Euro Area Inflation after the Pandemic and Energy Shock: Import Prices, Profits and Wages

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ABSTRACT: We document the importance of import prices and domestic profits as a counterpart to the recent increase in euro area inflation. Through a novel consumption deflator decomposition, we show that import prices account for 40 percent of the average change in the consumption deflator over 2022Q1 – 2023Q1, while domestic profits account for 45 percent. The increase in nominal profits was largest in sectors benefiting from increasing international commodity prices and those exposed to recent supply-demand mismatches. While the results show that firms have passed on more than the nominal cost shock, and have fared relatively better than workers, the limited available data does not point to a widespread increase in markups. Looking ahead, assuming nominal wage growth of around 4.5 percent over 2023-24 – slightly below the level seen in Q1 2023 – and broadly unchanged productivity, a normalization of the profit share to the average level over 2015-19 will be necessary to achieve a convergence of inflation to target over the next two years. Monetary policy will thus need to remain restrictive to anchor expectations and maintain subdued demand such that workers and firms settle on relative price setting that is consistent with disinflation.

WORKING PAPERS

Euro Area Inflation after the Pandemic and Energy Shock: Import Prices, Profits and Wages

Prepared by **Niels-Jakob Hansen, Frederik Toscani, and Jing Zhou**[1]

FIGURES

1. Introduction

The increase in firm profits in the recent inflation episode has been catching the attention of economic commentators and policy makers across advanced economies. Despite some cross-country heterogeneity, there has been a pattern of profits per unit of output (unit profits) being an important counterpart to the increase in the GDP deflator in advanced economies over the past two years. Policy makers have consequently pivoted in their communication to highlight the role of profits for inflation along with the role of unit labor costs. For example, ECB executive board member Philip Lane in an interview with Reuters pointed to "extraordinary unit profits", and ECB executive board member Fabio Panetta raised the risk of a profit-price spiral in a New York Times interview.[2] Former IMF chief economist Olivier Blanchard has pointed out that distributional conflict – be it driven by strong aggregate demand or the initial desire of one economic actor to increase relative prices relative to others – can generate inflationary processes.

Against this background, our paper investigates the role of profits, wages, and import prices in the recent episode of high inflation in the Euro Area. We contribute to the debate by disentangling the role of import prices, profits, and wages in inflation in the euro area. Focusing on the consumption deflator, we add the role of import prices to the now well-known GDP deflator decomposition. To set the scene, we confirm that unit profits in the euro area have increased sharply and are the main counterpart to the increase in the GDP deflator. The profit increase was largest in mining and utilities but was also significant in agriculture, construction, manufacturing, and contact-intensive services. Accounting explicitly for the import price shock through a consumption deflator rather than GDP deflator decomposition, we find that import prices account directly for 40 percent of inflation on average since 2022. But the role of domestic profits remains significant, accounting for just below 45 percent and labor costs for 25 percent of inflation. Net taxes were slightly disinflationary over the period and thus contributed negatively.

While nominal profits have increased, this is not necessarily true for profitability. Our results imply that firms have passed on more than the immediate nominal import cost shock. Given the increasing profit share of gross value added, firms have so far also been relatively more shielded from the adverse terms of trade shock than wage earners. But this does not necessarily imply that profitability (the markup or profit margin) has increased. Analysis by economists at the Bank of Italy (Colonna et al., 2023) carefully lays out the relationship between profit share and markup and illustrates the conditions under which they can move in opposite directions. They also show that data for Germany suggests markups in industry and in manufacturing remained constant in 2022, but increased in construction, retail, accommodation, and transport. In Italy, markups in 2022 were essentially at pre-pandemic levels. Our own reading of the limited national accounts-based data for the euro area is consistent with this, pointing to broadly constant rather than increasing profitability. How come firms have been relatively more shielded from the shock than workers? One reason is that prices are more flexible than wages— firms are able to adjust prices quickly to shield their profitability while wage is subject to more rigidities such as being set by previous wage negotiations.

The growing literature on the role for profits is generally aligned with our finding that firms have fared relatively better than workers even in the absence of a large increase in markups. For the euro are, among others, authors from the European Central Bank (Arce et al., 2023) and European Stability Mechanism (Capolongo et al., 2023) as well as the European Commission in its Spring 2023 forecast have shown that unit profits rose significantly in 2022, leading to an increase in the profit share. Unit profit increases have been

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concentrated in sectors exposed to international commodity prices and demand-supply mismatches. The analysis most closely related to our own is the work presented in speeches by the Bank of England's Dhingra (2023) and Haskel (2023) which through somewhat different methodologies decompose inflation into domestic profits, wages, taxes and imported prices (splitting out energy costs and other imported prices in Dhingra's approach). While the results differ somewhat between both approaches, both caution against an oversimplistic interpretation where an increase in gross operating surplus is interpreted as corporate profits being the largest driver of inflation. Haskel finds a larger role for terms of trade for euro area inflation than in the UK and US, with magnitudes broadly comparable to our own work for the euro area. On the implications for profitability and whether a positive markup shock has been a causal driver of inflation, work by the IMF in the October 2022 World Economic Outlook, does not find a broad-based increase markup for advanced economies in 2021. At the country level, in addition to Colonna et al. (2023), Glover et al (2023a) find that markups in 2021 increased 3.4 percent in the US, contributing significantly to the increase in inflation. In a follow-up piece, Glover et al. (2023b) show that the contribution of profits to inflation eased in the US in 2022, and that the pattern has been in line with previous economic recoveries.

Werning and Lorenzoni (2023) present a conceptual framework which can be used to think about inflation as a manifestation of conflict– disagreement about relative prices – between economic actors. In the context of a large import price shock as the root cause of an initial increase in prices, for example, this can lead to a generalized increase in inflation as agents sequentially (due to nominal rigidities) adjust prices depending on their inflation expectations. Blanchard (1986) is an important contribution on cost push inflation, where workers attempt to maintain their purchasing power following an initial erosion leading to further inflation. This can be a useful angle to interpret the consumption deflator decomposition we present. It suggests that in line with historical evidence, an acceleration in labor costs is likely ahead. From a more general perspective, our paper is loosely linked to the strand of literature which analyzes profitability and market power using firm-level data (e.g., De Loecker et al (2020), Davis et al (2022)) but we focus on national account data.

Illustrative simulations show that a compression in the profit share to historic norms will likely be necessary to achieve the disinflationary process under plausible wage growth assumptions. We start by estimating that the terms of trade contribute negatively to inflation in the euro area over the next two years – on the order of one percentage point in 2023 based on the assumptions underlying the April 2023 IMF World Economic Outlook. We also assume that there will be no contribution of net taxes to inflation and that labor productivity will remain broadly flat in the next couple of years. Under these assumptions we are able to map inflation outcomes in the profit share-nominal wage growth space using our consumption deflator decomposition. This exercise shows that average nominal wage growth of around 4.5 percent over 2023-24 is consistent with the inflation projections in the April 2023 World Economic Outlook for the euro area – which show inflation converging to target in early/mid 2025 – if profit shares return to the average level of 2015-19 by end-2024 and labor productivity remains broadly unchanged. Should wages increase more significantly – for example, in a static sense wage growth of around 5.5 percent would ensure that real wages return to their pre-pandemic level by end-2024 – inflation would be notably higher unless the profit share compresses to the lowest level since the mid-1990s. It is then incumbent on policy makers to anchor expectations and support coordination among economic actors on a low inflation equilibrium such that the recovery in real wages occurs at a measured pace and firms accept a compression in the profit share.

