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Shared Problem, Shared Solution: Benefits from Fiscal-Monetary Interactions in the Euro Area

Robert Beyer, Rupa Duttagupta, Alexandra Fotiou, Keiko Honjo, Mark Horton, Zoltan Jakab, Jesper Linde, Vina Nguyen, Rafael Portillo, Nujin Suphaphiphat, and Li Zeng, with contributions from Kelly Gao

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Prepared by Robert Beyer, Rupa Duttagupta, Alexandra Fotiou, Keiko Honjo, Mark Horton, Zoltan Jakab, Jesper Linde, Vina Nguyen, Rafael Portillo, Nujin Suphaphiphat, and Li Zeng, with contributions from Kelly Gao*

Authorized for distribution by Mark Horton
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ABSTRACT: This paper employs two established macroeconomic models to show that fiscal policy in the euro area can help monetary policy in reducing inflation. Specifically, a fiscal consolidation of 1 percent of GDP for two years and 0.5 percent in the third year across the euro area would ease the policy interest rate by 30-50 basis points relative to the baseline scenario, while lowering inflation. It would also put the public debt-to-GDP ratio on a downward path, with the output costs reversing after the second year. Additionally, a stronger fiscal contribution to the policy mix could mitigate financial fragmentation risks. In the current context of elevated inflation in all euro area economies, the findings suggest two key takeaways: first, synchronized fiscal and monetary policies offer gains even when monetary policy is unconstrained and, second, sharing the burden of lowering inflation through fiscal consolidation among euro area members is beneficial for union-wide inflation reduction, improving debt sustainability and inducing a lower policy rate path.

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Contents

Glossary

BP – Basis point

DSGE – Dynamic stochastic general equilibrium

EA – Euro area

FMI-fiscal monetary policy interaction

FP – Fiscal policy

FSGM – Flexible system of global models

GFC – Global financial crisis

GIRFs – Generalized impulse response functions

HD – High debt

HLW – Holstein, Laubach and Williams estimates of neutral rates

LD – Low debt

MP – Monetary policy

PP – Percentage point

WEO – World Economic Outlook

VAR – Vector autoregression

Introduction

The role of fiscal-monetary policy interactions in macroeconomic stabilization has become more prominent since the global financial crisis (GFC). During the GFC, policymakers, including in the euro area (EA), eased monetary and fiscal policies significantly to shield their economies. While fiscal easing was eventually reversed in the EA, particularly at the onset of the European debt crisis, monetary policy remained accommodative—with the ECB's policy rate close to the effective lower bound, quantitative easing, and asset purchase programs—to bring inflation closer to its target.

Subsequently, the COVID-19 pandemic spurred a new wave of combined fiscal and monetary policy expansion in 2020-21. Fiscal support was seen as essential, to mitigate the adverse impact on economic activity, via support to households and firms to deal with pandemic-related restrictions and dislocations. Conversely, the faster post-pandemic recovery of demand relative to supply, combined with commodity price shocks associated with Russia's war in Ukraine, led to an unprecedented rise in global and EA inflation levels in 2021 and 2022. Like other major central banks, the ECB embarked on monetary tightening. However, EA fiscal policies stayed broadly accommodative, at least initially, to provide fiscal relief to households and firms.

Against this backdrop, this paper analyzes the implications of fiscal and monetary policy interactions (FMI) in the EA in business cycle stabilization. The paper starts by empirically investigating such interactions in the past two decades. Then, it answers two questions in the current context: first, could an alternative policy mix deliver inflation reduction in the EA with better macroeconomic outcomes relative to the baseline? Second, given externalities from country-specific actions in a currency union, could fiscal coordination approaches help alleviate the macroeconomic tradeoffs of fiscal consolidation?

The paper considers two sets of interactions: (i) the interaction of fiscal policies and EA monetary policy and (ii) cross-country fiscal policy interactions for a *given* monetary policy. We also assess the sensitivity of interactions to country-specific conditions (importantly the size of the economy, its fiscal space, and financing conditions). The paper does not take a position on whether fiscal-monetary interactions need to be explicit or implicit but assumes that such interactions do not undermine institutional independence of the monetary or fiscal authorities. The paper also does not deal with the strand of literature of passive vs. active monetary fiscal regimes (see e.g., Leeper, 1991) but assumes that the central bank has an overarching role for ensuring long-term price stability whereas the primary responsibility of the fiscal authority is to ensure fiscal solvency in the long run.

The recent literature has established important payoffs from leveraging FMI, particularly under policy space constraints. For instance, studies have established that the fiscal multiplier is higher when monetary policy is accommodative or at its effective lower bound (Erceg and Linde, 2014; Bartsch and others, 2020; Chen and others, 2022). Also, unconventional monetary policy through asset purchase programs can reduce risk premia and improve debt sustainability in high-debt countries (Alberola and others, 2022). Others find evidence of strong, positive cross-border spillovers when fiscal stimulus originates in a large economy, when there are conditions of slack and monetary policy is accommodative, and when linkages with trading partners are strong (Blanchard, Erceg and Linde, 2016; Blagrave, Koloska and Vesperoni, 2017; Dabla-Norris and others, 2017). Institutional credibility also matters for macroeconomic performance. For instance, Banerjee and others (2022) show that under fiscal dominance (when the primary fiscal balance does not stabilize debt and the central bank cannot achieve price stability), the inflationary effect of higher fiscal deficits is some five times higher, notwithstanding the positive output effect.

We contribute to this literature by illustrating the benefits of fiscal and monetary policies pulling in the same direction—even under a high-inflation/low-growth setting when monetary policy is unconstrained—as well as

the economic payoffs when there is more fiscal coordination among currency union members. The paper has the following key findings:

First, using alternative constructs of the fiscal and monetary policy stance, we find that fiscal and monetary policies did not always work together for the purposes of business cycle stabilization. The most prominent period of divergence was during the EA sovereign debt crisis. During this period, fiscal policy in more than half of EA countries was procyclically tight, despite the ECB's accommodative monetary policy. This reflected limited options for higher debt countries facing market pressure and rising risk premia. While debt sustainability risks forced fiscal consolidation in high debt countries, evidence suggests that the output costs of such consolidation were salient (Blanchard and Leigh, 2013; Rannenberg and others, 2015). By contrast, during this period, EA countries with more fiscal space tended to adopt a countercyclical fiscal stance, aligned with monetary policy.

Second, VAR regressions suggest stronger output effects from positive fiscal spending shocks when EA monetary policy is on an easing path. Specifically, an increase in fiscal spending of ½ pp of GDP cumulatively raises EA output by 1.7 pp after three years when monetary policy is in an easing mode—potentially reflecting positive anticipation effects—compared to about 1 pp when monetary policy is in a tightening mode. This is in line with other studies (Bartsch and others, 2020; Chen and others, 2022; Blanchard and others, 2016).

Finally, two macroeconomic models—a two-country DSGE model drawing on Erceg and Linde (2013) and the IMF's Flexible System of Global Models (FSGM, see Andrle and others, 2015)—suggest that an EA fiscal stance that pulls in the same direction as EA monetary policy would enable monetary policy to be less tight compared to the baseline, while enabling additional inflation and public debt reductions. Starting with the baseline path set by the IMF's January 2023 World Economic Outlook (WEO) forecasts, we analyze the effects of a counterfactual EA-wide fiscal consolidation of 1 pp of GDP annually over 2023-2024, followed by a 0.5 percent of GDP consolidation in 2025. The negative fiscal impulse can be seen as an unwinding or further targeting of the EA fiscal support packages that were deployed to support households and firms against cost-of-living pressures in 2022-23 (averaging about 1¼ percent of GDP annually, see Arregui and others, 2022). The models suggest that the policy rate would be some 30 to 50 bp lower during 2023-25 and the core inflation gap would narrow by 0.15-0.25 pp in the first two years relative to the baseline, with a slightly negative effect on GDP that unwinds after the first year. The debt-to-GDP ratios would decline by up to 2 pp of GDP by end-2025 compared to the baseline.

This case of EA-wide uniform fiscal consolidation is illustrative to demonstrate the benefits of monetary and fiscal burden-sharing. As of early 2023, with inflation widespread across all EA economies, reducing it is both a domestic and EA-wide priority. The scenario shows the benefits of EA-wide fiscal consolidation in lowering inflation, recognizing that the appropriate country-specific levels of fiscal contraction would vary according to cyclical positions of the economies and fiscal sustainability concerns. This first scenario underscores the importance of a commitment device that fosters relevant fiscal consolidation at the EA level.

