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The Euro as an Optimum Currency Area?

A Reappraisal

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Abstract

The euro is not an optimum currency area because there is still considerable heterogeneity within the euro area. Cohesion can only be ensured by the ECB and the EU, which entails risks in terms of inflation, growth and distribution.

Zusammenfassung

Der Euro ist kein optimaler Währungsraum, weil die Heterogenität innerhalb des Währungsraums immer noch groß ist. Der Zusammenhalt kann nur durch die EZB und die EU gesichert werden, was mit Inflations-, Wachstums- und Vertei-lungsrisiken verbunden ist.

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The euro is like a bumblebee.
This is a mystery of nature because it shouldn't fly but instead it does.
(Mario Draghi)

1. Introduction

On 1 January 2026, Bulgaria joined the euro as its 21st member. ECB President Christine Lagarde (2025) had promised Bulgaria stability: with the euro, Bulgaria would be protected against an increasingly economically unstable world and gain access to EU capital markets, and thus to more favorable financing conditions. Bulgarians would not lose their monetary policy independence; rather, by participating in the European Central Bank's monetary policy decisions, they would gain sovereignty. Lagarde's rhetoric reflected the early optimism of the common currency, when promises of stability, growth and convergence were widespread.

The introduction of the euro in 1999 was seen as an important milestone on the path to a united Europe. French President Jacques Chirac (1999) promised businesses new development opportunities and consumers lower prices. The euro would become a pillar of stability in Europe. German Chancellor Gerhard Schröder (2001) believed that the introduction of the euro would bring better times than those under the old Deutsche Mark. He argued that future disputes would occur, at most, between bureaucracies rather than between citizens within the European Union.

More than 25 years later, the mood in Europe has sobered. The euro area has undergone a major financial and debt crisis since 2008. The common currency had to be stabilized under the motto "whatever it takes" by numerous fiscal and monetary policy instruments (Murai und Schnabl 2021). The officially measured price level (HICP) has risen markedly since the euro was introduced, meaning that the euro has already lost nearly half of its value. Growth is weak, and rising political polarization reflects social tensions that have reached a recent peak in concerns about the sustainability of French government debt.

Before the introduction of the euro, economist Paul Krugman (1990) had warned of growing economic imbalances as a consequence of heterogeneity within the euro area. Milton Friedman (1997) feared that a single monetary policy could generate political tensions, potentially even leading to fragmentation, because heterogeneity could not be offset through flexible exchange rates. The European Commission (1990) countered that the euro would lead to greater convergence and growth. Whether these expectations have been met is examined below on the basis of optimum currency area theory, in order to assess potential future risks for inflation, growth and distribution.

2. The EMU as an Optimum Currency Area?

Whether a currency area is optimum depends on how optimality is defined. Long before the introduction of the euro, Mundell (1961), McKinnon (1963) and Kenen (1969) developed the theory of optimum currency areas, which was discussed from different perspectives in the context of the euro's introduction.[1]

2.1. The Theory of Optimum Currency Areas According to Mundell

Robert Mundell was Canadian. Canada has a heterogeneous economic structure. Industry dominates in the east; agriculture and forestry in the west. Mundell's (1961) theory of optimum currency areas was based on the still-common assumption that the central bank should lower interest rates during a recession, thereby stimulating the economy. In a boom, it should raise interest rates to curb inflation. This policy approach is effective as long as both parts of the country follow the same business cycle. Rate cuts benefit both regions when they are simultaneously in a recession. Rate increases help them when inflation rises during a boom.

However, the problem lies in so-called asymmetric shocks. If, for example, demand shifts from furniture produced in the west of the country to cars produced in the east, then the common central bank faces a dilemma. If it lowers interest rates to help the west out of the recession, the east overheats. If it raises interest rates to cool down the east, the recession in the west deepens.

The burden of adjustment then falls on labor markets. Because unemployment rises in the west, prices and wages must fall so that the west can recover from the crisis. Or the workers who have become unemployed in the west migrate to the east, where the resulting higher supply of labor dampens wage growth and thus reduces the pressure to raise interest rates. This led Mundell (1961) to conclude that a common central bank in a heterogeneous currency area is viable only if labor markets are sufficiently flexible, as is the case in the United States for example.

During the discussions about a common European currency at the beginning of the 1990s, the question arose whether the planned European monetary union was an optimum currency area.[2] Since the collapse of the Bretton Woods system in the early 1970s, there had been two central bank models in Europe. The Deutsche Bundesbank pursued a stability-oriented monetary policy, under which German inflation was kept low. In contrast, the central banks of the southern European countries

[1] McKinnon (1961) argued that in small countries, where imports account for a large share of GDP, fluctuating exchange rates lead to pronounced price volatility, which hinders investment. He therefore saw a clear advantage for small countries in joining a monetary union.

[2] The Deutsche Mark, owing to its exceptional stability, was the leading anchor and reserve currency in Europe. As a result, the Deutsche Bundesbank dominated the monetary policies of partner countries in Europe, which was a particular source of irritation for France. In the early 1990s, France is said to have made its approval of German reunification conditional on Germany's agreement to a common European currency (Marsh 2011).

pursued a monetary policy geared toward growth, employment and fiscal expenditure, which resulted in higher inflation rates. Differences in the orientation of monetary and fiscal policies, and the resulting divergence in business cycles, were offset through often erratic exchange rate adjustments, which significantly disrupted the integration of a common goods markets in Europe.[3]

Different economic policy objectives combined with different economic structures suggested a high probability of asymmetric shocks. In a paper entitled "Shocking Aspects of European Monetary Integration," Bayoumi and Eichengreen (1993) concluded that there were substantial differences between supply shocks in the core of the European Community (Germany, France, Belgium, the Netherlands, and Denmark) and those in other potential member countries such as Italy, Spain, Portugal, Ireland, Greece, and the United Kingdom. The Western European candidate countries for the euro at the time did not, as a group, constitute an optimum currency area.[4] Moreover, labor markets in Western Europe were, and remain, inflexible due to extensive social security systems.

2.2. The Perspective of the European Commission

A study by the European Commission (1990) titled "*One Market, One Money*," which examined the advantages and disadvantages of a monetary union in Western Europe, reached a different conclusion: asymmetric shocks in a future common currency area were considered unlikely, as intra-industry trade was seen to dominate in Western Europe. The study drew on Kenen (1969), who had argued that large countries, owing to their diversified economic structures, are able to absorb asymmetric shocks within a monetary union. Concretely, there were numerous industries within which trade took place across the Franco-German border in both directions, such as in automobiles or pharmaceutical products.

In the event of a crisis in the automotive industry, Kenen (1969) argued that both Germany and France would be affected. Interest rate cuts by a common central bank would therefore provide relief to both countries. At the same time, a downturn in the automotive sector would be cushioned in both countries by other industries, reducing the pressure on the common central bank to lower interest rates. Krugman (1991) argued that a common currency would lead to a stronger spatial concentration of industries within the currency area, for example with the automotive industry in Germany and the pharmaceutical industry in France. However, in the view of the European Commission (1990), an automotive cluster would then

[3] Since its creation in 1978, the European Monetary System aimed to stabilize exchange rates in Western Europe but was repeatedly shaken by turbulence (Gros and Thygesen 1992).

[4] After the EU's eastern enlargement in 2004, when several Central and Eastern European countries began considering joining the euro, analyses were extended to a broader group of countries. A meta-study by Fidrmuc and Korhonen (2006) found that business cycles in some, though not all, of these countries were already strongly correlated with those of the euro area. An update of Bayoumi and Eichengreen (1993) by Campos and Macchiarelli (2016) shows that, for the period from 1989 to 2015, divergence within the euro area for the same group of countries declined significantly but still persists.

extend across borders—reaching, for instance, from Baden-Württemberg to Alsace and Lorraine—so that, from this perspective as well, there was nothing to stand in the way of a common currency.

2.3. Endogeneity of the OCA Criterion and the Role of Integrated Financial Markets

Frankel and Rose (1998) argued that even if business cycles would not immediately converge in the newly founded monetary union, they would do so after the introduction of the common currency. Once transaction costs and exchange rate-related fluctuations in competitiveness had been eliminated, trade within the monetary union would increase. As a result, the economies of member countries would converge. If, for example, France were in a boom and Germany in a downturn, France could simply purchase more goods from Germany and thus stimulate economic activity there.

From the 1970s onward, financial markets were liberalized and began to be incorporated into considerations of optimum currency areas. Mundell (1973a) argued that exchange rate fluctuations pose a substantial risk for investment in other countries. A depreciation of the target country's currency reduces returns when measured in the investor's currency. Strong exchange rate volatility therefore constitutes an obstacle to efficient capital allocation within a common economic area. This deficiency is removed by a common currency.

Mundell (1973b) also argued that integrated capital markets can absorb asymmetric shocks, a point later emphasized by McKinnon (2004). For example, if in an integrated capital market both Deutsche Bank and Crédit Lyonnais operate in France and Germany, a crisis in France would lead Crédit Lyonnais to incur loan losses. These would, however, be offset by lower loan losses in a booming Germany.

In the event of a banking crisis, France would not be affected in isolation. Strong economic conditions in Germany would help stabilize the French banking sector. Since it was assumed that a common currency would promote the integration of capital markets in the euro area, and as developments in financial markets became increasingly important for developments in goods markets, this implied that financial markets would stabilize the euro.

