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The effects of high inflation on public finances in the euro area*

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The recent spike in inflation, unprecedented in the history of the Economic and Monetary Union (EMU), has had major consequences across all areas of the economy, including public finances. The unique characteristics of this inflationary episode in the euro area, largely originating from external factors and involving non-standard, ad hoc government spending adjustments, necessitate a careful examination of its effects on fiscal accounts. Drawing on the extensive expertise of the Eurosystem — within the Working Group on Public Finance — this column sheds light on the intricate relationship between price dynamics and budgetary categories. It further estimates that the sizeable inflation surprise in early 2022 has had negative effects on budget balances going forward, challenging the conventional belief so far. The analysis also points to the important role of the denominator effect for debt-to-GDP ratios, which may fall even in the absence of benefits for the budget balance. Finally, a high degree of heterogeneity is documented across countries.

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The euro area experienced unusually high inflation in 2022, with levels not witnessed since the inception of the Monetary Union in 1999. Headline inflation peaked at 10.6% in October 2022 and then began a decline, reaching 2.9% by October of this year. This surge in prices has had various economic consequences, including reduced disposable income, heightened inequality[1] and marks on the fiscal position of euro area countries. Commonly, it is believed that inflation can positively influence fiscal balances. Deficits may temporarily improve as the nominal bases on which taxes are paid react immediately, whereas government expenditures may lag in response.[2] Also with an unexpected rise in inflation, the real value of government debt tends to be eroded, negatively affecting bondholders.[3]

However, the widely-held assumption about inflation's favourable effects on public finance should not be universally accepted, especially in light of the distinct characteristics of the current inflationary period. The euro area inflation, at least initially, was external in origin and affected only selected price indices with import content. The shock was also particularly large, and at such high levels of inflation, additional pressures could build up especially on the expenditure side.[4] Given these circumstances, it is necessary to conduct a comprehensive examination of the impact of the recent inflationary episode on public finances in the euro area. In a recent paper in collaboration with the Working Group on Public Finance, we examine the effects of recent price increases on fiscal accounts (Bańkowski at al. 2023b).[5] We consider the unique nature of the inflation shock and the specific budgetary arrangements of each Member State.

Effects of inflation on fiscal accounts

Inflation affects both the revenue and the spending side of the budget balance, albeit with different degrees of complexity. On the revenue side, price dynamics have direct impacts on macro bases, on which taxes are levied. Although tax progressivity may add some complexity, the relationship between prices and taxes should be, in principle, automatic. On the expenditure side, however, the relationship between inflation and spending categories cannot be characterised as simply. It depends on factors such as the specific spending category or country-specific indexation arrangements.

When examining the revenue side, inflation generally has a positive impact on public finances, primarily due to the fiscal drag. With progressive income taxes, increases in income and wages, even when aligned with overall price growth in the economy, push taxable income into higher tax brackets, especially when tax brackets are not fully adjusted for inflation. The effect is more pronounced with more tax brackets and greater dispersion between marginal tax rates. In the euro area, where personal income taxes are progressive in nearly all countries, this susceptibility to fiscal drag is particularly noticeable.[6]

[1] On the distributional impact of the inflation shock, including the role of fiscal support measures, see Amores et al. (2023).

[2] IMF (2023) report contains a description of how inflation typically affects fiscal accounts.

[3] Among many others, Hilscher et al. (2022) explore the plausibility of inflating away government debt, while Brunnermeier et al. (2023) describe the broader consequences of such an action for the real economy.

[4] Briodeau and Checherita-Westphal (2023) find evidence of non-linear effects of inflation (actual or surprise) on the primary balance in a panel of euro area countries over the period 1999-2022.

[5] Other recent contributions to the conversation about the effects of high inflation on public finances include works by Burriel and Odendhal (2023), focusing on external price shocks, notably oil price shocks; Cornille et al. (2023), Holler and Reiss (2023), and García-Miralles and Martínez Pagés (2023), who examine country-specific aspects; and IMF (2023), which provides a comprehensive multi-country study.

[6] Bańkowski at al. (2023b) take a detailed look at tax progressivity and other indexation aspects of taxes in euro area countries.

