DEC | DUBROVNIK ECONOMIC CONFERENCE

HRVATSKA NARODNA BANKA
EUROSUSTAV

32nd DUBROVNIK ECONOMIC CONFERENCE

May 29 – 31, 2026, Dubrovnik, Croatia

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Draft version

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Journal of Economic Perspectives—Volume 39, Number 4—Fall 2025—Pages 49–74

Sovereign Debt and Fiscal Integration in the European Union

Zsolt Darvas, Lennard Welslau, and Jeromin Zettelmeyer

Macroeconomic integration in the European Union occupies a halfway house. Most of the European Union shares a common currency and a single monetary policy, but fiscal policy remains national. The EU budget is small (just over 1 percent of GDP, excluding temporary funds) and must be balanced. Though EU debt has recently increased after a one-off attempt to use common borrowing as a stabilization instrument during the pandemic, debt markets are nationally fragmented. Financial systems also remain largely national, though banking supervision has become centralized since the euro crisis of 2010–2012.

In this setting, EU countries face several debt-related worries. First, each must worry about its own country-level debt sustainability. In addition, banks in the largest countries remain disproportionately exposed to debt issued by their home sovereigns. This pattern holds especially true in Belgium, France, Italy, Portugal, and Spain. Finally, each member of the euro area must in principle worry not just about debt risks at home but also about debt risks in other euro countries, which could spread by threatening the integrity of the single currency.

During the 2010–2012 euro crisis, the combination of these interlocking vulnerabilities almost extinguished the euro. Notably, however, the pandemic did

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For supplementary materials such as appendices, datasets, and author disclosure statements, see the article page at https://doi.org/10.1257/jep.20251451.

not have a similar effect, despite much higher debt levels. Also, monetary tightening during 2022–2023 did not lead to an EU debt crisis, as many had feared. This better-than-feared performance is often attributed to institutional improvements since the euro crisis, as well as European Central Bank policies geared to preventing a reemergence of sovereign debt risks.

The purpose of this paper is to take stock of EU sovereign debt risks in light of higher debt, higher interest rates, continuing fiscal fragmentation, but also better policies and institutions. We begin with some historical and institutional background. We then examine to what extent the euro area's institutional reforms have reduced the risks of what is commonly called the "sovereign-bank doom loop." Next, we present results from a debt-sustainability analysis for EU countries. For comparison purposes, we undertake the same analysis for the United States and the United Kingdom.[1] We finally turn to two policy debates: whether European fiscal rules require further reform and how common euro area public debt instruments might be expanded.

An Imperfect Macroeconomic Union

The European Economic and Monetary Union (EMU), established in the 1992 Treaty on the European Union in Maastricht, is one institution within the broader European Union. It involves a single currency, the euro (begun in 1999 and passing into widespread use in 2002). It is governed by an independent monetary authority, the European Central Bank (ECB). In contrast, fiscal and (initially) financial sector policies were largely left in the hands of national EU governments. The European Union does not have its own tax-raising powers, nor a macroeconomic stabilization instrument. The EU budget has focused on agricultural subsidies and "cohesion spending" aimed at supporting poorer regions, and has remained limited in size: currently, about 1.1 percent of EU GDP.[2]

With a single currency, the Economic and Monetary Union eliminated national-level monetary policy, as well as national-level devaluation and unanticipated inflation as a soft fiscal adjustment mechanism, and also eliminated national central banks as lenders of last resorts to their governments. But in contrast to federations such as the United States, EMU did not create fiscal mechanisms for macroeconomic stabilization or risk-sharing across member states. In these ways, EMU both required more from national fiscal policy and removed instruments to

[1] In this article, we use the terms "Europe" and "the European Union" roughly interchangeably. This said, many of the problems we ascribe to "Europe" also apply to European countries that are not members of the European Union. Furthermore, this paper considers sustainability in the United Kingdom in addition to that of EU members.

[2] The EU budget was supplemented by a temporary instrument during the COVID-19 pandemic—NextGenerationEU (NGEU), in which joint borrowing was used to finance expenditures amounting to 2.7 percent of the European Union's 2022 GDP over 2021–2026. However, the debt created by this instrument is intended to be fully repaid (rather than refinanced) over time, and no follow-up instrument is planned.

manage debt crises without an outright default or exit from the euro area. To create the fiscal space to conduct national countercyclical policy without endangering fiscal solvency, requiring the help of other EU members, or exerting pressure on the European Central Bank to monetize national public debt, the 1992 Maastricht treaty requires EU members to maintain or reduce their public debt and deficit levels to below 60 percent and 3 percent of GDP, respectively.

Figure 1 shows the distribution of sovereign debt as a share of GDP in advanced economies over the last 30 years. Debt/GDP ratios of EU members generally declined sharply in the second half of the 1990s, particularly in the top half of the debt distribution (Figure 1, panel A), unlike those of their non-EU peers (Figure 1, panel B). Following euro entry, debt levels in the lower half of the EU debt distribution continued to decline but edged up in the top quartile. The global financial crisis of 2008–2009 unsurprisingly triggered sharp increases in sovereign debt both in the European Union and elsewhere. But the rise in debt in the European Union continued for much longer, until 2014. This pattern was a consequence of the 2010–2012 euro crisis, when Greece restructured its government debt despite international financial assistance that initially sought to avoid this; debt issued by Ireland, Portugal, and Cyprus lost access to global financial markets and required international assistance; and debt issued by Spain and Italy came very close to losing market access.

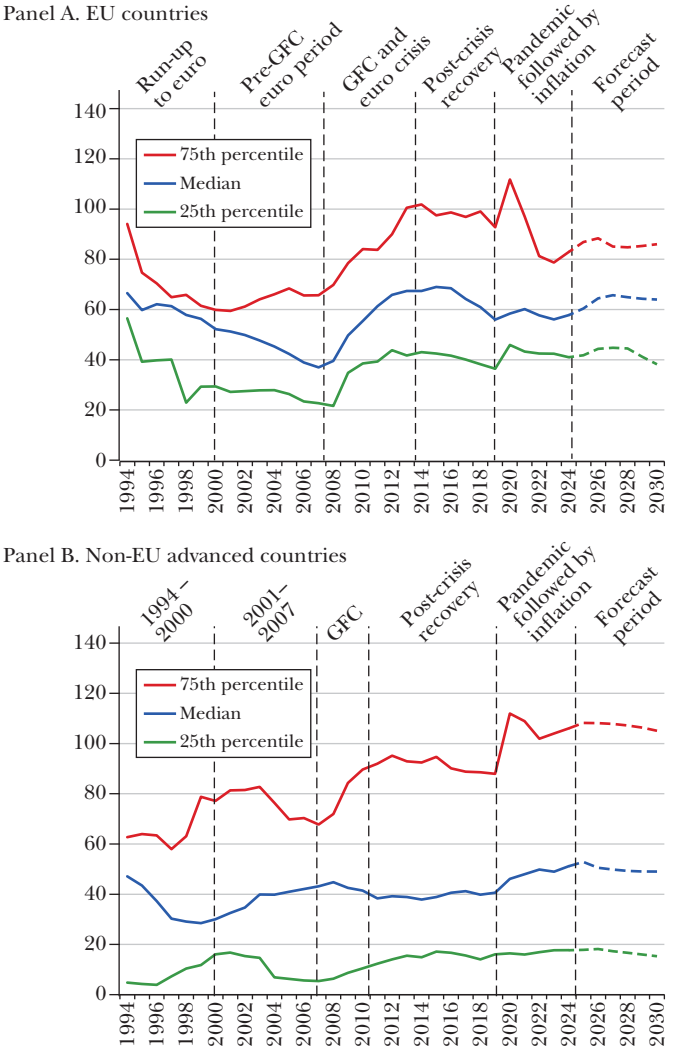
The failure of the Maastricht rules to ensure fiscal solvency and prevent a euro-threatening crisis had two main reasons. In some countries, including Greece and Portugal, the fiscal rules failed to create the intended fiscal buffers. But more fundamentally, the EMU architecture failed to take into account the interdependence of fiscal and financial sector solvency and liquidity. In the absence of EU-wide banking supervision and resolution mechanisms, the fiscal liability for banking crises remained national, while banking systems continued to cater mostly to domestic credit needs. This gave rise to a "sovereign-bank doom loop" or "diabolic loop" (Brunnermeier et al. 2016). Bank exposure to government bonds constituted an important channel through which the fear of government default dragged down the economy, while bank losses addressed by government bailouts strained public finances.