3. Causes of Divergence in the European Monetary Union

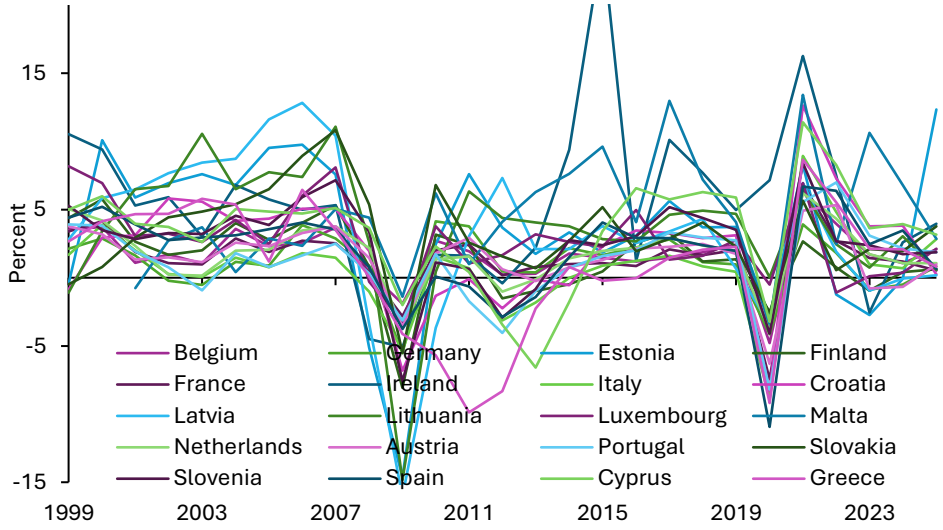
Contrary to the expectations of the European Commission (1990), the hypothesis of the endogeneity of the optimum currency area criterion (Frankel and Rose 1998), and Mundell's (1973a) idea of the absorption of asymmetric shocks through integrated financial markets, business cycles in the euro area have not converged.

3.1. Flaws in the Construction of the Common Currency Area

The European Monetary Union (EMU) is a flawed construction in that it is not based on a political union and therefore does not have a common fiscal and social policy (Feldstein 1997).[5] In the United States, Japan and the United Kingdom, there is not only a common central bank but also a common fiscal and social policy. The government in Tokyo, for example, decides on public spending and on the design of economic and social policy. Japan also has a system of fiscal transfers between regions that helps to smooth differences in business cycles within the country (Fischer and Schnabl 2018).

Common fiscal and social policies help to balance different cyclical developments in a common currency area (De Grauwe 2022). With a common finance ministry in Brussels, low tax revenues in the country in recession (e.g., Germany) would be offset by higher tax payments from the booming country (e.g., France). A common European finance ministry would then not need to cut spending or increase debt. In the booming country, higher contributions would be paid into the common unemployment insurance scheme, which would finance the higher payouts in the crisis country.

Figure 1: Real Growth of Euro Area Countries



Source: IMF.

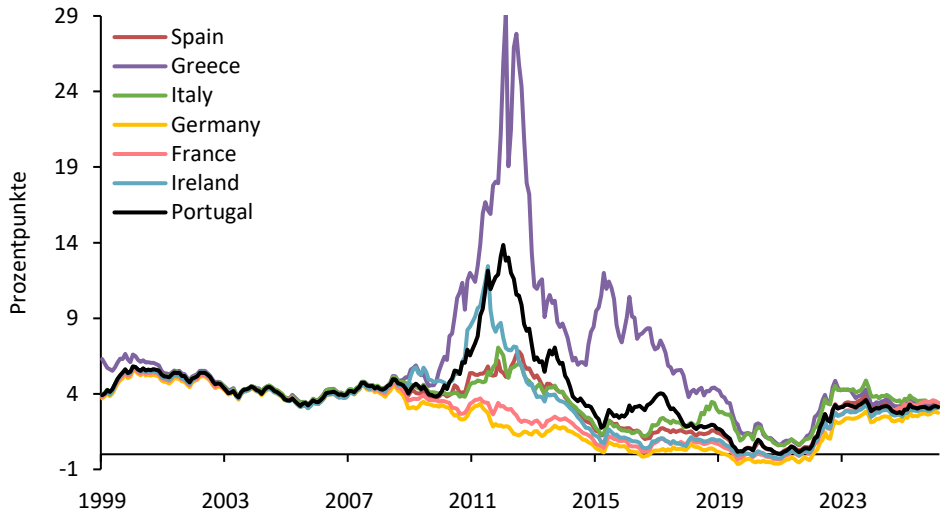
[5] "*No sizable country anywhere in the world is without its own currency. A national currency is both a symbol of sovereignty and the key to the pursuit of an independent economic and budget policy. The tentative decision of the European Union member states (with the exceptions of Den-mark and the United Kingdom), embodied in the Maastricht treaty, to abandon their national currencies in favor of the euro is therefore a decision of fundamental political significance*." Feldstein (1997: 24).

The first plan for a common currency in Europe, the so-called Werner Plan, had not only envisaged a common monetary policy but also a common fiscal and economic policy in 1970 (Gros and Thygesen 1992). However, a common fiscal, economic, and social policy has not been implemented in the European Union to this day. Although the European Union has its own regional policy, which allocates financial resources to economically weaker regions (European Commission 2025), it has not achieved convergence in standards of living. Divergence in business cycles remains high (Figure 1). The successive enlargement of the euro area has further increased heterogeneity.

3.2. Uncoordinated Fiscal Policies

Soon after the introduction of the euro, differences in fiscal policy stances led business cycles in the euro area to diverge. The Maastricht criteria for joining the euro had effectively required inflation rates in member countries to fall to the level of Germany. As a result, interest rates declined sharply to German levels, particularly in the southern euro area countries (Figure 2), triggering a strong increase in investment and consumption there. At the same time, Germany advanced reforms (Bradley and Kügler 2019), as the costly reunification had brought it into conflict with the Maastricht public debt ceiling of 60 percent of GDP.[6]

Figure 2: Long-Term Interest Rates in the Euro Area



Source: IMF.

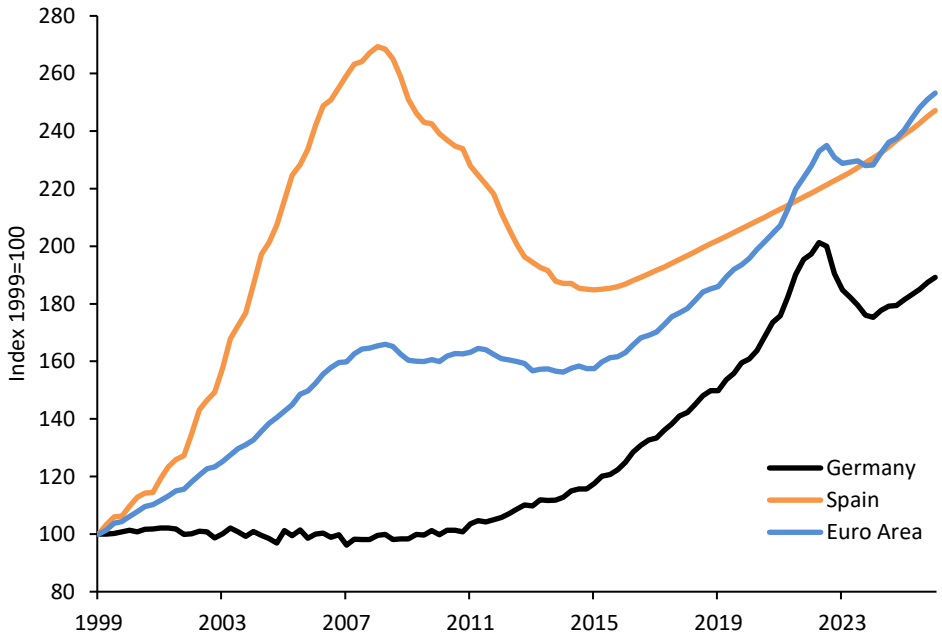
[6] *The Economist* had described Germany as the "sick man of Europe," as reunification, a rigid labor market, and weak exports had pushed the unemployment rate into double digits.

Fiscal austerity, cuts in social benefits, and the creation of incentives for private pension provision led to an increase in savings by the government, households, and firms in Germany. Since domestic demand for capital remained weak, German banks extended credit to the southern euro area, where it fueled consumption and excesses in real estate markets (Schnabl 2018). As government revenues from taxes and social security contributions rose during boom periods, southern euro area countries also increased public spending, further amplifying these excesses.

3.3. Asynchronous Financial Cycles

While macroeconomic models are largely focused on goods markets, financial markets have gained increasing importance for economic development, especially since the turn of the millennium. Increasingly expansionary monetary policies have not only supported rapid growth in financial markets worldwide but have also fueled euphoric boom phases that have repeatedly culminated in severe financial crises (Shiller 2000). Since central bank interest rate policies affect financial markets more quickly through rising or falling asset prices, while central banks base their decisions on consumer price inflation, monetary policy has not curbed but likely amplified excesses in financial markets (Schnabl 2019).[7]

Figure 3: Real Estate Prices in Spain, Germany and the Euro Area



Data source: Oxford Economics.

[7] See the monetary overinvestment theory of Mises (1912) and Hayek (1976).

Financial markets did not perform the stabilizing function assumed by Mundell (1973b). On the contrary, since the introduction of the euro, one-sided credit flows have driven differences in business cycles. Since the turn of the millennium, capital flows from Germany to the southern euro area have been associated with diverging business cycles. With the onset of the European financial and debt crisis, German banks withdrew their lending from the South, intensifying the downturn there while supporting economic activity in Germany.[8] The combination of expansionary monetary and fiscal policies fueled excesses in real estate and financial markets.

Figure 3 shows the asynchronous development in the real estate markets of the euro area since the introduction of the euro for Germany and Spain. Between 2001 and 2008, real estate markets boomed in Spain while they stagnated in Germany. With the outbreak of the European financial and sovereign debt crisis, housing prices in Spain collapsed, while the ECB's continued low-interest-rate policy in response to the crisis subsequently drove housing prices upward in Germany. After moving in tandem between 2014 and 2022, housing prices diverged again.

The increase of public debt, which was envisaged in Germany in spring 2025 could give rise to a new asymmetric shock within the euro area, as public spending is being expanded significantly and primarily in Germany, which still has greater fiscal space. The focus on infrastructure investment could trigger a new boom in German real estate markets, while rising interest rates in Germany could withdraw liquidity from property markets in other euro area countries.

