Europe, making many energy-intensive businesses uncompetitive. Many countries responded to high prices in the first year of the war with energy subsidies. Subsidies, if continued, add to the public bill. Even the European cap and trade system known as the Emission Trading Scheme, though it is cheaper and more efficient than most green industrial policies, and indeed can raise revenue, nonetheless makes energy more expensive. Energy-intensive businesses will clamor for subsidies or protection, or move abroad, or shut down.

Defense spending. In order to reestablish Europe's external security, the EU member states will need to spend more - by some accounts defense spending as a share of GDP may have to increase by 1% of GDP.

[5] https://ec.europa.eu/commission/presscorner/detail/en/qanda_20_24

[6] https://commission.europa.eu/news/focus-reducing-eus-dependence-imported-fossil-fuels-2022-04-en

Lack of fiscal space for the next crisis. The next once-in-a-century crisis is sure to come a lot sooner than that. Europe as a whole, and especially the slow-growing high-debt parts, has little room for higher tax revenue. The tax disincentives come from all taxes put together, the total wedge between producing something worth a euro and how many euros of good or service one can buy with the result. Combining payroll or social insurance taxes, corporate taxes, income taxes, VAT (sales) taxes, and more, marginal tax rates are well in to the range that reduce growth. When the government is spending half of GDP, the average tax rate is half. And for everyone paying less, someone else pays more.

This all might not be so bad if European countries could easily borrow more at low rates. But we already have seen signs of very limited fiscal space in some countries. So why do some governments and EU officials still appear rather complacent? Perhaps they believe that yields and spreads on sovereign bonds will remain moderate, independent of the quality of economic policies and the strength of economic fundamentals, and at least allow current debts not to grow further. They may also believe that the ECB, or another cross-country transfer program such as Next Generation EU, can always ride to the rescue to keep bond yields low, no matter how much countries borrow. However, such believes will make governments even less prepared for the next crisis.

The common worry about debt is simply that its level is high, exposing high debt countries to a run-like mechanism: higher spreads make debt less sustainable, and lead to higher spreads. But the largest, less frequently stated, worry about debt should be the lack of fiscal space it implies. We have seen four once-in-a-century crises in fifteen years. A fifth or sixth, perhaps even larger, will surely arrive. And we may have just seen the edge of the fiscal limit: The Covid fiscal expansions led or at least contributed to inflation in Europe as in the US and UK.

The next crisis may be worse. Yet many governments remain unprepared. They have not increased their fiscal buffers to be able to borrow after such shocks, as had been foreseen by the fiscal rules. Some governments may then be unable to borrow sufficient amounts in the first place, or inflation may

arrive sooner. Then, on top of inflation and sovereign debt problems, economies and societies used to bailouts may suddenly discover their absence - and they will be ill-prepared. Will the fiscal/monetary institutions that have evolved over the last two decades and during the last years be remotely able to handle such a major shock without sovereign default, financial meltdown, and big inflation?

Fiscal Challenges to Monetary Policy

After rising above 4% in October of 2021 and a worrying 10.6% a year later, the HICP inflation continuously fell to 2.4% in November 2023 and seems to be on a trajectory towards the target of 2%.

The easing of inflation since end 2022 does not diminish the formidable fiscal risks looming over monetary policy. The foreseeable elements of the fiscal situation are worrying. Yet the challenges for fiscal and monetary policy are likely to emerge in the next crisis, with those long-run problems as a background limiting individual and collective fiscal capacity and the ECB's ability to again paper over problems.

Imagine, for instance, that China blockades or invades Taiwan, Pacific trade stops, and the world teeters on the edge of a pacific war. Imagine that a new pandemic erupts, one that kills say 5% of those it infects, not a fraction of 1%. Imagine that Iran, possibly encouraged by Russia, attacks Israel. These or similar events are unfortunately not unthinkably unlikely. Any of these events could spark an economic and financial conflagration much larger than the crises of the last 15 years.

But also in case of a less severe crisis, the most foreseeable problem is that it will once again imperil the debt of slow growing high debt countries, and their financial systems. And political chances of a large-scale cross-country fiscal bailout appear slim. Member state taxpayers would have to tolerate higher taxes or lower domestic spending to safeguard the wealth of investors holding bonds of debt-burdened countries. Again. An effective crisis response mechanism must also be put in place before the crisis. But planning such fiscal transfers ahead of time seems even less politically feasible than cobbling

together a fiscal response in the shadow of crisis.

Once again EU officials and the governments of stressed member states will most likely regard bondholder losses via debt restructuring as unacceptable and threatening larger financial stability. And other member states may not want to be blamed for triggering a deeper crisis. If so, once again into the breach will step the ECB, since nobody else is around. But now the ECB has a much easier institutional track to intervention. It has won the acceptance of an essentially unlimited tool to purchase sovereign debts via TPI without any need for the crisis country to enter an ESM adjustment program agreed with the EU Commission and the member states, and financed by the latter. In this way the ECB would assume the bulk of the political and financial responsibilities and risks.

Why Not Inflation?

Some readers may ask: What's wrong with inflation?

In particular, some economists have argued that the bout of inflation following the pandemic, war, and energy disruption was at least in part a good thing, given the major challenges amid a limited fiscal space. In response to a "once-a-century" shock, let current bondholders finance expenditures by inflating away some of the value of their debt, rather than place the burden entirely on future taxpayers with the economic distortions that taxation involves. Inflation is an effective partial default, but without the financial and legal disruption that actual default occasions.

Why not keep at it, some might think? Another bout of inflation would reduce troublesome debts in particular of the highly indebted countries. Keeping interest rates low and a large balance sheet would directly ease their finances. In this view, inflation is a prime mechanism for "risk sharing" of unsustainable debts.

This advice for using inflation to finance the government of course ignores the many unfair distributional consequences. With high unexpected inflation workers regularly suffer lower real wages for some time, and (net) savers with bank deposits or other nominal claims lose real wealth, while people who

have financed real investments (e.g. real estate, machinery) with long-term debt will see a windfall gain as the real value of their debt falls. Another trouble with such an inflation tax strategy is that bond investors, as well as firms, workers, and shoppers need to be convinced that inflation truly is a "one-time" event that will not be repeated for decades to come. They need to be convinced that looking forward any period of cumulated inflation of say 10 percentage points above the target is broadly as likely as a period of cumulated 10 percentage points below target inflation. But his is unlikely to happen, not least as many member states have too high debt and low growth potential, and given the desire of central banks to avoid getting close to the effective lower bound on nominal interest rates.

Moreover, once in a century seems to happen every few years these days. Another bout of high inflation would convince bond investors that inflation is a regular policy, and therefore to demand an inflation premium ahead of time, and a risk premium as well. The ability of European countries to borrow real resources in the next crisis, and of the ECB to buy large amounts of debts without causing high inflation almost instantly, will sharply diminish.

More deeply, recurring bouts of inflation will damage public trust in institutions and European integration. Price stability was the first and most important foundational promise of the common currency. Bouts of inflation and devaluation did not make Greece or Portugal into flourishing economies with large fiscal space in the era before the euro.

Thus, consistent with the Maastricht Treaty, monetary policy must maintain its core mandate: price stability, even in the face of over-indebted member states. The ECB needs to ensure stable inflation at the 2% target. Over the medium term, the institutional framework of the euro must be reformed and the ECB should shrink and de-risk it balance sheet. Both is key to ensure lasting price stability and that the euro area is better prepared for future challenges and crises. That is the subject of our last chapter.

10.3 The Transmission Protection Instrument

In contrast to OMT, with TPI fiscal authorities do not need to agree on a program with the country in trouble (via the ESM). The ECB itself will have to assess whether future fiscal and structural policy plans are credible and sufficient to ensure sound fundamentals. The ECB itself will also have to decide and announce if this is no longer the case, and then stop its TPI interventions, leaving the country to default. This structure parallels the problematic design of the Securities Market program (SMP) interventions in 2010-11, which culminated in secret letters with conditionality requests sent in summer 2011 by the ECB to the Italian and Spanish prime ministers and signed by the ECB President and respective national central bank governors. For good reasons, the SMP program was scrapped when OMT was decided. The TPI seems a critical step back towards the flawed SMP design.

The TPI has some general eligibility criteria, largely assessed by the European Commission, but these are only to be taken into account as an "input" into the ECB's considerations. The criteria are:

1. "Compliance with the EU fiscal framework."

2. "Absence of severe macroeconomic imbalances" as measured by EU procedures.

3. "Fiscal sustainability: in ascertaining that the trajectory of public debt is sustainable, the Governing Council will take into account, where available, the debt sustainability analyses by the European Commission, the European Stability Mechanism, the International Monetary Fund and other institutions, together with the ECB's internal analysis;"

4. "Sound and sustainable macroeconomic policies" as measured by compliance with EU "Semester" country-specific recommendations and "Recovery Plans" commitments.

These eligibility criteria are less binding than they may appear at first sight.

In practice, criterion 1, compliance with the EU fiscal framework, is currently suspended given that the fiscal rules are suspended. Even when fiscal rules are reactivated, debt or deficit or other objective criteria do not automatically trigger non-compliance. The country must also be found not to have taken effective action to address its troubles. This finding is a political decision. It has only been made 6 times, and only for a short time (Redeker, 2022). Criterion 2, macroeconomic imbalances, and criterion 4, sound and sustainable macroeconomic policies, allow large room for interpretation and discretion by the European Commission. The Commission has approved, with a few concrete exceptions, all Recovery Plans, and given them all the same grades. The Commission seems to have been very flexible on determining when milestones and targets were met for disbursements. The exceptions have been Hungary and Poland, where the Commission used this power pressure states to take anti-corruption measures.

Thus only condition 3, a sustainable public debt trajectory, is likely, in practice, to be binding. However, as for instance the recent Argentina-IMF loan saga shows, with the right assumptions and enough political will, a declaration by the institutions that debt is sustainable is not difficult to achieve, even when markets are plainly unwilling to sustain the same debt[7].

A declaration of unsustainable debt would imply multilateral institutions including the EU Commission, the European Stability Mechanism ESM and the IMF taking steps that could trigger a sovereign funding crisis. However, and crucially, the TPI is not accompanied by a fiscal backstop from Euro area Member States, i.e. a commitment that a TPI intervention will trigger their fiscal contributions. And thus the ESM, EU Commission or IMF will likely not have made the very preparations that would be necessary to manage the sovereign debt crisis in a way to allow for financial assistance bridge loans from these institutions while an orderly sovereign debt restructuring is prepared. And the ECB can not provide such bridge loans, given the prohibi-

[7]See Press Release: "IMF Executive Board Approves US 50 Billion Stand-By Arrangement for Argentina" June 20, 2018,https://www.imf.org/en/News/Articles/2018/06/20/pr18245-argentina-imf-executive-board-approves-us50-billion-stand-by-arrangement

tion of monetary financing. So, the design of TPI implies that an upfront debt restructuring would be more disruptive than in case of an OMT programme. So, even in a relatively clear case of insolvency, the whole set up makes it extremely unlikely that the multilateral institutions would make any declaration that could signal that the conditions for TPI are not fulfilled.

Since implicit fiscal support via ECB is less transparent than explicit fiscal support and politically easier, other Euro area governments have fewer incentives to influence member states that are in the kind of trouble that leads to TPI support.

It is difficult for outsiders to prove that a green light given by the international institutions is wrong. Such agencies are usually in calm-the-waters mode, trying to spread good news. The institutions thus have strong incentives to declare debt "sustainable," even if that just shifts the burden of solving the problem to the ECB. In turn, governments understand these political-economy dynamics and have less incentive to put their houses in order.

ECB support falling on all members, individual governments have less incentive to restrain their own bond investors including banks from taking sovereign risk, or to complete the architecture of the Euro. Indeed, as the TPI was put in place, governments were quietly announcing that they were abandoning efforts to put in place a European Deposit Insurance.[8]

It is interesting and significant how the ECB explains TPI. The ECB diagnoses rising yield spreads as "disorderly market dynamics," and "fragmentation," rather than straightforward default spreads, though the ECB provided little information, how it would assess whether this diagnosis is true, or whether fundamental economic factors played a role. The ECB claims that its goal is to preserve "monetary policy transmission" with only "price stability" in mind. That characterization is enshrined in the "Transmission Protection Instrument" name of the program. President Lagarde explained[9] that TPI will

[8]Eurogroup statement on the future of the Banking Union of 16 June 2022. https://www.consilium.europa.eu/en/press/press-releases/2022/06/16/eurogroup-statement-on-the-future-of-the-banking-union-of-16-june-2022/.

[9]Christine Lagarde and Luis de Guindos: Monetary policy statement (with Q&A),21 July 2022, https://www.ecb.europa.eu/press/pressconf/2022/html/ecb.

be activated to "counter unwarranted, disorderly market dynamics that pose a serious threat to the transmission of monetary policy across the euro." See also the 15 June 2022 statement cited above.

Since in this case the ECB wanted higher, not lower, rates, one could argue that higher spreads were *helping* "transmission," but perhaps the ECB wanted higher rates focused on different countries than the market produced.