While the interdependence between sovereign debt and bank balance sheets can lead to a vicious circle in any country, euro-area countries were particularly vulnerable because of their lack of instruments to stop a crisis in market confidence (De Grauwe 2012). Sovereign-bank interdependence contributed to the spread of the crisis from countries with unsustainably high debt in the private (Ireland) or public (Greece) sectors to countries such as Italy and Spain, and complicated the management of the crisis.

Since the euro crisis peaked in 2011–2012, the architecture of Economic and Monetary Union has undergone three sets of reforms that attempt to address these weaknesses.[3]

[3]For a deeper treatment of the policy debates and evolution of the EMU architecture until 2021 in this journal, see Bilbiie, Monacelli, and Perotti (2021) and Lane (2021). For the new fiscal rules, see Darvas, Welslau, and Zettelmeyer (2024).

Figure 1
Sovereign Debt as a Share of GDP in Advanced Countries, 1994–2030



Source: IMF World Economic Outlook Database, April 2025.
Note: GFC is "global financial crisis." 2025–2030 values represent IMF forecasts. EU sample includes Austria, Belgium, Denmark, Finland, France, Germany, Greece, Italy, Netherlands, Portugal, Spain, and Sweden from 1994; Cyprus, Czech Republic, Estonia, Hungary, Ireland, Luxembourg, Malta, Poland, Slovak Republic, and Slovenia from 1995; Bulgaria, Croatia, Latvia, and Lithuania from 1998, and Romania from 2000. Non-EU sample includes Australia, Canada, Iceland, Japan, Korea, New Zealand, Norway, Singapore, Switzerland, and the United Kingdom from 1994; Taiwan Province of China from 1997; Israel from 2000; the United States from 2001; and Hong Kong SAR from 2004.

First, policy and institutional changes were introduced to prevent and mitigate sovereign illiquidity. After temporary lending programs supporting Greece, Ireland, and Portugal, a permanent institution, the European Stability Mechanism (ESM), was created in 2012 to provide conditional financial support to member states facing market pressure. The European Central Bank's Outright Monetary Transactions program announced in September 2012 offers unlimited secondary market purchases of sovereign bonds to countries in ESM programs. In 2020–2022, the Pandemic Emergency Purchase Programme (PEPP) showed that the European Central Bank was willing to deviate from its capital key in allocating bond purchases across its member states in an emergency. Finally, on July 21, 2022, the European Central Bank introduced a new instrument, the Transmission Protection Instrument, to "counter unwarranted, disorderly market dynamics" in bond yields of euro-area members.

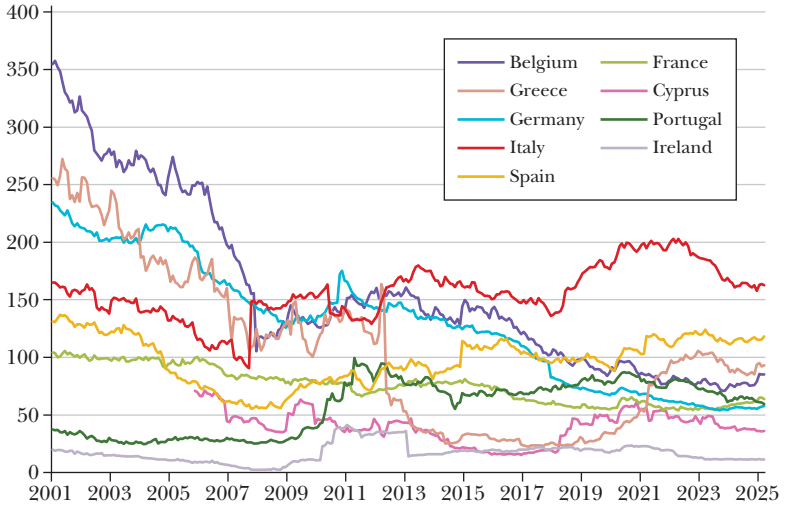
The second set of reforms launched the European Banking Union, which centralized banking supervision under the Single Supervisory Mechanism in 2014. Banking resolution was also partially centralized through the Single Resolution Mechanism, which includes an industry-financed resolution fund. However, these reforms have fallen well short of creating a unified EU-level institution. Deposit insurance and most liquidation or resolution decisions remain national (Véron 2024).

Finally, European fiscal rules have undergone two sets of reforms: in 2011–2013, and again in 2024. The current system, passed in April 2024, requires all EU member states to regularly submit four-year "fiscal structural plans" that meet certain debt sustainability criteria. Countries with debt above 60 percent are required to implement a fiscal adjustment program over four years, but can obtain an extension to seven years if they submit public investment or structural reform plans that improve their growth or fiscal prospects and are endorsed by the EU council. This must ensure that, over the ten years following the adjustment period and assuming no changes in fiscal policy, the debt/GDP ratio is projected to decline with at least 70 percent probability, allowing for unexpected shocks. In addition, the budget deficit must remain below 3 percent of GDP during the ten-year post-adjustment period; backloading of fiscal adjustment is generally not permitted; and several "safeguards" apply that require a minimum speed of adjustment.[4]

The question addressed in the following sections is to what extent the three main sets of reforms have succeeded in reducing or containing sovereign debt risks in the European Union—both liquidity risks magnified by the "doom loop" between banks and sovereigns, and sovereign solvency risks.

[4]For countries with debt above 90 (60) percent of GDP, the debt ratio must decline by a minimum average amount of 1 (0.5) percent per year during the adjustment period. Countries with a structural budget deficit exceeding 1.5 percent of GDP must improve their fiscal position by 0.25–0.4 percent of GDP per year, depending on the length of the adjustment period. For countries with a headline deficit above 3 percent of GDP, a minimum annual fiscal adjustment of 0.5 percent of GDP is required.

Figure 2
Bank Exposure to the Respective Domestic Government in Selected Euro-Area Countries, 2001–2025 (in Percent of Equity Capital)



Source: ECB Balance Sheet Items (BSI) database.
Note: Both government securities holdings and loans to the government are considered. For data availability reasons, the chart uses equity capital rather than the more commonly used Tier 1 capital. Except for Germany, Tier 1 capital is lower than equity capital. Tier 1 capital refers to a bank's highest-quality capital, including common stock, retained earnings, and other disclosed reserves. It is defined in Article 25 of Regulation (EU) No. 575/2013, available at https://eur-lex.europa.eu/eli/reg/2013/575/oj/eng.

Fiscal Fragmentation and the "Doom Loop"

Following the euro crisis, bank exposures to their domestic sovereign came down in some euro area countries but remained high in France, Greece, Italy, and Spain (Figure 2). In these countries, as well as Belgium, aggregate exposures of banks to the domestic sovereign continues to exceed "Tier 1" core capital held by banks. Thus, the sovereign-bank nexus remained a potential channel for the transmission of shocks from governments to the banking sector at the time of the 2020 pandemic shock and remains so today. Yet, while high borrowing and the collapse in output during the pandemic led to a sharp rise in debt/GDP ratios in 2020 (Figure 1, panel A), this did not trigger a debt crisis.

A possible reason is that the reforms of 2012–2020 succeeded in weakening the doom loop by reducing the threat of sovereign illiquidity. However, the 2020 pandemic also led to an unprecedented, centralized fiscal crisis response called "Next Generation EU," in the form of EU-level common borrowing that was passed on to EU member states—particularly the fiscally weaker ones. Hence, the success of 2020–2021 may reflect a particular approach to crisis management that

unlike 2010–2012 crossed the line into fiscal mutualization. But this policy has been declared to be a one-off, motivated by the symmetric and exogenous nature of the pandemic shock, rather than a permanent improvement in the euro architecture.

A better test of the hypothesis that the architecture of the euro improved between 2012 and 2022 is to compare the market impact of early reforms to that of the most recent reform, the introduction of the European Central Bank's Transmission Protection Instrument (TPI) in 2022. If the pre-2022 reforms had a strong cumulative effect, then the incremental impact of the most recent reform should be far lower than that of the initial reforms.