4. Divergence Indicators

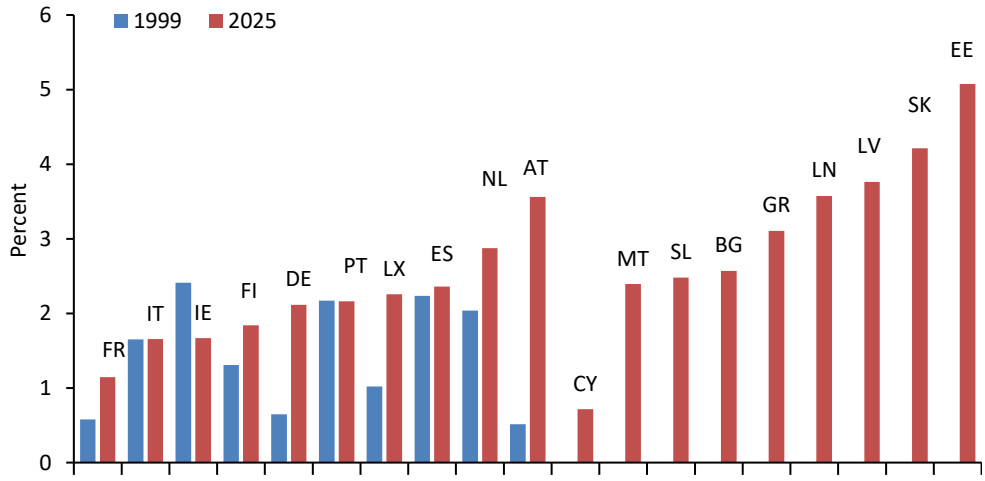
This raises the question of how divergence within the euro area has evolved over time. A general argument for increasing divergence is that the monetary union, which was already heterogeneous when it began with eleven countries, (Bayoumi and Eichengreen 1993; Honohan and Lane 2003; Obstfeld and Peri 2003), has become even more heterogeneous through its gradual expansion to 21 members. In particular, several Central and Eastern European countries with significantly lower per capita incomes have joined, most recently Bulgaria. Heterogeneous economic structures mean that common shocks such as the global financial crisis of 2008 are transmitted differently (Dornbusch, Favero and Giavazzi 1998), which can also impair the monetary policy transmission.

[8] The key factor was the policy mix of an overall expansionary monetary policy by the ECB combined with either expansionary or restrictive fiscal policies.

4.1. Divergence of Macroeconomic Fundamentals

Convergence is an important objective of the European Economic and Monetary Union according to Article 119 TFEU.[9] This requires "close coordination of economic policy" as well as sustainable growth, price stability, sound public finances and monetary stability. Price stability is enshrined as the objective of the European Central Bank's monetary policy under Article 127(1) TFEU. Since it was initially assumed that the ECB would have only one instrument at its disposal, namely the interest rate (conventional monetary policy), the principle of "one size fits all" applied (ECB 1999): the ECB was to base its interest rate decisions on the average inflation rate of the euro area as a whole.[10] In the sense of Mundell (1961), this implies that a single policy rate is appropriate for all countries only if their inflation rates are close to the euro area average.

Figure 4: Inflation Rates of Euro Area Countries 1999 and 2025



Source: ECB. No entry for countries in 1999 that were not members of the monetary union in 1999.

Figure 4 shows that inflation rates already differed across countries in 1999, despite the required convergence for entry into the euro area. By 2025, heterogeneity in inflation rates among the 20-euro area countries had increased compared with the founding year of the euro, when there were only 11 members. This reflects both the larger number of member states and more divergent inflation dynamics among the original euro area countries. As heterogeneity increases, so does the likelihood

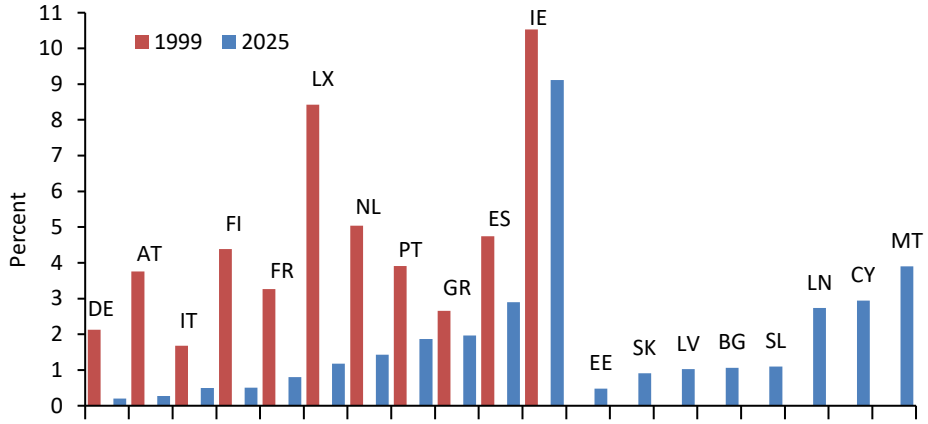
[9] "*…the activities of the Member States and the Union shall include, as provided in the Treaties, the adoption of an economic policy which is based on the close coordination of Member States' economic policies, on the internal market and on the definition of common objectives, and conducted in accordance with the principle of an open market economy with free competition*." (TFEU 2019).

[10] "*…the ECB has been assigned the primary objective of maintaining price stability in the euro area. The ECB therefore has no choice but to take a euro area perspective: its policy decisions aim at area-wide price stability. Those decisions draw on all available information, including that deriving from national indicators, but they cannot be tailored to the specific needs of a single Member State*." (Bini Smaghi 2011).

that a single policy rate set by the European Central Bank amplifies inflation or deflation in individual member states.

Since growth also plays an important role in monetary policy decisions (Taylor 1993), pronounced differences in growth within the euro area make the policy environment more difficult. Figure 5 shows substantial disparities in growth within the common currency area both in the euro's founding year, 1999, and in 2024. Differences in inflation and growth within a monetary union also affect wage developments, which are tied to inflation and productivity growth. Divergent wage developments in the euro area arise not least because wage bargaining takes place at the national level rather than at the EU level.

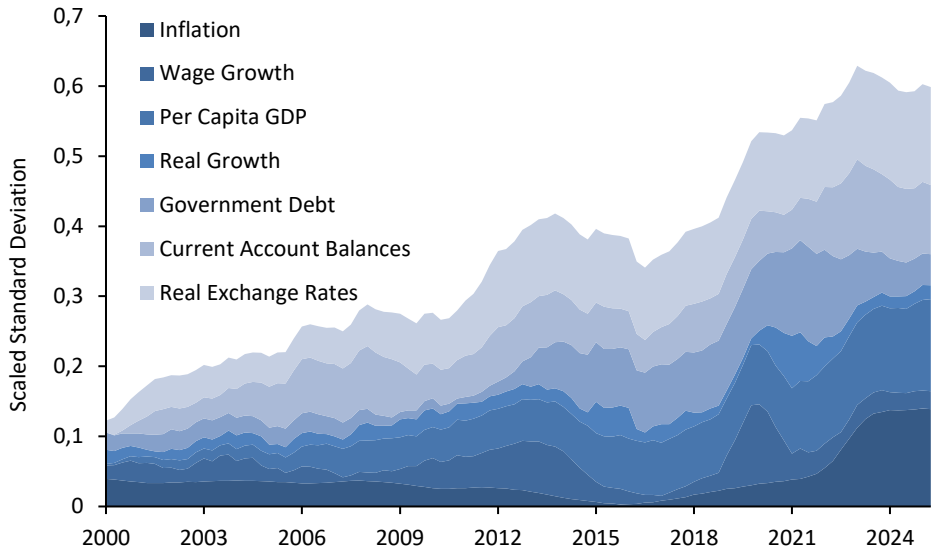
Figure 5: Growth Rates of Euro Area Members 1999 and 2025



Source: ECB. No entry for countries in 1999 that were not members of the monetary union in 1999.

With fixed exchange rates in a common currency area, nominal exchange rate fluctuations disappear, but differences in prices and wages can still affect real exchange rates between member countries. This was particularly pronounced in the period from the early 2000s to 2008. While capital inflows and the associated upswing pushed up prices and wages in some southern euro area countries such as Greece and Spain, austerity in Germany restrained both. The resulting real appreciation in the southern euro area and the real depreciation of the no longer existing Deutsche Mark led to growing current account imbalances within the euro area, which ultimately culminated in the European financial and debt crisis. Differences in per capita income also reflect heterogeneity within an economic area, as do differences in public debt ratios relative to GDP.

Figure 6: Divergence Indicator for the Euro Area 1999 to 2024



Source: Pfeifer and Schnabl 2024. Monthly basis.

The divergence indicator developed by Pfeifer and Schnabl (2024) combines all the above measures of divergence— inflation rates, real growth rates, wage growth, changes in real exchange rates relative to Germany, trade balances, GDP per capita, and public debt as a share of GDP—into a single index. For each year since the introduction of the euro, the standard deviation of these underlying variables across euro area countries is calculated. To ensure comparability across variables, the standard deviations are scaled and then aggregated. Figure 6 shows that, based on this indicator, divergence within the euro area has trended upward since the euro's introduction.