The paper proceeds as follows. First, it lays out the standard GDP deflator decomposition which has received much attention over recent months. It compares the contribution of unit profits, unit labor costs, and unit taxes today in the euro area with historical evidence from the 1970s oil price shocks as well as with other major economies. Second, the analysis moves closer to understanding the dynamics of HICP by proposing a decomposition of the consumption deflator (which like HICP but unlike GDP includes imports but excludes

exports). Third, we discuss what the results imply for profitability. Fourth, we analyze implications for the inflation outlook. The final section concludes.

2. Decomposing the GDP Deflator

In this section, we exploit that GDP from the income side can be written as the sum of labor compensation, gross operating surplus, and net taxes. It is well known that GDP from the income side can be written as

$$GDP = GVA + Net\ Taxes = Profits + Compensation\ of\ Employees + Net\ Taxes \qquad (2.1)$$

From this it follows that the GDP deflator (nominal GDP divided by real GDP) can be expressed as the sum of unit labor costs, unit profits and unit net taxes.
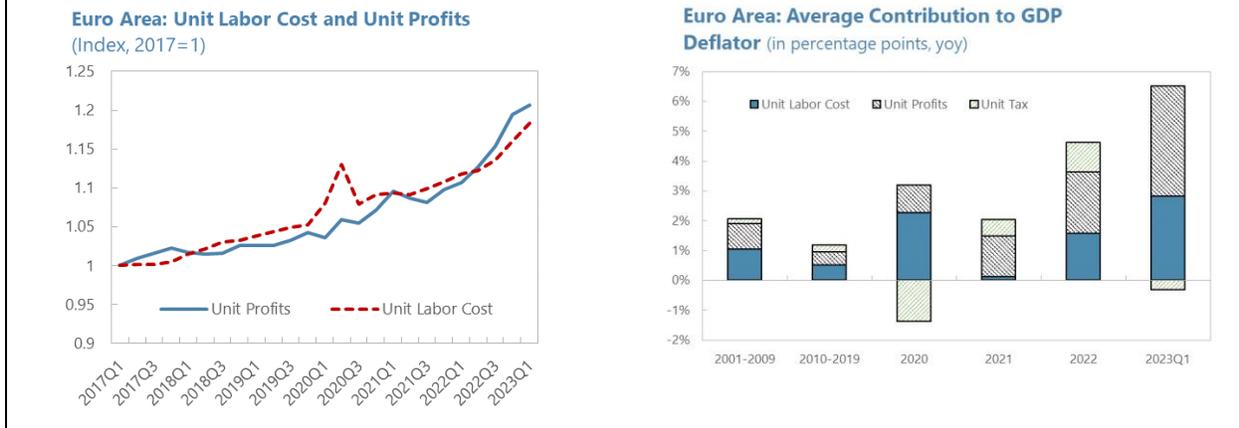
$$\frac{GDP}{GDP^R} = GDP\ Deflator = Unit\ Profits + Unit\ Labor\ Cost + Unit\ Taxes \qquad (2.2)$$

While this accounting identify does not allow for any causal interpretation, it shows how (changes in) the GDP deflator is reflected in profits per unit of real GDP (unit profits), labor compensation per unit of real GDP (unit labor cost), and taxes less subsidies per unit of GDP (unit taxes).

To exploit the GDP deflator decomposition identity, we rely on national accounts data. The national accounts report profits as gross operating surplus and mixed income. Operating surplus measures the surplus or deficit accruing from production by nonfinancial and financial corporations, government, households, and nonprofit institutions serving households. Mixed income is the surplus or deficit accruing from production by unincorporated enterprises owned by households. Gross operating surplus differs from profits shown in company accounts for several reasons. Only a subset of total costs are subtracted from gross output to calculate the gross operating surplus. Essentially it is gross output less the cost of intermediate goods and services to give gross value added, and less compensation of employees and taxes and subsidies on production and imports. It is gross because it makes no allowance for consumption of fixed capital (CFC). For ease of notation, we will refer to gross operating surplus and mixed income as nominal profits throughout this paper.

Profits per unit of output diverged sharply from their pre-pandemic trend in recent quarters and were the main counterparts to the increase in the GDP deflator in 2022 (Figure 1). Between 2000 and 2019, unit profits contributed slightly less to the GDP deflator than unit labor costs, with a minor role for increasing taxes. 2020 and 2021 saw high volatility in components, in part due to the temporary pandemic tax cuts, even as the GDP deflator increased by a steady 3 percent in both years. In 2022, the GDP deflator accelerated sharply, with both unit labor costs and unit profits rising significantly above averages in recent years. Unit profits contributed the largest share of the increase. The latest available data at the time of writing was Q1 2023, showing a further increase in both the contribution of unit profits and unit labor costs relative to the 2022 average.

Figure 1. Euro Area: Decomposition of Change in the GDP Deflator

Euro Area: Unit Labor Cost and Unit Profits
(Index, 2017=1)

Euro Area: Average Contribution to GDP Deflator (in percentage points, yoy)

Unit profits increased in agriculture, construction, mining and utilities, manufacturing and contact-intensive services. The mining and utilities sector saw the largest increase, while some sectors such as professionals and public administration remained below pre-COVID levels (Figure 2). Looking in terms of contributions to total GDP deflator inflation since 2022, trade, travel, accommodation and food—with a significant increase in unit profit and a sizable share in total gross value added—saw the largest increase in their share. Similar change also applies to mining and utilities, who previously contributed a negligible share to GDP deflator inflation, now was responsible for two tenths of the average inflation between 2022Q1 and 2023Q1. On the contrary, manufacturing, which used to contribute a quarter to the GDP deflator inflation in the last decade, only accounted for around one tenth of the inflation.

Figure 2. Euro Area: Sectoral Profit

Euro Area: Unit Profit
(Index, 2019=100, nominal profit divided by real GVA)

Sectoral Unit Profit Contribution to GDP Deflator Inflation
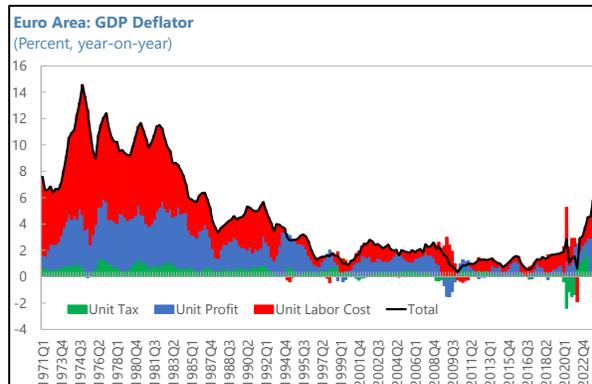(Percent, as share of total yoy inflation, Euro Area)

Sources: Eurostat.