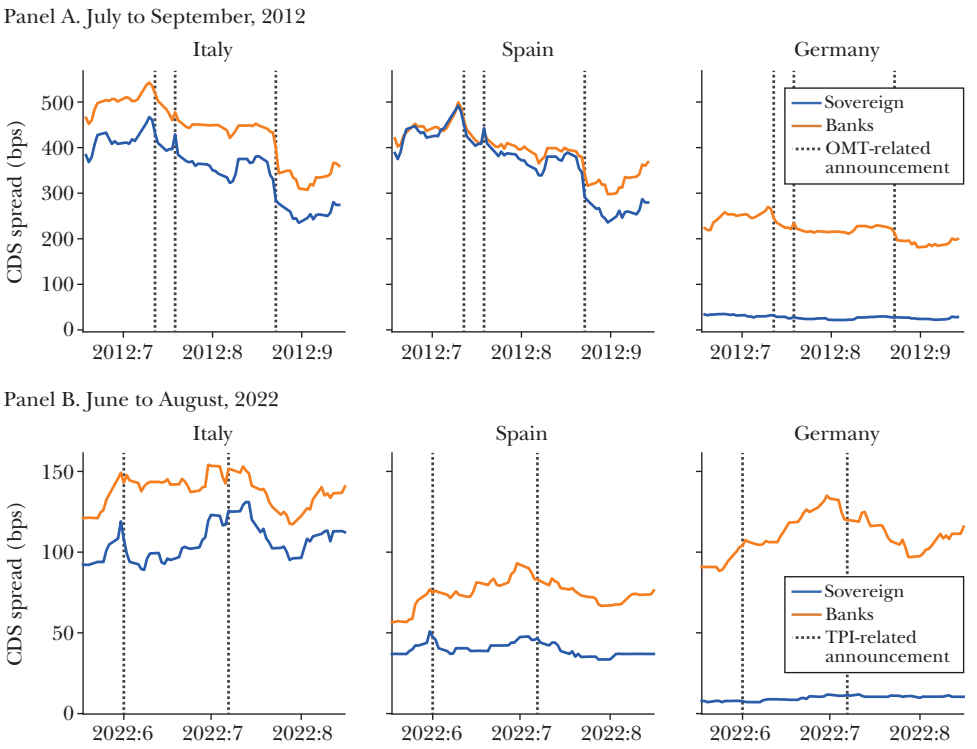
To check this, we compare the impact of the 2022 Transmission Protection Instrument announcements to those of the 2012 Outright Monetary Transactions (OMT) announcements. As noted in the previous section, OMT offers unlimited secondary market purchases of sovereign bonds to countries undertaking an adjustment and reform program supervised by the European Stability Mechanism, while TPI commits to pushing back against "disorderly market dynamics" in bond yields without requiring such a program.

Figure 3, panels A and B, show the movements of sovereign and bank credit risk, measured by credit default swap spreads around the time of the 2012 Outright Monetary Transactions and 2022 Transmission Protection Instrument announcements, respectively.[5] In Figure 3, panel A, the first vertical line indicates July 26, 2012, when ECB President Draghi said that "the ECB is ready to do whatever it takes to preserve the euro"; the second, August 2, 2012, when he announced the ECB might undertake "outright open market operations"; and the third, September 6, 2012, when the European Central Bank announced the technical features of the OMT program. In Figure 3, panel B, the first vertical line indicates the June 15, 2022, ad-hoc Governing Council meeting of the European Central Bank that called for accelerated work on a new antifragmentation instrument, while the second vertical line indicates the July 21, 2022, meeting that approved the TPI.

Figure 3, panel A, shows that in Italy and Spain, spreads on both sovereign and bank credit default swap fell on or immediately after the days of the Outright Monetary Transactions announcements in 2012, settling at substantially lower levels in the weeks following the September announcement compared to those prevailing before the July announcement. Figure 3, panel B, indicates that the reactions to the Transmission Protection Instrument announcements in 2022 were different. For example, while sovereign credit default swap spreads fell on or soon after the two announcement dates in 2022, these falls merely reversed the increase in yields in the weeks ahead of the first announcement. In addition, the 2022 TPI announcements appear to have affected mainly sovereign spreads, with bank-related credit

[5]Credit default swaps are a financial derivative that works like an insurance contract. The party purchasing the swap makes regular payments, and if the financial security covered by the credit default swap stops making payments, then the party that purchased the credit default swap receives a payment. The price of credit default swaps—the "spread" as measured as a percentage of the notional amount being insured—reflects the probability of default.

Figure 3
Sovereign and Bank Credit Default Swap Spreads at the Time of the OMT and TPI Announcements



Source: Refinitiv.
Note: Vertical lines show the timing of OMT-related announcements (Figure 3, panel A) and TPI-related announcements (Figure 3, panel B), as explained in the text.

default swap spreads remaining largely unaffected after the June 15 announcement. The June event was more informative, as it followed an unexpected ad hoc ECB Governing Council meeting, whereas the July 2022 launch of the TPI was largely expected.[6]

[6]In a more formal test of the impact of the 2012 and 2022 ECB announcements on various credit default swap spreads, we estimate a regression model similar to that used by Altavilla, Giannone, and Lenza (2016), who analyzed the effects of the three OMT-related announcements in 2012 on sovereign bond yields, involving a regression of the five-year spreads on credit default swaps on a constant and a set of event dummies that take the value of one on the day of the announcement and the following day, thereby allowing for potential delayed market reactions. The results, shown in the Supplemental Appendix (Figure A1 and Table A1), confirm the visual impressions of Figure 3. That is, in Italy and Spain, both sovereign and bank CDS spreads experienced large declines during the 2012 OMT announcements. During the 2022 TPI announcements, sovereign spreads also fell in both countries—albeit by much less—but bank spreads moved minimally, or even increased.

In short, the impact of the Transmission Protection Instrument announcement in 2022 differed from that of the Outright Monetary Transactions in 2012 in two ways. First, the 2022 TPI announcement did not result in permanently lower sovereign spreads in Italy or Spain, unlike the 2012 OMT. Rather, its main effect appears to have been to offset, or "calm," spikes in the sovereign spreads that occurred immediately before the announcements. Second, it seems to have affected mainly sovereigns rather than both banks and sovereigns, suggesting a weaker sovereign-bank nexus in 2022 compared to 2012.

Debt Sustainability

Should high and rising sovereign debt levels in many European countries be a cause of concern?[7] Figure 1, panel A, does not look overly dramatic: the debt distribution is for the most part below its post-crisis peak, and the International Monetary Fund (IMF) expects it to remain roughly stable in the medium term. But this impression may be too sanguine for several reasons: it does not show the debt trajectories of individual countries that we may be worried about the most (in the upper-25th percentile of the debt distribution), it does not reflect uncertainty, and it considers only a relatively short horizon. This perspective may miss debt drivers that could push debt back up, including higher real interest rates since 2022, which take a while to make themselves felt as the debt stock is rolled over, and the impact of aging populations, both on the spending side and via lower potential growth.

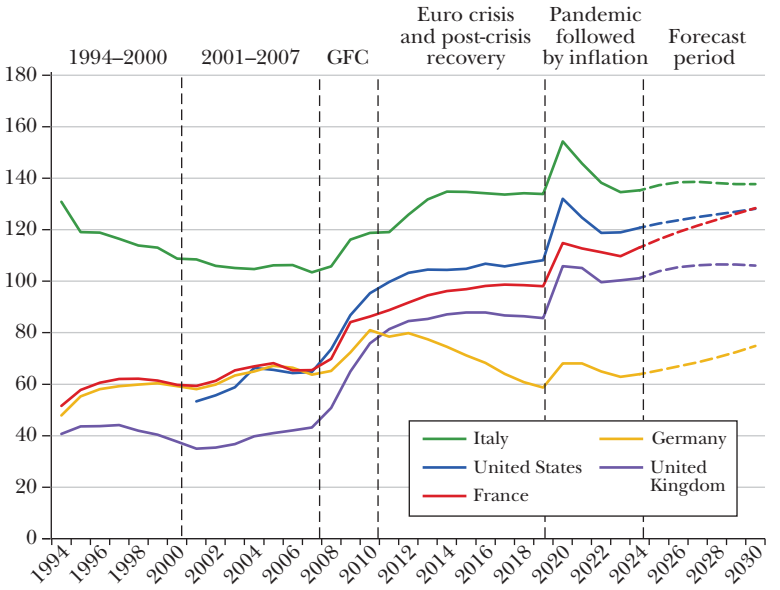
This section addresses the question whether debt in European countries is sustainable, using the definition followed in most of the empirical literature and policy practice since the early 1990s (for references and a survey, see Willems and Zettelmeyer 2022). Debt is considered sustainable when the fiscal effort required to (eventually) stabilize the debt/GDP profile looks feasible.[8] If this is not the case, the only way to restore sustainability is a debt restructuring (or a surprise inflation, if debt is expressed in nominal currency units).