4.2. Measures for Shocks and Cycles

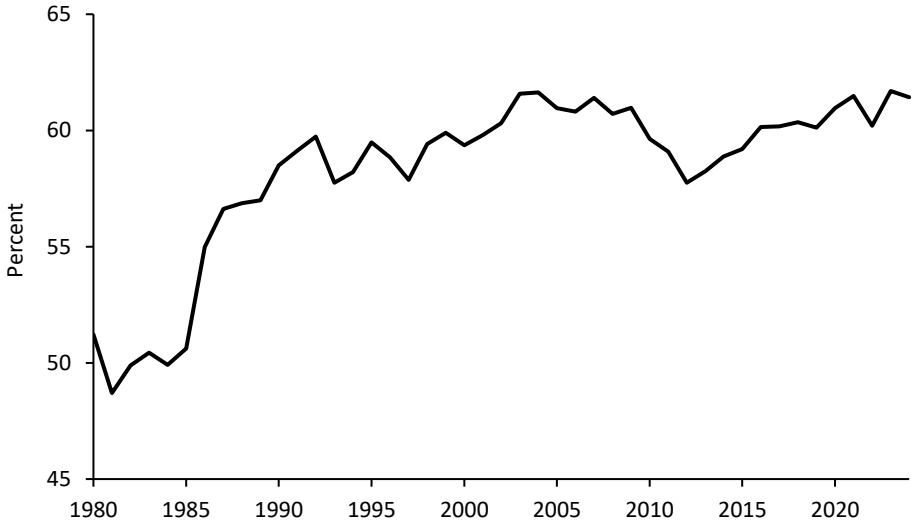
The hope of Frankel and Rose (1998) that the introduction of the euro would increase trade within the European Monetary Union has not materialized. Figure 7 shows that the share of European Union trade conducted within the EU has risen only marginally, from 59 percent to 61 percent, since the introduction of the euro. This is mainly because other regions of the world, particularly East Asia, have grown more rapidly. If weak growth in the EU, especially in the core euro area countries, persists, a shift in trade relationships away from the EU can be expected, which could contribute to a decoupling of business cycles.

In the early 1990s, Bayoumi and Eichengreen (1993) estimated the correlation of supply and demand shocks for the prospective members of the euro area using data on inflation and real growth. They found that supply shocks were significantly less correlated than in the United States. At the time, the authors found a relatively

homogeneous core (Germany, Benelux, France) and a heterogeneous periphery. Demand shocks were somewhat more synchronized than supply shocks, but still less so than in the United States. Twenty-five years later, Campos and Macchiarelli (2016) updated the estimates of Bayoumi and Eichengreen (1993) and found that heterogeneity had declined but persists.

Based on the method of Campos and Macchiarelli (2016), Figure 8 shows the correlation coefficients of supply and demand shocks with Germany for the eleven countries originally examined by Bayoumi and Eichengreen (1992), for the periods 1989–2015 (in black) and 2015–2024 (in grey).[11] The arrows indicate the direction of change. The closer countries are located to the upper right of the graph, the more closely their shocks are correlated with those of Germany. Supply and demand shocks in Denmark, Italy, and the Netherlands have moved closer to Germany in the period 2015–2024 compared with 1989–2015. For Spain, supply shocks have deteriorated, and for Belgium both supply and demand shocks have worsened. The supply shocks of France, Portugal, and Greece were already negatively correlated and have remained so in the more recent period.

Figure 7: Intra-EU Trade as a Share of Total EU Trade

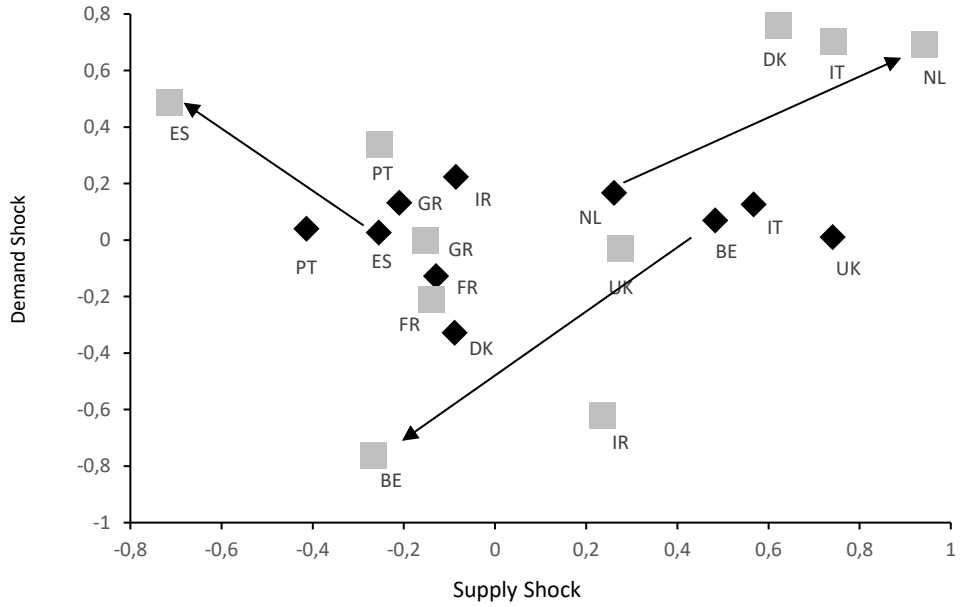


Source: IMF.

As the divergence indicator captures the cumulative change in heterogeneity across individual variables but does not reflect uncoordinated cycles in the sense of Mundell (1961), Bugdalle and Pfeifer (2025) developed an indicator of business and financial cycles that enables measurement of cycle correlations across countries. The idicator is based on quarterly growth rates of real GDP, real private consumption, real gross fixed capital formation, and unemployment. The financial cycle is based on quarterly changes in credit growth, housing prices, stock prices, and bond prices.

[11] Campos and Macchiarelli (2016) compute two versions, with the second allowing the long-run effect of supply shocks on the level of output to differ across countries.

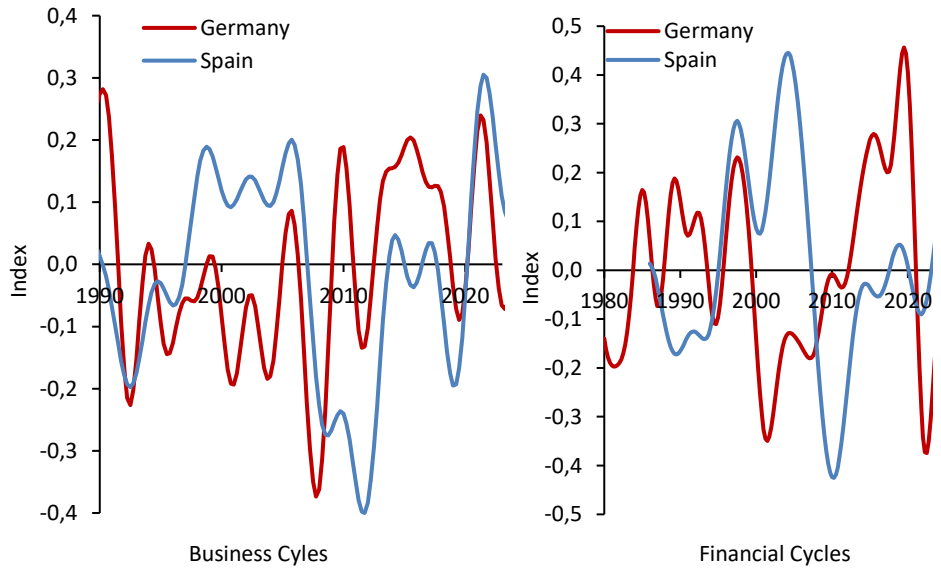
Figure 8: Correlation of Supply and Demand Shocks with Germany



Source: OECD and own calculations. 1989-2015 = ◆, 2016-2024 = ■

To calculate the synchronization of cycles, the measures of business and financial cycles are normalized so that the values are comparable. Figure 9 shows the resulting cycles for Germany and Spain over the period from 1990 to 2023. For the period from the early 2000s to 2008, both the business cycle and the financial cycle exhibit pronounced divergence between Germany and Spain.

Figure 9: Business and Financial Cycles for Germany and Spain

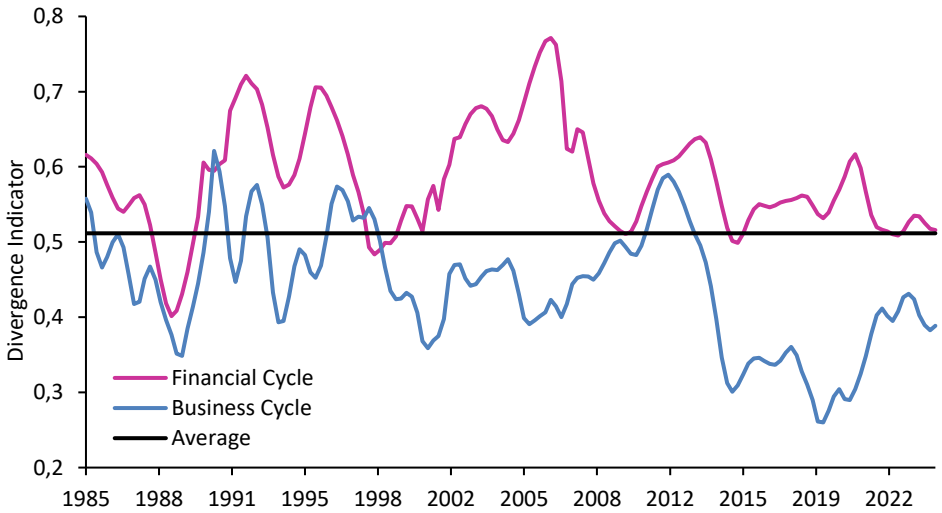


Source: Bugdalle and Pfeifer 2025.

During the recovery phase following the financial and sovereign debt crisis, the business cycle between Germany and Spain became more closely correlated, while the financial cycle continued to diverge markedly. The recovery in Germany appears much stronger than in Spain. Germany's planned new debt-financed spending program could give rise to a new divergence.[12]

The distance between the business and financial cycles of individual countries is measured using dynamic time warping (Sakoe and Chiba 1978; Berndt and Clifford 1994). This method allows to compare time series even when they exhibit slight lags. The calculated distance, as the deviation between the cycles of all country pairs, reflects their degree of synchronization. A low value means that business and financial cycles across countries move more closely together, while a high value points to large differences. For all countries in the currency area, the study shows that business cycles have converged since 2012, whereas financial cycles remain a persistent source of divergence in the euro area (see Figure 10). The convergence of business cycles since 2014 may be attributed to the slowdown in growth across all EU countries and/or to the cohesion mechanisms introduced since then.