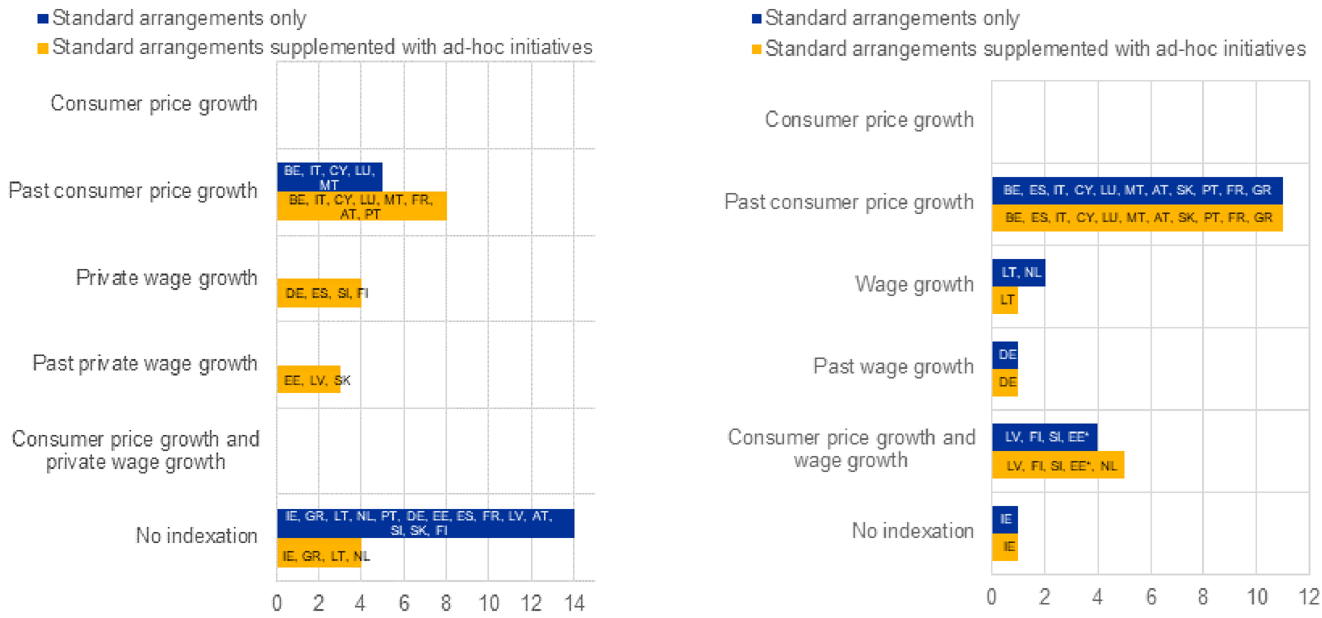
In assessing the impact of inflation on government expenditures in the euro area, it's essential to consider numerous characteristics.[7] First, price indexation varies by category, with pensions often more closely linked to prices than other social benefits or public wages. Second, identifying the appropriate nominal indices and their pass-through over time for various indexation mechanisms is crucial. Third, assumptions are needed for discretionary spending like government investment and intermediate consumption, as these expenditures are likely to respond to price changes, even without formal price linkage. Finally, any comprehensive analysis should include recent ad-hoc policy measures that governments have implemented in response to high inflation, extending beyond standard procedures.

Due to the often limited accessibility of detailed information on the impact of inflation on government expenditures, using the expertise within the Eurosystem, particularly the Working Group on Public Finance (WGPF) of the European System of Central Banks, becomes crucial. WGPF's insights confirm that ad hoc initiatives, going beyond standard automatic indexations (see Figure 1), have been systematically adopted in response to recent high inflation and they require reflection in this type of analysis.