This definition implies a distinction between debt sustainability and the sustainability of current fiscal policy. *Fiscal policy* is unsustainable if the debt/GDP ratio explodes conditional on current and planned primary deficits. In contrast, *debt* is unsustainable if the debt/GDP ratio explodes under *any* feasible fiscal policy. Hence, the statement that debt is unsustainable is much stronger than the statement that fiscal policy is unsustainable. For example, as Figure 4

[7] This section, as well as the following sections on debt-stabilizing primary balances and fiscal reaction functions, draw on Darvas et al. (2025).

[8] Stabilization of the debt/GDP ratio is a stronger condition than ruling out government "Ponzi games" in which the value of the debt rises over time purely in the expectation that it can be resold in the future. Specifically, debt stabilization requires the asymptotic rate of growth of the debt/GDP ratio to be zero, whereas a no-Ponzi-game condition allows the debt/ratio to grow so long as it is lower than the growth-adjusted asymptotic interest rate. For a discussion, see Willems and Zettelmeyer (2022).

Figure 4
Sovereign Debt as Share of GDP in the European G-7 Countries and the United States



Source: IMF World Economic Outlook Database, April 2025.
Note: GFC stands for "global financial crisis." 2025–2030 values represent IMF forecasts.

indicates, the IMF projects a debt ratio increase for France, Germany, and the United States, suggesting that current fiscal policy is unsustainable (which is confirmed by longer-term projections, such as those prepared by the Congressional Budget Office for the United States). Whether debt is unsustainable, however, requires further analysis.

We undertake this analysis using two approaches. The first estimates the primary budget that would prevent the debt/GDP ratio from exploding, taking into account uncertainty, and assesses the plausibility of reaching and sustaining it. This approach is used by policy organizations such as the International Monetary Fund, the European Commission, or the European Central Bank. The second approach, due to Bohn (1998), estimates a fiscal reaction function—that is, how the country has adjusted its primary budget in the past in response to rising levels of debt—and assesses whether this feedback is strong enough to ensure debt stabilization over time.

Debt-Stabilizing Primary Balances

In the first approach, we project debt under current fiscal policies—the baseline—and use this to generate a stochastic debt projection in an adjustment

scenario in which debt stabilizes over the long term with a given probability (taken to be 70 percent).[9]

The first step is to generate a deterministic forecast of the debt/GDP ratio over 20 years, based on the current fiscal policy as represented by the 2024 structural primary fiscal balance, which is defined as the primary balance excluding its cyclical component and the impact of temporary fiscal measures, and forecasts of the remaining debt drivers—nominal growth, inflation, interest rates and exchange rates, as well as the so-called stock-flow adjustment.[10] Growth forecasts and stock-flow adjustments are taken from official sources, while interest rates and inflation are forecast from market sources.[11] For many EU countries as well as the United States this shows rising debt/GDP over the entire forecast horizon, reflecting high 2024 fiscal deficits.

To quantify uncertainty, we next build a "fanchart" around the deterministic debt/GDP ratio projection. This involves estimating a vector autoregression model of the debt drivers, which captures their interdependencies. For each year and debt driver, we take a random draw from the set of historical residuals of the estimated model and use these and the model's estimated coefficients to construct a new path for the debt drivers and calculate the associated debt path (following the approach of Bouabdallah et al. 2017). By repeating this process, we generate thousands of scenarios, each with a unique debt path, which allows us to approximate a probability distribution around the deterministic forecast.

The final step is to find the structural primary balance, denoted SPB*, that is just high enough for debt to stabilize over the long term. This requires defining an adjustment period during which the structural primary fiscal balance is assumed to rise linearly to an end-value, and a post-adjustment period in which it is held constant at that end-value, except for "aging costs": changes in expenditures and revenues due to demographic developments, such as costs of public education, pensions, and long-term care. For EU countries, projections for costs related to an aging population are taken from the most recent available estimates of the EU Working Group on Ageing Populations and Sustainability; for the United States, which we include for comparison, we use social and health care spending projections by the Congressional Budget Office.

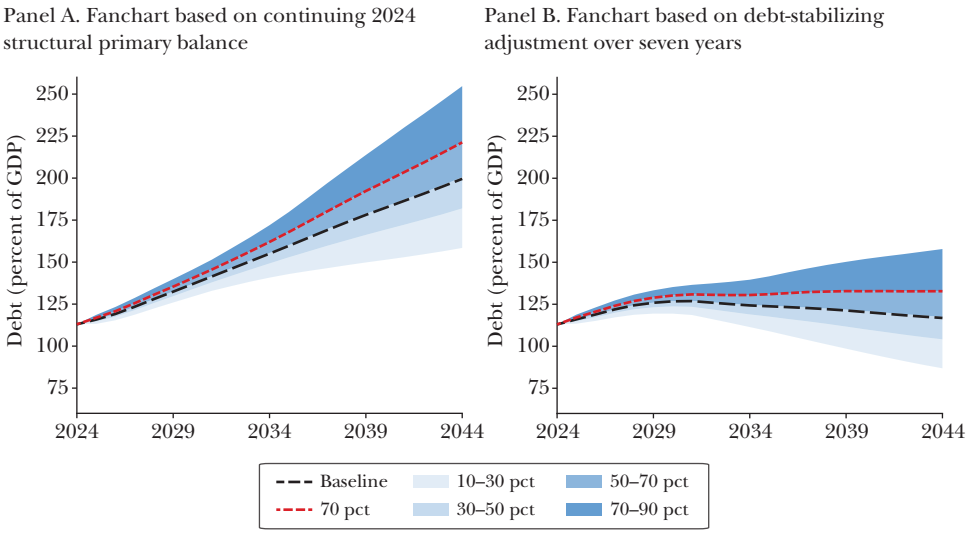
For each structural primary balance path, one can construct a debt fanchart, following the same steps as in the baseline scenario, except that during the

[9] For details, see the Supplemental Appendix available with this paper at the JEP website and Darvas et al. (2025).

[10] In principle, the debt at the end of a given year should equal the debt at the end of the previous year plus the budget deficit during the year. In practice, however, certain transactions, valuation effects, and statistical discrepancies can create differences, referred to as "stock-flow" adjustments. Such adjustments have had a significant impact on the debt dynamics of EU countries (see the annex of Boivin and Darvas 2025). In our calculations, we incorporate the European Commission's stock-flow assumptions, which are available for 2025–2026 for 24 EU countries and for 2025–2044 for Finland, Greece, and Luxembourg.

[11] Market sourced interest rate and inflation rate forecasts refer to forward rates, which are derived from the difference in yields of publicly traded inflation-indexed or nominal bonds of varying maturities.

Figure 5
Illustration of Stochastic Debt Sustainability Methodology for France



Source: Darvas, Welslau, and Zettelmeyer (2025).
Note: This figure illustrates the projected distribution of the French debt to GDP ratio up to 2044 under two scenarios: (1) maintaining the 2024 structural primary balance unchanged, and (2) implementing a fiscal adjustment from 2024 to 2031 that stabilizes the 70th percentile of the distribution between 2039 and 2044.

adjustment period the primary balance is treated as a policy variable (and hence as deterministic). SPB* is defined as the level of the structural primary balance at the end of the adjustment period such that the average slope of the 70th percentile of the debt distribution in the last five years of the 20-year fanchart equals zero. In line with the choice made by most high-debt EU countries under the new EU fiscal rules, we assume that the length of the adjustment period is seven years.[12] Consequently, we consider a post-adjustment period of 13 years. In general, SPB* is not very sensitive to the choice of the length of the adjustment period.

Figure 5 illustrates this approach for France. Figure 5, panel A, shows the fanchart associated with the baseline debt projection, on the assumption that the structural primary balance remains at its 2024 level of −3.7 percent, except for changes in aging costs. If current deficits continue, debt would explode from its current level of about 110 percent of GDP to more than 180 percent of GDP by 2044 with 70 percent probability (the upper bound of the lightest shaded area). Figure 5, panel B, shows the same projections on the assumption that the structural primary balance is raised, in equal annual steps during the adjustment period, such that the

[12] European fiscal rules require adjustment within four to seven years. Most high debt EU countries have requested the seven-year period.

debt stabilizes with 70 percent probability by the end of the adjustment period. This is shown by the flattening of the red dotted line, representing the 70th percentile of the debt fanchart distribution. The end-of-adjustment-period structural primary balance that achieves this stabilization is 1.2 percent of GDP. Hence, according to this estimate, debt stabilization in France requires a medium-term fiscal adjustment by 4.9 percent of GDP spread over seven years—that is, an average adjustment of 0.7 percent of GDP per year.