We also consider a second scenario of non-uniform fiscal consolidation, driven by a subset of high-debt (HD) countries, with debt-to-GDP ratios above 100 percent. The high- and low-debt (LD) groups are approximately equal in size in terms of total euro area GDP. The differentiation along debt levels is illustrative to consider the fact that fiscal consolidation is more pressing for HD while the need for inflation reduction is broader based. When only HD countries consolidate the same amount as in the first scenario, and LD countries do not consolidate, the resulting EA inflation reduction is lower. HD countries face a small short-term output cost (broadly similar to the first scenario), which is alleviated over time. Also, only HD achieve public debt reduction in the second scenario. For a similar magnitude of EA inflation reduction as in the first scenario, HD countries will need to double their fiscal effort and bear a higher short-term output cost but eventually harvest a notably

larger government debt reduction. Clearly, for such a scenario to work, there would need to be an EA-level incentive mechanism for HD to drive the EA-wide fiscal consolidation. Higher fiscal consolidation could also be forced by market pressures, but likely in a more disruptive manner.

If such a mechanism exists—i.e., a commitment mechanism to support HD during downswings to prevent debt distress (see Gourinchas and others, 2023) combined with EA-wide measures to reduce fiscal fragmentation risks, HD fiscal consolidation would improve their real exchange rate position within the EA and induce stronger HD growth after the first year. The output and debt effects would be further improved if fiscal consolidation by HD improved market sentiment, thereby reducing risk premia faced by HD.

These findings confirm that when fiscal policies in the EA complement monetary policy in reducing aggregate demand and inflation pressures, disinflation is feasible with a lower policy rate path. An additional macroeconomic payoff is lower public debt and lower borrowing costs, both reducing financial fragmentation and financial stability risks. Although there are some near-term output costs, these tradeoffs could be addressed with well-designed fiscal cuts and targeted support to the vulnerable and through incentive mechanisms that allow fiscal burden sharing.

The paper offers two broad takeaways. First, the EA would benefit from leveraging FMIs in dealing with high inflation. While the literature has mostly focused on the benefits of such interactions in raising growth and inflation in the context of a constrained monetary policy, we show that the benefits are also salient in reducing inflation. Second, given a currency union, our findings reinforce the call for explicit EA fiscal architectural reforms to promote fiscal coordination and reduce adverse spillovers and to generate stronger responses to economic shocks (see Arnold and others, 2022).

As a caveat, the paper does not explicitly consider differences in response lags of fiscal and monetary policies. For example, due to the budgetary process, discretionary fiscal policies may not respond as fast as monetary policy to business cycle changes. At the same time, during the past few years, both policies have moved at exceptional speed to provide support when needed. The transmission has also been faster with a potentially steeper Phillips Curve (Hodge et al. 2022). As a result, the timing mismatch is less of a concern for the purposes of FMI.

The rest of the paper is structured as follows. The next section examines how FMIs played out in the EA in the past two decades, and empirically analyzes these interactions. The third section introduces the conceptual framework underpinning the analysis. The fourth section uses modeling approaches to analyze different fiscal-monetary policy mixes. The final section offers policy conclusions.

Stylized Facts

We start by delving into EA experiences with FMIs during 2000-2021. The following two concepts guide the analysis:

- **Monetary-fiscal policy interaction**: Synchronized policies occur when both fiscal and monetary policy stances move output and inflation in the same direction. The monetary policy stance is defined as the difference between the real shadow rate (Krippner 2013) and the equilibrium (i.e., neutral) rate of interest.[1] One year ahead inflation expectations from the Survey of Professional Forecasters are used to deflate the nominal shadow rate. For the equilibrium rate, we consider both the standard estimates from Holstein, Laubach and Williams (HLW, 2017) and a more variable measure from Arena et al. (2020). While both can be interpreted as taking a medium-term perspective on equilibrium, they differ in how quickly observed and unobserved factors influence the equilibrium rate.[2] The fiscal stance is defined as the structural fiscal balance in percent of GDP.[3] A positive (negative) policy stance indicates contractionary (expansionary) policy. A decline (rise) in the policy stance indicates loosening (tightening) policy.

- **Macroeconomic stabilization policies:** An output-stabilizing fiscal policy implies counter-cyclical policy aimed at closing the output gap, while an inflation-stabilizing monetary policy refers to counter-cyclical policy aimed at closing the inflation gap. The output gap is the difference between actual and potential output. We report figures based on output gaps estimated by IMF country desks (as reported in the WEO database) but compare results to HP filtered output and unemployment gaps for robustness checks, and the results are qualitatively unchanged. The inflation gap is the difference between realized HICP inflation and the EA inflation target of 2 percent.

Based on these measures, the EA monetary policy stance is assessed as accommodative during much of the pre-pandemic period, but the degree of accommodation differed across periods and depends on the measure of the equilibrium interest rate (Figure 1, left panel). Based on the HLW neutral rate, prior to the GFC, the shadow rate was below the neutral rate but converged from 2003, implying accommodative but tightening monetary policy. During the GFC, the shadow rate declined rapidly, so that the monetary policy stance became increasingly accommodative, marking the beginning of the low-for-long interest rate period that lasted throughout the COVID-19 pandemic. Use of the alternative (Arena et al. 2021) measure of the natural rate of interest results in a tighter monetary policy stance from 2011 until 2015. The EA aggregate fiscal policy stance was mildly contractionary prior to the GFC, before shifting to expansionary during the GFC. The European Debt Crisis prompted a strongly contractionary fiscal stance on average, reversing into expansionary territory again during the pandemic, as several countries deployed extensive fiscal support.

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[1] During periods of unconventional monetary policy when nominal interest rates are at or close to the effective lower bound, this measure provides a better assessment of the policy stance compared to measures based on short-term nominal rates and Taylor-rule-based benchmarks. Also, note that the constructed index is a measure of de facto synchronization and does not suggest active coordination between the monetary and fiscal authorities to move in a specific direction.

[2] The equilibrium interest rate is the real rate consistent with inflation at target and GDP equal to its potential. Concepts of equilibrium differ according to their time perspective. The long-run rate ignores cyclical and other temporary factors and is closely tied to potential growth. In contrast, New Keynesian macroeconomic models feature a short-run equilibrium rate that is influenced by all economic shocks. The equilibrium concept of Holstein, Laubach and Williams (2003)—and related estimations—focuses on the medium-run and considers different factors that influence the equilibrium rate slowly (also see Beyer and Wieland, 2019).

[3] Alternative measures of fiscal stance, such as the overall fiscal balance and cyclically adjusted fiscal balance, were also used to test the robustness of the findings, which remained qualitatively unchanged.

Figure 1 Euro Area Policy Stances and Output/Inflation Gaps Over Time
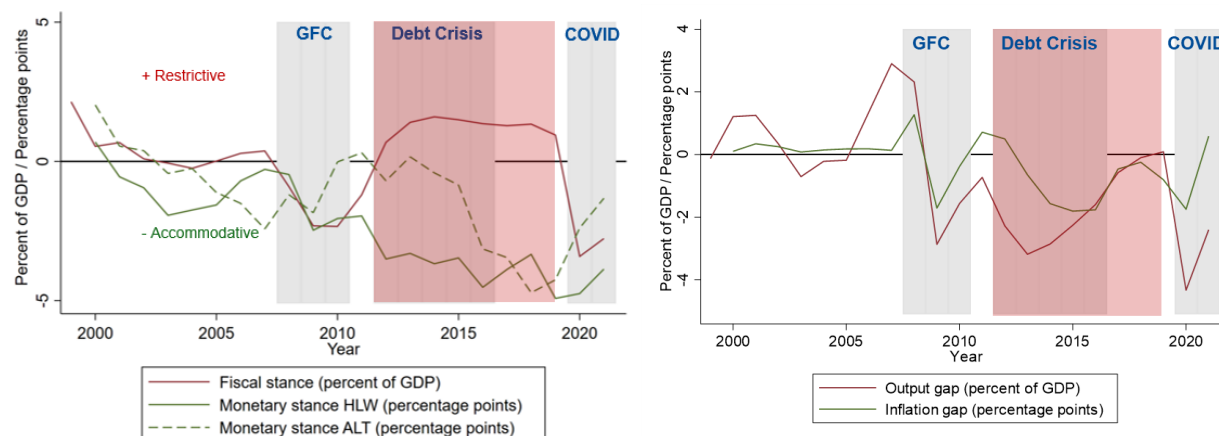
Notes: A positive number indicates restrictive policies; a negative number indicates accommodative policies. The gray areas mark times of economic crises. The red-shaded areas indicate periods where fiscal and monetary policy were moving in the opposite direction. HLW stands for Holstein, Laubach and Williams (2017) and ALT uses the alternative measure of the equilibrium rate from Arena et al (2020).

From the perspective of business cycle and inflation stabilization, four periods of varying fiscal and monetary policy synchronization therefore can be identified:

- Prior to the GFC, monetary and fiscal policy were largely synchronized and stabilizing. However, somewhat positive inflation and sizably positive output gaps during this period suggest that monetary policy and particularly fiscal policy, while in the right direction, were procyclically loose.[4] The alternative proxy for the natural rate suggests even more accommodative monetary policy. Stronger counter-cyclical fiscal policy could have contributed to output stabilization and stronger fiscal buffers.