Figure 10: Divergence Indicator for the Entire Euro Area



Source: Bugdalle and Pfeifer 2025.

[12] German reunification was an asymmetric shock for Europe, as the costly, rapidly initiated, debt-financed reconstruction in East Germany stimulated economic activity in Germany and pushed interest rates upward. Capital inflows into Germany put the Deutsche Mark under appreciation pressure and the currencies of other European countries under depreciation pressure. This triggered a crisis in the European Monetary System (Gros and Thygesen 1992).

4.3. Inflation Perception and Political Divergence

Since the ECB abandoned its reference value for money growth in 2003, it has based its monetary policy decisions solely on changes in the euro area's Harmonised Index of Consumer Prices (HICP) published by Eurostat.[13] With the exception of a brief period in 2021 and 2022, officially measured inflation remained close to the ECB's target of around 2 percent (see Figure 11).[14] However, it has also been argued that Eurostat's inflation measure may be biased downward due to the way quality adjustments and the weights of individual goods in the consumption basket are handled (see Schnabl and Sepp 2021). Important changes to the measurement of inflation were implemented after the introduction of the euro, so that inflation rates recorded during the era of the Deutsche Bundesbank are no longer comparable with those measured under the ECB.[15]

Quality improvements in industrial goods have increasingly been used as a basis for downward adjustments of prices in the statistics, for example when the processing power of a computer increases or a car includes a new feature as standard. By contrast, in services, where significant quality deterioration due to greater "self-service" can be assumed, no upward price adjustment is being made. In addition, Eurostat adjusts the weights of individual goods in the index to reflect changing demand. If, over time, Eurostat has increased the weight of cheaper goods with lower price increases, this has dampened measured inflation.[16] The sharply risen prices of stocks and owner-occupied housing are not included in Eurostat's consumer price index. A downward bias in measured inflation may help explain the marked divergence between officially measured inflation and perceived inflation as reported by the European Commission for the euro area (see Figure 12).

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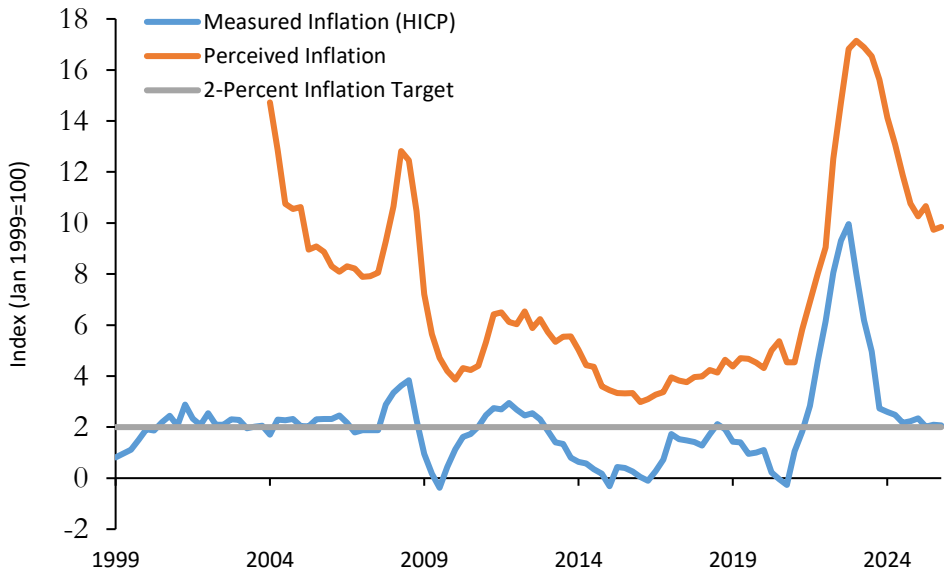
[13] By measuring inflation on the basis of consumption, Eurostat follows the standard practice in other currency areas.

[14] From 1999 to 2003, the target for HICP inflation was set at below 2 percent over the medium term, implying a range between 0 and 2 percent. From 2003 to 2022, the target was "specified" as below, but close to, 2 percent, which was later interpreted as a point target. Following a comprehensive strategy review, the ECB set a symmetric 2 percent target over the medium term in 2021, without specifying a lower bound. It argued that a prolonged undershooting of the target, as between 2013 and 2020, could justify a period of overshooting. In its 2025 strategy update, the ECB emphasized that large and persistent deviations of inflation from the target in either direction should be met with "appropriately forceful or persistent monetary policy measures" to prevent the de-anchoring of inflation expectations. In practice, the ECB now bases its monetary policy decisions on the latest inflation data.

[15] The global change in the measurement of inflation followed from the Boskin Commission, appointed by the U.S. Senate, which concluded in 1996 that inflation rates in the United States had been overstated.

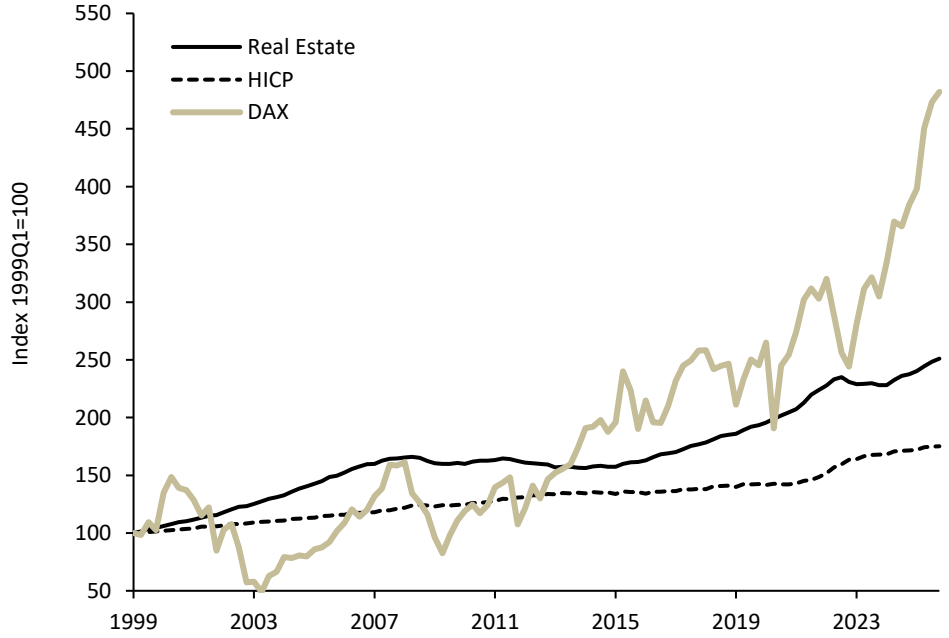
[16] The weights of individual goods in the statistics are not made public.

Figure 11: Officially Measured and Perceived Inflation in the Euro Area



Source: Oxford Economics and European Commission.

Figure 12: HICP, DAX and Real Estate Index for the Euro Area



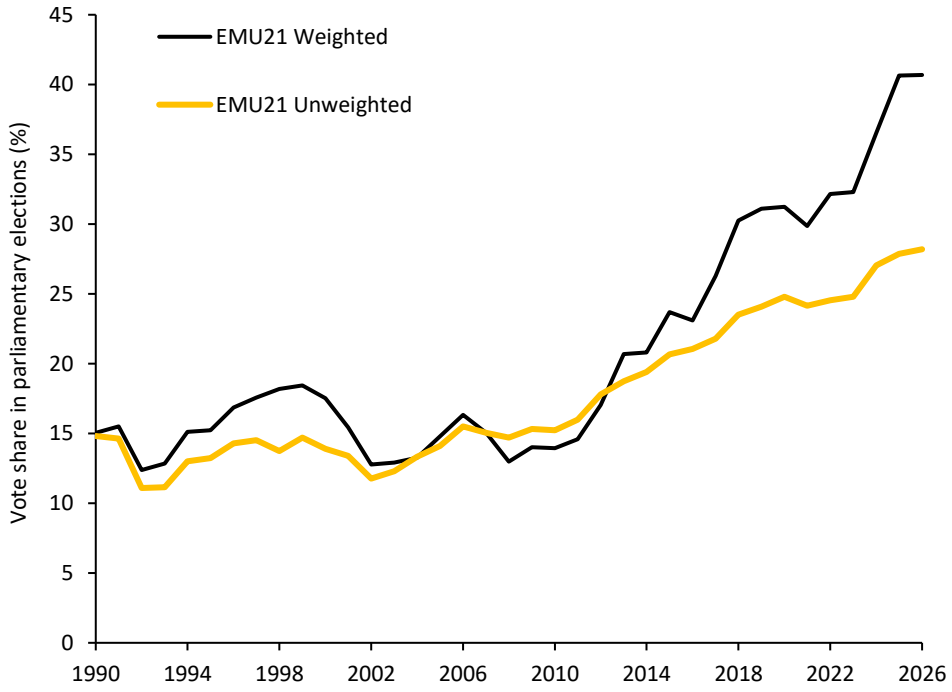
Source: Refinitiv, Oxford Economics.

The sharp rise in asset prices in the euro area since 1999 (see Figure 12) has amplified distributional effects across different population groups (Schnabl 2019). Older and wealthier individuals who already own real estate and equities have benefited from strongly rising asset prices. By contrast, younger people and those without assets have found it more difficult to acquire property and accumulate wealth. As

housing prices increase, younger cohorts must devote a larger share of their income to purchasing property than previous generations. The distributional effects of rising house prices are more pronounced in countries with relatively low homeownership rates, such as Germany, and less pronounced in euro area countries where a large share of the population owns their homes, such as Italy or the Netherlands.[17]

Public spending also typically has distributional effects, which are amplified when central banks purchase government bonds. Since the turn of the millennium employees in the financial, education, and healthcare sectors in the United States have disproportionally benefited from expansionary monetary and fiscal policies. By contrast, industrial workers have faced rising wage pressure from East Asia. In Germany for instance, the sharp increase in public spending since the European financial and debt crisis has had positive distributional effects mainly in regions where large export-oriented firms and administrative centers are located (Schnabl 2024). Key transmission channels of redistribution across regions have been rapidly growing subsidies and the creation of numerous new jobs in the public sector, including education and healthcare.