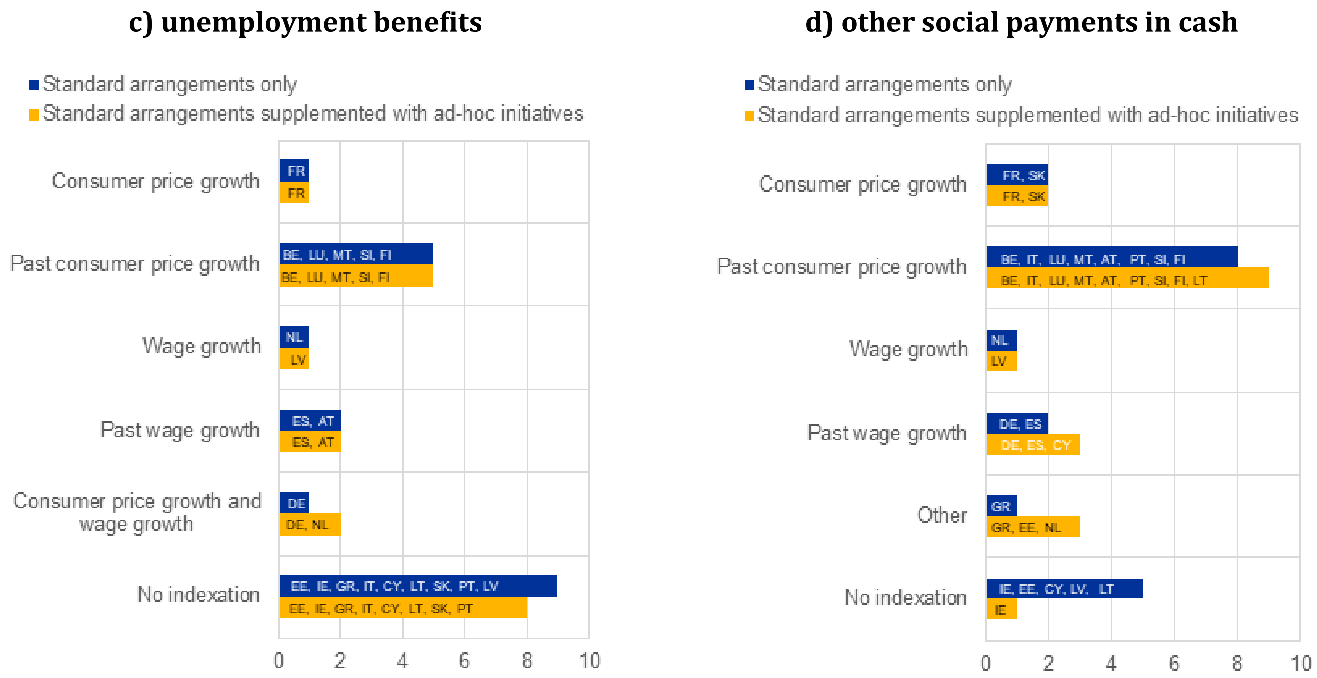
- On public wages, the WGPF information reveals that previously only a few countries directly linked them to prices. However, the recent spike in inflation has prompted a significant trend towards adjusting public wages with a view to preserving their real value.
- Regarding pensions, they are automatically indexed to prices (and/or wages) in almost all countries already within the established systems.
- Unemployment benefits are indexed in about half of the Member States - a proportion unaffected by recent ad hoc policy initiatives.
- Lastly, for other non-pension social benefits, such as child allowances, some form of indexation to prices has become increasingly common in several countries.

Figure 1: Indexation of major spending categories in the euro area (number of countries)

a) public wages **b) pensions**



[7] Checherita-Wesphal (2022) provides an overview of indexation schemes and other mechanisms for setting public wages and pensions across the euro area countries.



Source: Bańkowski at al. (2023b).