Table 1 shows the results of applying the same steps to EU countries with above-median debt levels, plus Slovakia, Poland, and Romania, which had large deficits in 2024, along with the United Kingdom and the United States for comparison. The first three columns show preliminary 2024 outcomes for the debt ratio, the fiscal balance, and the structural primary balance.[13] Column 4 contains the main result: SPB*, the structural primary balance at the end of a seven-year adjustment period required to stabilize the debt ratio with 70 percent probability by the end of the 20-year forecast horizon. This ranges from 0.3 percent of GDP for Germany to over 3 percent of GDP for Greece and Hungary. For Italy, SPB* is estimated at 2.5 percent of GDP, for the United States, at 1.8 percent of GDP.

Our results in Table 1 are generally close to the debt sustainability analysis of the European Commission (2024), and the differences do not impact the conclusions that follow, with one exception: Greece, where our methodology results in a much higher adjustment target than the Commission's.[14] This reflects the large output and interest volatility during the Greek sovereign debt crisis, which results in a rise of the higher percentiles of the debt fanchart at longer horizons. Hence, a methodology focused on long-run stabilization will result in a higher adjustment requirement.

Column 5 shows the adjustment requirement associated with these estimates, that is, the difference between SPB* and the structural primary balance in 2024. The country with the highest adjustment requirement is Romania (close to 9 percent of GDP), followed by the United States, Poland, and Slovakia (around 5.5 percent of GDP). In all cases, this reflects very large 2024 structural primary deficits rather than particularly high debt-stabilizing primary balances. Other countries with high

[13] The 2024 SPB estimates for EU countries are taken from the European Commission's May 2025 calculations, which may differ from other institutions' estimates due to methodological differences. For example, for Italy, the European Commission's May 2025 estimate was −0.3 percent of GDP, compared with the IMF's April 2025 estimate of 0.2 percent of GDP, which was later revised to 0.4 percent of GDP in the IMF July 2025 Staff Report for the Article IV consultation with Italy. The discrepancy was even larger for Spain, with the Commission estimating −0.7 percent of GDP in May 2025, compared to −2.0 percent by the IMF in April 2025.

[14] For a direct comparison of the results, see Table A1 in the Supplemental Appendix. The main differences with respect our methodology are that the European Commission (1) requires debt to stabilize with 70 percent probability in the first years after the end of the adjustment period rather than by the end of a 20-year period; (2) ignores uncertainty in the debt drivers during the adjustment period; and (3) assumes symmetric probability distributions for the debt drivers rather than allowing skew. The first and third of these differences tend to make the Commission's approach more conservative; the second, less conservative.

Table 1

Debt-Stabilizing Structural Primary Balances, Adjustment Requirement, and Comparison with Medium-Term National Fiscal Plans

	2024 outcomes			*Required adjustment*		*Comparison with medium-term fiscal plans (MTPs)*	
	Debt	*Fiscal balance*	*SPB*	*SPB**	*SPB* – SPB (2024)*	*SPB*(MTP)*	*SPB*(MTP) – SPB**
	(1)	(2)	(3)	(4)	(5) = (4) − (3)	(6)	(7) = (6) − (4)
Greece	154	1.3	4.0	3.2	−0.8	2.3	−0.9
Italy	135	−3.4	−0.3	2.5	2.7	3.2	0.7
United States	124	−7.5	−4.0	1.8	5.7	−4.0	−5.7
France	113	−5.8	−3.7	1.2	4.9	1.8	0.6
Spain	102	−3.2	−0.7	2.3	3.0	2.3	0.0
Belgium	105	−4.5	−2.0	1.7	3.7	1.6	−0.1
United Kingdom	101	−6.0	−2.5	1.7	4.3	1.0	−0.7
Portugal	95	0.7	2.4	2.9	0.5	2.9	0.0
Finland	82	−4.4	−1.1	0.6	1.7	2.6	2.0
Austria	82	−4.7	−2.5	0.6	3.1	1.2	0.6
Hungary	73	−4.9	0.5	3.7	3.2	2.8	−0.9
Cyprus	65	4.3	4.1	1.4	−2.8	2.4	1.1
Slovenia	67	−0.9	0.1	1.8	1.7	0.5	−1.3
Germany	62	−2.8	−1.0	0.3	1.3	1.1	0.8
Slovakia	59	−5.3	−3.8	1.7	5.5	1.0	−0.7
Poland	55	−6.6	−3.9	1.8	5.7	0.4	−1.4
Romania	55	−9.3	−6.4	2.3	8.7	1.7	−0.6

Source: Darvas, Welslau, and Zettelmeyer (2025).

Note: SPB* denotes the structural primary balance at the end of a seven-year adjustment period that stabilizes debt with 70 percent probability according to DSA methodology described in the text. For the EU countries, SPB*(MTP) refers to the structural primary balance promised after four to seven years in the EU countries' medium-term fiscal plans agreed with the European Commission in late 2024 for most countries, while the plans of Austria, Belgium, and Germany were approved in 2025; for the United Kingdom, to March 2025 projections of the Office for Budget Responsibility, based on the latest fiscal plans announced by the UK government; and for the United States, to May 2025 CBO projections. Debt and deficit numbers refer to the general government for all countries except the United States, for which only the federal government is considered. Pink shading highlights SPB* in excess of 2 percent of GDP; yellow shading highlights adjustment requirement in excess of 3 percent of GDP.

adjustment requirements include France, the United Kingdom, and Belgium. For Greece and Cyprus, the adjustment requirements are negative, reflecting large structural primary surpluses in 2024.

The question is whether these fiscal adjustments should be considered feasible. To answer this question, both the level of SPB* (column 4) and the distance between the 2024 SPB and SPB* (column 5) matter. However, the feasibility of achieving the latter—for example, reducing the deficit of France by almost 5 percentage points of GDP—is sensitive to the time horizon of adjustment. A fiscal adjustment of 5 percent of GDP will generally be unfeasible over a short period but could be feasible if stretched over time. The feasibility of extending the adjustment horizon,

however, depends on the patience of financial markets or (if a country loses market access) of official lenders. This is hard to assess.

In contrast, it is easier to assess the feasibility of sustaining a particular *level* of SPB* (column 4). While there are episodes of very high primary surpluses over short periods (for example, Belgium and Italy achieved primary surpluses of over 5 percent of GDP in the run-up to the euro, and Greece and Cyprus achieved primary surpluses of over 4 percent in the aftermath of their debt crises in the last decade), sustained high primary surpluses in excess of 3 percent are rare. The record holder in the European Union is Belgium, which achieved this level in 15 out of the last 45 years, followed by Italy and Cyprus, with 7 out of the last 45 years.[15] Hence, an SPB* above 3–3.5 percent of GDP would normally be viewed as a red flag.

In this light, the results in Table 1 are generally reassuring. Except for Hungary and Greece—where the high volatility of debt drivers during the Greek crisis likely distorts the results by widening the fan chart—our estimates of SPB* fall within a range that can be considered sustainable. Moreover, columns 6 and 7 show that most EU countries and the United Kingdom are currently targeting fiscal adjustments that would raise their structural primary balance above or close to SPB*. In this respect, the United States is an outlier: according to May 2025 projections of the Congressional Budget Office (2025), projected US structural primary balances are about the same in 2030–2035 as in 2024. At −4 percent, the latter falls well short—by over 5 percent of GDP—of the primary surplus that would be required to stabilize the debt according to our calculations.

At the same time, the medium-term adjustment plans of most EU countries and the United Kingdom look optimistic, for four reasons.

First, many EU countries and the United Kingdom are seeking to increase their defense spending rapidly, a factor not yet taken into account in most of the medium-term adjustment plans shown in Table 1.[16] As a result, in March 2025, the European Commission (2025) proposed, and the Council of Finance Ministers approved, that defense spending could be increased by up to 1.5 points of GDP over the next four years compared to the approved fiscal paths. But while helpful from the perspective of managing the requirements of the EU fiscal rules in the short term, this exception merely postpones the additional adjustment requirement associated with higher defense spending and does not help with debt sustainability.

Second, historical precedents for the magnitude of adjustment indicated in column 6 of Table 1 are exceedingly rare for several countries. According to Darvas et al. (2025), for example, the frequency of a fiscal adjustment of 4.9 percent of GDP,

[15] Data are from the IMF Public Finances in Modern History database, available at https://www.imf.org/external/datamapper/datasets/FPP. See Eichengreen and Panizza (2016) and Zettelmeyer, Kreplin, and Panizza (2017) for related historical analyses.