Figure 13: Index of Political Polarization



Source: Flossbach von Storch Research Institute. Vote share of extreme left and right parties in parliamentary elections. The unweighted index shows the average vote share of right-wing and left-wing populist parties in parliamentary elections of all 21 euro states. The weighted index weights by population size.

[17] Because the currency in Germany was stable for a long time, there was a strong preference for saving in bank deposits, whereas in countries with a history of high inflation people tended to save more in real estate.

Strong distributional effects of monetary and fiscal policy can lead to increasing political polarization. People who perceive themselves as losers of economic and social developments are more likely to vote for parties at the extremes of the political spectrum. This effect is reinforced when persistently expansionary monetary and fiscal policies have negative effects on growth, so that gains for one part of the population necessarily come at the expense of another. The index of political polarization in Figure 13 shows that, across the 21 current euro area countries, political polarization has increased markedly since the European financial and debt crisis.

5. Cohesion Mechanisms

Following the introduction of the euro, accelerated growth in the southern euro area countries initially pointed to a process of convergence in the form of narrowing differences in per capita income (Belke and Dreger 2013). This apparent catching-up process was driven by strong credit expansion, particularly from Germany to the southern euro area, which fueled private and public consumption in those countries. However, this convergence was not based on productive investment and was interrupted by the outbreak of the European financial and sovereign debt crisis, which brought the euro area to the brink of collapse.

The risk of a disintegrating monetary union made public cohesion mechanisms necessary. At the height of the sovereign debt crisis, then ECB President Mario Draghi stated that the European Central Bank would do "*whatever it takes to preserve the euro*" (Draghi 2012).[18] The speech marked a turning point, as maintaining cohesion in times of crisis was no longer seen as a fiscal responsibility of the euro area member states, but was explicitly brought into the remit of the ECB, where it arguably remains to this day. An institutionalized system of fiscal transfers at the supranational level, financed by the central bank, could relieve the ECB of this role.

5.1. Fiscal Cohesion Measures

In 2010, numerous euro area countries and the International Monetary Fund pledged bilateral assistance to Greece amounting to €110 billion (Murai and Schnabl 2021). On May 7, 2010, the German Bundestag passed the *Act on the Assumption of Guarantees in Connection with a European Stabilisation Mechanism*, which provided the legal basis for the German contribution.[19] This was politically sensitive, as it involved joint liability for the debt of another EU member state and thus touched upon the no-bailout clause of the European treaties (Article 125 TFEU).

[18] "*Within our mandate, the ECB is ready to do whatever it takes to preserve the euro. And believe me, it will be enough*."

[19] German Chancellor Angela Merkel defended the assumption of liability with the words: "*If the euro fails, Europe fails. But if we avert this danger, the euro and Europe will come out stronger than before*" (Deutscher Bundestag 2010).

In May 2010, the European Financial Stabilisation Mechanism (EFSM) was established with a volume of €60 billion. It was designed to provide short-term financial assistance to member states of the European Union if, owing to exceptional circumstances, they no longer had access to capital markets.[20] The EFSM provided assistance to Ireland (2010–2013: €22.5 billion) and Portugal (2011–2014: €26 billion). After approval by the European Council with a qualified majority, the European Commission issued Eurobonds for this purpose.

The European Financial Stability Facility (EFSF) was established in 2010 as a special purpose vehicle, raising funds on capital markets backed by guarantees from member states (Germany 27%). The second rescue package for Greece, amounting to €141.8 billion, was granted in February 2012 under the EFSF following approval by the German parliament. Chancellor Angela Merkel referred to a "*fundamental flaw in the construction of the monetary union*" and emphasized that the package was part of building a "*stability union*" based on growth and solidarity. Europe would gain if the euro prevailed (Merkel 2012).

The European Stability Mechanism (ESM) was established as a permanent rescue fund on the legal basis of an intergovernmental treaty outside the EU legal framework. The ESM, which entered into force in September 2012, has a total capital stock of €700 billion, of which €80 billion is paid-in capital. At the time, the German Finance Minister Wolfgang Schäuble promoted the policy in a government statement as a means of "*safeguarding stability in the euro area*." The ESM financed rescue packages for Cyprus (€6.3 billion), Greece (€61.9 billion), and Spanish banks (€41.3 billion). The German Bundestag had to approve these measures due to its participation rights in the ESM. Germany's share corresponds to a paid-in capital contribution of around €21.7 billion and guarantees, or callable capital commitments, of about €167.8 billion.

5.2. Monetary Policy Stabilization Measures

With his statement "*and believe me, it will be enough*," ECB President Draghi (2012) made it clear that the ECB's scope of action, unlike that of national parliaments, is unlimited. According to Bini Smaghi (2011), both conventional and unconventional monetary policy measures had already contributed to easing financing conditions prior to Draghi's announcement. For example, between May 2010 and September 2012, the Securities Markets Programme limited the dispersion of bank interest rates across countries.

National central banks in the Eurosystem initially used the instrument of Emergency Liquidity Assistance (ELA) to stabilize individual parts of the euro area. This allowed them to provide liquidity to domestic commercial banks (and to refinance

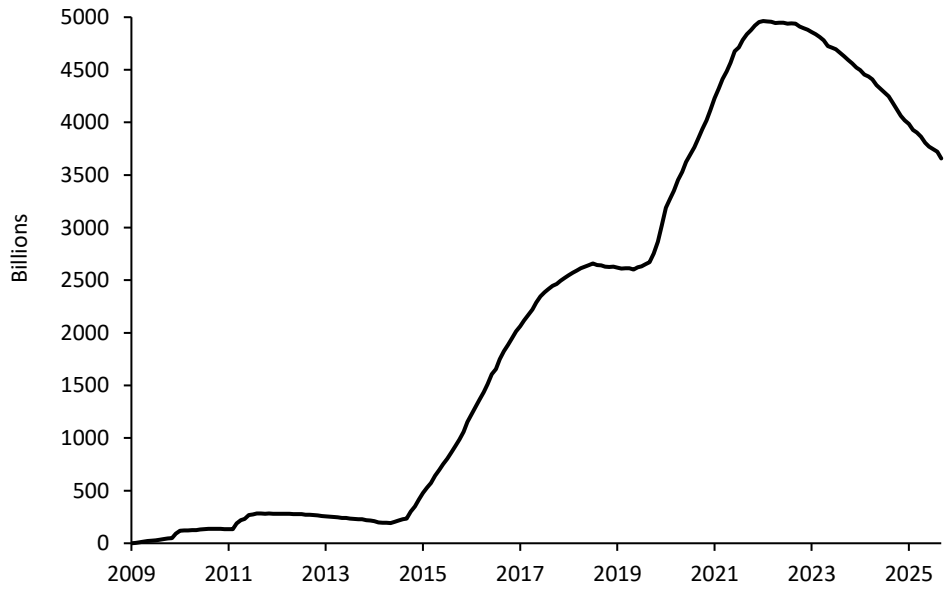
[20] The mechanism was established on the basis of Article 122(2) TFEU, which permits assistance if a member state faces serious difficulties due to events beyond its control.

themselves accordingly) independently of the ECB's monetary policy measures. The requirements for collateral were separate from those of the Eurosystem. The Central Bank of Ireland was the first to make use of ELA (2008–2013: €70 billion), followed by the Bank of Greece, which granted ELA amounting to €89 billion between 2010 and 2015. The central banks of Cyprus, Portugal, Spain, Slovenia, and Latvia also extended ELA support.

Under the Securities Markets Programme, the ECB purchased bonds from Greece, Ireland, Portugal, Spain, and Italy amounting to €218 billion. This was followed in 2012 by the (not activated) Outright Monetary Transactions, in 2015 by the Asset Purchase Programme (until 2022, totaling €3,000 billion), and in 2020 by the Pandemic Emergency Purchase Programme (until 2022, €1,850 billion), with both latter programmes dominated by purchases of public sector bonds.

Since 2023, the Eurosystem's bond holdings have been gradually reduced and currently stand at around €3,808 billion (see Figure 14). It remains uncertain how long this so-called quantitative tightening will continue and whether bond purchases will be resumed in the next downturn. However, since 2024 the ECB has envisaged maintaining structural holdings of government bonds on the Eurosystem's balance sheet, which makes a full reduction of these holdings unlikely.[21]

Figure 14: Bond Holdings of the Eurosystem



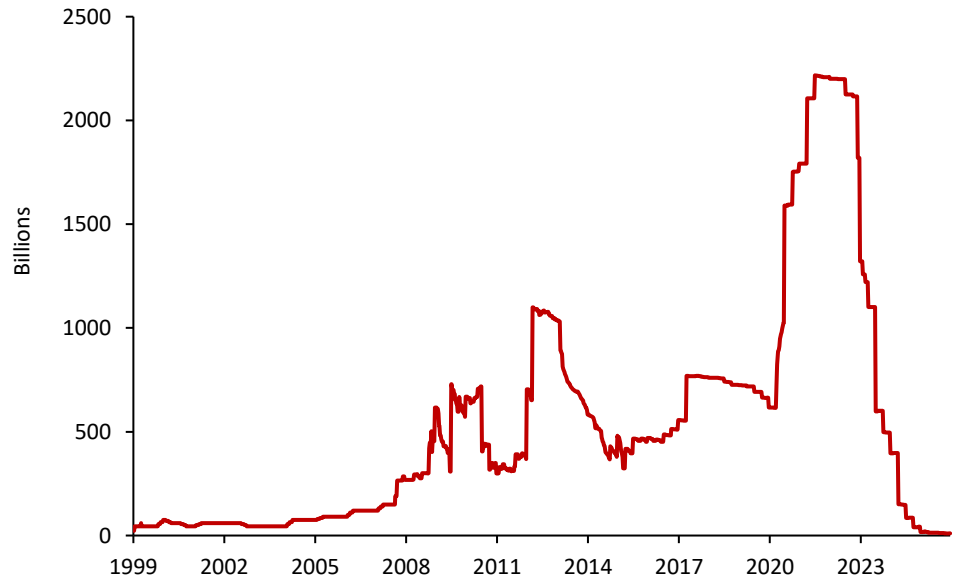
Source: ECB.