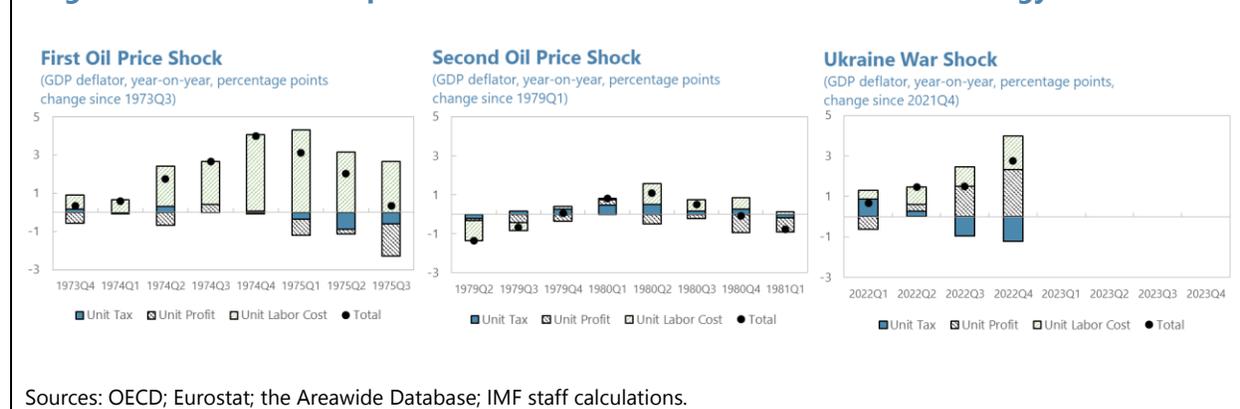Sources: Eurostat, IMF staff calculations.
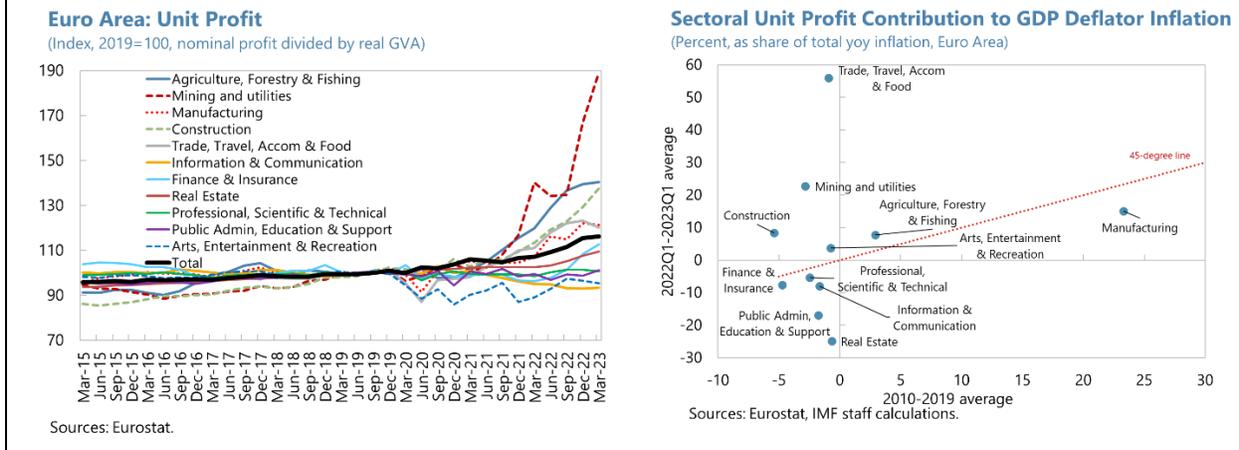
The increase in the GDP deflator following the current energy shock has been comparable in magnitude to the first oil price shock of the 1970s, but the composition has been different.
Following the first oil price shock in 1973 – spurred by the Organization of the Petroleum Exporting Countries oil embargo – the growth in the GDP deflator rose markedly, driven almost exclusively by accelerating labor costs while profits fell (Figure 3, left panel). [3] Labor costs also played more of a role during the second oil price shock in 1979 – triggered

Euro Area: GDP Deflator
(Percent, year-on-year)

by the temporary reduction in oil supply amid the Iranian revolution – although the overall increase in the GDP deflator growth was smaller in that episode (Figure 3, middle panel). The magnitude of the current increase in the GDP deflator inflation rate is comparable to the first oil price shock (Figure 3, right panel), albeit from a much lower starting level of inflation (text chart). Profits have played a larger role than labor costs so far in the current episode (Figure 3, right panel). However, during all three episodes the relative contribution from labor costs grew over time. This is consistent with the notion that firms can pass on higher inputs cost more promptly, while it takes a longer time for wages to adjust (the wage adjustments were large after the first oil price shock once they kicker in after about three-four quarters, likely due to explicit indexation arrangements and less anchored expectations). The resulting initially lower real wages would incentivize more hiring, eventually also pushing up wages. Thus, an increase in the relative contribution from wages during 2023 would be consistent with the historical evidence and theory.

Figure 3. Euro Area: Comparison of GDP Deflator Increase to Previous Energy Price Shocks

First Oil Price Shock
(GDP deflator, year-on-year, percentage points change since 1973Q3)

Second Oil Price Shock
(GDP deflator, year-on-year, percentage points change since 1979Q1)

Ukraine War Shock
(GDP deflator, year-on-year, percentage points, change since 2021Q4)

Sources: OECD; Eurostat; the Areawide Database; IMF staff calculations.

Relative to the US and Canada, the increase in the GDP deflator in the euro area has recently been more tilted towards profits. In Canada and the United States, the acceleration in the GDP deflator started earlier and was more biased towards higher labor costs (Figure 4). On a year-on-year basis the GDP deflator has decelerated in both countries in the second half of 2022. In the euro area and the UK, on the other hand, the GDP deflator accelerated precisely in the second half of 2022, with a large role played by profits. This could partly reflect the different nature of shocks, with the shock in North America being relatively more driven by demand (and a positive terms of trade shock in 2022) while the adverse energy shock played an important role in the euro area and UK. Taking a longer perspective to understand the cumulative GDP deflator change over

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[3] Nominal (unit) profits increased sharply in the years just before the oil price shock (1971-1973). The outsized role of labor costs' following the oil shock might thus have partly been a reaction to this increase.

both the pandemic and energy shock period (Q4 2019 to Q4 2022), shows that profits played the largest role in the Euro Area in relative terms (Figure 4).[4]

Figure 4. Euro Area: Comparison of Euro Area GDP Deflator Decomposition with Other Major Economies
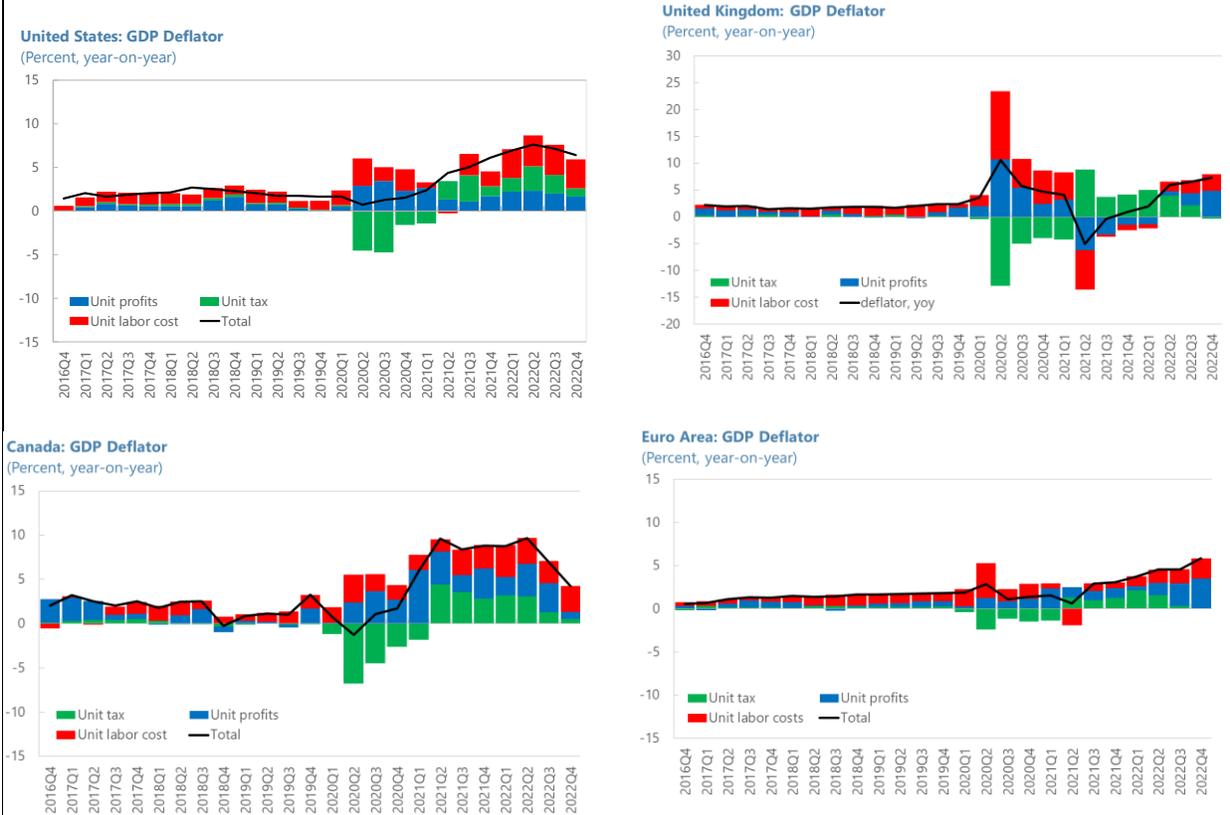
Sources: OECD; Eurostat; the Areawide Database; IMF staff calculations.