The alternative view is that the ECB merely says such things to avoid criticism that it is exceeding its mandate. But these statements, including the ECB's systematic distrust of market prices, is damaging. If the true purpose of the program cannot be spoken out loud, it is hard to have a serious discussion of how to face the difficult underlying issues. For example, if the only problem is truly "fragmentated" or "dysfunctional" markets, and the only goal "transmission" of ECB policy rates to other interest rates, then there is no reason to even discuss conditionality, moral hazard, or the fiscal consequences of bond purchases. Indeed, to even mention those as questions would invalidate the justification for the TPI program.

The political-economy incentives of the TPI risk to trap the ECB. Intervention is supposed to be limited to countries that are not in macroeconomic or debt trouble. But suppose the not implausible case, that a country's yield spreads rise because *functional* markets rightly worry about default risks. When the ECB realizes what bond market analysts had figured out, the ECB supposed to stop intervening "based on an assessment that persistent tensions are due to country fundamentals."[10] But then of course, if the ECB pulls out, a crisis will erupt. There being now no fiscal alternative, the ECB will be trapped into perpetual TPI support. The "assessment" will obviously be hard to produce.

Put it this way. Suppose there is political or economic trouble in a large country. Its bond yields start rising and it is having difficultly rolling over debt. Banks are in trouble. Is it imaginable for the ECB to declare , "No, this time

is220721~51ef267c68.en.html

[10]Press Release, "The Transmission Protection Instrument", 21 July 2022. https://www.ecb.europa.eu/press/pr/date/2022/html/ecb.pr220721~973e6e7273.en.html

it's really fundamentals not 'dysfunction.' Go ahead and default?"

In sum, while we do not exclude the possibility that multiple equilibria, "dysfunction," or "fragmentation" can at times be responsible for increasing spreads, we are concerned about the incentives and longer-term implications of the TPI announcement.

Decisions to offer what is in the end fiscal support, decisions to overrule the markets and pronounce a country sustainable or not, are profoundly political. (See Otmar Issing's (2022) "Sword of Damocles" for warnings on this subject, including political dangers.) The assessment of whether a a country is solvent is not just technical. It inevitably involves a normative judgement of how much burden can or should be imposed on taxpayers and recipients of transfers to make bondholders whole. Whether a member country in trouble is insolvent and its debt should be restructured, to the loss of its bondholders including domestic and foreign banks and their creditors, or whether the country should burden its citizens with higher taxes and spending cuts in order fully pay back bondholders, is better decided by parliaments and governments, not a central bank that wishes to stay independent.

The looser constraints – looser precommitments not to intervene – lack of conditionality, and lack of a fiscal backstop mean that TPI risks future inflation to a greater extent than OMT, for at least three reasons.

First, when addressing country-specific debt problems, TPI will likely crowd out OMT, precisely because of its greater "flexibility." Its use will thereby avoid, or at least delay, a European Stability Mechanism (ESM) adjustment program with conditionality. It thus will support additional borrowing without additional repayment capacity, and monetization of that borrowing.

Second, while an ESM program can require upfront debt restructuring, this will not be the case for TPI. Thus, with TPI it is much more likely that the ECB alone will bear the risk and fiscal burden of absorbing overvalued debt.

Third, since the point and direct aim of TPI is to reduce sovereign yield spreads, TPI thereby also reduces the probability that member with high debt and lack of fiscal credibility will face market discipline in form of higher higher

yield spreads.

When governments expect that their interest costs will likely be capped by the ECB below those resulting from market assessments of repayment probabilities based on fundamentals, they may have less incentive to undertake long-term reforms to persuade investors that debt can be repaid also in bad times, which makes the debt more inflationary.

TPI represents the final step opening the door to essentially discretionary bond purchases and credit spread control by the ECB. There is little constraint tying the ECB to the mast to not intervene when voices throughout Europe are screaming to be bailed out. TPI could thus create a risk of a vicious monetary-fiscal circle, and represents the epitomy of our theme and concerns.

As in the other one-off discretionary responses to crises (e.g. SMP or the inclusion of non-marketable collateral in several steps during the financial and sovereign debt crisis), moral hazard is sown every time the crisis-prevention harvest is reaped. We may not want to think of policies as rules, expectations, and precommitments, but markets do, and every action sets a precedent and reputation for the next one. Like it or not, life is a dynamic game. Doing it this time leads people to expect the central bank will do it next time. Yields go down, as people expect cost-free insurance, a central bank put option. Moreover, since distinguishing self-fulfilling doom-loops from genuine insolvency is difficult or impossible in real time, even an attempt to commit that the central bank will only do whatever it takes to stop doom loops but not prop up insolvency is not credible. The incentive for the country to reform, to solve its underlying fiscal problems, to pay the premium for long-term rather than short-term borrowing that insulates it from roll-over crises, or for bondholders to care about the difference is reduced. A central bank would like to say "just this once, to give you time to put your houses in order" to investors, banks, and countries. But without precommitments, without some structure by which next time does not look exactly like this time, we all know that the bank will make the same choice again. And each time becomes larger, and more clearly a fiscal bailout.

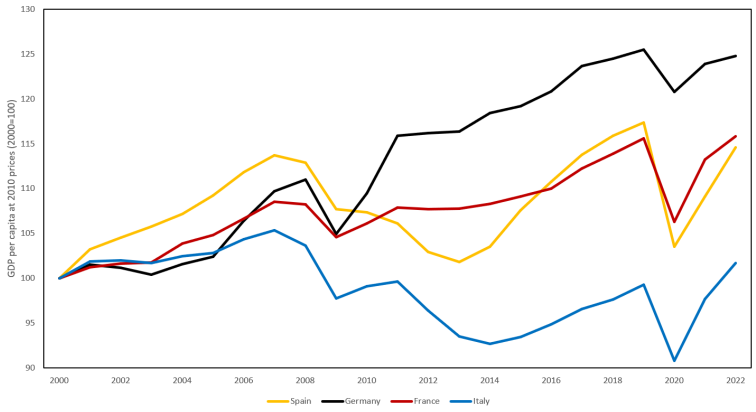

Figure 10.6: GDP per capita. Source: FRED, St. Louis Fed

10.4 Lack of Structural Reforms and Growth

In contrast to initial expectations several of the 12 countries that joined the euro area at an early stage (11 countries in 1999, and Greece in 2001) over the last two to three decades did not catch up towards (or fell back relative) to the EU countries with the highest real GDP per capita. This is the case for Italy, Greece, Spain, Portugal and to a lesser extent also France. Italy, tragically, has almost the same GDP per capita in 2023 as it had in 2000. In contrast, several Eastern EU countries, which were not part of the euro area during its first decade, such as the Baltics and Slovenia, or which still have not jet joined, such as the Czech Republic, Hungary, Poland, and Romamia, have been converging in real terms. (see Figure 10.7). Some of the latter growth is, of course, catch-up growth following the fall of the Iron Curtain.

Stagnation is unfortunate, of course, and also puzzling. The benefits of the Single Market should have supported growth and catching-up throughout Europe. Europe should not remain substantially below the US in GDP per capita.

Much stagnation, and most relative stagnation, likely comes from microeconomic and structural policies at the national level. Member states still

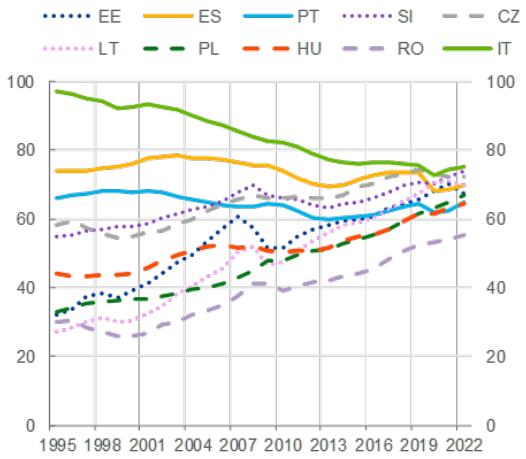

Figure 10.7: Real GDP per capita of selected EU Countries. Purchasing power standard. Index, with the simple average of DK, NL, AT, SE, and BE = 100. Sources: European Commission data. Selected countries: those that in 2022 were between 75 and 100% of the EU average per capita GDP. Solid lines: Early € entrants (IT, ES, PT). Dotted lines: late € entrants (LT, EE, SI). Dashed lines: non € (CZ, PL, HU, RO).

face large challenges such as low innovation, low productivity and potential growth, and high youth unemployment. A credible central bank that maintains price stability and avoids distorting incentives contributes a good deal to efficiency and trust. Beyond this, long run growth is not a monetary affair.

One way to identify areas where improvements of institutional quality, regulations, rule of law etc. that govern economic activities are needed the most is the World Bank's Worldwide Governance Indicators (WGI) dataset. It summarises how companies, citizens and experts view the quality of governance. Looking at a simple average of the four WGI indicators *rule of law, regulatory quality, government effectiveness and control of corruption*, none of the 12 countries that joined the euro at an early stage saw an improvement in its institutional quality since 1998, while several saw a significant deterioration, among them Greece, Italy, Spain, Portugal, Austria, Germany, and the Netherlands, in ascending order of their score in 2022. In contrast, several EU countries that adopted the euro (more than) a decade after its inception improved their institutional quality between 1998 and 2022. This has been the

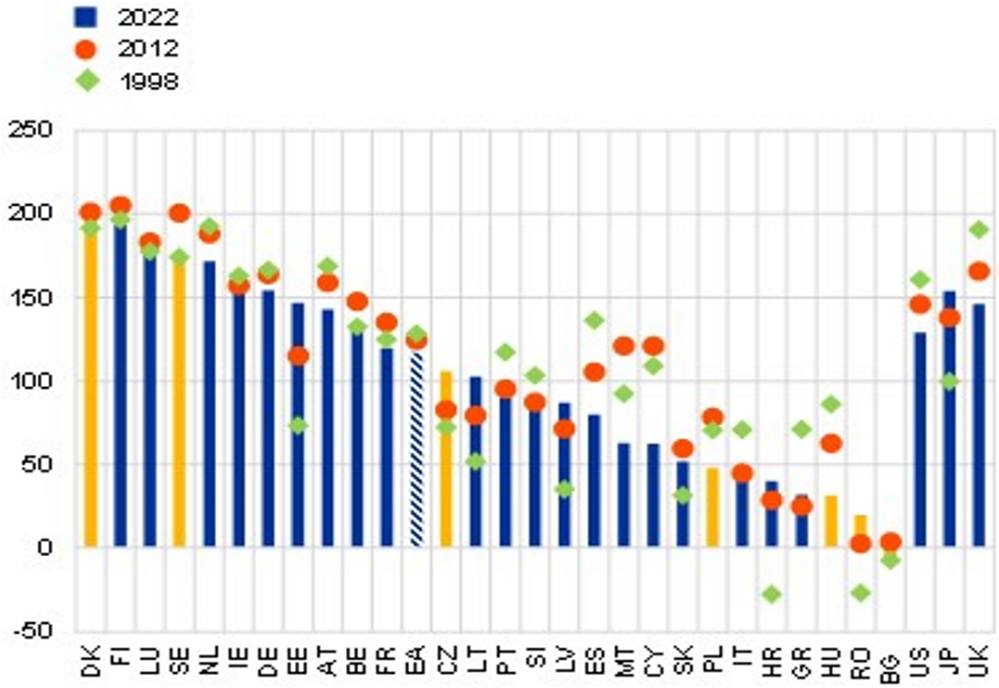

Figure 10.8: Institutional Quality in EU Member States. Source: World Bank Worldwide Governance Indicators. Note: Scores reflect the average of the four measurable governance indicators: rule of law, regulatory quality, government effectiveness and control of corruption. Higher values indicate better governance. A score of 250 would reflect that a country is the global best performer in all four subcategories. Euro Area average in unchanged composition.

case for Slovakia (which joined 2009), Estonia (2011), Latvia (2014), Lithuania (2015) and Croatia (2023). From the EU Member States that are still outside the euro area, Romania and Czech Republic saw a significant improvements.[11] (See Figure 10.8). Of course, improving institutional quality is part of the "catch-up" from communism.

European Union bodies are aware of these challenges and the resulting reform needs. Thus, the large joint borrowing program, NextGenEU, launched during the pandemic, provides financial incentives to less productive and debt-

[11]See also "The euro area needs better structural policies to support income, employment and fairness," ECB Blog, October 11 2023,https://www.ecb.europa.eu/press/blog/date/2023/html/ecb.blog231011~b743839ce4.en.html.

heavy nations to kick-start reforms. If reform implementation is strong and the money is spent wisely, such investments should help to lift potential growth.

It is too early for a comprehensive assessment. However, some early signs are not very promising. A "reform" of the pension system in Spain supposedly to pursue reform commitments with the EU under the NextGen plan has increased the structural deficit in the country, according to the evaluation of the independent fiscal authority, by 1% of GDP.[12] A recent book-length evaluation by economists Tito Boeri and Roberto Perotti of the Italian plan (Boeri and Perotti, 2023) is summarized by the authors as concluding that:

> It allocates absurdly high amounts on useless or deleterious but "easy" expenses like the Superbonus or "fashionable" like digital in primary schools while neglecting expenses that are necessary for our society, starting with those to offer opportunities to young people in the urban suburbs. Almost all the major "epochal" reforms, on which according to the governments the success of the Plan depended, are at a standstill, and many were abandoned before starting.

