1.2. Recent inflation developments in Greece and the Eurozone

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Introduction

Headline inflation in Greece in September 2023 reached 1.6%, falling below the European Central Bank's 2.0% target for the second time since June 2023. Core[1] inflation, however, remained elevated at 3.9%, above the headline index for the eighth consecutive month. Inflation in September was mainly fueled by rising Food prices, which had by far the largest positive contribution (2.0 percentage points), while held back by the significant negative contribution of the Housing group (-2.6 percentage points). In the Eurozone, inflation reached 4.3% (core inflation 4.5%). The Food, Alcohol and Tobacco group recorded the highest inflation, while Energy recorded the lowest. Greece had the third lowest inflation in the Eurozone, following the Netherlands (-0.3%) and Belgium (0.7%).

1.2.1. Greece

Based on monthly data, the National CPI in September 2023 registered an annual increase of 1.6% compared to 2.7% in August, falling below the 2.0% target of the European Central Bank. The National CPI increased 1.8% m-o-m in September, compared to no change in August and decreased 1.1% in July. On the other hand, core inflation (based on the National CPI) reached 3.9% compared to 5.3% in August, still above the headline index for the eighth consecutive month, implying that although exogenous inflationary pressures have eased significantly (in fossil fuels) inflation is fueled by pressures within the economy.

The evolution of the Harmonized CPI (HICP) is similar. Specifically, in September 2023, HICP inflation fell to 2.4%, down from 3.5% in August 2023, while core inflation reached 4.3%, down from 5.4% in August.

The largest contribution to the annual percentage increase of the National CPI in September 2023 came from the group of Food and non-alcoholic beverages with 1.98 percentage points, followed by Hotels-Cafés-Restaurants with 0.58 p.p., Transportation with 0.41 p.p. and Health with 0.40 p.p. The Housing group contained inflation with a negative contribution of 2.58 p.p. due to the reduction of prices in electricity, natural gas and heating oil.

More specifically, the annual increase of the National CPI in September 2023 by 1.6% is a combined result of the following changes in the price indices of subgroups of goods and services. More specifically, increases were recorded by:

- 9.4% in the group Food and non-alcoholic beverages. This is mainly due to the increase in the prices of bread and cereals (4.8%), meat (8.4%), fish (4.1%), milk-cheese and eggs (6.7%), oils and fats (16.1%), fruit (13.9%), vegetables (17.7%), sugar-chocolates-sweets-ice creams (8.2%), food n.e.c. (9.1%), coffee-cocoa-tea (6.0%), mineral water-refreshments-fruit juices (13.9%).
- 2.5% in the group Alcoholic beverages and tobacco, mainly because of the increase in the prices of the not served alcoholic beverages (5.7%).
- 6.2% in the group Clothing and footwear, due to the increase in the prices of clothing and footwear.
- 3.7% in the group Household equipment. This is mainly due to the increase in the prices of household appliances and repair (2.0%), glassware-tableware and utensils of domestic use (5.4%), non-durable household articles (3.3%), domestic services (7.2%).
- 5.6% in the Health group mainly because of the increase in the prices of pharmaceutical products (11.8%), medical-dental and paramedical services (5.5%), hospital care (0.9%).
- 3.0% in the group Transport, mainly because of the increase in the prices of new motor cars (3.0%), secondhand motor cars (9.0%), spare parts and accessories for motor cars (6.6%), fuels and lubricants (0.9%), maintenance and repair of motor cars-motor cycles (5.3%), tickets for passenger transport by air (7.9%).
- 3.1% in the group Recreation and culture. This is due to the increase, mainly, in the prices of major durables for recreation and culture (2.2%), small

1. The Core Inflation Index is calculated from the Overall Consumer Price Index excluding the divisions of Food and non-alcoholic beverages, Alcoholic beverages and tobacco, and Energy prices.

TABLE 1.2.1 Inflation in Greece (%)

	National CPI	CPI (m-o-m, %)	Headline inflation CPI (y-o-y, %)	Core inflation (y-o-y, %)	Harmonized inflation (y-o-y, %)	Core HICP (y-o-y, %)
2022M09	114.5	2.9	12.0	4.9	12.1	6.9
2022M10	113.2	-1.2	9.1	5.2	9.5	6.6
2022M11	113.1	0.0	8.5	5.9	8.8	6.8
2022M12	112.5	-0.5	7.2	5.2	7.6	5.9
2023M01	112.0	-0.5	7.0	6.0	7.3	6.5
2023M02	112.3	0.3	6.1	6.6	6.5	6.8
2023M03	113.7	1.2	4.6	6.7	5.4	7.0
2023M04	114.5	0.6	3.0	6.1	4.5	7.2
2023M05	114.9	0.4	2.8	6.7	4.1	7.3
2023M06	115.6	0.6	1.8	4.9	2.8	4.8
2023M07	114.3	-1.1	2.5	5.4	3.5	5.4
2023M08	114.3	0.0	2.7	5.3	3.5	5.4
2023M09	116.3	1.8	1.6	3.9	2.4	4.3

Source: ELSTAT, Eurostat.

recreational items-flowers-pets (5.8%), cinemas-theatres (10.6%), package holidays (9.1%).