Notes: For the United States, the bars do not sum up to the full deflator growth in each quarter, as profits, net taxes, and labor cost here sum to gross domestic *income*.

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[4] IMF (2022) had a box with a similar exercise on contributions to cumulative GDP deflator changes, however, the period covered was 2019q4-2021q4.

3. Decomposing the Consumption Deflator

Conceptually, the GDP deflator does not provide a full picture of the recent episode of surging consumer price inflation since it includes export prices and excludes import prices. On average, different measures of price changes in the economy such as the GDP deflator, the total consumption deflator and HICP/CPI inflation tend to co-move closely (text chart). However, at times of large terms-of-trade swings they can decouple, and this has been the case over the recent years. The link between the consumption deflator and HICP developments is tighter, since they both include import prices of consumer goods and unlike the GDP deflator exclude export prices.

Euro Area: Price Dynamics - National Account Deflators vs HICP (yoy)

Source: Eurostat
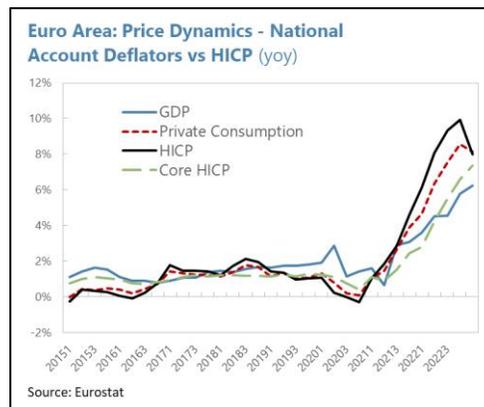
Using a set of simplifying assumptions, consumer price inflation can be decomposed into contributions from domestic profits, labor, foreign, and net taxes. Assume that the production function to produce total consumption is Cobb-Douglas, with weight λ_{js} for value added from country j sector s ($\sum_{j,s}\lambda_{js} = 1$). The cost minimization problem for producer is:

$$\min_{q_{js}} \sum_{j,s} p_{js}q_{js} \qquad s.t. \qquad \prod_{j,s}(q_{js})^{\lambda_{js}} = 1$$

The resulting producer cost for one unit of total consumption is equal to

$$\prod_{j,s}\left(\frac{p_{js}}{\lambda_{js}}\right)^{\lambda_{js}}$$

and the share of the cost of goods from country j sector s in the total cost amounts to λ_{js}. Assuming that retailer takes a constant markup (corresponding to a constant elasticity of substitution between goods in consumer's utility function), then the dynamics of consumption deflator inflation mimic those of producer prices combined with a sales tax τ.

$$p = (1 + \tau)\prod_{j,s}\left(\frac{p_{js}}{\lambda_{js}}\right)^{\lambda_{js}}$$

Consumption deflator inflation can be written as:

$$\ln p - \ln \tilde{p} = \sum_{j,s}\lambda_{js}(\ln p_{js} - \ln \widetilde{p_{js}}) + \ln(1+\tau) - \ln(1+\tilde{\tau}) \qquad (3.1)$$

where $\sim$ denotes value of a given variable in the last period. Essentially, $(\ln p_{js} - \ln \widetilde{p_{js}})$ can be calculated from the GVA deflator inflation of country j sector s, which can be decomposed into labor compensation (L) and profit (F) using real GVA (y) and grouped into domestic profit, domestic labor compensation, and foreign.

$$\text{Ln } p_{js} - \ln \widetilde{p_{js}} = \underbrace{\frac{\frac{L_{js}}{y_{js}} - \frac{\widetilde{L_{js}}}{\widetilde{y_{js}}}}{\widetilde{p_{js}}}}_{contribution\ from\ labor} + \underbrace{\frac{\frac{F_{js}}{y_{js}} - \frac{\widetilde{F_{js}}}{\widetilde{y_{js}}}}{\widetilde{p_{js}}}}_{contribution\ from\ profit} \qquad (3.2)$$

The decomposition of consumption deflator inflation needs four sets of data. First, nominal and real sectoral GVA to calculate sectoral GVA deflator inflation. Second, sectoral nominal labor compensation (or profit) to decompose the GVA deflator inflation into labor and profit. Third, the share of sectoral value added in consumption. Fourth, sales tax rate to calculate the contribution from net taxes. After accounting for the domestic parts, the residual can be attributed to foreign. In terms of data sources, i) and ii) can be obtained from quarterly national account, iv) can be proxied by the difference between inflation and inflation under constant tax rates calculated by Eurostat. For iii), ideally, one would need the sectoral value-added share

corresponding to the consumption bundle underlying HICP, however, such data is not available. Instead, we use the sectoral value added for total consumption (private and government) from the OECD's TiVA dataset (as of year 2018). Note that, similar to (3.1), the total GDP deflator inflation can also be presented as a weighted average of sectoral GVA deflator inflation, with the weights equal to the share of sectoral real GVA in total real GVA. The weights for total consumption deflator inflation differ from those for GDP deflator in two ways. First, there is no weight for imports in the GDP deflator, but for European countries, foreign GVA accounts for about 20 percent of total consumption. Second, for each sector, the share in GDP could be different from the share in consumption. For instance, for intermediate manufacturing goods such as steel, the share could be zero in consumption but nonzero in GDP.

Decomposing the consumption deflator confirms the role of profits as the main counterpart to the recent inflation surge, but also highlights the key role of foreign prices. From 2022Q1 to 2023Q1, the foreign (imported) part—closely linked to the terms of trade—contributed about two fifths to the total consumption deflator inflation, which is comparable to the contribution from energy to HICP inflation.[5] Domestic profits still played a large role—contributing 45 percent to the total consumption deflator inflation (Figure 5). Compared with historical averages, the rising import prices and profit parts replaced labor cost as the main counterpart to inflation over the past two years. With the reverse of energy prices, the contribution from import prices has been decreasing since its peak in mid-2022, and similar to previous energy price shocks (Figure 3), the contribution from labor compensation has already gradually picked up over recent quarters.