10.5 EU Institutional Reform Paralysis

We have emphasized the risk of negative side effects engendered by the ECB's interventions on incentives of private parties such as banks and other bond investors or on member states

A feeling among policy makers that the ECB will help to deal with future fiscal and financial problems, using its (or the Eurosystem's) balance sheet and if needed inventing new tools, makes it harder for the EU (and euro area policy makers) to push through politically difficult but needed improvements of fiscal, financial and economic institutions.

The financial and sovereign crises exposed some key shortcomings of the EMU's institutional set-up. Two are paramount: introducing ways to deal

[12] See the evaluation document from AiREF: El impacto de las reformas del sistema de pensiones entre 2021 y 2023

with sovereign debt crises, and completing banking union.

Still no efficient way to deal with debt crises

There still does not exists a well worked out institutional structure comparable to corporate bankruptcy to deal with potential sovereign debt crisis (either insolvency or roll-over failure).

If sovereign debt is not to be absolutely guaranteed in nominal terms by monetization, then it must be held by private institutions and investors that can bear risk. Alternatively or additionally, a common (or intergovernmental) *fiscal* institution (such as the ESM) should undertake a thorough investigation of country fundamentals and based on this decide whether (i) it will provide financial support against binding conditionality to bridge the crises, or (ii) inform the crisis country how it would provide support, after an orderly debt restructuring, should this be decided by respective authorities.

Important elements of this *fiscal* task seem by now having fallen to the ECB. However, decisions on rescuing the government of a crisis country and its bondholders, conditionality, sovereign debt restructuring, the implied fiscal transfers and re-distributions, and the underlying judgements on the quality of country fundamentals are highly political, the proper province of elected politicians not independent central bank technocrats. At the same time, governments (and the ESM) seem less and less able or willing to impose conditionality or investor haircuts.

A first set of reforms to deal with debt crises was agreed in principle in a June 2019 Euro summit. But Italy has blocked all efforts of ratification of ESM reform, doing so most recently in June 2023.[13]. Italy was concerned that the reform, although minor, would not just make debt restructuring easier and more orderly, but also more likely. In the words of Banca d'Italia governor Ignazio Visco[14] in 2019,

[13] See Euroactiv, "Reluctant Italy postpones eurozone bailout fund's ratification," June 27, 2023, https://www.euractiv.com/section/politics/news/reluctant-italy-postpones-eurozone-bailout-funds-ratification

[14] https://www.bancaditalia.it/pubblicazioni/interventi-governatore/integov2019/visco-audizione-4122019.pdf

> The small and uncertain benefits of a debt restructuring mechanism must be assessed in the face of the enormous risk that would be taken by introducing it: the mere announcement of such a measure could trigger a perverse spiral of insolvency expectations, likely to be self-fulfilling. We should all bear in mind the terrible consequences that followed the announcement of Private Sector Involvement in the resolution of the Greek crisis after the Deauville meeting at the end of 2010.

Italy also categorically ruled out using ESM funds in multiple occasions, reflecting either the expectation of easy financing conditions under ECB support, or distaste for ESM conditionality. Recently, Prime Minister Meloni[15] declared that Italy won't access ESM as long as she is prime minister.

Abandoned Banking Union

After a short burst of action in 2012-2014 (see Section 6.4), Banking Union and banking reform remain stalled. The objectives of banking union where to "severe the vicious link between bank and sovereign fragility"; "the restoration of private liability in banking"; and to "reinforce the basis for the single market in banking services" (Beck et al. (2022)). Accomplishing these aims required, first, establishing a single Europe-wide, banking supervisor; second, establishing a single, centralized, crisis management and deposit insurance framework; and, third, reducing the concentration of sovereign exposure of bank balance sheets (Bénassy-Quéré et al. (2018)).

Sadly, several these reforms never took place. The Single Supervisory Mechanism has not fully replaced national supervisors, who retain the right to demand liquidity and capital in their jurisdictions from subsidiaries of foreign banks and hence limit the potential economies of scale of cross-border mergers. The Single Resolution Board has been an extra layer of mostly useless bureaucracy and a European Deposit Insurance has not seen the light. As for the excessive exposure of banks to their own sovereign, not only have they not

[15] https://www.ansa.it/english/news/politics/2023/03/15/italy-wont-access-esm-as-long-as-im-pm-meloni_aa0faefc-2bdc-4c12-979c-b5b2337b5836.html

been reduced, but in some cases they are above the levels of the crisis. In the assessment of a group of European economists (Beck et al. (2022)) the Banking Union is "far from complete....This perpetuates the 'doom loop' between banks and sovereigns. [...] Despite the successful adoption of common rules and standards, pivotal responsibilities in bank crisis management still remain at national level.." We discuss the progress in the three areas next.

Single Supervision. The Single Supervision was indeed put in place and started its operations in November of 2014. But soon it became clear that the existing regulation leads to conflicts between the regulators of an international bank's headquarters country and those of the bank's subsidiaries.

This so-called home-host conflict fragments the EU banking market and impedes cross-border private risk-sharing. Home and host regulators issue conflicting orders, require duplicate capital and liquidity, and make cross-border mergers inefficient. Host countries fear home country regulators will prefer saving the parent bank even at the risk of foreign subsidiaries. Host countries aim to avoid any inside-the-bank resource transfers in order to protect local depositors and boost local lending. It is not just about being ready for crisis: both home and host regulators want to influence credit allocation of the banks, a conflicting aim. In sum, home–host conflicts complicate the operation of cross-border banks and hinder financial integration. This is a significant barrier to attaining a single market for banking services.

Crisis Management and Deposit Insurance. Also little effective progress has been recorded on Bank resolution. The Bank Recovery and Resolution Directive (BRRD) was designed to make it easier to resolve or shut down failing banks and to bail in shareholders and uninsured creditors (see (Lane, 2021).) And indeed, the Single Resolution board was operational on January 1, 2016. Theoretically, the Board was tasked to decide whether to put a bank in resolution and which resolution tools to use, including the financing through the Single Resolution Fund. In practice, this leg of the banking union only operated on paper. The Single Resolution Board (SRB) has been very reluctant to intervene in national banking crises, leaving individual states responsible for bailing out or liquidating their banks. Middle-sized banks have

been considered by the SRB not to meet the "public interest" criterion for resolution, while very large banks can probably not credibly be resolved by the SRB with the resources at its disposal, €66bn in funds [16] as of July 2022 and a maximum €68bn from the potential ESM[17] credit line. Member states, afraid of the political consequences of bailing-in bond-holders (required in order to use Single Resolution Fund financing), were all too happy to avoid European entanglements.

As a result, the basic principle of prioritizing bail-in of junior debt and shareholder equity before calling on public funds has in fact only exceptionally been applied. The one exception was Spain's Banco Popular rescue in 2016, which did apply the new Bank Recovery and Resolution Directive rule-book. In all other cases, bail in of uninsured creditors was fully or partly avoided, thereby shifting large burdens onto the government and thus taxpayers. This was the case for example in the cases of Germany's regional banks NordLB and HSH, Italian Banks Monti de Paschi, Veneto Banca and Banca Popolare di Vicenza, Cyprus Corporative Bank (see Garicano (2020)).

Nor has a common deposit insurance been put in place. The European Commission did make a legislative proposal in 2015 that "would reduce the vulnerability of national deposit guarantee schemes to large local shocks... weakening the link between banks and their national sovereigns." However, the resistance from members of the European Parliament as well as certain member states ensured this proposal never reached the stage of being taken into consideration either in Parliament or in the European Council.

Absent a European deposit insurance, national deposit guarantee schemes remain liable for banking rescues. The banks backstop will continue to be, in most cases, the national treasury, increasing doom-loop risks. Banks and their regulators also seem to expect that the ECB will step to avoid a financial crisis with both (i) lending to banks at favourable rates and (ii) security purchase programs to keep yield spreads on sovereign and bank bonds moderate, a kind of implicit European deposit insurance of last resort. In this way, insufficient

[16] https://www.srb.europa.eu/en/single-resolution-fund
[17] https://www.esm.europa.eu/content/how-much-could-esm-lend-single-resolution-fund

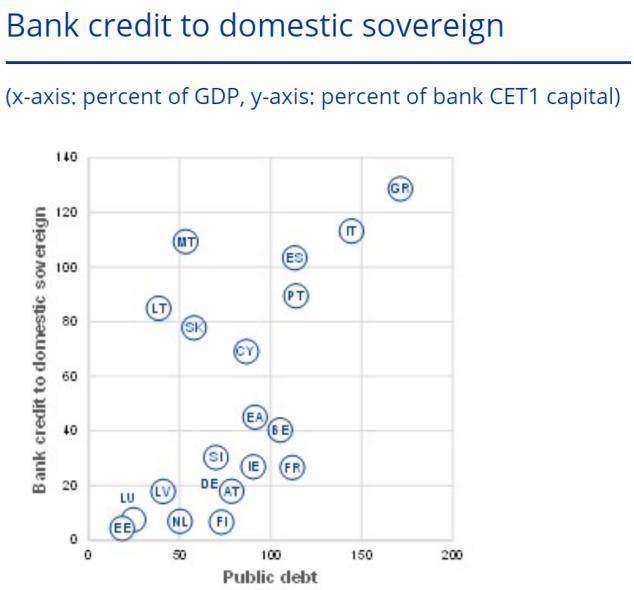

Figure 10.9: Bank credit to domestic sovereign in the euro area. Sources: Eurostat and ECB supervisory data (COREP and FINREP). Note: CET1 refers to Common Equity Tier 1 capital. Consolidated data referring to Q4 2022.

banking regulation and lack of an explicit European deposit insurance with adequate, risk based insurance fees, shift risks and costs to the central bank balance sheet and windfall profits to banks and their owners. This risks to create political economy dynamics where sovereign debt and creditor bailouts remain the rule and the Single Resolution Mechanism (and its Single Resolution Fund) remains unused.

Reducing Sovereign Exposures. No efforts have been made to reduce exposures of banks in a country to that country's debt. In some countries with debt-to-GDP ratios above 100%, sovereign exposures of banks are currently at around 100% of bank CET1 capital (see Figure 10.9). As long as Eurozone banks balance sheets are still full of their own sovereign debt rather than an internationally diversified portfolio, a sovereign default means a national banking crisis. Treasury debt imperils the banks, bank debt imperils the treasury, a bank run is effectively a treasury run, and a treasury run can spark a bank run.

The effort to try to build a package reducing sovereign exposures of banks (a "Northern" objective) and a European Deposit Insurance (a "Southern" objective) have been postponed sine-die by a Eurogroup meeting tasked with setting up a "road-map" to complete banking union. The Eurogroup could only agree that:[18]

> Subsequently, we will review the state of the Banking Union and identify possible further measures with regard to the other outstanding elements to strengthen and complete the Banking Union.

Banking Union has failed in its main objectives. The key factors contributing to the doom loop remain in place, private liability continues to be mostly absent, and the European Banking Market remains highly fragmented and national. Banks' intra-euro-area exposures declined in the decade after the crisis by 24% from 2008 levels, while the percentage of euro-area cross-border loans decreased to reach 6% (Schmitz, Tirpák et al., 2017). See also the ECB 2022 report[19] which argues:

> As further domestic and cross-border bank consolidation could help address structurally low profitability and fragmentation in retail credit markets, it should be considered to remove remaining regulatory obstacles.

Stagnation of banking reform is a global problem, as revealed in the US where simple reforms to stabilize the treasury market had not been implemented for years, leading to hiccups in 2019 and such a large dislocation that the Fed began buying the majority of new issues in March 2020. A money market fund bailout, direct lending to State and Local governments, and a Draghi-worthy "whatever it takes" that corporate bond prices shall not fall followed. The Silicon Valley Bank failure, in which a run broke out because of

[18] "Eurogroup statement on the future of the Banking Union of 16 June 2022." https://www.consilium.europa.eu/en/press/press-releases/2022/06/16/eurogroup-statement-on-the-future-of-the-banking-union-of-16-june-2022/.

[19] https://www.ecb.europa.eu/pub/fie/html/ecb.fie202204~4c4f5f572f.en.html#toc3

simple uninsured deposits funding long-term treasury investments that fell in value when rates rose, showed a system unable to manage the most basic risks imaginable. In the UK, a near collapse of pension funds borrowing short and lending long treasury debt similarly surprised its central bank. In Switzerland, the failure of Credit Suisse showed all the promises about orderly resolution, priority of claimants, convertible bonds, shareholder wipe-outs, and living wills were empty. So, despite the common refrain that countries and governing institutions should take calm periods to institute reforms, doing so seems to violate human nature, or at least bureaucratic nature.

This is not surprising. Bail-ins and restructuring will never be the tool investors and financial institutions prefer. Why should banks and investors give up on a system where they make gains in good times and bear few losses in bad times? Why should banks support a European deposit insurance system or a regulatory reform that recognizes that government bonds give good yields because they bear default risk, and requires them to issue capital to hold such assets? The incentive is even lower if the ECB provides ex-post insurance by monetizing debt, which does not involve direct taxes or insurance premiums. The result is that each countries' taxpayers and consumers will continue bearing the bulk of the financial burden during crises.

We now have not just a few one-off expedients in the rear-view mirror; we have programs in operation and a regime with clear expectations. The ECB has the tools, commitments and firepower to prop up debts; people expect that it will do so; incentives for governments to do the hard work either to make the system more resilient or to construct alternative resolution mechanisms are weak, if not absent. It has worked so far. But the size of the commitments grows and grows, and eventually it will fail if it is not reformed.