- 3.0% in the group Education, mainly because of the increase in the prices of fees of primary education (3.8%), fees of secondary education (3.5%).
- 4.8% in the group Hotel-Cafés-Restaurants. This is mainly due to the increase in the prices of restaurants-confectioneries-cafes-buffets (5.6%).
- 2.4% in the group Miscellaneous goods and services. This is mainly due to the increase in the prices of hairdressing salons and personal grooming establishments (4.0%), other appliances and articles for personal care (1.8%), private insurance connected with health (5.7%), motor vehicle insurance (2.1%).

On the other hand, prices decreased in the following groups of goods and services:

- -15.0% in the Housing group, mainly because of the decrease in the prices of electricity (-1.2%), natural gas (-82.0%), heating oil (-20.7%). This decrease was partly offset by the increase in the prices of rentals for dwellings (6.3%), services for the repair and maintenance of the dwelling (3.0%), solid fuels (19.2%).
- -3.1% in the Communication group, mainly because of the decrease in the prices of telephone services (-3.5%).

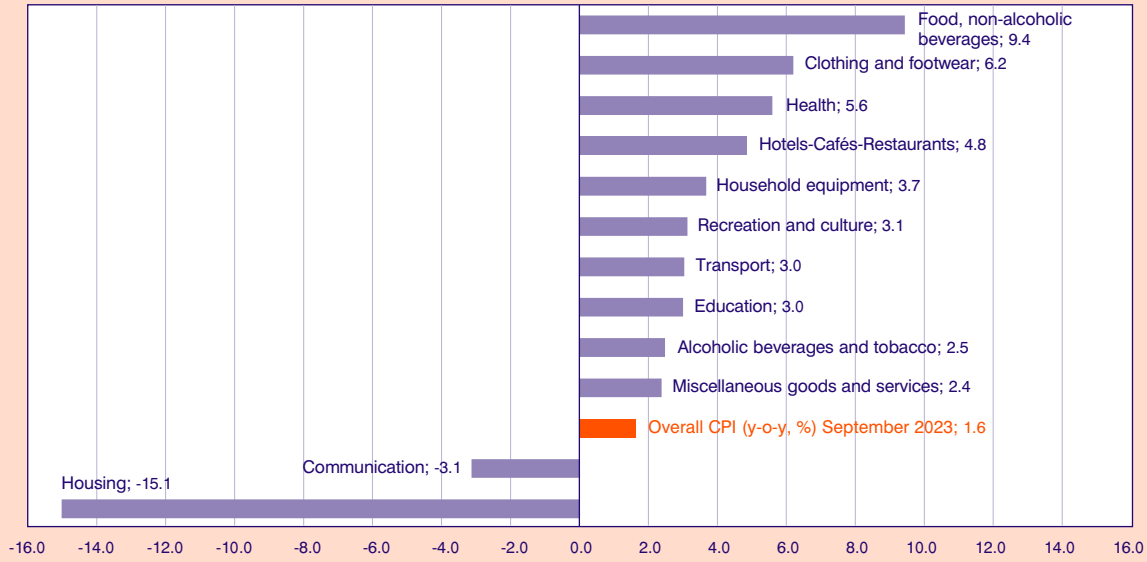
1.2.2. The euro area

According to Eurostat's flash estimates, in September 2023, inflation in the euro area showed further deceleration and reached 4.3% against 5.2% and 5.3% in August and July 2023, respectively. The core inflation in September reached 4.5%, compared to 5.3% and 5.5% in August and July 2023, respectively.

The highest annual rate of HICP in the euro area is still recorded in the Food sector (+8.8%), followed by the group of Services (+4.7%), and the group of Non-energy industrial products (4.2%). On the contrary, the group of Energy prices fell by -4.7%.

Among the Eurozone countries, the highest inflation was recorded in Slovakia (8.9%), Croatia (7.3%) and Slovenia (7.1%), while the lowest inflation was in the Netherlands with negative inflation (-0.3%), Belgium (0.7%) and Greece (2.4%).