Figure 5. Euro Area: Decomposition of Change in the Consumption Deflator

Euro Area: Consumption Deflator Inflation Decomposition (Percentage points, yoy)

Euro Area: Foreign Contribution to Inflation and ToT (LHS: percentage points, RHS: percent)

Sources: Eurostat, OECD, IMF staff calculations.

Sources: OECD, Eurostat, Haver Analytics.
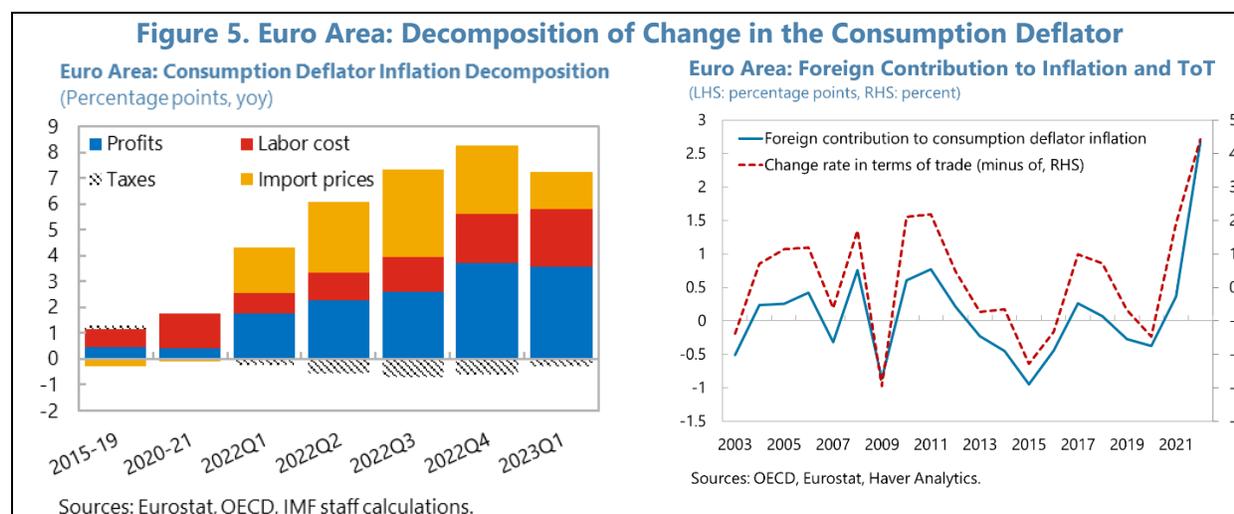
The recovery of productivity in 2022 contributed negatively to inflation in 2022. Building on the decomposition framework, the unit labor cost term can be further divided into nominal compensation per worker and labor productivity (real output per worker) and the unit profit term can be separated into capital rent (nominal profit per real capital) and capital productivity (real output per capital). For a given level of the unit labor cost or unit profit, higher productivity allows larger increases in wages or capital rent. This was the case in 2022 (Figure 6)[6]—as productivity recovered from the slump during COVID, it helped to offset some of the wage

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[5] The remaining differences between consumption deflator developments and HICP are because public consumption is included in the former and the weights for individual items in private consumption differ for HICP/CPI and the consumption deflator. Ideally, the private consumption deflator would be a better suit for analyzing consumer prices than the total consumption deflator. However, country-sector-specific value added—which is needed for the decomposition—is only available for total consumption not for private consumption, from the TiVA dataset.

[6] Due to the lack of sectoral capital stock data at the euro area level at quarterly frequency, the decomposition of unit profit is not feasible for consumption deflator inflation.

and profit pressure on inflation. For instance, unit labor costs accounted for about 1.5 percentage points of the average consumption deflator inflation between 2022Q1 and 2023Q1, within which compensation of employees and rise in labor productivity accounted for 2 and −0.5 percentage points, respectively.(Figure 6, left). Looking at the GDP deflator, contributions of compensation of employees and labor productivity are similar. We can also break out capital productivity here. Profits accounted for close to 2.5 percentage points of the average GDP deflator inflation between 2022Q1 and 2023Q1 – with capital rent accounting for around 3¼ percentage points and capital productivity having a dampening impact of about ¾ percentage points (Figure 6, right). Note that in 2023 Q1 labor productivity dropped quite sharply relative to Q4 2022 but only moderately relative to 2022Q1. If productivity continues to decline through the rest of 2023, the room for wages to grow would be less, all other variables kept equal.

Figure 6. Euro Area: Accounting for the Contribution of Productivity to Inflation

Euro Area: Consumption Deflator Inflation Decomposition (Percentage points, yoy)

Euro Area: GDP Deflator Inflation Decomposition (Percentage points, yoy)

Sources: Eurostat, OECD, IMF staff calculations.

Sources: Eurostat, OECD, IMF staff calculations.

Note: Real capital stock data is available up to 2022Q4, and 2023Q1 is estimated based on the real capital stock in 2022Q4 and gross fixed capital formation in 2023Q1.

# 4. Implications for Profitability and the Distribution of Income

Nominal unit profits and the profit share can increase without a change in markup.[7] To obtain a measure of the profit share we need to relate nominal profits to gross value added or GDP. And to obtain measures of profitability we need to relate profits to the value of inputs or output. The classic way to study profitability in economics is through the lens of markups over marginal cost (MC). Assume first that firms set a constant markup η, then consumer price $P = (1 + \eta)MC$ and unit profit $\Delta = \frac{profit}{Y} = \eta MC$. It is immediately clear that unit profit can increase without a change in the markup, simply because MC increases. Now note that the profit share in gross value added is equal to $\frac{\eta MC}{WL + \eta MC} = \frac{\eta}{\frac{WL}{MC} + \eta}$, where $\frac{WL}{MC}$ is the labor cost share in total cost. What happens to the profit share following a non-wage cost shock? As an illustrative scenarios, we consider three different production functions, always under the assumption that wages do not adjust: i) under Cobb-Douglas production function (where the elasticity of substitution between labor and energy is one), the labor cost share

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[7] In terms of definitions, we use the following labelling: Unit profits are defined as nominal profits per unit of output or per real value added. For profitability we consider a number of possible indicators. Profit shares are defined as nominal profits relative to nominal output or gross value added. Profit margins are nominal profits as a share of total output (in a national account setting) or nominal profits as a share of sales. Finally, the markup – the canonical way to look at profitability in economics - is defined as the ratio of price over marginal cost.

is constant, so will be the profit share in gross value added; ii) under Leontief production function (where the elasticity of substitution between labor and energy is zero), the labor cost share decreases and the profit share increases; iii) under CES production function (where the elasticity of substitution between labor and energy is between zero and one), energy inputs will be partially substituted by labor, but in net, the labor cost share decreases and the profit share increases. Both nominal profits and the profit share can thus increase with constant markup.[8]