Overall, that banking union fell substantially short of political promises made during the sovereign debt crisis. It would be wrong to blame this one the single supervisory mechanism, which has to apply the existing regulatory and institutional architecture, that " is still not powerful enough to offset a national bias that dominates banking sector policy. Most member states still wish to maintain control over their banking systems, limit cross-border exposures to

liquidity needs in times of crises, protect national or regional banks against foreign competitors, and leverage their domestic banking systems to facilitate government financing in times of stress." (Beck et al. (2022))

10.6 The ECB's Large Market Footprint

Reducing interest rates and embarking in Quantitative Easing is easy. Unwinding it is hard. And yet, Central Banks must do it, not just to address (i) the blurring of the line between fiscal and monetary policy, (ii) the reduction of the central bank credibility (e.g. as a large increase in rates creates large losses for the central banks) and (iii) the distortion they introduce on the incentives of governments, European Institutions, as we have discussed, but also (iv) the distortions QE creates on financial markets. In a March 2, 2023 speech entitled "Quantitative tightening: rationale and market impact", ECB Board member Isabel Schnabel argued that "the size of our balance sheet should only be as large as necessary to ensure sufficient liquidity provision and effectively steer short-term interest rates towards levels that are consistent with price stability over the medium term."

The Interbank Market and the ECB's acceptance of Non-Marketable Collateral

The original operating procedure of Central Banks, including the ECB, were designed with the objective to "make the policy stance effective while at the same time leaving a minimal imprint on the financial system" (Borio, 2023). To accomplish this, the ECB interest rate setting is supposed to work as follows, according to the ECB's own description:

> *Our primary monetary policy instrument is the set of ECB policy rates. The Governing Council of the ECB sets three rates:*
>
> 1. *The interest rate on the main refinancing operations. In these operations banks can borrow funds from the ECB against collateral on a weekly basis at a pre-determined interest rate.*

2. *The rate on the deposit facility, which banks may use to make overnight deposits at a pre-set rate lower than the main refinancing operations rate.*
3. *The rate on the marginal lending facility, which offers overnight credit to banks at a pre-set interest rate above the main refinancing operations rate.*

The rate on the deposit facility and the rate on the marginal lending facility define a floor and a ceiling for the overnight interest rate at which banks lend to each other. This creates an interest rate corridor for money markets.

Hence this so-called "corridor" system permits a certain degree of volatility in interest rates but ensures they are broadly anchored around the ECB's central refinancing rate.

This remains the description of the system in the ECB's web site: In practice, with excess liquidity provided by the ECB via generous lending to banks at fixed rates with full allotment from autumn 2009 onwards and more clearly with the start of the Asset Purchase Program program in October 2014 and the beginning of the era of quantitative easing, the system´s functioning changed markedly. Market interest rates descended towards the ECB's deposit facility rate, which effectively creates a floor (see Figure 10.10 from Schnabel's presentation). Hence the "corridor" system becomes a "floor" system.

The most forceful defense of the convenience of a large balance-sheet size has been expressed by Altavilla, Rostagno, and Schumacher (2023). They argue that the ECB's framework should ensure that banks' liquid reserves are adequate and that a floor system, where the ECB maintains a considerable amount of non-borrowed reserves, is more effective in supporting lending activities compared to the ceiling system. The paper presents some empirical evidence of a positive relationship between non-borrowed reserves and bank lending (not for borrowed reserves). Hence the authors argue in favor of a baseline convergence to a quantity of non-borrowed reserves consistent with the Friedman rule (just saturating the system) to support moderate loan contraction and avoid economic volatility. Specifically, they argue against quantitative tightening and

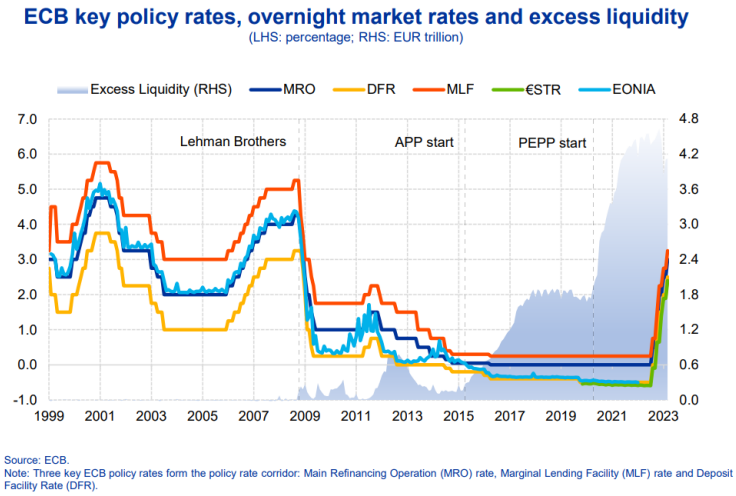

Figure 10.10: ECB key policy rates, overnight market rates and excess liquidity (LHS: percentage; RHS: EUR trillion). Three key ECB policy rates form the policy rate corridor: Main Refinancing Operation (MRO) rate, Marginal Lending Facility (MLF) rate and Deposit Facility Rate (DFR). Source: Isabel Schnabel Speech, March 23, 2023.

propose that the ECB's balance sheet should start growing again after mid-2026 to finance the secular growth in the demand for central bank liabilities.

In our view, the creation of excess liquidity can be useful during severe financial stress and volatility. However, outside such episodes, under the current framework, maintaining excess liquidity via a large (and in the medium-term further increasing) portfolio of risky longer-term bonds has important undesirable consequences:

1. **The private unsecured inter-bank market is replaced by a public intermediary, the ECB.** This means that whatever information was provided by this market disappears as well. All banks face the same funding cost, while in a system without large excess liquidity, banks that are regarded as risky or potentially fragile by market participants would have seen their overnight funding costs increase and would have been forced to borrow at a higher rate from the marginal lending facility. This provided a useful market signal to the bank concerned and bank supervisors. Now,

as long as a bank has excess liquidity, it will not need to use the marginal lending facility or to attract private funds with higher interest rates. The "true" liquidity and credit conditions of individual banks in the economy become increasingly difficult to know and the risk of misplacing of risks and assets increases. The disappearance of the interbank market may take time to reverse, as Borio (2023) points out: "The damage is long-lasting. If you don´t use a muscle, it atrophies. Desks are dismantled. Institutional memory withers." Incentives for prudent liquidity management by banks are impaired. The result is that reliance on the ECB for liquidity, rather than developing robust internal management practices, could increase systemic risks.

2. **Collateral scarcity**. In particular, the Eurosystem holds over a third of euro area sovereign bonds (see Figure 10.12), impacting market dynamics and pricing. In particular, asset purchases by the Eurosystem lead to bond scarcity, with the consequence, according of Arrata et al. (2020), of causing financial intermediaries to lend cash at rates even below the ECBs Deposit Facility Rate in repo transactions to obtain bonds. As they argue, a consequence of this scarcity could be that ultimately "central banks asset purchases–aiming at flattening the yield curve–might result in partially losing control over the short end of the curve (i.e., money market rates). " A "scarcity premium" appears in both repo and bond markets, leading to higher prices for these assets. During times of uncertainty, demand for safe assets that can be used for private repo loans spikes, straining the market. For instance, last year's volatility led to anomalies in the Bund-OIS spread and repo market rates (see Figure 10.11), affecting the monetary policy's transmission. The policy decisions' impact on repo markets also showed delays and dispersion in rates.

3. **Distortions in Risky Collateral.** The large size of the ECBs balance sheet is not just due to the short-term liquidity issues or sovereign bond holdings (see 10.13). Changes in collateral policies (mainly introduced during the financial and debt crises and initially understood as "temporary") mean significant amounts of non-marketable collateral can be

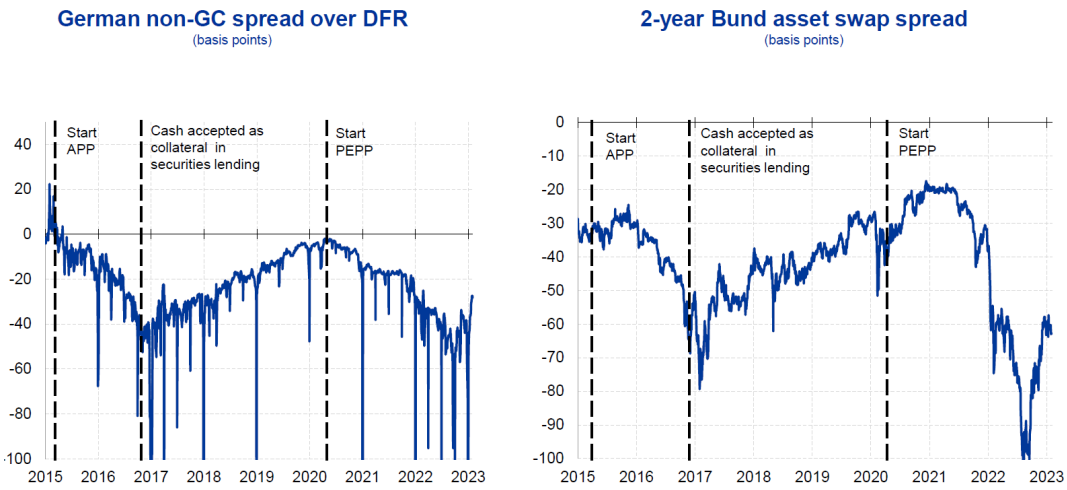

Figure 10.11: QE has contributed to scarcity of safe and liquid assets in repo and bond markets Source: MTS and BrokerTec, ECB calculations.Note:The y-axis is cut at -100 bps.

used by banks to borrow from the ECB. Banks are likely to post large amounts of low quality collateral at the ECB and have an incentive to borrow large amounts from the as long as ECB interest rates include a subsidy for banks relative to private markets that do not accept such collateral (or only at high risk premia). This risks to distort the price of risk, and potentially introduces systemic risk by reducing monitoring effort among banks.

4. **Monetary Policy Tranmission.** Finally, as discussed in Chapter 2, a large central bank balance sheet with maturity mismatch and thus interest rates risks can backfire. It risks to undermine the effectiveness of monetary policy transmission when interest rates need to be increased with the aim to fight high inflation, while bank profits are boosted via a high remuneration of large excess reserves.

In sum, beyond the incentive conflicts for the European governments and institutions we have discussed, the current balance sheet has led to significant distortions in the financial markets, including the suppression of the private unsecured inter-bank market, altered risk management practices among banks

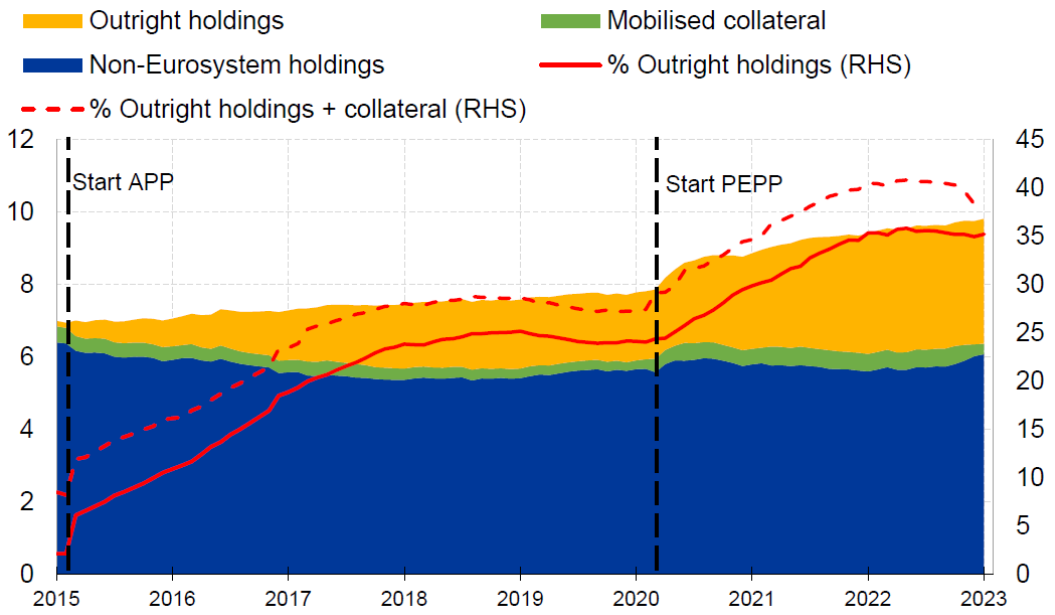

Figure 10.12: Eurosystem footprint in euro area sovereign bond markets (LHS: EUR trillion; RHS: percentage). Source: Eurosystem, CSDB. Note: Outright holdings refer to EGBs held by the Eurosystem, adjusted by the amount of EGBs lent back to the market via securities lending against cash. Mobilised collateral with the Eurosystem includes EGBs mobilised as collateral for open market operations. Only euro area central and regional government bonds denominated in euro were considered, represented in nominal amounts, without maturity restrictions.