- During the GFC, output and inflation gaps were negative and large. Both fiscal and monetary policy stances became countercyclically expansionary to boost demand and likely helped in quickly closing the output and inflation gaps.

- A strong divergence of fiscal and monetary policy emerged during the European Debt Crisis. While monetary policy was accommodative (with the degree of accommodation depending on the equilibrium interest rate measure), fiscal policy was highly contractionary, including after fragmentation risks were mitigated, despite a substantial negative output gap.

- Both policies were synchronized again during the pandemic, when fiscal and monetary policies were loosened. While fully aligned with economic stabilization at the beginning of the pandemic, the sharp increase in inflation resulted in a positive inflation gap from 2021.[5]

Within this aggregate picture, there was a large degree of heterogeneity in monetary-fiscal policy interactions across EA countries. We construct a synchronization index as the product of the monetary and fiscal stance,

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[4] While early comparisons of the ECB's interest rate setting relative to benchmark rules raised concerns about a too soft response to inflation pressures (Alesina et al., 2001; Faust et al., 2001; Gali, 2002), there was no consensus that earlier hikes would have been adequate (Draghi 2018). Gross and Zahner (2021) show that inflation became a more important determinant of monetary policy decisions over time.

[5] Similar to the debate in the early 2000s, there is now an ongoing discussion whether the ECB tightened the monetary policy stance belatedly (Reis, 2022; Darvas and Martins 2022).

which confirms the aggregate picture but also shows that countries with higher debt (Annex I) experienced longer spells of lack of policy synchronization.

Figure 2 Output/Inflation Gaps and Fiscal Policy During European Debt Crisis
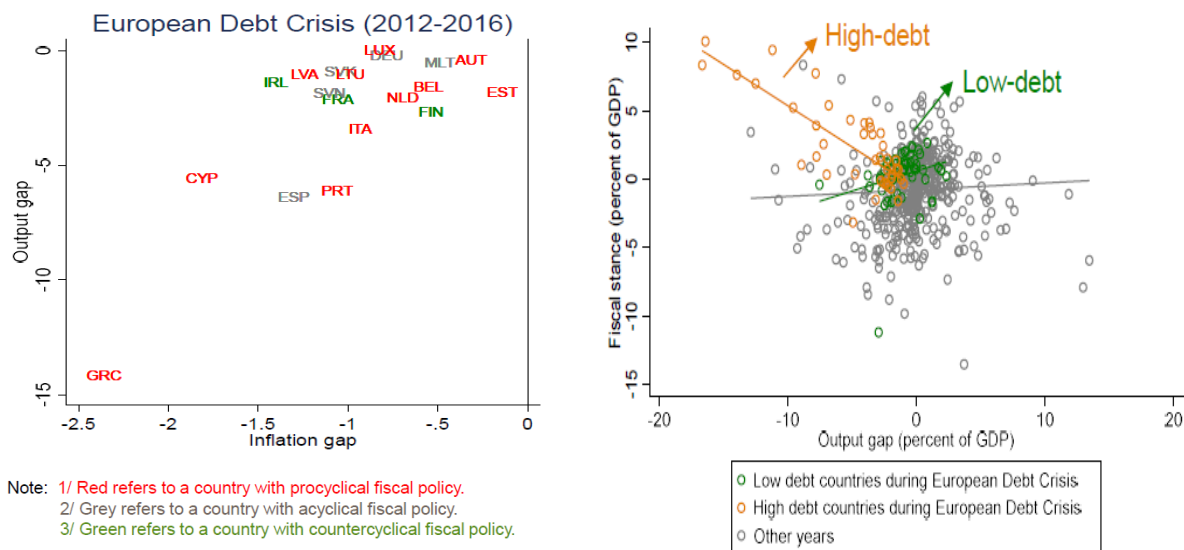
During the European Debt Crisis, the lack of policy synchronization was particularly evident for high-debt countries as previously defined (those with public-debt-to-GDP ratios above 100 percent in 2022).[6] These countries experienced much larger negative output gaps and somewhat larger negative inflation gaps (Figure 2, left panel). For low-debt countries, larger negative output gaps were associated with higher fiscal stimulus, in line with stabilization objectives. On the contrary, fiscal policy in the high-debt countries was procyclically contractionary (Figure 2, right panel).[7]

Summarizing, fiscal and monetary policies in the EA were not always synchronized from the perspective of business cycle stabilization. When they worked in the same direction and were counter-cyclical, especially during the GFC and early in the pandemic, large output and inflation gaps reverted relatively quickly. In contrast, these gaps lingered for longer during the European Debt Crisis when aggregate fiscal contraction at the EA level, driven by high-debt countries, offset monetary easing attempting to mitigate GDP contraction. The historical analysis also sheds a cautionary note that debt distress can tie the hands of the fiscal authorities in responding countercyclically to downswings, raising the risk of adverse spillovers. This points to the need for building fiscal buffers during good economic outturns and stronger fiscal coordination mechanisms within the currency union via the timely adoption of appropriate EU fiscal rules (see Arnold and others, 2022).

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[6] These countries within our sample include are Belgium, Cyprus, France, Spain, Greece, Italy, and Portugal.

[7] A Taylor-type panel regression analysis confirms strong procyclicality of fiscal policy in high-debt countries during the European Debt Crisis, with a 1 pp more negative output gap being associated with a 0.34 more restrictive fiscal stance (statistically significant at the 1 percent level). Using the overall fiscal balance—rather than the structural primary balance—makes the stance of high debt countries during the European Debt Crisis acyclical but strengthens the countercyclical stance of low debt countries, confirming the main thrust of the findings.

We next estimate the impact of a government spending shock within a panel VAR framework and compare generalized impulse response functions (GIRFs) in periods when monetary policy is in a tightening cycle regime with periods when monetary policy is in a loosening cycle.[8,9]

Figure 3 Selected GIRFs of a government spending shock in I-VAR analysis
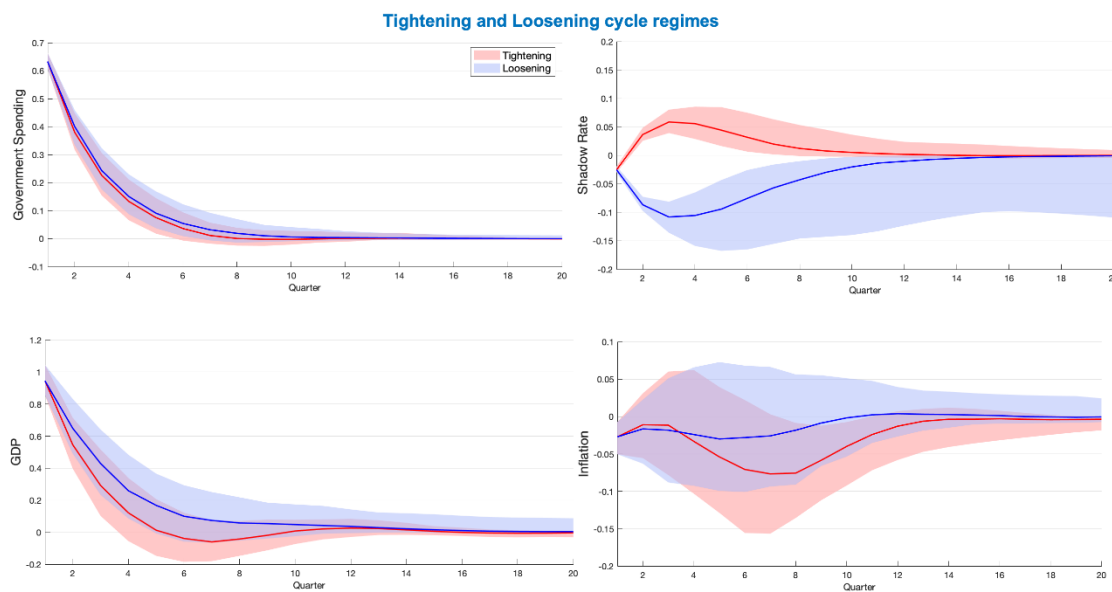
When monetary policy is in a tightening regime, an unexpected increase in government spending (Figure 3, upper left panel) is associated with an increase in the shadow rate (Figure 3, upper right panel), making monetary policy offset the fiscal shock somewhat. In contrast, when the monetary policy is loosening, it reinforces government spending.