[16] At the June 25, 2025, NATO summit, NATO allies (which include all EU members except for Austria, Cyprus, Ireland, and Malta) agreed to raise military expenditures to at least 3.5 percent of GDP annually by 2035 from the previous NATO target of 2 percent. Some of the medium-term plans underlying column 6 of Table 1—including those of Poland, the Baltic countries, and Germany—already envisage increases in defense spending of this magnitude, but most did not.

as required for France, is about 11 percent of all observed seven-year changes in the structural primary balance since 1970, and zero percent in France during this period.

Third, many of the national medium-term plans of EU countries are based on nominal growth assumptions that are more optimistic than those of the European Commission, and may well be too optimistic (Boivin and Darvas 2025; Zettelmeyer, Darvas, and Welslau 2025). Because the operational fiscal target under EU fiscal rules is not the structural primary balance but rather nominal expenditure growth, use of optimistic assumptions implies the structural primary balance in seven years may turn out substantially lower than envisaged in the medium-term plans, even if countries comply with their expenditure growth ceilings.

Fourth, and likely related to the previous three points, the International Monetary Fund's April 2025 forecast for the primary balance is substantially less optimistic than the announced medium-term targets for almost all EU countries (see Supplemental Appendix, Table A2).

The bottom line is that debt appears sustainable in all or almost all of the countries shown in Table 1, but with an important caveat. In many cases—about a dozen, according to the table—stabilizing the debt ratio will require large adjustments, several of which will likely require more time than the maximum seven years envisaged by the European Union's fiscal rules. Such an adjustment may be workable, so long as countries receive the market financing for their debt that allows them to stretch out their adjustment. If they do not—that is, if they lose market access for their government debt—they will need to resort to public crisis assistance, likely led by the European Union and/or the International Monetary Fund.

Fiscal Reaction Functions

An alternative approach to thinking about the sustainability of debt focuses on the historical feedback from debt or expected deficits to the primary fiscal balance (Bohn 1998). The question is whether this feedback—if it continues in the future—is strong enough to ensure debt stabilization over time.

If the real growth rate of the economy exceeds the real interest rate paid on the debt, then debt/GDP ratio will decline over time—in effect, the denominator of the ratio will outgrow the numerator. If the real interest rate exceeds the growth rate of the economy, however, debt will only be sustainable if the government reacts to an increase in debt by increasing the primary surplus by an amount that exceeds the product of the debt ratio and the difference between the real interest rate and the real growth rate. If so, the debt ratio will stabilize.[17] Bohn (1998)

[17] More specifically, Bohn (1998) estimates:

$$s_t = \rho d_{t-1} + z_t + \epsilon_t,$$

where s_t is the primary balance as a share of GDP, d_t is debt as a share of GDP, z_t is a set of controls, ε_t is the error term, and ρ is a parameter. If $1 + \rho$ is larger than $(1 + r_t)/(1 + g_t)$, which is approximately the same as saying that $\rho > r_t - g_t$, the difference between the real interest rate and the real growth rate—then the debt ratio will stabilize.

estimated the respective parameter to be about 0.05—much more than the typical difference between interest rates and growth in advanced countries, which has historically been negative or in the order of a few basis points (less than 0.03). Thus, governments were in general reacting to existing debt in a way that made debt sustainable.

But has that pattern continued in the twenty-first century? In a study of the sustainability of the US debt/GDP ratio, Auerbach and Yagan (2025) looked at how the US fiscal reaction function has changed over time. They split their sample into two periods: the period before the global financial crisis and the period after it. They find that between 1984 and 2004, the US government responded to debt in a way that made debt sustainable—but has not been doing so in the last couple of decades.

We apply a similar analysis to a broader sample of countries including EU countries, as well as the United Kingdom and the United States between 1990 to 2024.[18] Our fiscal reaction regression has the primary budget surplus as a percent of GDP as the dependent variable. The key explanatory variable is the debt/GDP ratio. We also include a variable that measures the cyclical state of the economy, the ratio of actual to potential GDP, as well as controls for inflation, trade, political stability, crisis-related expenditures, and fixed effects for countries.

There are two obvious concerns in such a regression. First, the cyclical state of the economy is not exogenous. Second, the dependent variable, the primary balance, may be correlated with previous observations. We address these issues by following Plödt and Reicher (2015) and Checherita-Westphal and Žďárek (2017) in employing an instrumental variable approach to control for the endogeneity of the cyclical state of the economy and by including lagged values of the primary balance to control for autocorrelation.[19]

We first estimate the average fiscal response function for three country groups: Western EU countries, Eastern EU countries, and a sample including Western EU countries, the United Kingdom, and the United States. Between 1990 and 2007, we observe a robustly positive fiscal reaction in the first and third samples. Here, a one percentage point increase in debt was associated with an increase in primary surpluses in the following year between 0.04 and 0.05 percentage points—similar to Bohn's (1988) results. For Eastern EU countries, the estimated coefficient was not significantly different from zero. For the second sample period, point estimates for the Western European Union, the United Kingdom, and the United States remain significant but fall to circa 0.02, while the coefficient for Eastern EU countries rises to circa 0.03 and becomes statistically significant.

[18] For the new EU member states in our sample, Bulgaria, Cyprus, Czechia, Estonia, Croatia, Hungary, Lithuania, Malta, Poland, Romania, Slovakia, and Slovenia, data are only available from 1995 onwards.

[19] Instruments include the lagged output gap, the second lag of the debt ratio, and the first and second lag of output growth gap. Because the inclusion of lagged values of the dependent variable can result in biased estimates when using a fixed effects estimator, we instead use the Arellano-Bond Generalized Method of Moments estimator. Full details, results, and robustness checks for the regression are available in the Supplemental Appendix.

To identify between-country differences, we decompose the aggregate effect of the Western EU, UK, and US sample by interacting the effect of debt ratios with the country-level fixed effect variables. Country-specific estimates are positive and significant for all but one country (Spain) in the first sample half, ranging from 0.04 (France) to 0.13 (Sweden). In the second sample half, however, the fiscal response is only significantly different form zero for seven countries (Germany, Finland, France, Netherlands, Portugal, and Sweden).

Figure 6 illustrates the fiscal reaction function coefficients and 90 percent confidence intervals for a selection of countries based on a rolling 15-year estimation window for Western EU countries, the United Kingdom, and the United States. The estimates are positive for much of the sample in most countries, but decline over time in the years since the global financial crisis. For Belgium, France, Italy, and the United States, this results in negative point estimates for the last 15-years; for Denmark, Germany, Greece, Portugal, Spain, and the United Kingdom, estimates are close to zero.

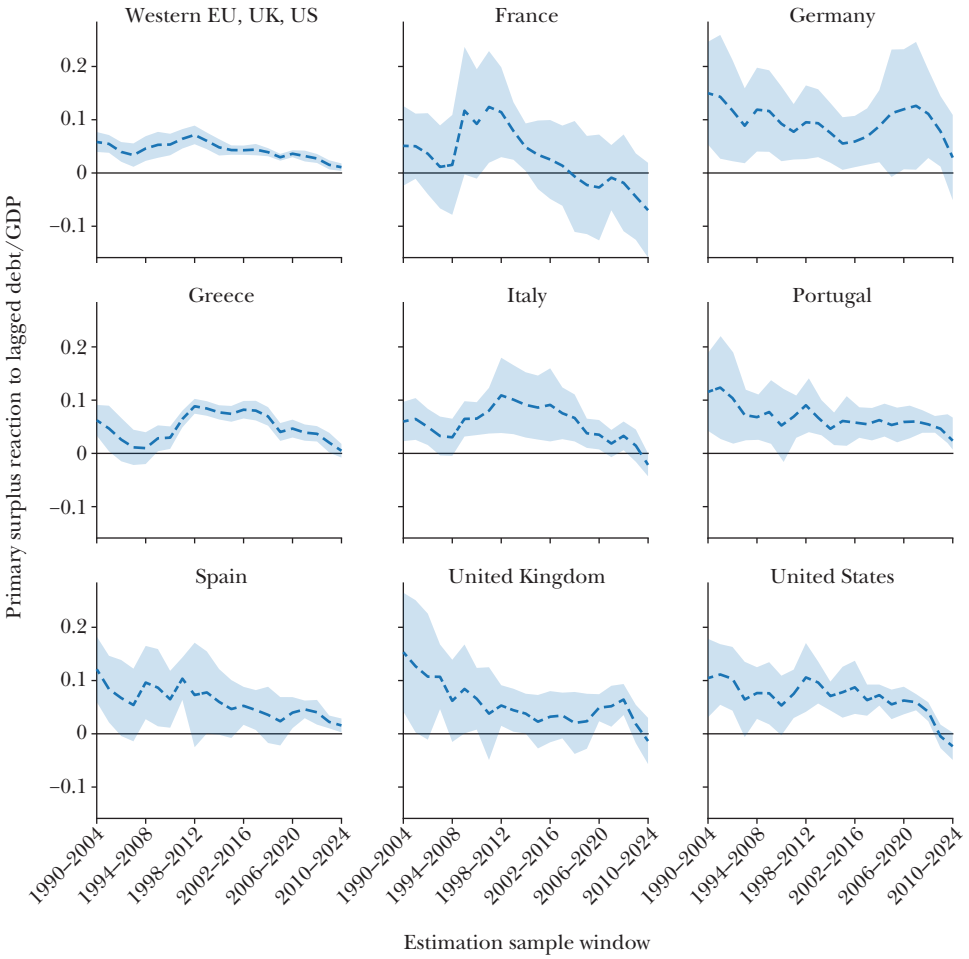
A possible explanation for the smaller fiscal reactions since the global financial crisis could be the higher level of the debt. Ghosh et al. (2013) suggest that fiscal adjustment diminishes at high debt levels, a phenomenon they call "fiscal fatigue." To test their hypothesis, they estimated a fiscal reaction function with a third-order polynomial in the lagged debt/GDP ratio. A negative and significant coefficient of the cubic term implies fiscal fatigue. We follow their approach and add quadratic and cubic terms of the lagged debt/GDP ratio to our fiscal reaction function. Between 1990 and 2007, we only find evidence of fiscal fatigue for Eastern EU countries. For the second sample half, however, we find evidence of fiscal fatigue for the two samples including Western EU countries, the United Kingdom, and the United States.