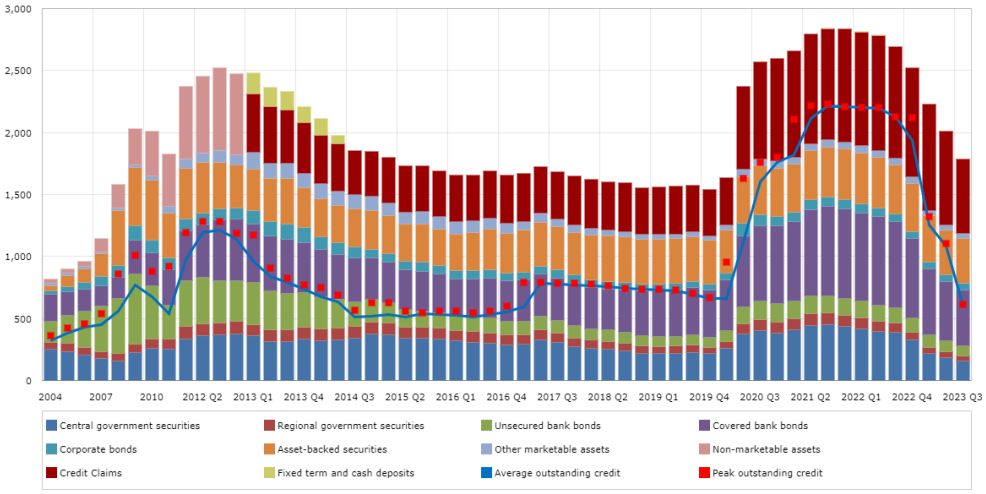

Figure 10.13: ECB: Use of Collateral and Outstanding credit. Source: ECB. EUR billion, after valuation and haircuts. Averages at the end of month data over each time period. Since Q1 2013, the category "Non-Marketable Assets" is split into two categories: "Fixed term and Cash Deposits" and "Credit Lines"https://www.ecb.europa.eu/paym/coll/charts/html/index.en.html#:~:text=Since%20Q1%202013%2C%20the%20category,Credit%20claims

and created a scarcity of high-quality collateral. These issues have not only impaired the functioning of markets, but might also increase expectations of future large scale support of banks or sovereigns in trouble and thereby systemic financial stability risks.

10.7 The ECB and the Balance of Payment

As a side effect of its large footprint and the creation of excess reserves, the ECB can contribute to finance national trade deficits or private capital outflows via the Eurosystem balance sheet. The ECB effectively provides balance of payment financing for some member states that otherwise would have to come from markets at higher interest costs, or from a crisis management institution such as the IMF or the ESM via financial assistance loans based on conditionality.

ECB contribution to financing cumulated trade deficits or private sector capital outflows showed up most clearly as an astounding buildup in target2 balances. For an example, substantial target2 liabilities the central bank of Ireland emerged already in 2008-9, during the fiancial crisis. When the EU/IMF programme was agreed in late 2010, Ireland's debt towards the ECB had increased to about 100% of its GDP. In Italy we we see a first significant drop in the target2 balance at a much later stage, in 2011-12 during the sovereign debt crisis, to a negative €274bn in mid 2012. From mid-2012 until 2015 we see some improvement until, and then a more or less continuous drop that accelerated in 2022 and recently recovered somewhat reaching €521bn in December 2023 (Figure **??**).

"whatever it takes (OMT)

The case of Germany is the other side of the coin. Here the increase of target claims follows a roughly constant trend throughout the period, with some fluctuations around it at the time of the sovereign crisis, and the Pandemic. In December 2023 it stood at almost €1.1 trillion.

During the height of the sovereign debt crisis, it was clear that this was not a sustainable situation. The exposure of the ECB towards national

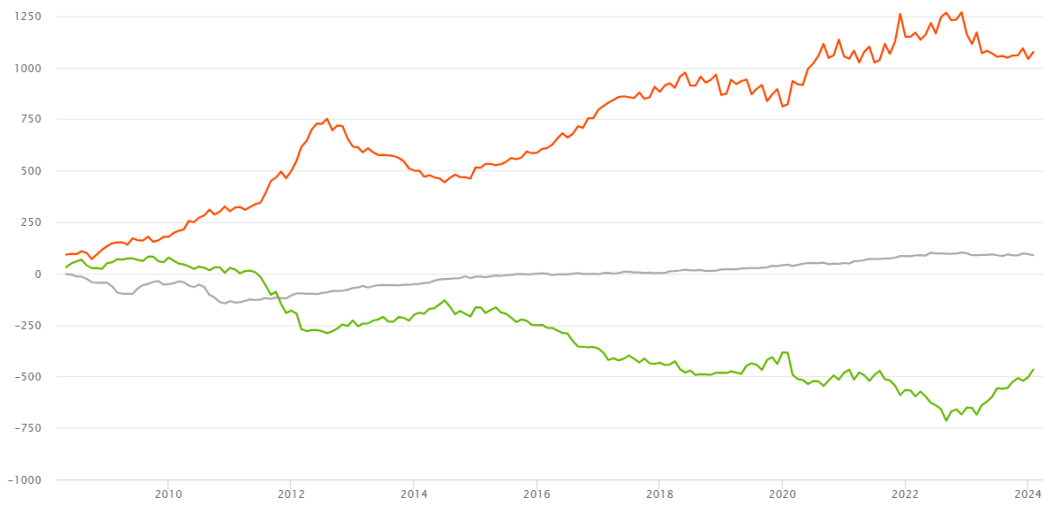

Figure 10.14: Target2 Balances, Germany (red), Ireland (grey) and Italy (green). Outstanding amounts at end of period. Source: ECB

central banks of stressed countries was bound to increase with a deepening of the crisis. Following "whatever it takes (OMT)" until end-2014 target2 debt mostly declined, in particular in the program countries. However, since the mid-2010s, large scale asset purchase programms and ECB loans to banks at favourable conditions contributed to a further substantial increase in target2 debt. This development was somewhat reversed when the ECB withdrew the bulk of its large scale lending to banks under its TLTRO programms in 2023. (Figure 10.15)

Short-term ECB financing of balance of payment outflows can be helpful, if such outflows are not related to elevated country-specific risks, but purely temporary liquidity issues. In this case, target2 balances should be transitory and reverse quickly. However, capital outflows (or a drying up of capital inflows) are often at least in part related to country specific weaknesses that require national fiscal, financial sector and structural policy interventions.

Banks could in principle offer higher interest rates (or reduce their risks) to stop such outflows, but they have little incentives to do so, if they can get or use funds at more favourable rates from the Eurosystem. Banks may be able to borrow new money from the ECB at lower rates than from the market, or,

	2019-12	2014-12	2012-06	2011-12	2010-12
European Central Bank	-236.13	-23.64	11.93	42.16	-22.37
Austria	-46.64	-30.09	-39.08	-34.59	-27.47
Belgium	-63.71	-12.37	-31.07	-52.87	-13.86
Croatia	-	-	-	-	-
Cyprus	8.50	-2.50	-11.27	-7.91	-6.44
Estonia	0.62	3.19	0.70	0.64	-
Finland	57.07	19.73	72.47	66.01	19.69
France	28.46	-17.01	-10.18	-77.42	-28.35
Germany	895.22	460.85	728.57	463.13	325.56
Greece	-25.66	-49.32	-105.99	-104.75	-87.09
Ireland	35.37	-22.74	-100.09	-120.43	-145.19
Italy	-439.45	-208.94	-274.29	-191.38	3.41
Latvia	-3.83	-0.80	-	-	-
Lithuania	-0.87	-	-	-	-
Luxembourg	192.41	105.08	125.26	109.42	67.92
Malta	5.56	-1.93	-1.13	-0.42	-1.22
Netherlands	46.43	19.41	123.30	152.78	40.50
Portugal	-76.98	-54.59	-74.32	-60.92	-59.91
Slovakia	9.30	2.24	-5.27	-13.62	-13.31
Slovenia	3.44	2.39	-5.17	-2.73	-2.09
Spain	-392.38	-189.87	-408.42	-174.98	-50.92

Figure 10.15: Target Balances euro billion. Outstanding amounts at end of period. Individual TARGET balances of euro area NCBs are not provided for dates before the accession of their countries to the euro area. Source: ECB

they may draw on pre-existing excess liquidity which they may have received by selling assets to the central bank. Some may argue that it is the task of the ECB to avoid fragmentation and ensure a level playing field among euro area banks. However, this view seems to ignore that higher market risk premia to be paid by weaker banks or sovereigns (including those related to bank-sovereign doom-loop risks) can well be fundamentally justified, and thus a feature one would expect from an *of an open market economy with free competition, favouring an efficient allocation of resources*.

National governments and bank regulators have the core responsibility and tools to address such cross-country risk-differentials, not monetary policy. In any case, if the central bank provides a subsidy to commercial banks relative to prevailing market conditions (e.g. by accepting low quality, non-marketable collateral), this might generate disincentives for banks to strengthen their balance sheets (e.g. by reducing its sovereign exposure or by increasing its capital buffer) in order to attract inflows of private funds.

Importantly, the ECB's involvement in financing the balance of payments of individual countries would remain, even in the hypothetical case without the existence of national central banks: the accounting system would no longer show target2 loans from the ECB to national central banks and vice versa, however the economic phenomenon of the central bank financing parts of balance of payment outflows could continue. The ECB could still replace private cross-border capital flows with its balance sheet, if it provides sufficient loans to banks at favourable conditions and/or helps to keep risk premia and thus yields on bank bonds, interbank lending or sovereign bonds below the market yields that would result without such central bank interventions. In this case the ECB may assume additional risks on its balance sheet and help private investors to limit their own exposures to country specific risks and thus their contribution to cross-border risk sharing.

A comprehensive analysis is provided by Eisenschmidt, Kedan, and Schmitz (2022), who describe the relation between target balances and the balance of payments of euro area countries during the sovereign debt crisis in clear terms:

> "Prior to the financial crisis, when liquidity conditions in the euro area were neutral and TARGET balances were small, very large flows in the other BoP components – partly stemming from current account deficits, but mainly from private financial flows – were observed without notable changes in TARGET balances (see Fig. 10.16). During the sovereign debt crisis, a substantial part of the liquidity provided by the Eurosystem to banks in TARGET liability countries was used for external transactions related to the current account deficits and the collapse in private financial inflows, thereby leading to an increase in TARGET liabilities. Correspondingly, the euro area countries with the largest TARGET claims (Germany, Luxembourg and the Netherlands) received foreign inflows, while recording a surplus in the current account."

Figure 10.16 shows the combined target balances of Italy, Spain and Portugal, which experienced their strongest deterioration during the first half of 2012, when concerns about debt sustainability in Italy and bank-sovereign doom-loops in Spain were mounting. Figure 10.17 depicts separately the developments for Greece and Portugal, where the deterioration of the prospects for debt sustainability started about 2-3 years earlier than in Italy. The Greek case seems particularly interesting. The ECB's cumulated support for the large Greek trade deficit reached more than 40 billion Euro by Oct-2009, when general elections took place. In 2009 the overall fiscal deficit in Greece reached around 15% of GDP and the current account deficit around 12% of GDP. It cannot be excluded that in this case the ECB's balance of payment support helped the outgoing government to continue with an unsustainable fiscal policy for longer than otherwise possible. Six months later, when the Greek EU/IMF adjustment program with an overall official sector funding envelop from euro area member states and the IMF together of 110 billion Euro and was close to being finally agreed, the Target2 debt of Greece already stood at above 80 billion Euro.

Eisenschmidt, Kedan, and Schmitz (2022) argue that in contrast to euro debt crisis, "the increase in TARGET balances since 2015 cannot be attributed

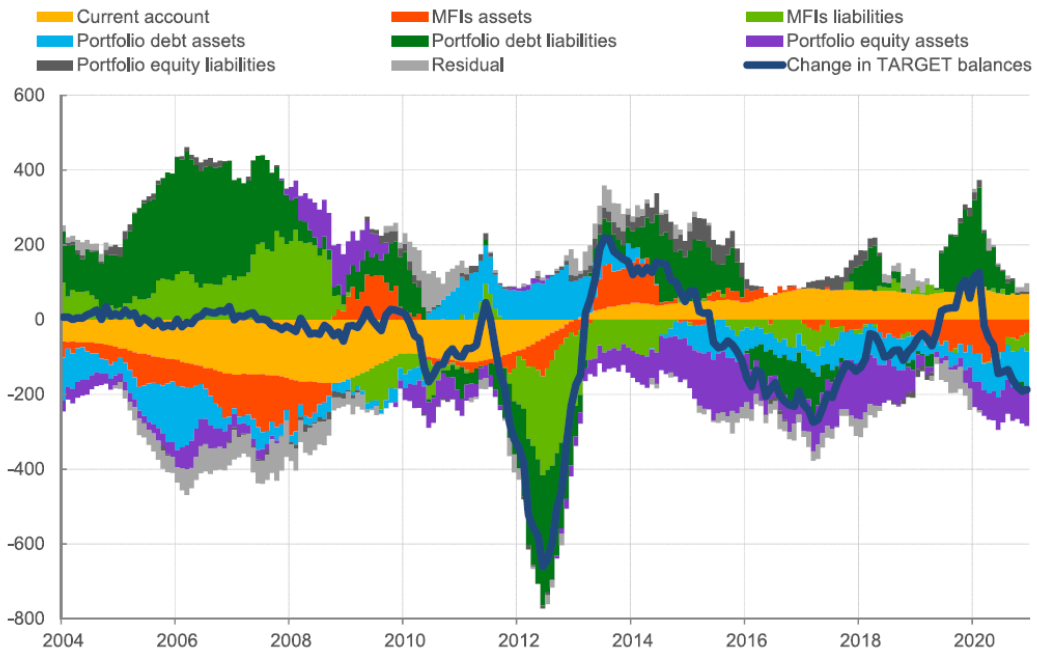

Figure 10.16: Changes in TARGET balances and main components of the balance of payments in the countries with the largest TARGET liabilities. Figure 8 in Eisenschmidt, Kedan, and Schmitz (2022): Source: European Central Bank. Notes: 12-month changes in TARGET balances; 12-month moving sum of monthly balance of payments transactions; EUR billions. TARGET liability countries include Italy, Spain and Portugal. Decomposition based on Eisenschmidt et al. (2017). "Assets" refer to gross outflows, i.e. investment abroad by domestic residents, while "liabilities" refer to gross inflows, i.e. investment by non-residents in the domestic economy. A negative value for assets indicates a net increase in foreign assets by domestic residents. A negative value for liabilities indicates a net reduction of domestic assets by foreign residents. A positive value for the current account indicates a surplus. The last observation is December 2020.