The results provide suggestive evidence for a larger output effect of government spending when policies are synchronized (Figure 3, lower left panel). The government spending multiplier is higher in the first year than when policies are not synchronized (1.5 versus 1.2), possibly reflecting anticipation effects from the overall loosening policy stance. Although the long-term effects are not statistically significant, the cumulative government spending multiplier is estimated at 1.7 (1) after three years when policies are (not) synchronized. Similarly, while the impact on inflation is initially very similar and statistically insignificant, there is a more sustained disinflation when monetary policy is in a tightening regime (Figure 3, lower right panel).[10]

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[8] The analysis is based on an interacted-state dependent EA panel VAR (I-VAR) model and estimation follows Caggiano et al (2017), Di Serio et al. (2021) and Fotiou (2022). Impulse responses are in percent to a government spending shock of one standard deviation. The endogenous variables included are government spending, GDP, government receipts, inflation, the shadow rate and government debt to GDP, with the interaction variable being the shadow rate. The model controls for exogenous US-related variables as well as the forecast of the annualized growth rate of total government expenditure over GDP produced by the Economist Intelligence Unit to account for fiscal foresight issues.

[9] We use an interaction turn which identifies the tightening cycle regime as the period 2005:Q3 to 2008:Q2 and the loosening cycle regime from 2003:Q4 to 2004:Q2 and 2012:Q2 to 2017:Q4.

[10] As part of the Strategy Review, ECB (2021) offers a taxonomy to describe the state-contingent nature of these interactions.

The next section starts with a conceptual framework to identify the macroeconomic effects of FMIs in a multiple-country setting compared to a single-country setting, and then presents the analytical results from two models.
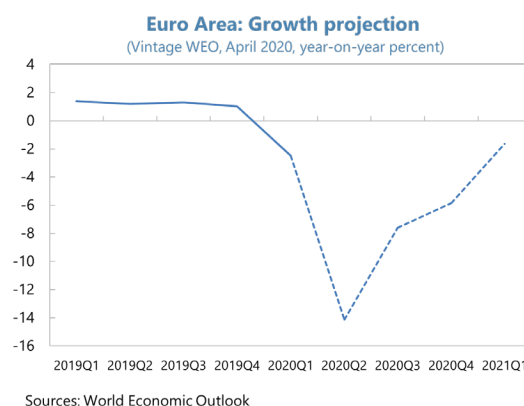
Conceptual Framework

A single country setting

We first consider the interaction between fiscal and monetary policy (FP and MP, respectively) in a single country setting. Whether a high level of synchronization between FP and MP is achieved depends on the macroeconomic outlook, summarized here by different combinations of growth and inflation.[11] These two macro variables are influenced by a combination of supply and demand shocks to the economy. Depending on the shock (demand vs. supply and persistence), policymakers find themselves in one of the four illustrative quadrants. For example, whether the economy ends up in C or D will be affected by how persistent a supply shock is.

| | Less Synchronized |

Inflation outlook / Growth outlook	High	Low
High	A	B
Low	D	C

The initial onset of the pandemic stemmed from a large and sudden supply shock, with a large drop in growth and low inflation (chart and quadrant C). Given this outlook, FP and MP both provided exceptional support, cushioning the impact on the economy, while marginally contributing to about a quarter of the unexpectedly higher inflation, i.e., the realized inflation compared to IMF forecast in 2020. (Hodge et al. 2022[12]). Also, the reallocation of demand from services to goods affected by severe supply-side constraints resulted in an outlook of high inflation and low growth as the pandemic faded (quadrant D). In 2021, excess savings and strong pent-up demand, especially for services, led to sharp recovery and

Euro Area: Growth projection
(Vintage WEO, April 2020, year-on-year percent)

Sources: World Economic Outlook

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[11] At this juncture, we can set aside the ELB issue.

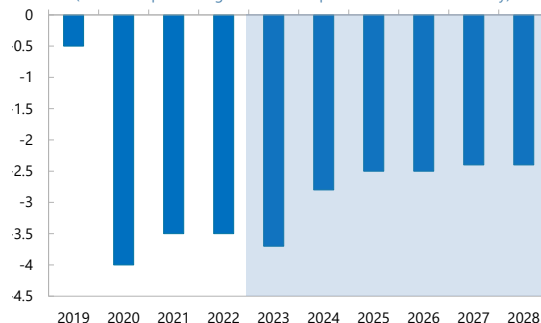[12] The amount of explained inflation doubles if the Phillips curve in the model is assumed to be steeper, but other factors clearly play a role. While not an exhaustive list, these factors may include supply/demand imbalances not captured by the model, including those associated with a shift in the composition of consumption towards goods during the pandemic, which strained supply chains.

an initial move towards quadrant **A**. But in the case of Europe, Russia's war on Ukraine and the ensuing energy crisis further exacerbated the terms-of-trade shock, reinforcing the push of the outlook to quadrant **D**.

Euro Area: General Government Structural Balance
(Percent of potential gross domestic product in national currency)

Quadrant **D** came with exceptional challenges. With the price stability mandate, MP needed to tighten to align aggregate demand with the economy's reduced productive capacity. Meanwhile, FP needed to focus on its distributional objectives by alleviating the impact of the shocks on the vulnerable. Even without any additional discretionary fiscal policy action, fiscal automatic stabilizers are still at work when the economy is in this quadrant. The level of fiscal support would determine the cyclical fiscal position in this quadrant, and synchronization between MP

Sources: World Economic Outlook January 2023

and FP could therefore be more difficult. Indeed, Dao et al. (2023) argue that exceptional energy measures introduced in 2022, termed "unconventional fiscal policy", have contributed to lower headline inflation and passthrough to core inflation compared to the counterfactual. However, the extent of fiscal support declined in 2021- 2022 relative to 2020.

Entering 2023, the inflation outlook based on the IMF's January 2023 WEO projections suggests inflation will remain above target for an extended period of time. The growth outlook in the EA was subdued (positive but low growth), bringing the economy closer to quadrant **A.** Once again MP and FP can complement each other.

Euro Area Projected Growth for Output
(In percent, 2020Q1-2023Q4)
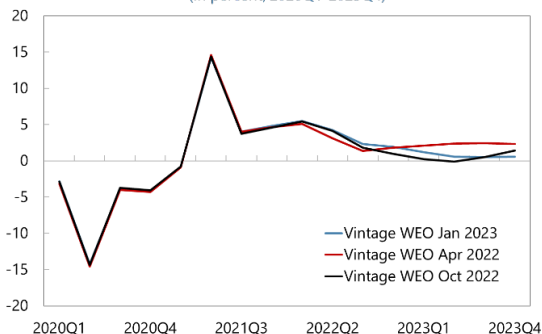
Sources: World Economic Outlook

Euro Area Projected Inflation Growth for Inflation
(In percent, 2019Q1-2023Q4)
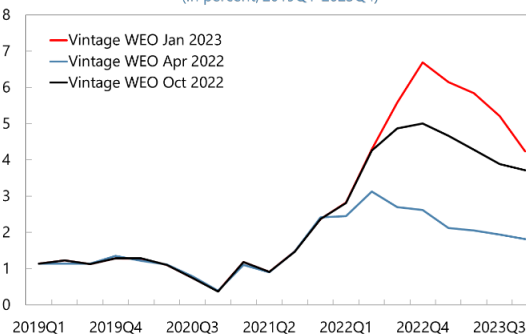
Sources: World Economic Outlook

A two-country setting

We now consider two countries within the same currency union. The currency union is currently experiencing a high inflation outlook. These two countries could differ by sizes, but more importantly in their debt levels, referred to here as low debt (LD) and high debt (HD). Despite sharing the same monetary policy, country-specific fiscal policy complicates policy synchronization.

• When average inflation in the currency union is above target, MP needs to respond by raising policy rates. Higher policy rates will raise borrowing costs but more so for HD. If the macroeconomic outlook is similarly positive for both countries, FP policy should tighten in both countries but by a higher degree in the HD country.

Macro quadrant	High debt	Low debt
Same	More synchronized	More synchronized
Different	Less synchronized	Less synchronized

- The benefit of synchronization is that one policy reinforces the other. By reducing the fiscal stimulus and therefore inflation, FP can allow MP to embark on a more gradual tightening path, accounting for the lagged transmission, reducing the risks of de-anchoring inflation expectations and financial market disruptions. By focusing on bringing inflation to target, MP can reduce output and inflation variability, creating a more stable macroeconomic environment for FP to pursue a credible medium-term fiscal plan.

  Spillovers between HD and LD could either enhance or mitigate the impact of the currency union-wide policy. A lack of synchronization will have a more negative impact compared to the one-country setting, given spillovers between the two countries.

- *Aggregate channel* (Blanchard et al. 2017): outside of a liquidity trap, where interest rate is at effective lower bound, if FP in one country loosens, this will further accelerate inflation and initiate more MP tightening, raising borrowing costs for the other country, more so for HD. As a result, FP loosening tends to raise output in the home country but lower output in the other.

- *Compositional rebalancing channel*:

  - Real exchange rate: The relatively large increase in output in country 1 because of fiscal stimulus causes its inflation to run above the other for some time, and the implied depreciation of the terms of trade in country 2 will boost real net exports for the latter. If country 2 engages in fiscal consolidation (while county 1 loosens fiscal policy), this effect on the real exchange rate becomes stronger.