The presence of fiscal fatigue implies a "debt limit," above which debt becomes unsustainable (Ghosh et al. 2013). This is the level of debt at which the primary surplus is exactly sufficient to cover the growth-adjusted interest service of an extra unit of debt. When debt exceeds this limit, the primary surplus is not enough to cover interest payments, debt grows continuously, and the government defaults. With an interest-growth differential around zero, the debt limit is equal to the largest real root of our estimated fiscal reaction function. For Western EU countries in the period since the global financial crisis, the debt limit is 236 percent of GDP. For the sample also including the United Kingdom and the United States, it is 217, about 30 percentage points above estimates by Ghosh et al. (2013).

What does this imply for debt sustainability? The positive correlation between primary surpluses and debt ratios appears to have reduced significantly amidst the fiscal turmoil of the past decade and a half. Although a fiscal response around 0.02 need not result in an explosive debt path (assuming equilibrium interest growth differentials remain below this level), this is not an encouraging development.

The results also show that fiscal reactions to debt ratios may change over time. One reason why policy reactions may change, for example, is the evolution of fiscal institutions—such as the new EU fiscal framework—and a recognition, shared by policymakers, that some countries could be too close to their debt limits. The fact that most EU countries have promised adjustment in line with their

Figure 6
Reaction of Primary Surpluses to Lagged Debt, Rolling 15-Year Sample Estimates



Source: Authors' calculations based on IMF World Economic Outlook, IMF Public Finances in Modern History, IMF Direction of Trade Statistics, International Country Risk Guide (ICRG), European Commission AMECO, and Bureau of Economic Analysis.
Note: Figure is based on 15-year rolling window fiscal reaction estimates from a sample including Western EU, United States, and United Kingdom. The model includes controls for country fixed effects, lagged primary balance, actual to potential output ratio, irregular expenditure, trade as share of GDP, inflation, and political stability using the Arellano-Bond GMM estimator. Dashed blue lines are point estimates of the effect of lagged debt ratios on primary surpluses. Shaded areas are 90 percent confidence intervals based on cluster robust standard errors.

medium-term adjustment requirements, as shown in the previous section, could indicate such a change. However, if the decrease in fiscal responsiveness continues, or interest-growth differentials increase substantially, debt in Europe may become unsustainable.

Do EU Fiscal Rules Require Another Reform?

The EU fiscal rules enacted in 2024 have generally gotten off to a good start. As of mid-July 2025, all 27 EU countries submitted "medium-term fiscal-structural plans" to the European Commission that by and large respected the spirit and letter of the new rules. The main caveat, as discussed above, is that these plans are in many cases based on optimistic macroeconomic assumptions. This implies that even though countries promise to meet their adjustment targets ex ante, they are likely to miss them ex post—in some cases by a wide margin.

Aside from this point, the limitations of the new rules have become apparent in two areas, which may require a "reform of the reform."

First, the medium-term fiscal plans proposed would raise EU public investment by just 0.25 percent of GDP by 2028, which would do little to fill the major investment gaps identified by Draghi (2024). Adjustment pressures under the new rules have likely contributed to this outcome. As Boivin and Darvas (2025) illustrate, fiscal adjustment was associated with substantial declines in public investment in EU countries in the 2008–2013 crisis period—from the global financial crisis through the euro crisis. This negative correlation persists in the 2024–2028 medium-term fiscal plans. Hence, one of the stated objectives of the new rules—to protect public investment in times of fiscal adjustment and encourage higher investment in the aggregate in the European Union—does not appear to have been reached.

Second, EU countries whose debt is above 60 percent of GDP do not benefit from the flexibility of raising their debts to finance EU-endorsed investment, even if they could do so without raising their borrowing costs and without endangering their debt sustainability. In the past, this constraint had little practical effect, because the largest country in this category—Germany—had no inclination to spend more, in part because it was constrained by a constitutional fiscal rule, the "debt brake," that capped Germany's federal cyclically adjusted fiscal deficit at 0.35 percent of GDP. But in March 2025, Germany's Parliament mustered a two-thirds majority to replace the debt brake with a provision that allows unlimited borrowing for defense purposes, while maintaining a cap on nondefense spending, except for spending from extrabudgetary funds, which also require a two-thirds parliamentary majority. The same parliamentary act created such a fund, worth about 11 percent of GDP, to be spent within 12 years.

However, as argued by Steinbach and Zettelmeyer (2025), this extra spending cannot be reconciled with the EU fiscal rules unless nondefense spending is compressed far more than the reformed "debt brake" requires or Germany makes very optimistic assumptions about nominal growth, helping the government project a stronger improvement in the structural primary balance than the likely outturn. The medium-term plan presented by Germany in July 2025 combines both elements: very optimistic macroeconomic assumptions together with a backloaded adjustment plan, which implies a much higher compression of spending at the end of the adjustment period than Germany's new national debt brake would require (Zettelmeyer, Darvas, and Welslau 2025). Both are a bad idea: the former, because it

undermines the purpose of fiscal rules; and the latter, because it leads to an undesirable swing in fiscal policy.

A better solution would be a further reform of the fiscal rules. This should include two elements.

First, a "fiscally responsible public investment rule" could exempt public investment plans endorsed by the EU council from quantitative debt and deficit reduction requirements, provided that the additional investment is consistent with debt sustainability. Such a rule might require additional fiscal adjustment in the noninvestment budget to ensure the structural primary balance at the end of the adjustment period is sufficiently high to stabilize debt (Darvas, Welslau, and Zettelmeyer 2024, Appendix 1).

Second, the rules could offer more flexibility to countries that do not pose fiscal risks to maintain or raise their debt levels, even if their debt exceeds 60 percent of GDP. One way of doing so would be to increase the EU treaty's debt "reference value" from 60 to 90 percent of GDP—leaving most other elements of the new fiscal rules unchanged.[20] Making this change would require unanimity among EU governments. Another approach, proposed by Pench (2025), would be to give countries with debt above 60 percent, but low fiscal risks, leeway to increase their debt before they are required to reduce it. Low fiscal risks could be defined, for example, by the level of fiscal adjustment required to stabilize the debt, or as assessed by a sovereign risk framework like those operated by the European Commission (2024) or the International Monetary Fund (2022).

Can the EU Expand Its Pool of Supranational Safe Debt?

At the end of 2024, EU-level supranational, AAA-rated debt stood at about €1.1 trillion, roughly 7 percent of EU GDP. Over half of this is EU debt was issued during and since the pandemic under two programs: the Next Generation EU (NGEU) funds created to support public spending and prevent a fiscal crisis during the pandemic (with a with face value of about €410 billion when the program is completed in 2026), and the €98 billion SURE (Support to mitigate Unemployment Risks in an Emergency), a temporary loan facility to finance employment schemes and mitigate pandemic-related income losses. The European Union has also borrowed to finance financial assistance loans for non-EU countries, about €50 billion so far, which is set to double based on commitments made to Ukraine.