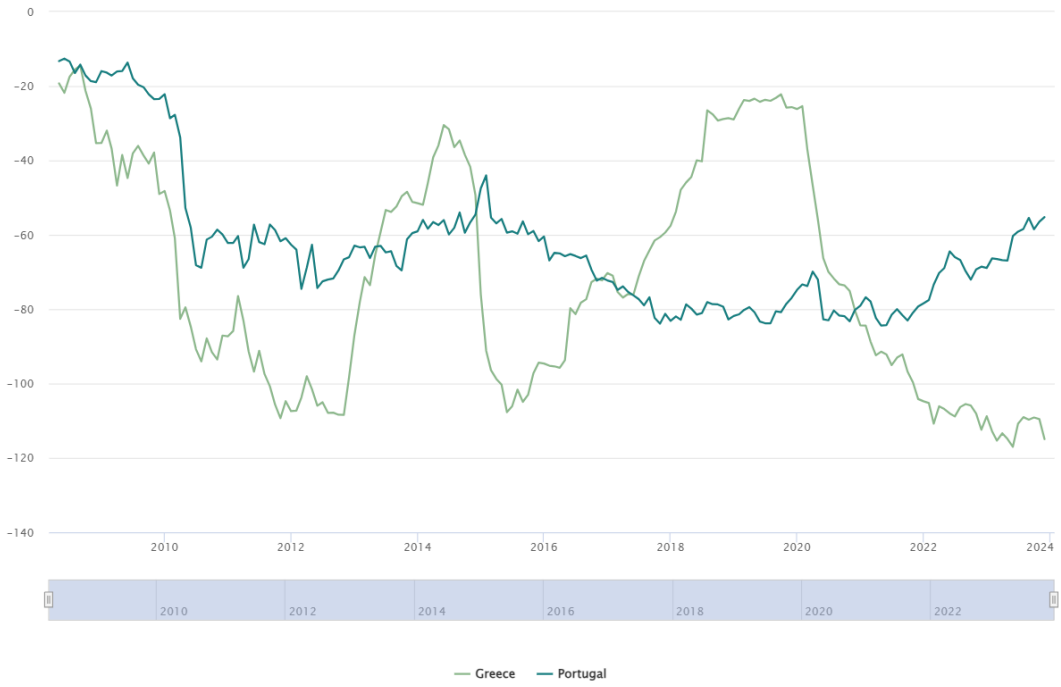

Figure 10.17: TARGET 2 Balances in Greece and Portugal. EUR billions; outstanding amounts at end of period.

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to macroeconomic imbalances or a new bout of financial market stress; it is almost entirely driven by the decentralised implementation of the ECB's asset purchase programs."

On this issue, we have a different assessment. Certainly, a purchase of a bond by the national central bank of country X leads to a *short-term* increase of target debt of X, if the investor (say an investment fund) that sells the bond deposits the money with a bank in country Y, possibly a financial center. However, we do not see how such short-term increase in target balances can become quasi permanent (or at least very persistent), without the support or (implicit) subsidies that the Eurosystem indirectly provides to the sovereign or banks in X. Indeed, the ECB has been arguing that asset purchases will stimulate the euro area economy via the so-called portfolio rebalancing channel. Investors that sell their bonds will use these funds to provide loans that finance, or to acquire, risky assets such as equities or bank bonds. The question then is, why do investors prefer to invest in other countries than X in a persistent manner? What are structural and political impediments in country X (relative to other countries) that make it less attractive for private investments, and at the same time result in the need for financing from the foreign official sector at risk free interest rates? Is it the role of the central bank to persistently finance a significant part of the external debt of country X, thereby replacing cross-border risk sharing by private markets and reducing pressures on national authorities to address the root causes of cumulated private capital outflows?

In sum, ECB support that persistently finances a part of a country's cumulated trade deficit or private capital outflows via target2 balances risks blurring (i) the distinction between monetary policy and government tasks and (ii) the signal about country risks that comes from the market. Such public sector balance of payment loans risk undermining incentives for national governments to adjust policies and implement necessary reforms to improve economic fundamentals and reduce doom-loop risks in its banking sector.

It is evident to us from the above discussion that the European Central Bank must strive towards reducing gradually, but substantially the size of its balance sheet and in particular the associated default and interest rate risks.

This is needed, inter alia, to restore the functioning of private risk sharing and capital allocation (e.g. in the interbank market), ensure the effectiveness of monetary policy, reduce risks and disincentives associated with target2 balances and reduce the risks to financial stability.

Chapter 11

Reform Proposals

The main goal of the euro should be a stable common currency, facilitating European trade, markets, and integration. The initial vision of an independent central bank, whose main mandate is price stability, with a strict separation between monetary and fiscal policy remains the best way to accomplish this goal, along with fiscal and financial institutions that insulate against demands for monetary intervention. This was the vision of the Maastricht treaty, and it is desirable in all views of monetary policy, even the fiscal theory of the price level. The challenge is how to implement that institutional framework given what we have learned from the sequence of four crises, and in light of the ad-hoc, sub-optimal institutional frameworks that have cropped up in that time.

An important Treaty obligation for the ECB/Eurosystem is to *"act in accordance with the principle of an open market economy with free competition, favouring an efficient allocation of resources (...)"*. When designing the road ahead, this principle should receive a stronger weight than in the past. This would also strengthen the conditions for lasting price stability. Policies that undermine competition or distort market prices and allocation of resources risk to backfire in the longer run, making it more difficult to maintain price stability.

In what follows we set up our reform proposals. Some of them can be done at a technical level and can be started immediately. Others may be more

discuss and agree, and some may require a few years until full implementation. However, none of them require Treaty Change and the time for starting such reforms, in our view, is now.

11.1 A Reform Package is Urgent

A comprehensive reform package is needed. Several measures and reforms need to be decided as a package, and then implemented with an efficient and time-consistent sequencing.

Fiscal rules need elaboration and well designed incentives to be made credible. The sovereign-bank nexus needs to be addressed and the credibility of the no bail-out clause should be restored. Banks and financial systems cannot continue as hostages against bond investor haircuts. The options for orderly sovereign default, debt restructuring *within* the euro area needs to be created. National authorities need encouragement to implement structural reforms.

Last, but not least, the ECB must be unburdened. It should no longer carry out or announce quasi-fiscal interventions that have the potential to provide windfall profits to bondholders and shift their interest rate risks and the costs associated with a debt overhang or a default risk in one member state to citizens and taxpayers in others member states. If the EU and the member states see a need for a European institution that can purchase national sovereign bonds, e.g. of a member state in trouble, they should task the existing ESM, or a new common euro area fiscal institution (EFI) with such policies. Governments and parliaments, not the ECB, should take full responsibility for these policies and transparently decide about the associated risk- and burden-sharing.

The ECB will of course continue to be able to supply sufficient reserves, but this should be based on quasi risk free loan provision to banks based on high quality marketable collateral, or on buying new short-term super senior sovereign securities.

We discuss elements of such a reform package in the next few sections.

Jean Monnet coined the famous statement that *Europe will be forged in*

crises, and will be the sum of the solutions adopted for those crises. ["L'Europe se fera dans les crises et elle sera la somme des solutions apportees a ces crises.", Jean Monnet, Memoires (1976)]

However, not every crisis will result in an improved institutional structure, in a deeper and better functioning Europe and EMU, in more public support for the European integration. Guiso, Sapienza, and Zingales (2016) found:

> So far history seems to have vindicated Monnet's theory. Before the 2010 European Sovereign Crisis, nobody would have anticipated a common supervision of the European banking sector any time soon. Since November 2014 this has become a reality. Yet, was this move triggered by a rising consensus towards more integration or was it forced down the throat of reluctant voters? Answering this question is crucial to the future of the euro and of Europe in general. If integration increases the demand for further integration, political integration is just a question of when, not if. In contrast, if integration forces further integration against voters' will, the integration process is more at risk. As all chain reactions, there is the risk of a meltdown. (...) Europe seems trapped: there is no desire to go backward, no interest in going forward, but it is economically unsustainable to stay still.

Our aim is to restore interest in going forward.

The last crisis was just bad enough to show the limits to the current approach. A serious inflation did break out, despite an architecture that was supposed to prevent inflation. The fuel is on the fire that the next crisis will surely be worse. We may just have one last opportunity to rethink and correct the current implicit and ad hoc institutional structure of the euro. Take the patch-laden ship back to drydock and fix the hull for good. If this does not happen, the next storm might sink the ship.

We do not base our key proposals for the road ahead on the (optimistic) assumption that a major Treaty change which introduces key elements of a fiscal

and political union in a democratically legitimate and efficient manner will be possible and can happen soon. Such a Treaty change would need to shift sovereignty over important economic policies, public spending and taxation decision from national governments and parliaments to a European government and parliament in a transparent manner, after an open public debate in all member states. A Treaty change in our view would be needed to provide a sound, robust and democratically legitimate basis for many current proposals that argue for permanent tools of cross-border fiscal risk sharing, such as a central fiscal capacity or common decisions, implementation, administration and financing (e.g with euro bonds) of European public goods. As desirable as a true and efficient fiscal union that avoids the moral hazard issues discussed in this book may be, we do not think that Europe can afford the risk to wait, pretend and continue to muddle through with the current set of implicit and inconsistent institutions until a far-reaching Treaty change has had a chance to be successfully implemented.

Therefore, our proposal is based on reforms and institutional change that mostly can be implemented relatively swiftly as they do not require a Treaty change. In several cases a full implementation and completion of the original intent of the functioning of monetary union would already ensure an important step in the right direction.

11.2 ECB purchases should focus on European bonds

It follows from our analysis that we need a radical departure from current practices in the European Central Bank's operations to deal with the current blurred lines between fiscal and monetary policies that result from the expansion of the balance sheet, the abandonment of the capital key as a guide to sovereign purchases and the introduction of TPI. In particular, we propose that the ECB's bond buying programs are restricted exclusively to the purchase of Euro-bonds in a broad sense– bonds issued by supranational European authorities, such as the EU Commission or the ESM. To make such European bonds safe assets for the ECB, the EU or the member states should provide

legally sound guarantees (covering interest rate and default risk) to the ECB when purchasing such European bonds. According to this proposal, after a suitable, and pre-announced, transition period, the ECB would no longer buy the bonds of individual member states.

We have discussed extensively the risks of current practices: they discourage fiscal responsibility from member states, and enable disproportionate support to more indebted nations, potentially leading to moral hazard and undermining the principle of fiscal responsibility. Moreover, they limit the incentives that EU policymakers have to make the necessary institutional reforms. Additionally, they strain the credibility and independence of the ECB, as they are perceived by many people to finance government deficits, contravening the EU's treaty provisions against monetary financing.

We believe that restricting the ECB's bond purchases to securities issued by European authorities addresses these concerns effectively. First, it minimizes the risk of using the ECB as a tool for national fiscal policy, thereby preserving its independence and maintaining a clear demarcation between fiscal and monetary responsibilities. Second, it removes the current disincentives for the creation of common fiscal tools, a fiscal capacity or a European Treasury. Only when the ECB stops providing an largely unconditional safety net for national soverign bonds, will the governments of the member states feel the need to to incur the necessary political costs to build a resilient system. Third, our proposal does this without in any way affecting its ability to conduct monetary policies independently- on the contrary, this independence is enhanced.

In conclusion, the current trajectory of the ECB's bond purchasing program is unsustainable and fraught with risks that undermine the EU's fiscal and monetary stability. By restricting its bond purchases to bonds issued by European authorities, the ECB can safeguard its independence, encourage fiscal discipline, and lay the groundwork for a more unified fiscal policy framework within the EU.

11.3 Mitigating Risks and Costs of Debt Restructuring

What happens if the fiscal framework fails? If there is no plan B, then no conditionality that the country does not fully accept can be enforced. Therefore, an orderly sovereign debt restructuring *within* the euro area, rather than chaotic default or exit, needs to be a realistic option in case of a debt overhang. Such restructuring would allow an over-indebted sovereign to (i) receive sufficient debt relief from its creditors, and thereby (ii) avoid overburdening its citizens and in particular the young and future generations and the resulting social costs and political instability.