In addition, theory does not have a clear prediction on the expected behavior of markup following a cost shock. In textbook models of monopolistic competition, markups are determined by structural features of the market. Firms set prices such that markups are maintained (at least as long as the market structural such as market concentration or demand elasticity do not change). But two important caveats apply here. First, market structure (for example the number of active producers) was likely changed following the Covid-19 and energy shocks, and the bottlenecks and supply disruptions. Changes in market structure might thus imply changes in markups. And second, there is empirical evidence suggesting that markups are pro-cyclical (Nekarda and Ramey, 2020). Such a behavior would also be consistent with prices being less sticky than wages, such that the markup over labor cost (also an input into production) increases during booms and contracts in recessions (Broer et al., 2020). If markups are indeed generally procyclical, then constant or even increasing markups over the past quarters would constitute a different dynamic.
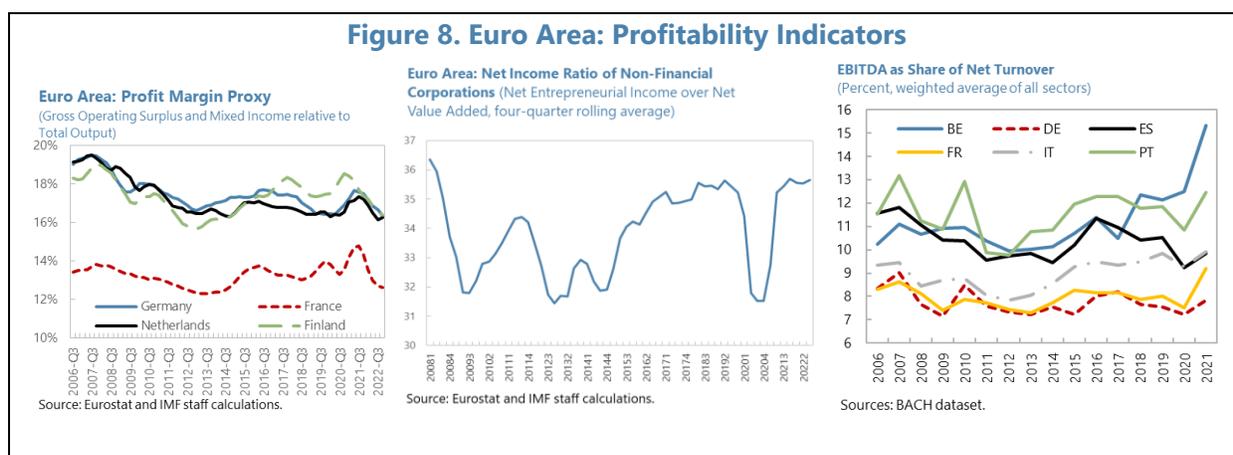
The empirical results discussed above – notably the increase in the profit share - imply that profits have so far fared relatively better than wages. Given Europe is a net energy importer, the adverse terms of trade shock implies that national income must fall (relative to counterfactual) if part of the shock turns out to be permanent. This can happen through lower real income for corporations, workers, or both. The sharper increase in unit profits than unit labor costs (Figure 1), and the related GDP and consumption deflator decompositions (Figure 1 and Figure 5) have already shown that so far the *relative* beneficiary have been profits rather than wages. The left chart in Figure 7 illustrates this more explicitly by showing that the profit share has risen to the highest level since the Great Financial Crisis (GFC). One more way to see the relative outperformance of profits is to note that as of Q1 2023, profits (adjusted for the GDP deflator) were about 1 percent above the pre-pandemic (2010-2019) trend, while compensation of employees (also adjusted for the GDP deflator) stood about 2 percent below trend (Figure 7, right hand side).

Figure 7. Euro Area: Income Shares and Real Wage and Profit

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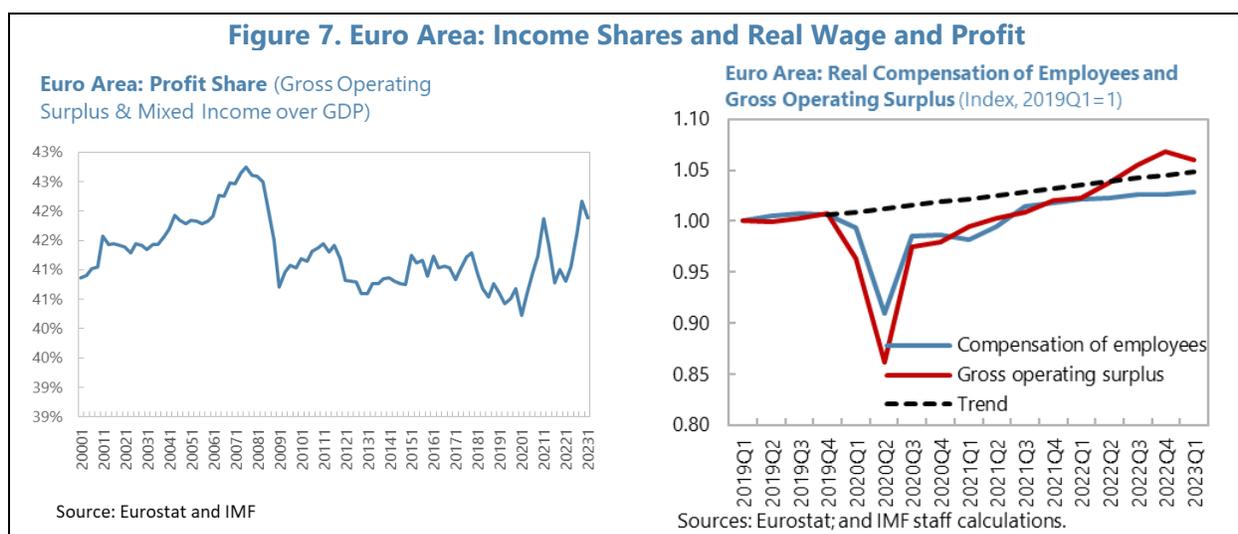
[8] See Colonna et al. (2023) for a closely related exposition.

The limited available data paint a picture of resilient but perhaps not (sharply) increasing profitability.
Figure 8 illustrates a few available indicators based on ECB (2004) which all shine an imperfect but useful light
on profitability. A sectoral account-based proxy for overall profit margins shown in the left chart accounts for
intermediate inputs but is only available for a handful of countries at quarterly frequency. This indicator shows a
sharp increase in profitability in 2021 but a reversal in 2022, providing perhaps the most concrete up to date
data cautioning against the hypothesis of a large profitability increase in 2022. The indicator in the middle chart
moves closer to how pre-tax profits as measured in corporate accounts, and shows an elevated level since
mid-2021 but with 2022 levels not (much) above pre-pandemic levels.[9] Finally, the right-hand side chart shows
a microdata proxy for firm level markups, illustrating a rebound from the pandemic low in 2021. [10] The data from
this dataset for 2022 is not available yet. Overall, the data at this point is not fully conclusive on whether
profitability increased in 2022 or whether firms have merely been able to shield (a good part of) their profitability
in the face of a large cost shock.

Figure 8. Euro Area: Profitability Indicators

Euro Area: Profit Margin Proxy (Gross Operating Surplus and Mixed Income relative to Total Output)
Source: Eurostat and IMF staff calculations.

Euro Area: Net Income Ratio of Non-Financial Corporations (Net Entrepreneurial Income over Net Value Added, four-quarter rolling average)
Source: Eurostat and IMF staff calculations.