  - External demand: the increase in country 1 fiscal spending will generate higher external demand (through higher import demand in country 1) for country 2, boosting both output levels. Union-wide inflation will therefore increase by more than what is implied by the increase in inflation in country 1 and its relative size in the union.

Given these externalities, there is scope for fiscal burden sharing between the two. In the current context of high inflation, if FP tightening is carried out by only one group of countries (e.g., HD in the two-country set up), the short-run output cost is disproportionately experienced by this group—while the other group experiences a relatively lower output loss through the external demand channel and some deterioration of its bilateral real exchange rate position. By contrast, the ensuing, somewhat less-tight MP (given some fiscal consolidation by some countries) is enjoyed by all countries. As such, when all union members face a common challenge of high inflation, an incentive mechanism that allows for greater fiscal consolidation at the union level would yield an easier MP path. Such a fiscal-monetary policy mix--compared to other scenarios when there is either no or limited fiscal consolidation by only some countries—would allow stronger inflation reduction and short-term output costs that are shared more evenly. The next section uses a modeling approach to calibrate these fiscal-monetary interaction scenarios in the EA.

Model Calibration for the Euro Area

We use a two-country version of the SIGMA and the FSGM for the euro area to calibrate alternative scenario analyses for the EA. The SIGMA model offers a simple framework to study the differential impact of common policies between a high-debt and a low-debt country, as well as the spillovers of one country's policy to the other. Our understanding of the channels then serves as the basis for refining the results to match individual countries' data in the second model, the FSGM, which provides country-specific results. The consistency in results across the two models provides a robustness check to our analysis.

The two-country model differentiates LD and HD countries.[13] Based on the IMF's January 2023 WEO projections (Figure 4), projected output paths for both groups are similar. However, several HD economies are expected to have a shaper economic downswing (Figure 4, top left), and relatedly, some have more negative output gaps projected for 2023 (e.g., Greece, Italy, and Spain) than the rest of the EA. Also, core inflation in both LD and HD are expected to remain considerably above the 2-percent inflation target in the near term, albeit more so in LD countries (Figure 4, bottom left). Overall fiscal balances for both HD and LD are projected to improve somewhat over time (Figure 4, top right), although HD fiscal deficits are relatively larger. Long-term interest rates are projected to rise significantly throughout the medium term. According to the WEO projections, the HD group is faced with 50-100 bps higher risk premium than that of LD (Figure 4, bottom right), partly reflecting historical trends in HD countries' sovereign bond spreads against German bunds and other macro assumptions.

Figure 4: Current Conjuncture for High- and Low-Debt EA Countries
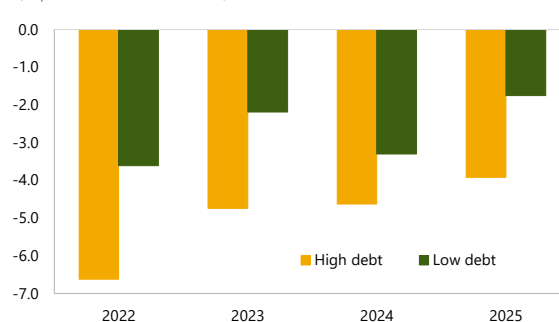

Projected Output Growth
(In percent)
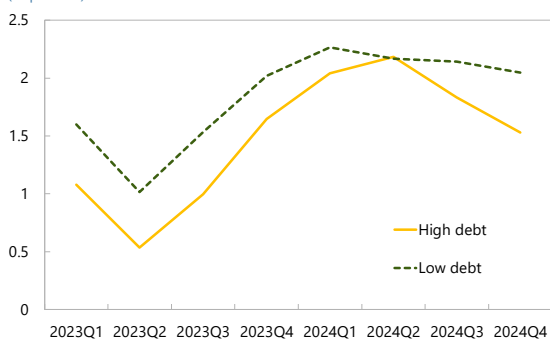
Source: World Economic Outlook

Overall Fiscal Balance
(In percent of GDP, 2022-2025)

Sources: World Economic Outlook

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[13] High-debt countries refer to the economies with public debt above 100 percent of GDP in 2022. These include Belgium, Cyprus, France, Greece, Italy, Portugal, and Spain.

Figure 4: Current Conjuncture for High- and Low-Debt EA Countries (continued)

Core Inflation
(In percent, 2022-2025)

Sources: World Economic Outlook

Long term interest rates
(GDP-weighted, 2022-2025)

Sources: World Economic Outlook
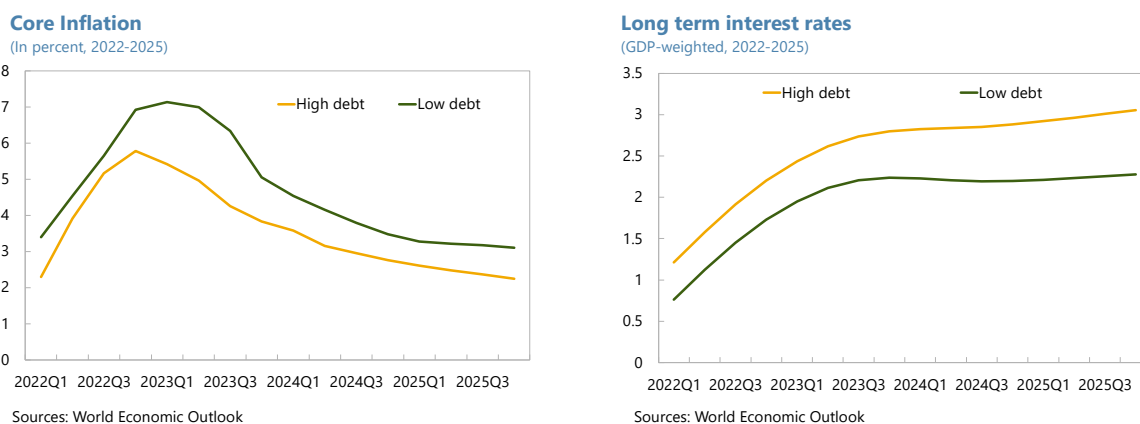
Figure 5: Degree of Heterogeneity on Key Macroeconomic Variables Across EA, 2022
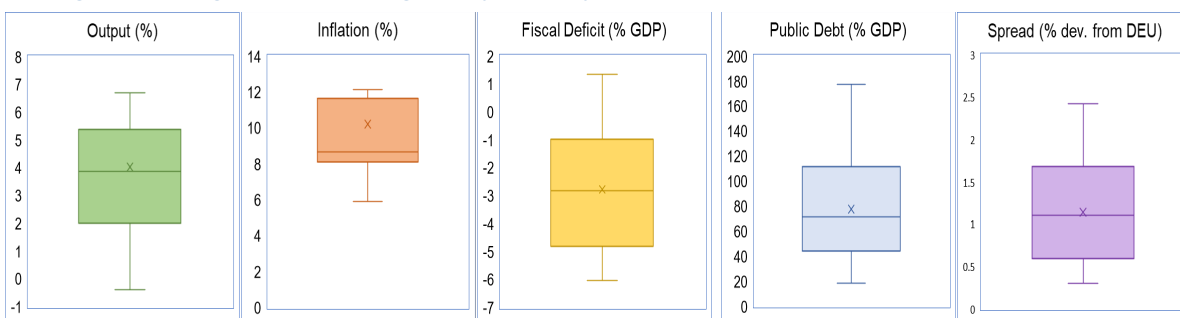
Note: The whisker chart indicates maximum and minimum values of key macroeconomic variables across EA countries. The cross (x) marks the median values, whereas the horizontal line in the rectangular box indicates the mean. The rectangular area indicates a range between the first and the third quartiles.
Source: IMF WEO, January 2023.

While the economic environment characterizing the EA is one of high inflation and low growth, there is considerable cross-country heterogeneity, in terms of output, inflation, fiscal space, and sovereign spreads (Figure 5). For example, while public debt in Greece stood at almost 180 percent of GDP in 2022, Estonia's debt-to-GDP ratio was only 18 percent of GDP. A large degree of heterogeneity that has implications on policy leverages can generate different effects of shocks, which combined with different spillovers across the EA, would result in different output and inflation paths across countries.

Starting with the baseline IMF January 2023 WEO projections calibrated to the EA, we simulate different shocks with varying degree of persistence, to illustrate counterfactual scenarios under which FP in the EA help MP through some fiscal tightening relative to levels projected in the January 2023 WEO.

Scenario 1: all countries in the currency union consolidate

When the whole currency union implements a small fiscal consolidation, the monetary policy burden is reduced. We consider a negative spending shock[14] to government consumption of 1 percent of GDP in both 2023 and 2024, followed by 0.5 percent of GDP in 2025 for both HD and LD groups. This fiscal contraction can be seen as an unwinding the fiscal support measures implemented during 2022-23 (averaging more than 1½ percent of GDP in 2022-23, see Arregui and others, 2022).