The original debt and deficit rules saw that countries might get into fiscal trouble, and tried to ensure they never would do so. But, as we have seen, even France and Germany blew through those rules at an early stage. And possibly with some reason. Government debt is useful, and governments must be able to borrow in bad times. Historically, no debt/GDP ratio is entirely safe, and no debt/GDP ratio is per se dangerous.

The essence of the currency union, while maintaining member states' fiscal sovereignty, is that they abandon the option to inflate away debt. The time must come then, when a government gets into fiscal trouble, and if the conditionality and reform programs fail, there must be a mechanism for resolving that trouble other than unlimited transfers, or monetization and inflation. Sovereign debt becomes like corporate debt.

Political communication should be clear: Avoiding a debt restructuring in case of a debt overhang does not "rescue" a country and its citizens. It rescues creditors. It also may rescue the current government. The debt must be held by private investors who can take losses. A key incentive to ensure this must be the credible possibility of orderly sovereign debt restructuring in case of insolvency. Investors are rewarded by reaping higher yields when those losses do not materialize.

It is unwise to try to invent orderly restructuring on the fly in the middle of a crisis. This was also the lesson of the 2008 financial crisis, when regulators

realized that orderly restructuring of big banks with no plan was infeasible. It is much better for bondholders and financial regulators to understand the regime, the nature of the losses they will occasionally bear, and the rights they will have in the event of trouble to avoid or mitigate losses. Highly leveraged banks are then obviously poor candidates to hold concentrated positions in risky sovereign debt. And it is crucial that holders of sovereign bonds (including exposed banks) do not expect bailout or subsidies in case of default. Under these conditions sovereign debt will be held by investors who can take losses.

By "orderly," we refer to a structured process similar to the U.S. Chapter 11 bankruptcy, or the ideals of IMF rescue plans with upfront debt-restructuring. The elements include debt write-downs, restructuring (exchange of short term debt for low interest longer maturity debt, or debt with contingent payments), short-term financing by the ESM or a similar fiscal body, and binding conditionality with an enforcement mechanism. Write-downs or forced maturity extensions, are obviously a partial default.

Many crises, including the Greek crisis, come when short-term debt must be rolled over, not when the country is unable to pay coupons on long term debt, or tries to borrow and is unable to do so. A forced maturity extension or roll over into long term debt is one way to address the crisis. Yes, it is a mark to market loss for bondholders. But it helps to avoid the element of run, multiple equilibria, or forbearance that many crises involve. Often, the long term debt amounts to stock in the country, or a forced recapitalization. The back-loaded interest rates can be quite good, and if the plan succeeds, bondholders eventually end up making money.

Restructuring must happen swiftly. If people see a high probability of solvency crisis, but are uncertain how and when it will be solved (e.g. either with orderly default inside the union, or an exit or muddling through with large increases of income and wealth taxes) they will try to sell immediately and they will stop investing in the country. Muddling through and fully paying back debt that matures in the meantime with financial assistance funds, as happened in Greece from spring 2010 until March 2012, lets those short-term debt holders off the hook, concentrating losses on everyone else. In turn, that leads to an

incentive to buy and then to issue run-prone and crisis-prone short-term debt. A swift debt restructuring in the form of maturity extension can limit the period of large uncertainty and confidence losses. It may also help to keep investors interested in sustainable reforms and adjustment. Restructurings can also include reductions or delays of interest payments, or reducing the priority of existing debt. Restructuring can include something like the equity securities that corporate bondholders get, such as GDP linked bonds. "Default" is not as simple as not getting your money back! In many ways it is "doing your bit to invest in the reform rather than running away with other people's money."

A group of 14 French and German economists, (Bénassy-Quéré et al., 2018), argue along these lines in favour of

> ... creating the economic, legal and institutional underpinnings for orderly sovereign-debt restructuring of countries whose solvency cannot be restored through conditional crisis lending. First and foremost, this requires reducing the economic and financial disruptions from debt restructuring – by reducing the exposure of banks to individual sovereigns ... and by creating better stabilisation tools and a euro area safe asset ... In addition, orderly and credible debt restructuring requires ... ESM policies and procedures that provide an effective commitment not to bail out countries with unsustainable debts.

Their second and third recommendations are the subject of the next two sections.

Part of the reform program is rhetorical. Public communication needs to change. Sovereign restructuring has been considered anathema, with some vague idea that it would be an unthinkable economic calamity for anyone to suffer a write-down of bond values.

Some economists (see e.g. Tabellini (2018)) fear that given already high public debt, a discussion to make sovereign debt restructuring easier would increase instability and debt financing costs, and hence make a debt crisis more likely. This is part of the eternal dance of incentives we have seen many

times.

In our view, this risk can not be easily dismissed in the short run, but it seems less relevant in the long run. In the midst of a crisis, announcing that bondholders, who expected fiscal or monetary rescue, may have to bear unspecified haircuts certainly will induce them to be even less willing to roll over debts. But as a well oiled bankruptcy mechanism enhances corporate borrowing at low rates, the same should be true of sovereigns. A believable no bail out regime strengthens incentives for sound policy implementation and hence bolsters the credibility of future fiscal policies. The credible option of orderly debt restructuring inside the euro area would decrease the probability of a country leaving the euro, reducing re-denomination risks.

Once it is finally digested that currency union without fiscal union means that member states that borrowed a lot, bringing them into high debt sustainability risks, must occasionally default, to avoid that inflation burdens all citizens of the union, some natural changes in the nature of debt issues follow.

First, long-term government debt is broadly preferable to short-term debt. Long-term debt is immune from the roll-over risks that practically define a crisis, and it shields the government from the fiscal impact of interest rate rises, both of the risk free rate and the spread. Long term debt that pays a variable rate tied to the relevant ECB policy rate or other rates independent of country risks can protect against the latter. With such protection, *new* borrowing has to pay higher spreads, but the government is not faced with higher rates on all its outstanding debt.

However, one of many disincentives of the current regime is that governments don't naturally see the incentive to issue long-term debt. The yield curve is usually upward sloping, so the protection against risk comes with a premium, like all insurance. So why pay the premium, if countries can expect that the ECB will come to the rescue should they get into trouble?

Second, sovereign debt is different from private debt in the absence of collateral, or other assets or income streams that creditors can seize in bankruptcy. That need not be the case. Many debts historically were funded by specific revenue streams, not general obligations. Much US municipal debt

is still so backed. That protection goes both ways: If the specific tax stream fails, the bonds can default without dragging down the entire issuing entity. Bondholders can often seize the specific stream – tolls on a bridge, say – if the city as a whole goes bankrupt. When it is admitted that sovereigns can default, bond investors will start to demand better protection against default in these ways, or with rights to seize assets.

Our system of sovereign debts evolved with sovereigns that issued their own currency and would thereby usually avoid explicit default. The precommitments not to inflate under the common currency brings naturally changes to the optimal structure of debt from that previous regime. By presuming that somehow sovereign debt can (almost) never default under a common currency, the EU has squashed this natural institutional evolution.

11.4 Debt Crisis Management is a Fiscal Policy Task

Temporary financing as provided by the IMF or the ESM is part of good resolution management regimes. Bankruptcy includes debtor-in-possession financing that allows firms to continue operating while bankruptcy arrangements are worked out. IMF rescue packages involve similar (hopefully) temporary senior financing arrangements. Here especially it is better to have institutions, and their hard limitations and precommitments what they will not do, worked out ahead of time. There is a role for both fiscal and monetary help, but their roles should be sharply delineated. Some of the "temporary" financing ends up being permanent, and amounts to fiscal transfers from the rest of the EU to the country in trouble, and its bondholders, a form of insurance. That part needs to be understood, and walled off from monetary financing and thus the central bank balance sheet.

A new common fiscal institution or an enhanced ESM

A common euro area fiscal (crisis management) institution, with the necessary tools and sufficient capital provided by member states should be fully in charge of managing transitions risks and fiscal crises more generally.

We do not take a stance whether this should be a new EU institution enshrined in the Treaty, or an intergovernmental institution as a enhanced European Stability Mechanism (new ESM). In any case, the euro area finance ministers sitting on the Board of this new ESM should be able to take swift decisions with qualified majority (and it should be accepted, if a member state does not want to participate). Such an institution should fully unburden the ECB from quasi-fiscal tasks and the related risks for price stability and democratic accountability.

In the event of a fiscal crisis, possibly coupled with a financial/banking crisis, the common fiscal crisis management institution would investigate, assess the fundamentals of the member state and take the necessary decisions.

How much and what nature of fiscal help should the institution offer? The nature of fiscal transfers across countries are really up to voters of EU member states and thus parliaments and governments. But we suggest rules consistent with the founding philosophy of the EU, which frowns on fiscal transfers for countries in trouble. Thus temporary fiscal help when a country really is solvent, or perhaps solvent after a reform program, is consistent with this fiscal philosophy, but ex-post "risk" sharing (which can quickly become improvidence-sharing) is unfair and undermines the functioning of markets.

In case the stressed member state is assessed as solvent, but markets are not yet convinced, it is vital to prevent legacy debt's higher risk premia from spilling over to the yields on new borrowing. The ESM should thus concentrate its efforts to keep financing costs manageable by providing loans at favourable rates (with seniority). In addition, it could purchase some bonds, but only newly issued short-term debt, such as T-Bills. T-Bills issued in a crisis might be regarded as having a kind of de facto senior status, not least as they were exempted from the debt restructuring and haircuts in Greece in 2012.

It's always important to distinguish, who is being helped – the country or its creditors? Rescue packages tend to confuse this issue. For helping the country, the key issue is to give it access to *new* financing while debt problems are worked out, *not* to prop up the prices of legacy debt and thus the wealth of bondholders.

Consequently, buying legacy debt, if at all, should only be done at large discounts. This seems diametrically different from what central bank asset purchase programs, e.g. the ECB's SMP program in 2010-11, normally aimed at, namely pushing up bond prices as much as possible, so as to lower yields on both outstanding and new debt. The ESM could announce that, in case the adjustment program is successful, and no default is needed, it would give some of the profits it makes on having bought legacy debt at very low prices back to the stressed country, thereby supporting incentives for strong implementation of the adjustment policies. Allowing legacy yields to rise gives their holders an incentive to stay invested, whereas propping up legacy bond prices gives their holders an incentive to sell as quickly as possible while the price support is in place. It seems to quiet the fire, but in fact it fans the flames. Providing insurance via financial assistance and/or buying newly issued short-term debt, and/or an extension of maturities of outstanding debt, grants high-debt governments the time to adjust during the transition. It also keeps open the option for an orderly sovereign debt restructuring, should adjustment fail. However, providing insurance to keep prices of pre-existing (legacy) debt high uses public money to make legacy bondholders richer and shifts default risks from private investors to taxpayers.

Assistance will usually come with conditionality that includes fiscal and microeconomic reforms. A common fiscal institution such as the ESM that monitors conditionality and is committed to pay attention is important for this effort to work.

In principle, additional fiscal resources can help economic prospects following the debt restructuring. Thus, there is a case for a NextGenerationEU (NGEU) type program or/an ESM program that could be supported by ECB's Outright Monetary Transactions (OMT) purchases, focusing on newly issued short-term debt. But it is important that such new monies are actually spent in growth-enhancing activities, and not mainly to make existing bondholders whole, or to continue the sorts of ineffective spending that got countries in to trouble in the first place. The record of pandemic transfers in this regard seems not so good.

The most common incentive for good behaviour is not penalties, but access to additional funds. Access to any new NGEU style program could be tied to compliance with fiscal conditions, as determined by the independent authority. The Recovery and Resilience Facility Regulation could act as a precedent, provided it succeeds to boost potential growth and resilience - not just demand. An independent authority is an important precommitment to say no, if there was insufficient compliance, just as independent central banks are an important precommitment to say no to monetary financing and high inflation. An independent fiscal authority with transparent and relatively simple procedures can also work simply by providing information to bond markets as rating agencies are supposed to do. If a trusted independent authority says the country is not on a good fiscal path, bond yields will rise, and the country will feel pressure to reform.

11.5 Breaking the Sovereign–Bank Nexus

A resolution mechanism with bridge financing will still not be enough if the strong nexus between banks and sovereigns remains. "Systemic risk" and "contagion" means a fear that sovereign debt troubles will lead to a collapse of banks. Banks that are strongly exposed to their sovereign are hostages against sovereign restructuring. They seem a key reason the ECB and to an extent fiscal authorities are so anxious to protect existing bondholders, and cave in against previous efforts to commit against bailouts. The reality and the fear have arguably, become worse over the last few years. Banking union, as envisaged in in part set up during the crisis (see Section 6.4) was supposed to mitigate this risk, but the effort to complete it has been largely abandoned (see Section 10.5). Part of the reason is that, from the perspective of banks and their owners and investors, a taxpayer bail-out, or large scale ECB loans at favourable rates, are of course preferred to (investor) bail-in. Ex-post taxpayer insurance reduces the cost of capital and increases the expected bank profits compared to an explicit deposit insurance with adequate insurance premia. And, needless to say, banks and their share- and bondholders also benefit from the implicit insurance and subsidies provided by, or expected from, the European Central Bank, for free.

The expectation of a possible bail-out or large subsidy provides disincentives that can delay a necessary resolution and increase its social costs. However, if a bank does no longer meet capital requirements or lose access to markets, "failing or likely to fail" needs to be established at an early stage before most of the bail-in able liabilities have flown out. Avoiding a delayed resolution ensures that the bulk of the burden falls on shareholders and creditors via bail-in and thus without significant costs to taxpayers. This would also help to unburden the ECB.