EBITDA as Share of Net Turnover (Percent, weighted average of all sectors)
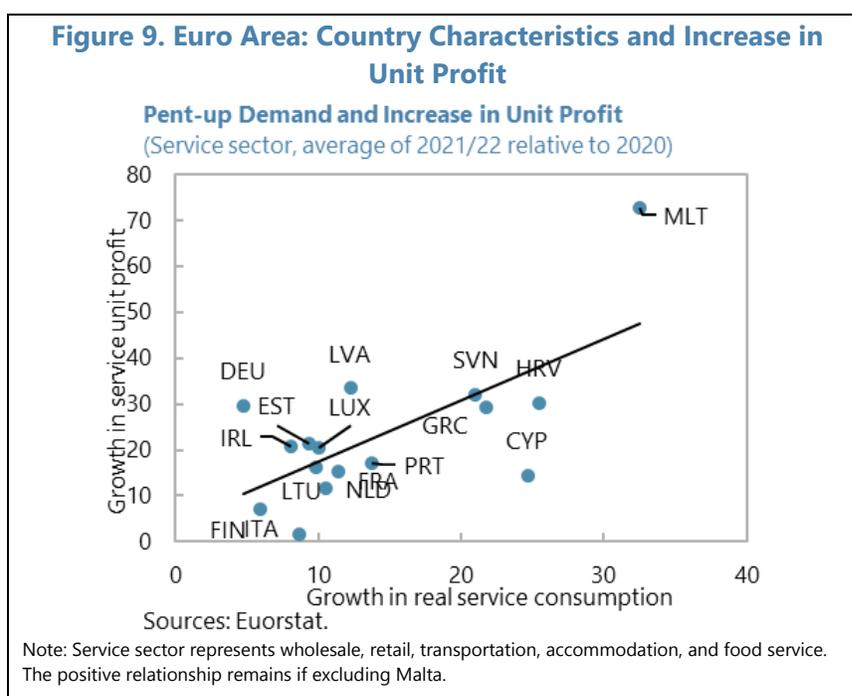Sources: BACH dataset.

**Several factors could explain resilience and even a possible increase in profitability – including
temporary pricing power, capacity constraints in competitive markets, or market structures allowing
windfall profits.** The baseline story would have been firms passing on the energy shock amid sufficiently
strong demand that markups did not need to react. For instance, facing higher energy costs, two thirds of
SMEs in Germany have implemented or are planning price increases (Schwartz and others, 2022). Beyond
resilient profitability, certain sectors have market structures allowing for windfall profit gains at certain times,
e.g., mining or certain electricity producers who use renewable sources experienced virtually no increase in
their marginal costs but revenues which depend on the marginal cost of fossil fuel producers. The pandemic
and energy shocks might have also led to conditions generating unusual profits in generally highly competitive
markets—as pointed out by Olivier Blanchard, such higher prices can be rationalized by competitive firms
operating on an upward sloping marginal cost curve (e.g., due to constraints on boosting productive capacity in
the short run).[11] Alternatively, supply disruptions might lead to temporary monopolies or oligopolies, providing
firms with pricing power (Weber and Wasner, 2023). Again, profitability may increase. Concretely, for contact-
intensive sectors such as food services and travel, the post-pandemic release of pent-up demand paired with a

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[9] The net income ratio is the ratio of net entrepreneurial income (close in spirit to pre-tax corporate profits in business accounts) to net value added. Net entrepreneurial income equals net value added plus subsidies on production and property income receivable from financial assets owned by non-financial corporations (including profits of foreign subsidiaries), minus compensation of employees, taxes on production, interest and (land) rents payable

[10] The firm balance sheet data for a group of European countries comes from the BACH dataset (Bank for the Accounts of Companies Harmonized). The proxy for markup used here is the share of EBITDA in net turnover (sales of goods and services net of returns, ductions, rebates, VAT, and excise taxes).

[11] See https://twitter.com/ojblanchard1/status/1642581647378862082?cxt=HHwWhMC-6cbTz8stAAAA.

reduction of productive capacity might have provided them with pricing power and led to increases in profit margins (Figure 9). Similarly, the construction sector was able to raise prices, buttressed by the buoyant demand due to work-from-home needs since the pandemic as well as scarcity in materials and labor. Agriculture and manufacturing, which produce tradable goods in contrast to the other sectors, have benefited from rising global prices for agricultural commodities (e.g., grain shortages caused by disruptions to Ukraine's exports).[12] Empirically, national account markup proxies presented by Colonna et al. (2023) show that precisely in retail and construction markups did increase in Germany (but no such dynamic is apparent in Italy) while there was no increase in markups in industry and manufacturing. All in all, resilient demand amid at least temporarily restricted supply seems to be part of the story.

Figure 9. Euro Area: Country Characteristics and Increase in Unit Profit

Pent-up Demand and Increase in Unit Profit
(Service sector, average of 2021/22 relative to 2020)

Sources: Euorstat.
Note: Service sector represents wholesale, retail, transportation, accommodation, and food service. The positive relationship remains if excluding Malta.

5. Implications for the Inflation Outlook

We exploit the consumption deflator decomposition from Section 3 to map nominal wage growth and profit share scenarios to the resulting inflation rates over the coming two years. Assuming no change in tax rates and constant labor productivity, consumption deflator inflation (equation (3.1)) can be rewritten as the sum of three parts

$$\ln p - \ln \tilde{p} = \sum_{j,s} \lambda_{js}(\ln \frac{Y_{js}}{y_{js}} - \ln \frac{\widetilde{Y_{js}}}{\widetilde{y_{js}}}) = \sum_{domestic,s} \lambda_{js} \underbrace{\left(\ln Y_{js} - \ln \widehat{Y_{js}}\right)}_{nominal\ sectoral\ GVA\ growth} + \underbrace{\sum_{domestic,s} \lambda_{js}\left(\ln y_{js} - \ln \widetilde{y_{js}}\right)}_{real\ domestic\ consumption\ growth} + foreign.$$

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[12] Note that structurally profit shares vary widely between sectors. Here we are interested in the change over time for each sector.

Starting from the foreign part it is closely related with the terms of trade (as shown in Figure 5). Therefore, it can be projected based on its historical relationship with the growth rate of the terms of trade and the terms of trade for 2023/24 as projected in the IMF's April 2023 World Economic Outlook (WEO). For real total domestic consumption growth, it is closely linked with real GDP growth. Therefore, it is projected based on its historical relationship with real GDP growth and using the WEO projections of GDP growth for 2023-24. Projected domestic nominal sectoral GVA growth is based on assumptions for labor compensation (e.g.,

Euro Area: Growth of Real Domestic GVA in Consumption and Growth of Real GDP

$y = 0.7162x + 0.222$
$R^2 = 0.9783$

Sources: OECD, IMF staff calculations.