Two models are used, calibrated to the EA—the two-country version of the SIGMA model drawing on Erceg and Linde (2012) and the IMF's Flexible System of Global Models for the EA (FSGM, see Andrle and others, 2015). The average results from both models are shown in Figure 6, while Annex II has the detailed country-by-country effects for a few EA economies under the FSGM model.

The EA output level is lower by 0.6 to 0.8 pp in the first year, but growth recovers thereafter, such that the output effects are insignificant by end-2025 (Figure 6, top left chart, the output deviation is -0.2 to 0.2 pp relative to the WEO baseline)[15].

Core inflation is lower by 0.15-0.25 pp in the first two years compared to the baseline. As a result, the endogenous monetary policy response results in the policy rate over the three-year period to be some 30-50 basis points lower relative to the baseline MP path and peak reduction of 30-70 basis points in the second year (bottom left chart). While the impact on inflation appears modest (see also Dao et al, 2023)[16]--a key benefit is from a significantly lower interest rate path, which alleviates potential financial fragmentation risks further.

There are also payoffs from lower debt-to-GDP ratios (Figure 6, bottom right) depending on the sacrifice ratio, or ratio of output loss relative to inflation reduction. As output is on impact lower than in the baseline, government tax revenue is lower, and some automatic stabilizers are activated. The government primary deficit hence narrows by less than one to one (by 0.75 percent of GDP in the SIGMA model). Coupled with the denominator effect, the debt-to-GDP ratios either fall marginally (see LD country in both models) or are slightly higher on impact (see HD country in both models). However, from the second year of consolidation, the positive output effects from a lower interest rate and real exchange rate depreciation (and thereby external demand) start increasingly offsetting the negative output effects from fiscal consolidation effects. Thus, fiscal consolidation, combined with a lower interest rate path, enables public debt-to-GDP ratios to be lower by some 1.5 pp to 2 pp lower in both HD and LD countries by end-2025.

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[14] In the model, capital expenditures have a link to potential output via TFP growth, as opposed to current expenditures. A different consolidation with more cut to capital expenditures would likely result in lower near and medium-term output and higher debt-to-GDP ratios

[15] Both models have similar fiscal multiplier with the average output loss over average spending cut during the first two years is 0.5 for SIGMA and 0.6 for FSGM.

[16] Dao et al. (2023) also use the FSGM to simulate the impact of exceptional discretionary fiscal measures in the euro area in response to the energy shock.

Figure 6: Impacts of Union-wide Fiscal Consolidations on Key Variables

Output
(Percent deviations from baseline)

Sources: Staff Calculations

Inflation
(Percentage point deviations from baseline)

Sources: Staff Calculations

Policy rate
(Percentage point deviations from baseline)

Sources: Staff Calculations

Public Debt for LD and HD
(Percentage point deviations from baseline)

Sources: World Economic Outlook
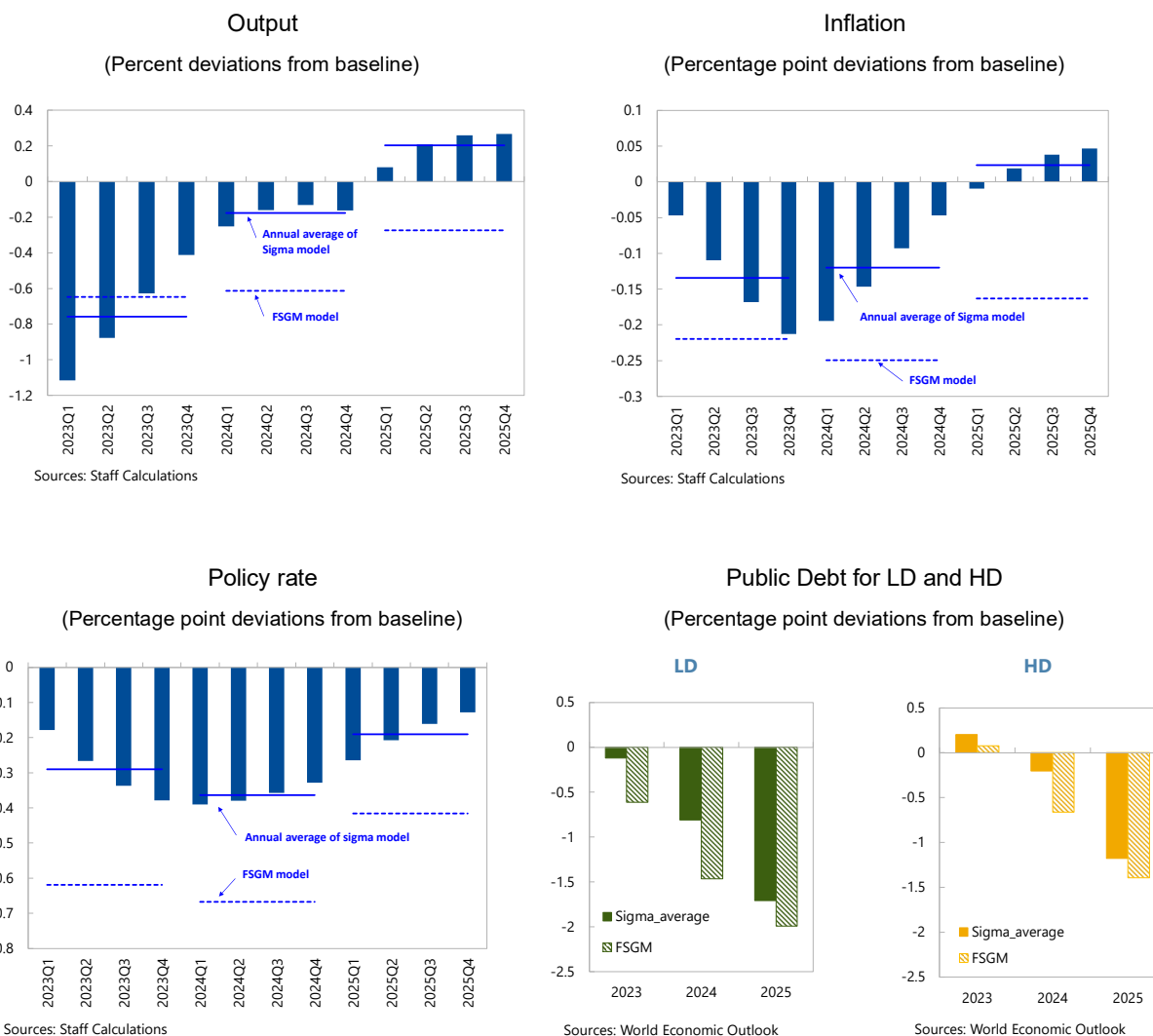
The differences in the magnitude of the effects in the two models are small and largely reflect slightly different assumptions, for instance, regarding the composition of the fiscal shock between expenditure and revenue items, the sacrifice ratio, and the slope of the Phillips curve. For instance, the Phillips curves in the FSGM are strongly forward-looking (with a forward-looking term of around 0.7), which makes price reactions to future marginal cost changes more than in SIGMA. In addition, SIGMA uses Kimball preferences, which flattens the Phillips curves relatively.

This case of EA-wide uniform fiscal consolidation demonstrates the benefits of fiscal policy pulling in the same direction in bringing down EA inflation. As shown in Figures 4-5, with core inflation higher than the target by a wide margin across both HD and LD economies, reducing it is both a domestic and EA-wide priority. The appropriate level of fiscal consolidation by a country will depend on cyclical positions of the economies and fiscal sustainability concerns. In the next scenario, we consider the implications of a more differentiated fiscal consolidation approach concentrated in a few EA economies.

Scenario 2: Only the high debt country consolidates

Against the uniform-consolidation baseline, we simulate a fiscal consolidation only by HD countries in a counterfactual scenario.[17] This group is burdened with a higher level of public debt given a legacy of multiple crises, and thereby faces higher borrowing costs and fragmentation risks. A negative spending shock concentrated in HD implies that the output costs (similar in level as in scenario 1) are borne largely by this group, but these costs reverse within a year including because the RER of HD becomes more competitive relative to LD as the LD group does not consolidate. As a result, medium-term debt reduction is largely achieved by HD countries.

The results with the SIGMA model are shown in Figure 7. Specifically, the yellow bars show the case when HD countries engage in 1 percent of GDP fiscal consolidation for two years and ½ pp in the third year (same level and composition, which is entirely from a cut to government consumption, as in scenario 1), but LD countries do not consolidate. In this case, the debt-to-GDP ratio for HD falls by 1-2 pp while LD debt-to-GDP increases marginally by 0.01-0.05 pp. However, compared to scenario 1, inflation reduction is only about 0.1-0.15 pp in the first two years in the EA. Relatedly, the endogenous MP response is less accommodative in scenario 2 compared to scenario 1 (with the policy rate some 15-20 bp higher during 2023-25 relative to scenario 1) because of lower fiscal consolidation at the union level.