Major assumptions and simulation set-up

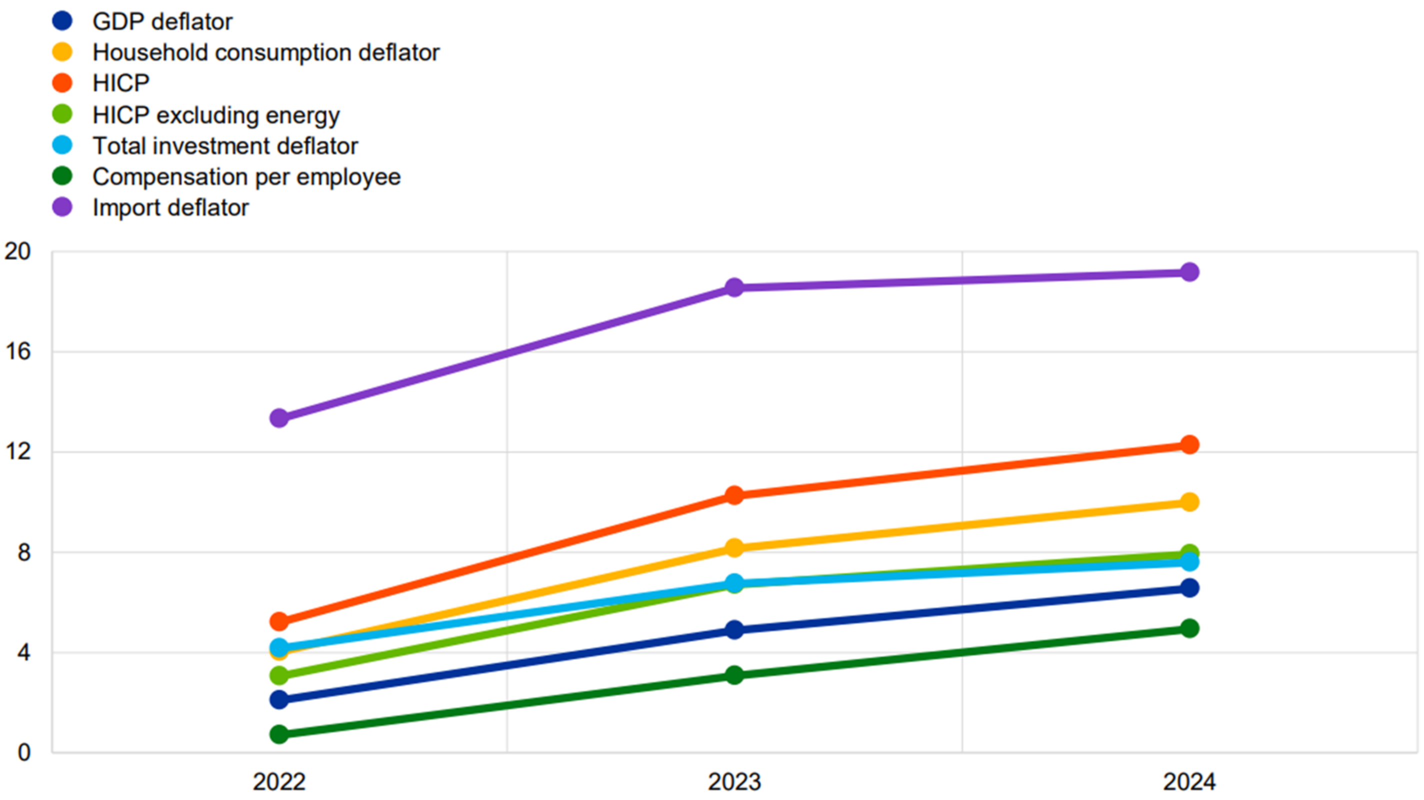
Once the reaction of each budget category to price dynamics is determined, the ECB's fiscal projection platform can be used to simulate the effects of the recent inflation surge on fiscal accounts.[8] This country-specific framework, now enhanced with the WGPF insights, is apt for analysing the direct fiscal impact of the early 2022 inflation surprise in a detailed way.[9]

The inflation surprise in the simulations is proxied by the revisions in price forecasts from December 2021 to December 2022 Eurosystem staff projections. These revisions, reflecting a substantial upward adjustment in the inflation outlook for 2022 and 2023, notably affected the HICP and household consumption deflator, both with significant import content, while domestic prices like average employee compensation and the GDP deflator saw limited changes (see Figure 2). This underscores the predominantly external nature of the inflation shock at that time, as opposed to a more widespread, broad-based inflation.

[8] For discretionary spending, the simulations assume a link to price dynamics estimated based on historical data, as documented in Bańkowski et al. (2023b).

[9] The simulations with the platform are partial equilibrium and come with two main limitations: they use price revisions as proxies for exogenous inflation shocks and only account for the most direct effects on fiscal variables by not altering real variables. Consequently, they do not capture the broader impacts of inflation on real economic activities, including those associated with monetary policy, which would bring additional indirect fiscal costs.

Figure 2: Inflation surprise: revisions to price variables in the December 2022 versus December 2021 Eurosystem projection (deviations in cumulative growth rates, percentage points)



Source: December 2021 and December 2022 Eurosystem staff macroeconomic projections for the euro area.

Simulated fiscal impact of the inflation surprise

The simulations indicate that the euro area's budget balance has been negatively affected by the early 2022 inflation surge (see Figure 3a). In 2022, the impact is marginally negative, owing to a partial-year impact, slight revenue increases and limited spending reaction. However, by 2024, lagged indexation arrangements lead to increased spending pressures, outweighing revenue gains and amplifying the budget cost to nearly 1% of GDP. Contrary to the belief that inflation benefits fiscal accounts, this adverse effect stems from the inflation surprise being narrow-based and concentrated in prices with import content. Although consumption taxes grew, they form a small portion of government revenue. Domestic prices, including wages and the GDP deflator, faced lesser pressure at the time, leading to moderate income tax and social contribution increases.[10] The strong response on the expenditure side, largely indexed to consumer prices, coupled with increasing cost of the purchased goods and services falling into the discretionary spending category, more than offsets any revenue benefits.