[21] "*At a later stage, once the Eurosystem balance sheet begins to grow durably again taking into account legacy bond holdings, new structural longer-term refinancing operations and a structural portfolio of euro area securities will also be introduced.*" (ECB 2024)

This was accompanied by an expansion of the Eurosystem's longer-term refinancing operations, which at their peak reached a volume of around €2,200 billion (see Figure 15). Targeted longer-term refinancing operations (TLTROs) were loans granted by the ECB to commercial banks with long maturities (several years) and favorable interest rates. Unlike standard refinancing operations (main refinancing operations and LTROs), they were conditional on lending to the real economy (households and firms, rather than banks or governments). TLTROs were particularly attractive for banks because they carried low interest rates and, at times, even negative rates of up to minus one percent (Deutsche Bundesbank, n.d.). These longer-term refinancing operations have since been reduced to zero (Figure 15).

An important stabilizing instrument were the so-called TARGET2 balances of the Eurosystem, which correspond to credits and claims of national central banks vis-à-vis the European Central Bank (Sinn and Wollmershäuser 2012). While these were largely balanced before the European financial and sovereign debt crisis, substantial imbalances emerged during the crisis, driven by current account deficits, capital flight, and bond purchases by the Eurosystem.

Figure 15: (Targeted) Longer-Term Refinancing Operations of the ECB

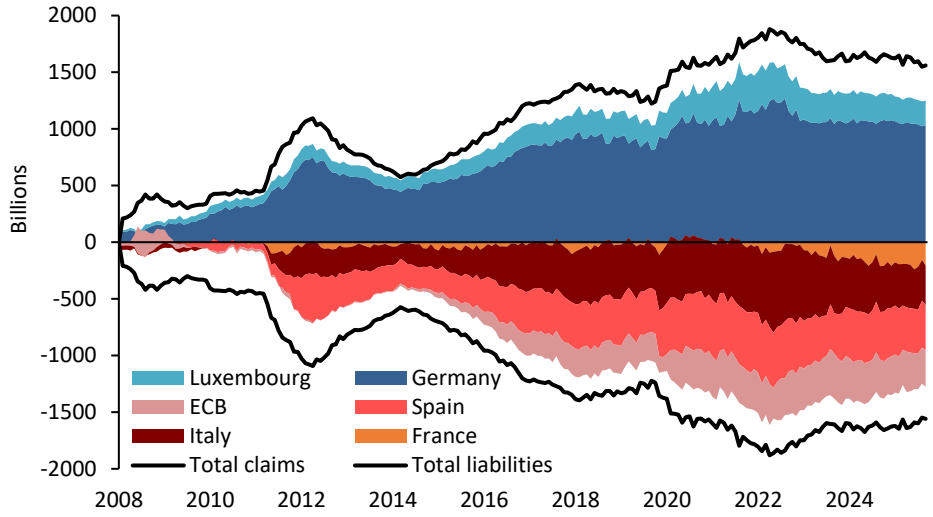


Source: ECB.

Sinn (2012) views the Eurosystem's TARGET2 balances as a credit stabilization mechanism. The rapidly growing TARGET2 liabilities of the central banks in the southern euro area were accompanied in particular by rapidly increasing claims of the Deutsche Bundesbank and the Central Bank of Luxembourg (see Figure 16).[22] These developments enabled central banks in crisis countries to expand lending to their commercial banks, thereby counteracting a banking crisis and the potentially associated sovereign debt crises.

The Eurosystem has thus not only gradually lowered and permanently kept interest rates low in the course of the European financial and debt crisis (conventional monetary policy). It also responded to heterogeneous economic developments with a growing set of unconventional monetary policy instruments. In doing so, it assumed a role beyond its original mandate of ensuring price stability, namely, to safeguard the cohesion of the common currency area. Although the scope of individual monetary policy instruments cannot be aggregated, the substantial expansion of the Eurosystem's balance sheet can be seen as an indicator of the broadening of its responsibilities (Figure 17).[23]

Figure 16: Target2 Balances of the Eurosystem

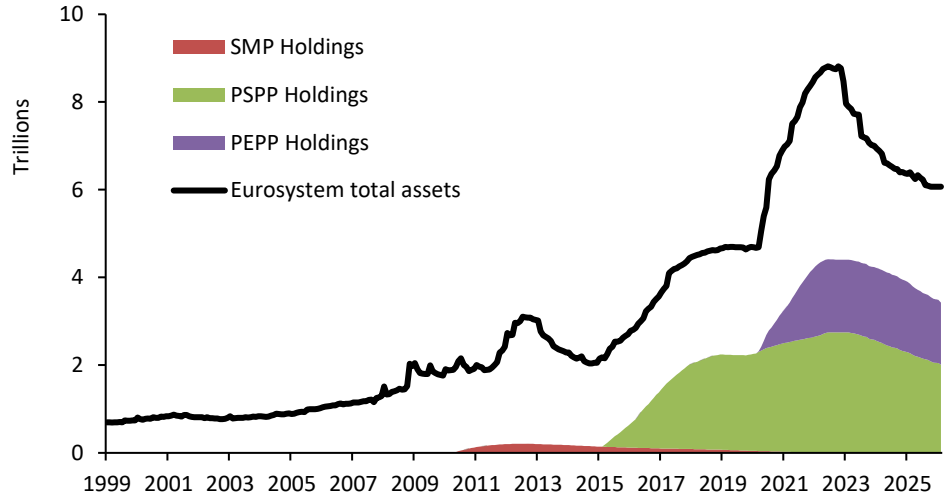


Source: ECB.

[22] From the ECB's perspective (ECB 2011), TARGET2 balances ensure effective monetary policy transmission by providing commercial banks with unlimited liquidity at a given interest rate, provided they have sufficient collateral.

[23] Bessent (2025) criticizes the U.S. Federal Reserve for overextending its scope, arguing that the structure of its greatly expanded balance sheet has led to redistribution, for example in favor of homeowners.

Figure 17: Balance Sheet Volume of the Eurosystem and Holdings of Government Bonds



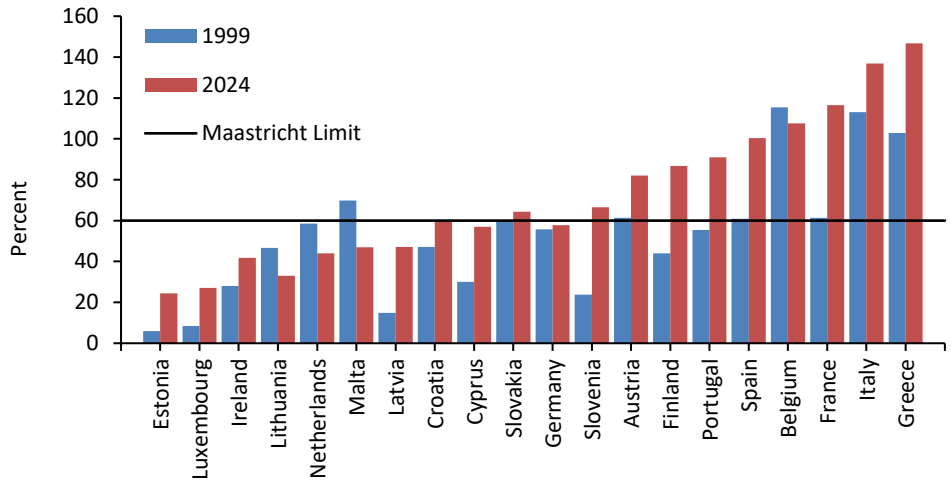
Source: ECB.

From 2015 onward, the large-scale purchases of government bonds from euro area countries were conducted according to the capital key, that is, proportionally across all member states of the monetary union. Nevertheless, under the PSPP and PEPP programmes, the Eurosystem's holdings of government bonds deviated from the capital key in favor of southern European crisis countries such as Spain and Italy, and increasingly France (Birkholz and Heinemann 2023). For other unconventional monetary policy instruments, such as ELA or targeted longer-term refinancing operations, no country quotas were specified at all (Bugdalle 2025). Since July 2022, the ECB's so-called Transmission Protection Instrument has allowed targeted purchases of government bonds of individual member states. Restricted to special circumstances, the aim of these instruments is to safeguard monetary policy transmission in the event of sudden yield hikes that cannot be explained by fundamentals (ECB 2022).

5.3. Fiscal Redistribution

Prior to the creation of EMU, Obstfeld and Peri (1998) had already proposed an intraregional transfer mechanism similar to those of Italy or Canada to ensure comparable economic conditions within the euro area. Since the early years of European integration, the EU's regional policy redistributes financial resources to economically weaker regions (European Commission 2024). However, this policy primarily pursues social and environmental objectives and therefore does not directly serve to maintain cohesion within the European Monetary Union. With €56 billion for the 2021–2027 budget, its annual volume is relatively modest.

Figure 18:Government Debt as a Share of GDP of Euro Area Countries 1999 and 2024



Source: ECB.