based on an aggregate wage growth assumption and the historical deviations of sectoral wage growth relative to aggregate wage growth) and for the profit share (e.g., return to historical averages).
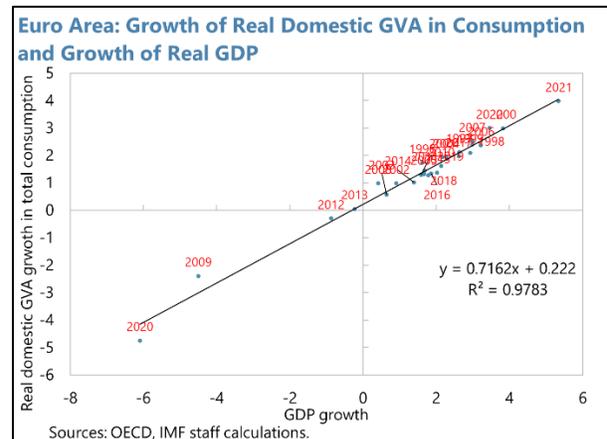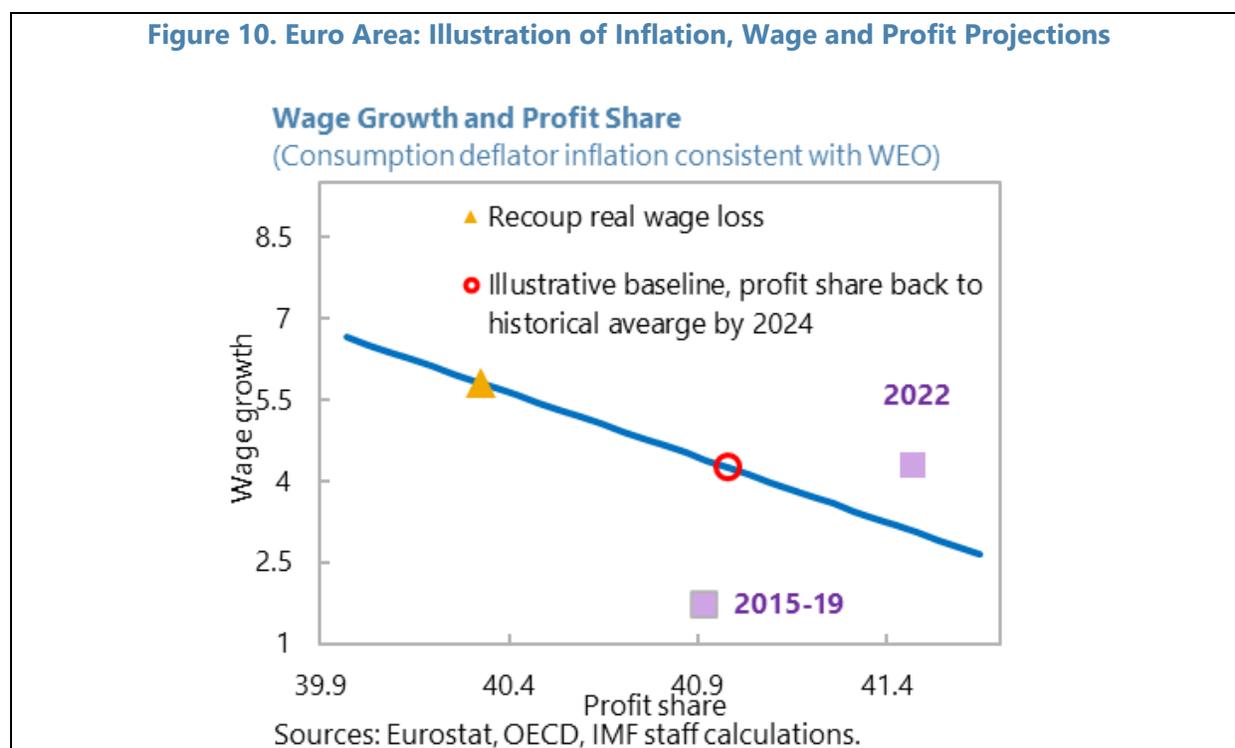
Both an increase of wages relative to profits and a compression in profit shares appear plausible going forward. Given the observed drop in real wages (this is to be expected initially as wages are stickier than prices), workers will want to recoup these losses. Werning and Lorenzoni (2023) show that sequential increases in prices and wages are a standard feature of macroeconomic models. A large increase in profits and thus higher initial price increases may subsequently increase workers demand for higher nominal wage increases. Based also on the historical evidence in Section 2, we would thus expect nominal wage pressures to increase following the real wage erosion. At the same time, given the temporary nature of the factors which could explain the resilience or increase in profit margins discussed in the previous paragraph, a compression of the profit share going forward seems also plausible.

Illustrative simulations suggest that a compression in the profit share to the historic average will be necessary to achieve the disinflationary process under plausible wage growth assumptions. We exploit the terms of trade to project the foreign component of the consumption deflator, assume no change in net taxes and no change in labor productivity, and then map inflation in the profit share-nominal wage growth space (Figure 10). One can think of this exercise as a consistency check on different possible assumptions for nominal wage growth, profit share and inflation. First, it is worth noting that the foreign component will help disinflation in 2023 due to a recovering terms of trade. We estimate that it will directly lower inflation by around 0.7 percentage points in 2023. Conditional on this, all combinations of nominal wage growth and profit share on the black line in Figure 9 yield inflation over 2023-24 consistent with the IMF April 2023 WEO projections – in other words a convergence of inflation to target in early/mid-2025. The area above the line would lead to higher inflation, the area below the line to lower inflation. As an illustration, consider the dot for the 2015-19 average. During this period inflation stood below the 2 percent target, with a profit share around 42 percent and nominal wage growth of around 2 percent. As a comparison, wage growth was 4.5 percent in 2022 and the profit share stood around 42.5 percent. If the same combination of wage growth and profit share were to persist over 2023-2024, inflation would remain above the path required to converge to target. And with a plausible pickup in nominal wage growth as discussed above, a constant profit share would in fact lead to inflation substantially above current baseline projections. Specifically, with nominal wage growth around 4.5 percent over 2023-24, profit shares would have to return to 2015-2019 averages by end-2024 to achieve the baseline inflation projection (the red dot in Figure 10).[13] If nominal wages instead increase such that real wages recover to 2019 levels by 2024 (implying nominal wage growth of around 5.5 percent each year), the consumption deflator

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[13] The April WEO projection for the change in the consumption deflator is 4.9 and 2.5 percent in 2022 and 2023, respectively.

would be around 1 percentage point higher than in the WEO on average over 2023-24, or to keep the inflation path projected in the WEO, the profit share would need to drop by another 0.7 percentage point, reaching the lowest since the mid-1990s.[14] Finally, under the higher wage assumption, to reach the WEO consumption deflator inflation projection, the profit share would have to drop noticeably below the historical average (the triangle in Figure 10). In addition, given the drop in labor productivity observed in Q1 2023, there are risks to the stable labor productivity assumption embedded in the exercise. This all suggests that there are upside risks to the inflation outlook.

Figure 10. Euro Area: Illustration of Inflation, Wage and Profit Projections

Sources: Eurostat, OECD, IMF staff calculations.

6 Conclusion

This paper has documented the importance of import prices and domestic profits as a counterpart to euro area inflation since the pandemic and energy shock. A decomposition of the consumption deflator in 2022 shows that one third of inflation is directly accounted for by import prices, with domestic profits accounting for close to 50 percent.

Based on available data the increase in profits represents firms passing on more than the nominal cost shock but not necessarily increasing profitability. Data and measurement constraints loom large when assessing profitability, but our reading of the available national accounts based indicators, as well as the work of other recently published studies show no conclusive verdict on whether profitability has increased or not. Given no signs of a sharp, broad-based increase in profitability, we do not find evidence that would warrant substantial concerns or policy interventions in terms of competition policy. Policy makers should nevertheless

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[14] Note that real wages (adjusted for HICP) would still be significantly below their pre-COVID trend even if they regain their end-2019 level by 2024. This scenario is thus not necessarily inconsistent with the needed adjustment in income to the terms of trade shock.

remain attentive to market power, a structural issue that predates the current inflationary episode and should be addressed through competition policy and related tools (IMF, 2019). More work in this direction is warranted, including on sectoral and country heterogeneity, and would provide important insights to policymakers.

Monetary policy should continue to anchor expectations at target. Given Europe is a net energy importer, the adverse terms of trade shock implies that national income must fall (relative to counterfactual). This can be achieved by depressing real profits and/or real wages. While monetary policy is not the right instrument to influence the distribution, our results suggest that tight policies are needed to anchor expectations and maintain subdued demand such that economic actors settle on relative price setting that is consistent with disinflation. In particular, we find that if productivity stays broadly unchanged, a normalization of profit shares to historical averages by end-2024 and nominal wage growth around 4.5 percent would be consistent with inflation converging back to target by mid-2025. In our reading, this suggests more upside than downside risks to the current inflation outlook.

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