Completing banking union as Europe has completed the single market in most other areas would be beneficial. Branches of international banks need not be in trouble when that country's debt is in trouble, and can easily be recapitalized from abroad. European banks should be able to count on a single European regulatory mechanism, and not be hostage to conflicting national regulators.

We suggest a two-pronged package to push forward and complete the Banking Union (see also Garicano (2020)). First, sovereign concentration charges are needed to reduce banks exposure to sovereigns. Second, we should profoundly reform and properly fund the Single Resolution Board to reduce sovereigns exposure to banks.

Dealing with the Banks' Sovereign Debt Exposure

A monetary union without fiscal union requires the option of sovereign default, and thus that banks and bank regulators treat sovereign debt as debt that may default. Hence a successful sovereign debt restructuring mechanism requires that the EU addresses the fact that by allowing banks to be loaded with sovereign debt, with no recognition of sovereign risk, the financial system is hostage to sovereign default. Under current regulations, banks which hold sovereign debt in concentrated manner do not incur any capital requirement, which can lead to large concentrations of sovereign risk. Indeed, and amazingly after all we have been through, sovereign debt still carries no risk weight in financial regulation!

Concentrated positions in sovereign debt need to be counted as particu-

larly risky. The most straightforward response to such concentration could be to introduce credit risk weights based on the credit ratings of sovereign bonds. However, credit ratings in the past have often reacted too late, but then too sharply. Many of the assets that failed spectacularly in 2008 had relatively low risk weightings, so there is natural widespread mistrust at the ineffectiveness and arbitrariness of ratings-based risk weights. Additionally, up to now, several European countries do not accept in principle any proposal that discriminates between different countries' debt. They claim it would lead to market "fragmentation." They are right it would initially likely lead to higher spreads. But those spreads may reflect the true risk of their bonds, rather than the ability to sell bonds to banks under a fig leaf of equality, enforced by ex-post bailouts.

As an alternative, Véron (2017) proposed setting a cap at 33% of Tier 1 capital for holdings exempt from capital requirements, with a rising risk weight for exposures beyond this limit. This proposal does contain exposure, but does not facilitate the development of a balanced portfolio. Again, politically, this proposal faces opposition, as lower rated Member States would fear it would decrease market demand for their sovereign issuances and increase their funding costs.

Garicano (2020) suggests instead that banks should be rewarded for diversifying their portfolios. The regulator would define a European "Safe Portfolio," and then determine banks' capital charges by how far their sovereign portfolio deviates from that diversified safe portfolio. The Safe Portfolio could be modeled after the European Central Bank's capital contribution key. (Garicano suggests that in calculating the safe portfolio, future cash flows should be discounted at the risk free rate, e.g. the OIS rate. Otherwise, when a country's risk premium rises, its bond prices fall, and banks could be forced to buy more of their bonds.) This proposal has the advantage of reducing exposures to the domestic sovereign, while maintaining overall demand for sovereign issuances also from from lower-rated countries. It would not imply any ex ante discrimination between different countries' debt, e.g. based on ratings. Thus it could provide a balanced solution to the issue of sovereign risk concentration in banks. It would also facilitate the path towards a European Safe Asset that would also help the European Central bank to sell its gigantic sovereign

portfolio.

To avoid a diversified, but highly leveraged investment by bank in sovereign debt, this proposal would have to be complemented with the introduction of limits or capital charges on the overall position on sovereign bonds. Risky sovereign debt should ideally be held by mutual funds, pension funds, insurance companies and other long-term unleveraged investors. Banks should lend to people and businesses.

In all of this one must keep in mind that banks and countries like the current system. A country can more easily borrow if it can force its banks to buy its debts. National regulators can steer national banks to the kinds of lending and investment they want to see. Occasional bailouts, protection from international competition, and artificially low financing costs are great for everyone, except the general European taxpayer or money holder who eventually foots the bill. But their influence is diffuse.

There are more detailed proposals, including Brunnermeier et al. (2016). The latter proposes some financial innovations, including the creation of a Europe-wide "safe asset" other than deposits at the ECB. Such proposals are not without challenges, as surely our proposals are not without challenges. But that discussion needs to happen, and a sustainable system needs to be created.

Breaking Banks' Dependence on States

As states are too dependent on domestic banks to buy their debt at low prices, so banks are too dependent on states. National regulation and national deposit insurance also mean that if a state gets into fiscal trouble its banks are threatened. A country having a debt crisis does not have the fiscal space to address a banking crisis. Deposit insurance needs to be ironclad in its main function, to stop depositor runs. Absent the ability to print money, only a European-wide deposit insurance can give that assurance.

First, the Public Interest Assessment applied by the Single Resolution Board (SRB) to determine when the European Resolution framework should apply, must be clarified to cover all European financial institutions requiring substantial funds for resolution. Current standards for banks to be in the (Eu-

ropean) public's interest are too stringent. The assessment should be clarified and broadened to cover all "middle class" banks. This would include banks operating in more than one Member State and all Single Supervisory Mechanism (SSM) supervised banks.

Secondly, the SRB needs adequate funds, and recourse to additional funds if needed. Middle class banks that rely on depositor funding could be helped by providing the SRB with coordination powers over national deposit Guarantee Schemes (DGS).

Lastly, to ensure the SRB has sufficient funds to resolve banks and national DGSs and regulators cooperate, a European deposit insurance should be implemented. This scheme would consist of national deposit guarantee schemes and a European central fund. The contributions to this fund would be risk-based to ensure fairness, address moral hazard and avoid regulatory arbitrage. A strict rule needs to ensure that deposit guarantee funds must only be used to protect insured deposits and only after large scale bail in of shareholders, bondholders and other non-insured creditors has been applied.

Together, these are practical proposals based on current institutions that cut the link from banks to sovereigns. They give banks incentives to diversify their portfolios both within sovereign debts and away from sovereign debts to private debts, and the they break the fragility of national deposit insurance, which is a claim on national fiscal capacity.

11.6 Money Creation: Exclusive competence of the ECB

In Chapter 3 we discussed some issues related to the national non-monetary tasks, which national central banks can perform under their own responsibility and related investments they can finance with euros (base money), unless the Governing Council of the ECB rejects this with a two-thirds majority.

We can understand why such a structure had been decided in a monetary union that is not a fiscal union, possibly also with a view to (i) keeping

flexibility in view of the natural uncertainty about the functioning of the new currency and (ii) smoothing the transition from national to single monetary policy. We also can understand that member states may have (had) a preference for maintaining their own national central banks, which can provide national lender of last resort loans to domestic banks, can buy their own sovereign debt, and create net interest margins and profits that can be remitted to national treasuries.

However, after 25 years of the euro, it seems time to rethink this set-up.

The main objective would be to ensure that money creation can only happen in relation to monetary-policy and thus is an exclusive competence of the Governing Council of the European Central Bank. This could be implemented in two ways as described in Options 1 and 2 below. Option 1 is less far-reaching and in our view should in any case be implemented. Option 2 includes Option 1, but requires additional substantial preconditions and preparations and therefore may only be implemented at a later stage.

Option 1: NCBs would still exist and perform a decentralised implementation of monetary operations, but they would not conduct non-monetary transaction (as national tasks). Ideally foreign reserves and gold and the related revaluation accounts (which are part of the national wealth of the respective member state) would be re-defined as related to monetary policy and thus be kept on NCB balance sheets. Realised profits from foreign exchange transactions would continue to accrue to the respective NCB. The other existing non-monetary balance sheet items of NCBs, would be shifted to new national financial institutions (NFIs). NFIs would perform national, non-monetary tasks, but would not be able to finance the related transactions with newly created euros (base money). This would eliminate the current blurring of the separation of the single monetary policy and national tasks and thus the possibility that individual national central banks can finance national tasks with money creation which may eventually show up in target2 liabilities. This reform would ensure that money creation can only happen in relation to the single monetary-policy and is an exclusive competence of the ECB.

Option 2: A further, more far-reaching reform would in principle be

possible, once the above banking sector reforms are implemented, banks are fully de-linked from national sovereigns and the ECB would only buy European bonds. In this case, in addition to the changes under Option 1, all bank reserves would be held at the ECB directly as US bank reserves are all held at the US Fed, and transactions are cleared in a day. In addition, after a transition period, all *new* monetary policy transactions would happen on the balance sheet of the ECB. NCBs would still be involved in carrying out monetary policy operations, but those would be recorded at the ECB balance sheet and all income and risks would be fully shared according to the capital key. Pre-existing monetary policy related balance sheet items would be grandfathered at the NCB balance sheets until they mature or are actively unwound and the related profits and losses would not be shared. Selling or unwinding of such pre-existing assets (e.g. via QT) would continue to be based on monetary policy decisions of the Governing Council.

The second option includes full risk sharing of any new monetary policy transactions and of lender of last resort loans to solvent banks with liquidity problems. To avoid misguided incentives and an overburdening of the ECB, Option 2 would require as pre-condition a full completion of banking union, including a full centralisation of all banking regulation and supervision, and a complete separation of sovereigns from "their" banks (including as regards the exposures of banks to their domestic sovereign).

11.7 Limits on ECB Interventions

The enhanced ESM or new common fiscal institution discussed above would fully unburden the ECB, ensuring a clear and credible separation between fiscal and monetary policy. At the same time, the rules on ECB interventions need to be settled once and for all, and not by simply accumulating expedients that prove useful in putting out the latest fire. Rules on ECB interventions should not just be structured to most effectively put out the crisis at hand. Limits are mostly defined by what the ECB does not want to do at the moment, but to allay criticism that the ECB needs some limits. Limits should be structured with moral hazard in mind, and include binding precommitments

for what the ECB will not do even if later it wants to. Such rules really cannot be written in the heat of a crisis.

We have written extensively on the quasi-fiscal nature of some instruments used or announced by the ECB since the global financial crisis and the need for conditionality defined by fiscal authorities, not the ECB, as had been decided by the ECB as a pre-conditon for OMT interventions.

Without clear and credible limits on ECB interventions, governments will have incentives to postpone the hard choice between default, cross-country transfers and conditional programs, hoping that monetary policy will buy them time.

The ECB would do well to be clear and candid in its communications. With its current tools, not least TPI, it *is* managing fiscal crises, not just possible symptoms such as "dysfunction," "fragmentation," "contagion," "transmission," and so forth. While these were useful devices to ensure the intervention fits the ECB's mandate and parry political criticism, they obscure the important public debate over what the concrete economic, financial and fiscal impact of ECB interventions, and the ECB's role will be. Inflation in the end does come from too much money and public debt, relative to the potential of the economy to produce goods and services and tax revenues for the government, and normally not so much say from market fragmentation.

In the future, the new common fiscal institution, or the enhanced ESM, should be in charge of all country-specific fiscal support or sovereign bond purchases. The ECB could still provide support in a deep crisis of specific member states, but only indirectly via purchasing short-term bonds issued by the ESM or an EU institution provided it receives strong guarantees from member states. In this way member states would indemnify the ECB in case of losses related to materialisation of default and interest rate risks on any new bond holdings (similar to the ones given by the UK Treasury to the Bank of England). Such guarantees would protect the capital of the ECB, but avoid providing windfall gains to private investors.

The ECB would thus no longer be involved in purchasing national sovereign debt. The ESM or the new common fiscal institution would be solely

responsible for fiscal crisis prevention and management. This includes assessment of country fundamentals and debt sustainability, financial assistance loans (or purchases) to address fragmentation, fiscal fragility or sovereign-bank nexus risks. Member states need to be prepared to significantly increase the capital of the new ESM or the new common fiscal institution such that it has the fire power to provide sufficient financial assistance loans also to large member states. The new ESM would provide financial assistance and may buy newly issued short-term sovereign debt of the country in trouble when there are genuine problems in markets or while fiscal packages are being organized.

The ECB could keep the quantitative easing tool to purchase bonds, but, as we proposed, it would have to be (after an adequate transition) of supranational Euro issuers.

Moreover, in normal times, outside a deep recession with deflation risks, the ECB should significantly reduce its holdings of government bonds. The fiscal and banking reform package suggested above would also allow the ECB (including national central banks) to reduce its balance sheet risks by selling existing holdings of sovereign bonds. This would help to avoid capital losses of the ECB in case of a future default, which in turn could require fiscal recapitalzation of the ECB and the national central banks. It would allow the ECB to concentrate its monetary policy on fighting inflation, without worrying that higher interest rates may cause sovereign debt crises that it will have to fight again.

Euro area banks should have sufficient capital buffers, liquidity and strong risk management such they that can finance themselves via the interbank and repo markets or by issuing equity and bank bonds, also in recessions or crises times–except in the most severe, systemic, crisis. In order to avoid disincentives for bank managers, shareholders and regulators to strengthen bank balance sheets, the ECB should no longer provide large scale monetary policy loans to banks in the euro that are subsidised relative to market conditions. For example, in the future the ECB should only accept low quality, non-marketable debt as collateral in the marginal lending facility at significantly higher interest rates than the rate on the main refinancing operations or the deposit facility.

This would avoid, or at least reduce, the risk that the ECB subsidises banks with public money, reducing incentives for higher bank capital buffers and bank mergers, burdening taxpayers and blurring the separation between monetary and fiscal policy.

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