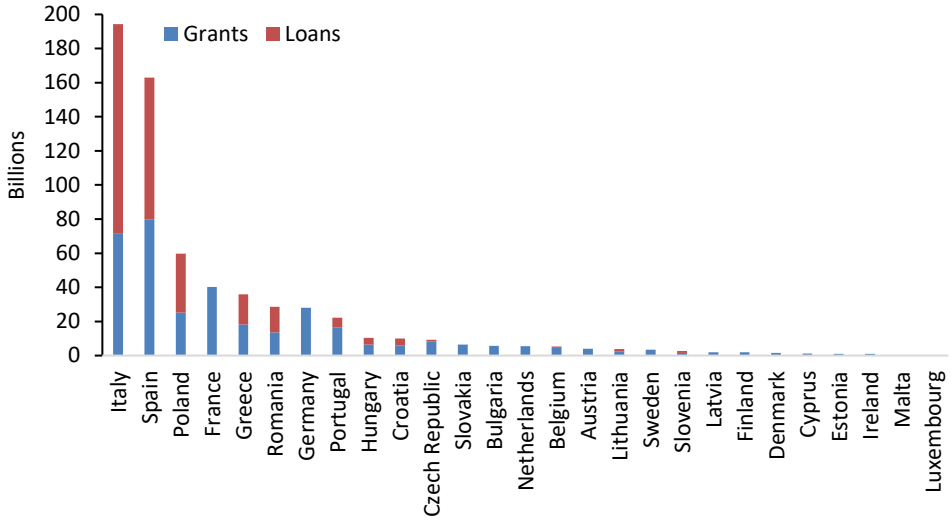
The euro area was initially designed so that fiscal and social policies of member states would remain largely independent, with only upper limits set for public debt.[24] To prevent governments from pressuring the common central bank to finance public spending, the Maastricht debt criteria were intended to constrain government borrowing. However, even at the time of entry into the euro area, exceptions to the debt criteria were made for countries such as Belgium, Italy, and Greece, and subsequently generous exemptions were granted in many cases regarding budget deficits (Bugdalle 2025), allowing public debt levels to rise well above the 60 percent threshold (see Figure 18). During the COVID-19 crisis, the debt limits were suspended for all EU countries. Today, average public debt in the euro area amounts to 87 percent of GDP, ranging from 24 percent in Estonia to 154 percent in Greece.

Increasing divergence within the euro area has led to calls for a common fiscal policy. Since taking office in 2017, French President Emmanuel Macron has repeatedly advocated a common fiscal policy to ensure the long-term stability of the euro. In his 2017 speech at the Sorbonne, he called for a common euro area budget, a euro area finance minister, and joint bonds to finance shared investment (Macron 2017). Similarly, former ECB President Draghi (2024) has called for joint debt to finance common EU expenditures. In this context, increasing joint borrowing would serve as a common safe asset and support the euro's international role.[25]

[24] A maximum for the annual government deficit of 3 percent of GDP and a maximum for public debt of 60 percent of GDP.

[25] A more prominent role of the euro as an international currency would create additional scope for borrowing, as the central banks of countries that maintain exchange rate pegs to the key currency hold large amounts of government bonds of the issuing country on their balance sheets. McKinnon (2012) described this additional borrowing capacity, with reference to the United States, as an exorbitant privilege.

Figure 19: Fund Allocation under NextGenerationEU



Data source: European Commission.

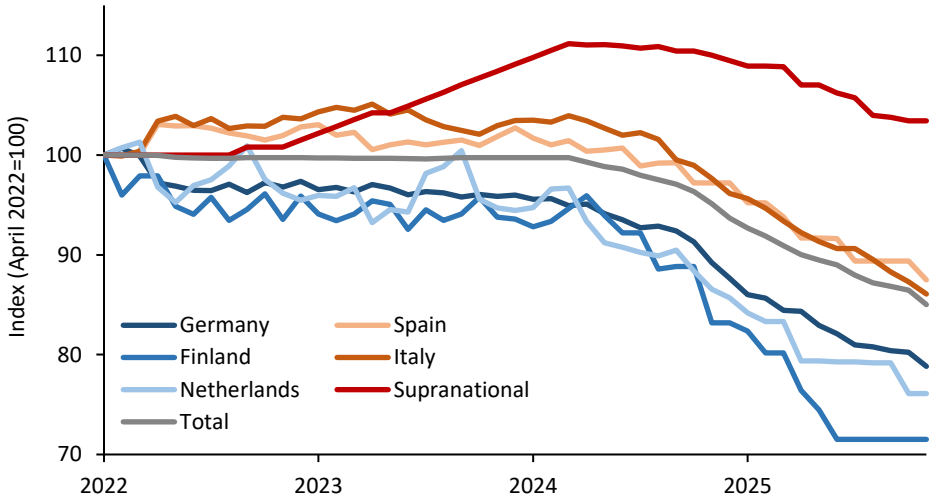
During the COVID-19 crisis, the idea of fiscal transfers within the EU and the euro area was revived. Initially, the EU introduced the debt-financed labor market programme SURE, amounting to €100 billion, which primarily supported the southern euro area countries. In the aftermath of the crisis, the "recovery fund" NextGenerationEU, was adopted with a volume of €809 billion, likewise disproportionately benefiting the southern euro area countries (Figure 19).[26] To finance the fund, the EU created an exception to Article 310 TFEU, which stipulates that the EU should be financed solely from its own resources.[27] Since the financial transfers helped stabilize economic activity in highly indebted euro area countries, NextGenerationEU contributed to the cohesion of the euro area.

Since EU debt is not attributed to individual member states under EU debt rules, additional EU borrowing can be seen as a way to ease national debt pressures without painful reforms. This applies in particular to France, which, due to strong political polarization, no longer appears able to bring its high budget deficit under control through sufficient fiscal consolidation (Schnabl 2025). Transfers to France financed by EU debt would also support the common currency, as activating the Transmission Protection Instrument in favor of France would likely entail a significant loss of credibility for the euro.

[26] An overview of the allocation of funds in Germany is provided by the Federal Ministry of Finance (2024). Among the largest recipients in Germany are DB Netz AG, BioNTech SE, Bundesdruckerei GmbH, CureVac N.V., the Federal Foreign Office, Sixt GmbH, and Deutsche Post AG.

[27] Article 122 TFEU permits borrowing in crisis situations.

Figure 22: Development of PEPP Public Sector Securities in the Eurosystem's Balance Sheet Since the End of Net Purchases



Source: ECB, Bugdalle (2025).

If EU borrowing leads to a further increase in public debt and the supply of government bonds in the euro area, risk premia on sovereign bonds across the EU and the euro area are likely to rise as well. If this raises interest burdens for euro area countries and the EU, the likelihood increases that the ECB will resume purchases of supranational and EU bonds. EU bonds are not only already included in the ECB's list of eligible assets, but under the reinvestment policy of the PEPP, the ECB has increasingly replaced German and Dutch government bonds with supranational bonds (see Figure 22). Supranational bonds include those issued by the EU, the European Investment Bank (EIB), and the ESM.

6. Economic Policy Implications

At its inception, the European Monetary Union was not an optimum currency area and, contrary to many academic arguments pointing to increasing convergence, it has not evolved into one. This is largely because the monetary union has remained incomplete without a common fiscal and social policy. A key consequence was the European financial and debt crisis, which could only be stabilized through the ECB's intervention as lender of last resort and a largely unconditional guarantee in support of the euro.

Röpke (1964) foresaw the gradual shift toward a liability and transfer union: "(…) *if the states should agree on a common course of monetary policy, those with less monetary discipline would prevail over the few others which had more. It is disease, not sanity, which is infectious****. It is always the slowest ship in a convoy which determines the speed of the group*** (p. 236). (...) *the member states, indulging in reckless monetary policies like Italy (and to a lesser degree France, in spite of her much-vaunted "planification") will ''export'' their inflation to other countries observing a*

higher degree of monetary discipline, for example Germany. In view of this monetary disintegration, it is thought that a common monetary system of the six countries of the EEC is necessary. But, here again, it is obvious that such a system supposes a common economic, financial, and social policy, which is inconceivable without a real merging of national governments into one supranational state—which is a mere phantom" (p. 236).

Since the Eurosystem's balance sheet has no effective upper limit, there are technically no constraints on the ECB's actions, as long as these are justified by the need to ensure the transmission of monetary policy in order to fulfill its mandate of price stability. Moreover, with the incorporation of climate objectives into the ECB's monetary policy framework, the focus on price stability has receded, likely giving the ECB additional scope for government bond purchases. However, a trend toward increasingly expansionary monetary policy entails negative effects on growth and distribution, pushing those who lose from euro stabilization measures toward the political fringes. As this process is already well advanced, a renewed surge in inflation in the euro area appears politically risky.

Finally, Germany's economic strength appears increasingly exhausted. In the past, the hard Deutsche Mark, through its appreciation, pushed Germany's export-oriented economy toward continual productivity gains, some of which could be redistributed to other member states of the European Community and later the European Union through common European institutions. By contrast, the increasingly weak euro has made the German industry more sluggish, with productivity no longer growing. The redistribution of resources, as in the case of NextGenerationEU, is therefore inevitably associated with welfare losses in Germany, which pose a risk to political stability. A long-term solution for a stable euro area is therefore needed, and three scenarios can be envisaged.

First, a common fiscal and social policy could be established at the European level, possibly accompanied by a system of regional fiscal transfers and even a common defense. This would represent a major step toward a political union in Europe and would provide a long-term institutional foundation for the stability of the euro. Second, the European Union and the European Central Bank could return to the original stability-oriented interpretation of the European treaties. This would require a persistently restrictive monetary policy by the ECB and substantial cuts in public spending by member states. Firms would thereby be forced to achieve productivity gains, giving the EU a much-needed boost in growth.

If Europe lacks the capacity to pursue either of these paths, a third option, the breakup of the monetary union, possibly into a northern and a southern euro, may become increasingly attractive. This scenario will become ever more likely once the economic strength of the north is no longer sufficient to stabilize the south. A northern and a southern euro would restore monetary competition in Europe, which for many years generated substantial welfare gains for its populations.

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