The direct impact of inflation on the euro area's debt-to-GDP ratio is primarily through the denominator effect, rather than through accumulating budget balance effects. By 2024, this inflation shock is estimated to reduce the debt-to-GDP ratio by nearly 5 percentage points (see Figure 3b). The majority of this decrease is on account of the "Snowball effect (deflator growth)" category, representing the denominator effect. However, these results do not capture all the consequences of inflation and the monetary policy response to it. Factors not fully included in our analysis are the increased cost of financing (excluding inflation-indexed bonds), downward revisions to real growth, and discretionary fiscal support by governments in response to the energy shock and high inflation.

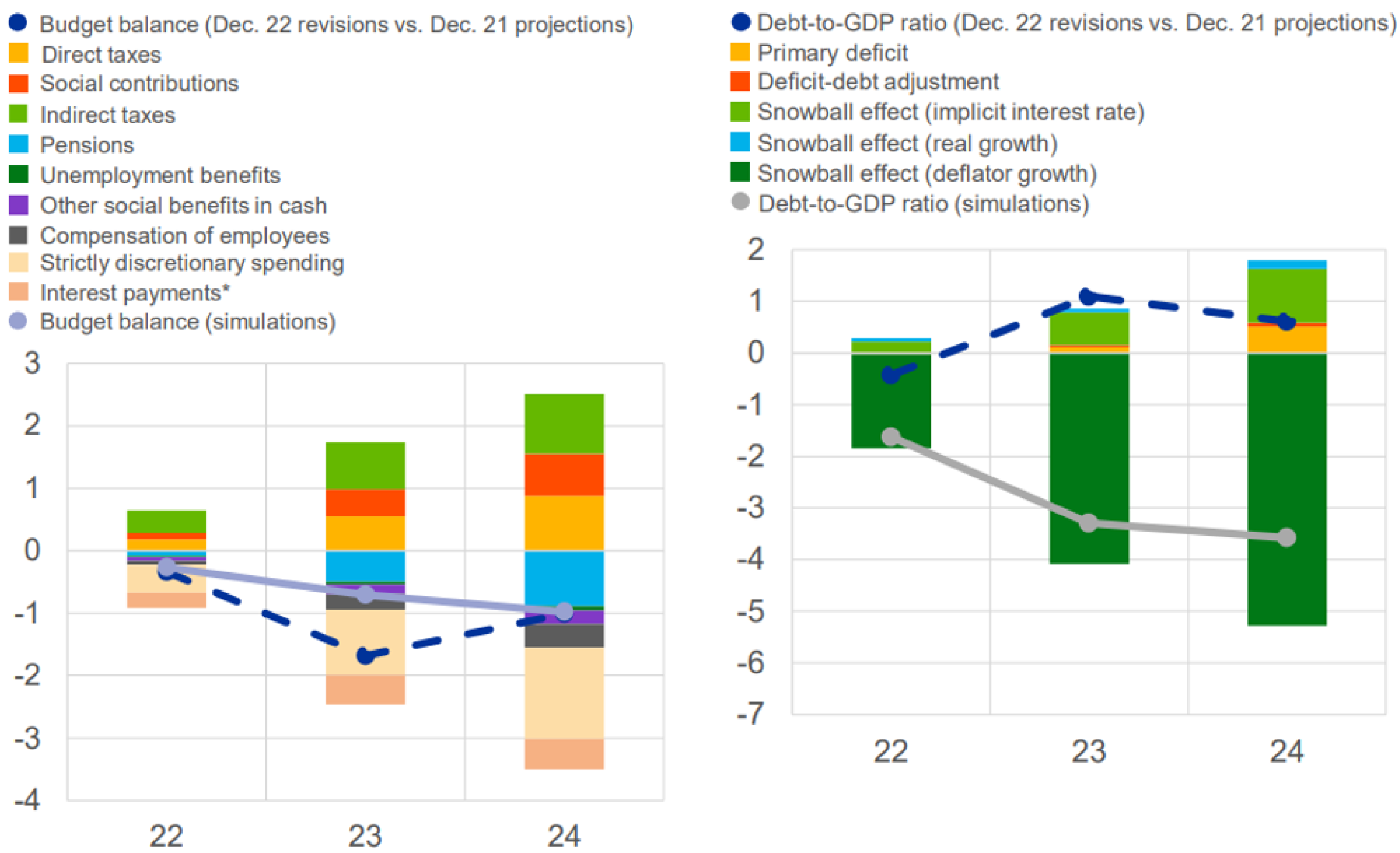
[10] The dispersion between prices has somewhat narrowed since the post-inflation forecast vintage (i.e., December 2022), primarily due to a sharp moderation in import prices. However, the broad picture remains unchanged, with the cumulative price increases since the start of the inflation episode still expected to continue varying across different prices in the coming years.