Conversely, while not shown, given that HD countries make up half the size of the union, these countries would need to engage in double the level of fiscal consolidation to bring about the same level of inflation reduction at the union level as in scenario 1. This consolidation would hurt their economic activity harder on impact (compared to scenarios 1 and 2, given the higher fiscal consolidation), but conversely would help generate a faster debt reduction in three years.

Scenario 3: HD consolidation combined with risk premia reduction

There is an empirical literature documenting that risk premia increase with higher public debt ratios, even disproportionally, for euro area countries (Haugh et al., 2009; Bernoth et al., 2004; Ardagna et al., 2007).[18] While risk premia are expected to decline as well in scenario 1 when both countries consolidate, they are expected to decline more so for HD countries and especially if HD country consolidates by more. To model this impact, we can consider a final scenario with additional gains in market confidence with HD countries' fiscal consolidation. Specifically, if HD's fiscal consolidation plan results in increased market confidence, this could further lower the risk premium and the spread between HD and LD countries' borrowing cost. This would to some extent support aggregate demand for the whole union. In scenario 2, when only HD country reduces spending by 1 percent of GDP for 2 years, followed by 0.5 percent of GDP, the medium-term debt-to-GDP ratio declines by around 2.5 percentage points. Based on the literature[19], we consider a scenario where their risk
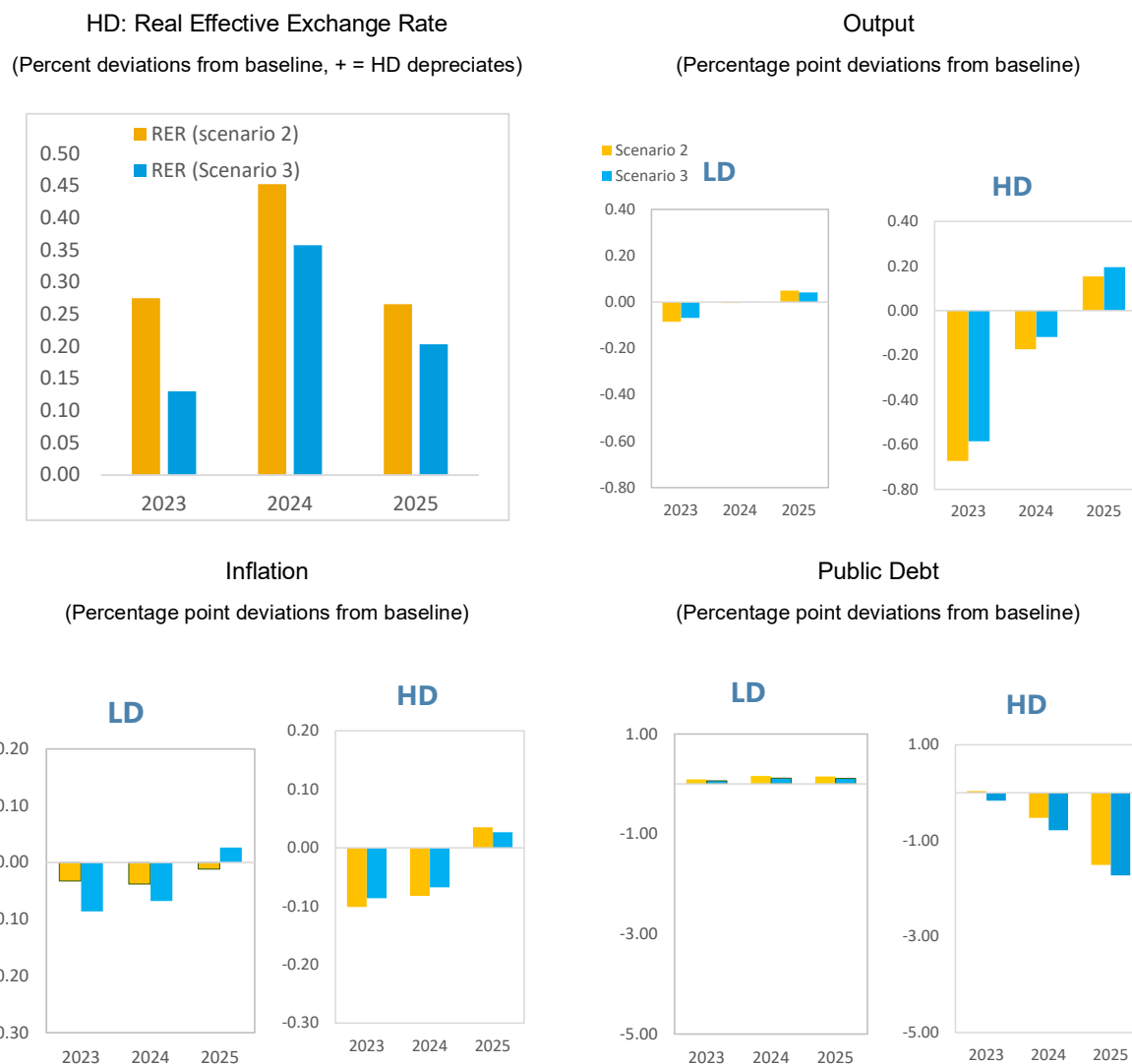
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[17] HD countries are about half of EA output. For the purposes of the SIGMA model, the HD group includes Belgium, Cyprus, France, Greece, Italy, Portugal, and Spain, while the LD includes Austria, Germany, Ireland, Netherlands, Slovakia, and Slovenia.

[18] Bernoth et al. (2004) shows that bond yield spreads among EU eurobonds against Germany and the US contain risk premia which increase with debt, deficit, and debt-service ratio. Ardagna et al. (2007) looks at the sample of OECD countries to show that an increase in primary deficit to GDP leads to an increase in long-term borrowing costs, only for countries with above-average levels of debt. Haugh et al. (2009) then confirms that fiscal performance measured by the ratio of debt service to tax receipts and expected fiscal deficits has a nonlinear impact on the yield spread for sovereign bonds between Germany and other euro area countries.

[19] The magnitude of the effect can vary depending on a wide range of factors, including macroeconomic conditions, monetary policy, and the perceived creditworthiness of the country. Assuming a symmetrical effect, one percentage point decline in the debt-to-GDP ratio could lower risk premia for long-term bond by 3 to 5 bps (Afonso and Sousa, 2011), 1.5 to 2 bps (Balli et al. 2015), and 2 to 3 bps (Börsch-Supan et al. 2020).

premium declines by 12 bp for the first two years, and another 6 bp in the third year. In this scenario, the HD group's output loss will be lower and the debt-to-ratio would decline even faster.

Figure 7: Impacts of Fiscal Consolidation in High-Debt Euro Area Countries

HD: Real Effective Exchange Rate

(Percent deviations from baseline, + = HD depreciates)

Output

(Percentage point deviations from baseline)

Inflation

(Percentage point deviations from baseline)

Public Debt

(Percentage point deviations from baseline)

Conclusions

This paper argues in favor of leveraging FMI in the EA in reducing inflation back to the EA-wide target of 2 percent. Recent studies that question the strict separation of responsibilities between these policies have typically focused on policy synchronization in boosting inflation. Specifically, the long period of low inflation in advanced economies before the pandemic, with monetary policy at its effective lower bound, induced calls for fiscal policy to reinforce accommodative monetary policy and raise inflation to its target. We show that the benefits of fiscal-monetary interactions cut both ways and even when monetary policy is unconstrained. EA-wide fiscal consolidation could bring faster inflation reduction while allowing the monetary policy path to be less tight. With inflation high in all EA economies, EA governments need to share the burden of lowering inflation with monetary policy.

We calibrate alternative fiscal consolidation scenarios using two well established macro models, the FSGM and SIGMA. Two models are used for robustness. These scenarios produce different fiscal consolidation paths among EA economies, all of which generate additional inflation reduction at the union level relative to the baseline as per the IMF's January 2023 WEO. These results show that a contractionary EA fiscal stance would allow an endogenous monetary policy path that is less tight relative to the baseline. This is because inflation will be slightly lower than under the baseline scenario without fiscal consolidation. Specifically, a fiscal consolidation of 1 percent of GDP for two years and 0.5 percent in the third year –reversing or further targeting the fiscal support packages of 2022-23–allows the policy interest rate in 2023-25 to be, on average, 30-50 basis points lower than the baseline. The peak impact on interest rate could be even more sizable. Indeed, fiscal consolidation helps avoid a significant increase in interest rates, which could have material impact on financial conditions and bear fragmentation risks. Moreover, fiscal contraction helps put the public debt-to-GDP ratio on a downward path, helping with rebuilding of fiscal space.