The remainder of the outstanding EU-level debt consists of debt issued by EU agencies: the European Investment Bank (€220 billion), the European Stability Mechanism (€67 billion), and the ESM's predecessor, the European Financial

[20] In addition, the so-called "deficit resilience safeguard" rule, which envisages minimum steps of fiscal adjustment until the deficit is below 1.5 percent of GDP, would have to be eliminated or waived for borrowing that finances EU-endorsed public investment.

Stability Facility (EFSF, €197 billion). While an additional €350 billion is expected to be issued by the end of 2026 to finance the remaining commitments under NGEU, EU supranational debt remains small both as a share of GDP and relative to the remaining pool of euro-denominated AAA-rated bonds, issued by Germany, the Netherlands, and Luxembourg, which amounted to about €2.6 trillion at the end of 2024.

Expanding the pool of euro-denominated EU-level AAA-rated debt could have two beneficial effects. First, if this debt was held by euro-area banks in lieu of sovereign bonds, they would eliminate the bank-sovereign doom loop without raising credit risk (Brunnermeier et al. 2017; Alogoskoufis and Langfield 2020). Second, it could contribute to a unified euro capital market, creating a homogenous pool of euro area bonds that attracts foreign investors, and potentially lower the cost of borrowing in the euro area (Monti 2010). This argument has gained prominence recently as some investors and central banks have expressed openness to diversifying away from US Treasury debt to escape policy uncertainty and fiscal risks in the US economy (Merler 2025).

How to Expand Safe AAA-Rated EU Debt

The question is how to do it. Expanding EU level-debt issuance would require a political decision to centralize additional fiscal functions, which is not likely. This leaves a possibility explored by a literature going back to Delpla and von Weizsäcker (2010) and Monti (2010), namely, to create safe EU-level debt synthetically through a combination of tranching and pooling. "Tranching" would create debt instruments that follow a seniority structure, for example, with levels or senior and junior debt. If the junior tranches that are the first to absorb any losses are sufficiently "thick," the senior tranches could even feature AAA ratings. "Pooling" would combine debt from different countries into a single pool. These proposals can be divided into two categories, depending on whether pooling or tranching comes first.

In the proposals that call for pooling followed by tranching (Brunnermeier et al. 2011, 2016, 2017), financial intermediaries would purchase euro area sovereign bonds roughly in proportion to the shares that EU national banks hold at the European Central Bank, up to some limit that ensures the liquidity of the market in the remaining bonds, while simultaneously issuing multi-tranche "sovereign bond backed securities" backed by this portfolio. Debt service received by the intermediary would be paid to the holders of these securities using a "waterfall" structure: in the event of a default on some of the underlying bonds, the holders of the senior tranche would be paid first. According to simulations by Brunnermeier et al. (2017), the size of the junior tranches required to ensure that the five-year expected loss rate of the senior tranche corresponds to that of the AAA-rated German bund is about 30 percent. That is, the face value of the senior tranche—referred to as "European Senior Bond," or "ESBie"—would be 70 percent of the face value of the cover pool.

In the proposals that call for national-level tranching followed by pooling (Leandro and Zettelmeyer 2018; Giudice et al. 2019), euro area sovereigns would

issue bonds in several tranches. The most senior tranche would be limited as a common share of GDP or share of total debt (or by the minimum of the two). Financial intermediaries could purchase the senior tranche while simultaneously issuing a single, AAA-rated security based on the pool of senior debt. Alternatively, investors wishing to reduce risk through diversification as well as seniority could buy a pool of senior tranches themselves.

Both approaches exist in two variants: with a single public intermediary, and with regulated private intermediaries. Based on the Brunnermeier et al. (2017) sovereign default model, Leandro and Zettelmeyer (2019) showed that either approach could generate a maximum volume of safe euro-nominated bonds in the order of 20 percent of euro area GDP, corresponding to about €3 trillion euros in 2024—a modest amount compared to the US Treasury market, but more than enough to replace all national debt in euro area bank balance sheets.

The main difference between the two approaches is that in the second national-level tranching, all new sovereign issuance would occur through the junior bond(s). While this shift would not affect the average cost of debt, it would increase its marginal cost—an advantage from the perspective of encouraging fiscal discipline, but a significant disadvantage from the perspective of lower-rated sovereign issuers concerned about market access. Perhaps for this reason, the national-level tranching approach was never pursued (though Blanchard and Ubide [2025] have recently tried to revive it).

In contrast, the pooling-then-tranching approach was explored by a High-Level Task Force of the European Systemic Risk Board (ESRB 2018). This report focused on developing a market for *privately* issued sovereign bond backed securities, and found that this approach raised operational challenges: Would the tranches within the pool of securities be truly homogenous and liquid? How would the pool and tranches be affected by eventual debt restructuring cases? To what extent would the role of a private intermediary add risks of its own?

These issues would be much easier to address by a lightly capitalized public intermediary than by private intermediaries. But in the aftermath of the euro crisis from 2010–2012, the public intermediation approach was rejected by the "frugal," higher-rated euro countries, who feared that it would give rise to implicit guarantees and moral hazard on the side of the weaker-rated sovereign bond issuers.

Steps for EU Policymakers

To seize the opportunity of the new interest in the euro area safe debt as a complement and possible alternative to the US Treasury market, EU policymakers should take two steps.

First, existing EU debt stemming from NextGenerationEU grants should be rolled over ad infinitum, rather than wound down. It makes no sense to add an additional burden to EU fiscal adjustment for the purpose of eliminating an asset that provides significant value at a small public cost.

Second, EU policy makers should reconsider the Brunnermeier et al. (2011, 2017) ESBie proposal—but in the version involving a capitalized *public* intermediary

rather than the version with private intermediaries. A public intermediary could avoid or overcome many of the regulatory and operational problems that the High-Level Task Force of the European Systemic Risk Board identified, and endowing it with some capital would provide investors with an assurance that unanticipated problems related to tranching and pooling (as opposed to the underlying debt assets) could be handled. Hence, European Senior Bonds issued by a public European Debt Agency will likely find much better reception by investors than European Senior Bonds issued by private entities, even if they are backed by exactly the same cover pool. It would also serve as a symbol of European resolve to make the euro a widely used and traded global currency in an uncertain and shifting international environment.

Conclusion

This paper has taken stock of sovereign debt risks across countries of the European Union following a series of shocks over the past five years, including a pandemic, an energy price shock, an inflation shock accompanied by a sharp tightening of monetary policy, and mounting pressures to increase defense spending. Euro area countries faced these shocks with the added complications of a macroeconomic framework combining centralized monetary policy with decentralized fiscal policy. Our main findings can be summarized in three points.

First, although fiscal and financial fragmentation persists, the fiscal risks related to this fragmentation seem to have receded thanks to institutional reforms to strengthen banking systems, receded macroeconomic imbalances, and the much greater willingness of the European Central Bank to intervene in sovereign debt markets. This was true even before the announcement of the ECB's latest antifragmentation tool, the Transmission Protection Instrument, as the muted reaction to that instrument shows.

Second, with few exceptions, stabilizing the future trajectory of debt/GDP with reasonably high probability does not require unrealistically high primary surpluses. In this sense, debt remains sustainable in most EU countries. Debt stabilization will require very large fiscal adjustments in some countries. But the countries with the largest adjustment requirements—Romania, Slovakia, and Poland—have relatively low debt. Furthermore, judging from the medium-term fiscal plans agreed with the European Commission, these and most other countries seem to be willing to make an effort.

Third, for some countries, adjustments may take much longer than promised, potentially straining the patience of markets. In France and Romania, the adjustments agreed upon with the European Commission have few, if any, historical precedents. Consistent with Auerbach and Yagan's (2025) findings for the US debt/GDP ratio, fiscal reaction function estimates indicate that the feedback from high debt to fiscal tightening has weakened and is close to zero in many European countries—including Belgium, France, Italy, Germany, Greece, Portugal, Spain, and the United Kingdom. Debt stabilization will hence require a break

with past behavior. It remains to be seen whether the recently reformed fiscal framework and/or fear of market reactions are sufficient to produce this break.

Europe's fiscal challenges go beyond debt stabilization. Europe will also need to reprioritize spending in the direction of defense and investment, and it should seize the opportunity created by investor nervousness about policies in the United States to create a larger and more homogenous safe debt market. Addressing these challenges is technically feasible but will require significant additional reform.

■ *We are grateful to the Managing Editor, Timothy Taylor, as well as to Gon Huertas, Jeffrey Kling, Jonathan Ostry, Jonathan Porter, Heidi Williams, Stavros Zenios, and seminar participants at Bruegel for comments on an earlier draft.*

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