In principle, total forecast revisions to fiscal variables reflect a combination of these factors and others unrelated to the inflationary shock. In fact, they point to a rise in the debt-to-GDP ratio over 2023-24 and a somewhat stronger negative impact on the budget balance, particularly in 2023 (as illustrated by the dotted lines in Figures 3a and 3b).[11]

Figure 3: Direct effect of the inflation surprise on public finances considering standard and ad hoc indexation arrangements

a) Euro area government budget balance (percentages of GDP)

b) Euro area government debt-to-GDP ratio (percentage points)



Sources: Own calculations based on the December 2021 and December 2022 Eurosystem staff macroeconomic projections. Notes: Panel a): the grey budget balance line and the bars (its components) reflect the simulation results of the direct (partial) impact (automatic indexation and other adjustments) of the inflation surprise, scaled to the GDP before the shock. These abstract from the indirect effects, such as the impact of monetary policy reaction on interest payments, output and tax bases. For example, the "Interest payments" category in this chart captures only the direct impact of the inflation revisions on interest payments related to inflation-indexed bonds. All effects of indirect channels, including the full interest payment impact and discretionary fiscal policy reaction – together with other factors – are captured in the dotted line, which denotes total revisions in the budget balance-to-GDP ratio between the December 2022 and December 2021 projection vintages. The "Direct taxes" and "Social contributions" categories denote the impact on these items, which are paid by both households and firms. The calculations reflect existing indexations of income tax brackets in Belgium and Austria. Panel b): The snowball effects refer to the change in the debt-to-GDP ratio due to the differential between the effective interest rate paid on the stock of debt and the nominal GDP growth (further decomposed in the chart into real GDP growth and GDP deflator growth). The grey line and the bars (its components) illustrate only the effect of the revisions to price variables on the debt-to-GDP ratio. In this context, the category of "Snowball effect (implicit interest rate)" reflects only the direct impact of the inflation revisions on interest payments related to inflation-indexed bonds. The dotted line denotes revisions in the debt-to-GDP ratio between the December 2022 and December 2021 projection vintages, reflecting all factors at play but excluding the base effects of revisions to the debt ratio in the period analysed. Charts for individual euro area countries are presented in the Appendix to Bańkowski at al. (2023b).*

[11] See Bańkowski et al. (2023a) for an assessment of the effects of fiscal measures undertaken in the face of high inflation.

Euro area results cannot be uniformly applied to individual countries, as national circumstances vary when it comes to inflation dynamics and budget characteristics.[12] Countries with relatively more imported inflation surprises or more indexed expenditures are more susceptible to inflation-driven budgetary costs. Nationally, the effects of inflation on public finances vary greatly. For instance, Belgium and France, with high indexed spending, face significant inflation-induced direct budget costs (around 1.5% of GDP). Conversely, Lithuania experiences a positive effect, benefiting from inflation-boosted taxes and having lower proportions of indexed spending.

In the same vein, the inflation-induced changes in the debt-to-GDP ratios also greatly vary between euro area countries. Under certain conditions, namely a high starting value of the debt-to-GDP ratio and a sizeable inflation surprise within the GDP deflator, the denominator effect may lead to sizeable debt-to-GDP ratio drops. The simulations feature multiple cases of decreases of more than 10 percentage points (Cyprus, Lithuania and Portugal). However, as mentioned, it is important to note that in reality, debt and deficit dynamics are influenced by a multitude of indirect factors tending to put upward pressure on debt. Additionally, future political decisions regarding the path of fiscal policy also play a significant role. ■

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[12] The appendix of Bańkowski at al. (2023b) contains country-specific results.

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