Who should bear the burden of fiscal adjustment in the 20-economy EA currency union? A union-level fiscal contraction can be achieved in many ways, all with different macroeconomic tradeoffs. For instance, all countries could pitch in with some fiscal consolidation. For simplicity we consider a proportionately equal level of consolidation, which is not an unreasonable assumption given the broad-based nature of inflation in all EA countries. Alternatively, the consolidation burden could also be borne only by some, such as the high-debt countries that are likely more to gain from lower interest rates and risks of fragmentation. When only one group of countries undertake fiscal adjustment, the short-term output costs would fall on this group even though there are medium-term benefits of debt reduction. The findings of this paper reinforce the call for timely fiscal architectural reforms to strengthen the currency union and generate more conducive policy responses to economic shocks.

Annex I. Policy Synchronization in Euro Area Countries

Figure A1: Aggregate policy synchronization in the euro area
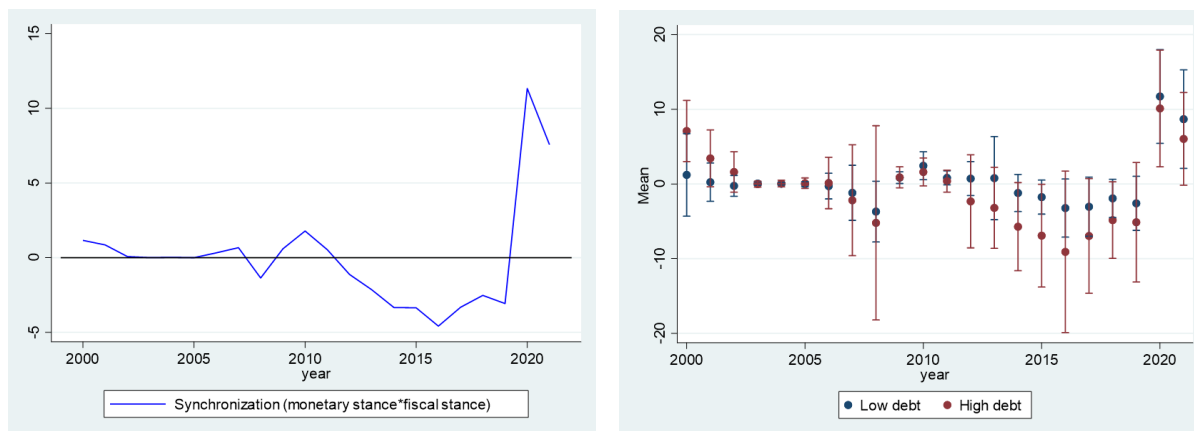
Note: A positive (negative) sign implies that the two policies are (not) synchronized for demand management purposes. The points in the right figure show the average and the error bars the standard deviation.
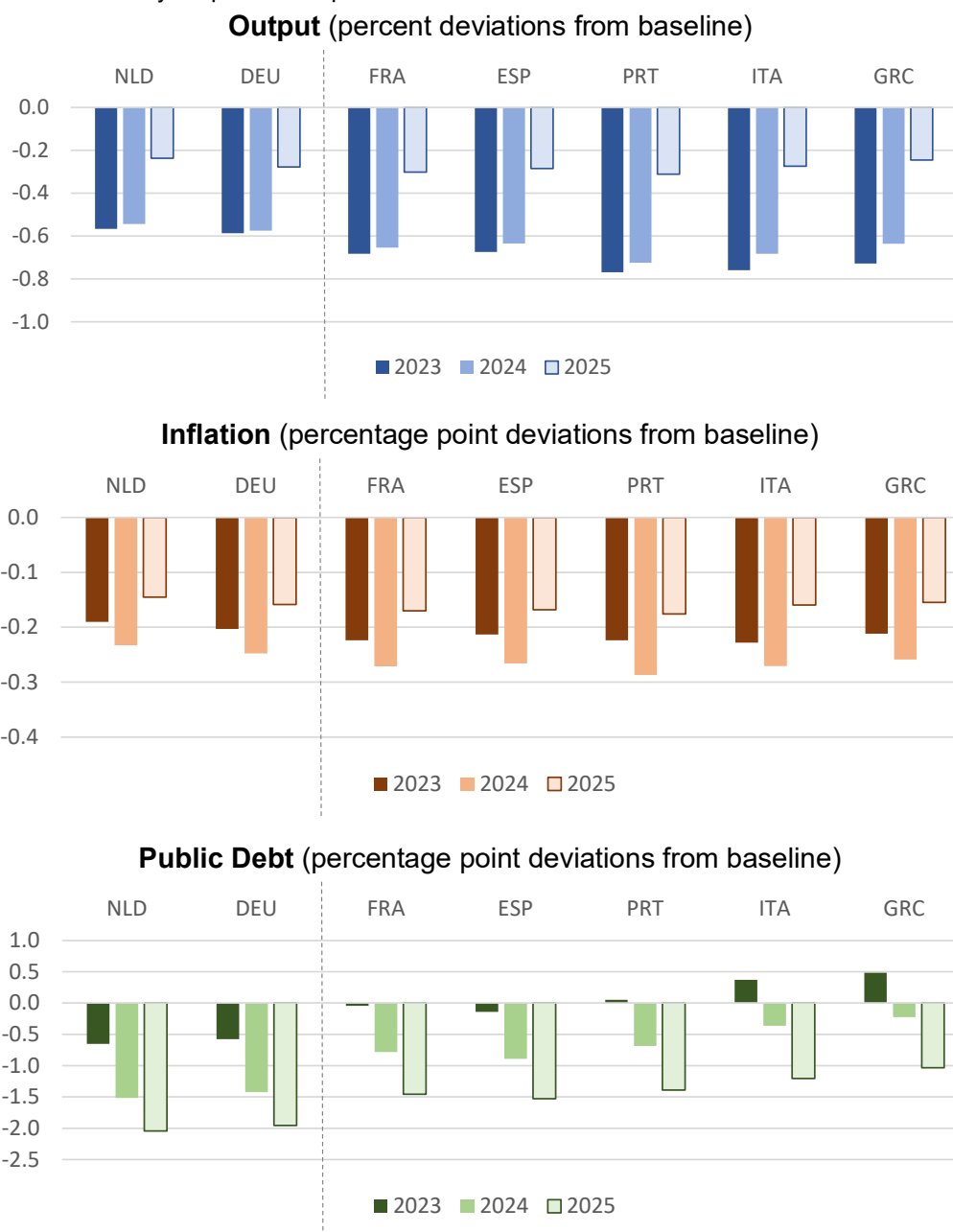
Table A1: Policy synchronization in euro area countries

	Before GFC	GFC	Debt Crisis	Covid-19
Austria	-0.4	0.3	-1.8	13.8
Belgium	4.1	1.0	-0.9	16.0
Cyprus	-0.6	1.3	-7.6	5.8
Estonia	-0.1	-1.8	-2.1	13.5
Finland	3.2	0.8	0.8	8.2
France	-0.3	0.7	1.3	14.7
Germany	-0.3	0.5	-4.7	7.6
Greece	-0.8	-4.2	-18.6	8.0
Ireland	1.6	-0.1	0.7	-1.2
Italy	1.5	0.3	-6.9	7.2
Latvia	-1.1	-0.3	-2.2	13.1
Lithuania	-1.5	-1.6	-2.0	13.4
Luxembourg	2.2	0.5	-2.0	4.0
Malta	-0.7	-0.9	-2.7	19.8
Netherlands	0.7	1.0	-1.3	11.1
Portugal	-1.6	0.6	-8.8	-5.4
Slovak Republic	-3.1	0.3	2.9	3.9
Slovenia	-1.1	0.5	3.7	15.0
Spain	1.0	0.4	-1.0	8.7
Low debt	0.0	0.1	-0.8	10.2
High debt	1.4	-0.5	-7.7	7.9
Total	0.2	0.0	-2.8	9.3

Note: This table shows the construct of the policy synchronization index by country (the product of the EA monetary policy stance with the country-specific fiscal stance as measured by the structural fiscal balance) during four periods.

Annex II. FSGM Results for Uniform EA-level Fiscal Consolidation

This annex shows the country-specific results of the union-wide fiscal consolidation of 1 percent of GDP (during 2023 and 2024) and 0.5 percent of GDP in 2024. The outcome is broadly similar across countries, resulting in some output loss—which narrows over time—inflation and public debt reduction. This helps reducing fragmentation risks. However, high debt countries (e.g., Greece, Italy, Portugal) face slightly higher output costs of about 0.05-0.1 pp relative to low debt countries (e.g., Germany and Netherlands), and lower debt reduction over the three-year period compared to low debt countries.

Output (percent deviations from baseline)

Inflation (percentage point deviations from baseline)

Public Debt (percentage point deviations from baseline)

Sources: Staff calculations

Note: See Scenario 1 in *Model Calibration for the Euro Area* for details of the simulation.

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