FIGURE 1.2.1
Annual % changes in National CPI sub-categories (September 2023)



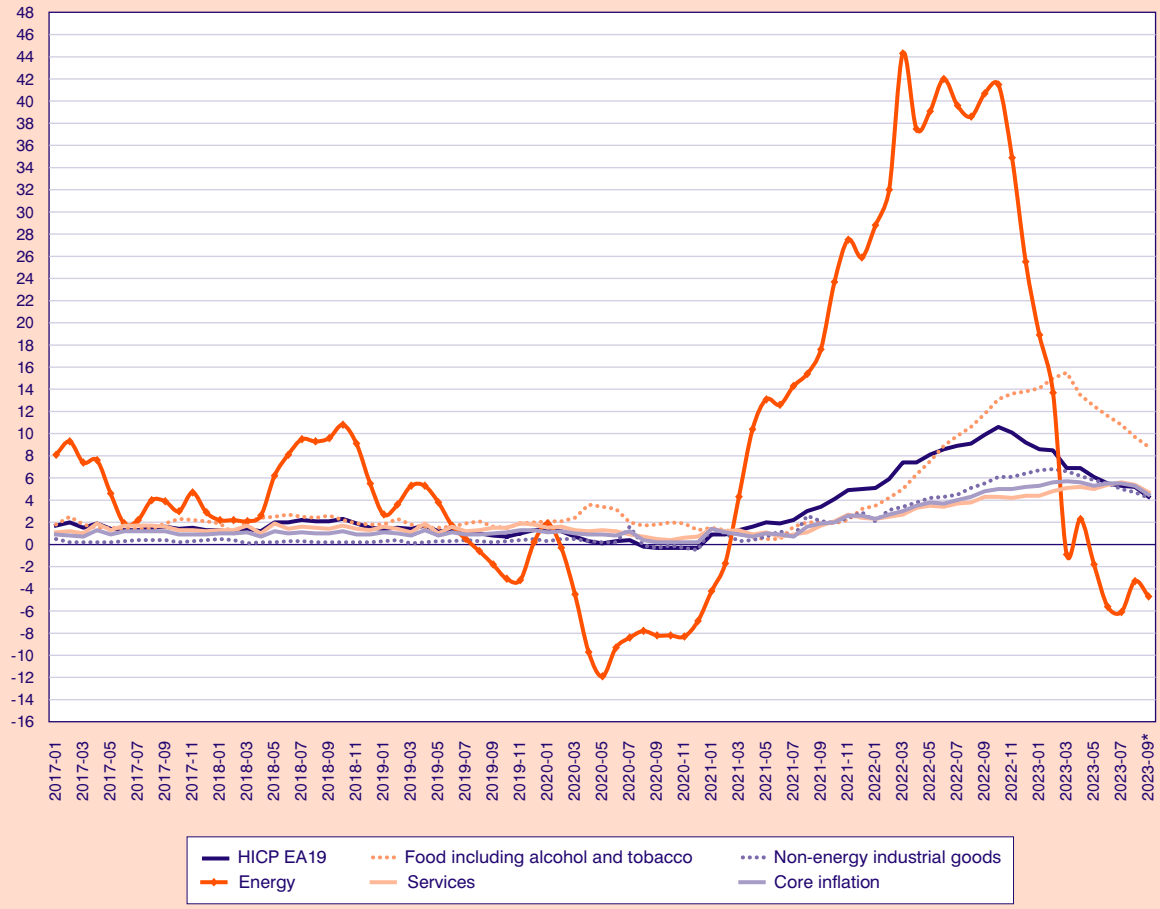
Source: ELSTAT.

TABLE 1.2.2 Annual % changes in National CPI sub-categories, January-September 2023

Groups of goods and services	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1 Food and non-alcoholic beverages	15.4	14.8	14.3	11.4	11.6	12.2	12.3	10.7	9.4
2 Alcoholic goods and tobacco	3.0	2.9	3.7	4.0	3.5	3.4	3.4	3.2	2.5
3 Clothing and footwear	6.5	7.1	14.4	5.6	11.8	5.9	5.2	6.9	6.2
4 Housing	-0.1	-4.9	-10.4	-13.4	-12.9	-11.7	-11.8	-12.6	-15.0
5 Household equipment	10.6	10.5	11.0	10.9	9.9	7.6	6.4	5.6	3.7
6 Health	2.9	5.3	5.6	6.5	7.8	7.7	7.8	5.9	5.6
7 Transport	8.1	6.5	1.9	1.4	-3.1	-7.6	-3.7	1.6	3.0
8 Communication	-1.3	-1.6	-1.9	-1.8	-2.3	-2.7	-2.8	-3.1	-3.1
9 Recreation and culture	3.4	3.5	2.9	3.7	3.3	3.6	3.5	3.3	3.1
10 Education	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	3.0
11 Hotel-Cafés-Restaurants	7.8	8.1	7.5	8.5	7.4	6.3	6.2	6.1	4.8
12 Miscellaneous goods and services	5.4	5.8	6.2	6.4	6.8	4.2	3.6	3.9	2.4
General Index	**7.0**	**6.1**	**4.6**	**3.0**	**2.8**	**1.8**	**2.5**	**2.7**	**1.6**

Source: ELSTAT.

FIGURE 1.2.2
HICP in the euro area, monthly data, annual % change



Source: Eurostat.

*Flash Estimates.

BOX 1

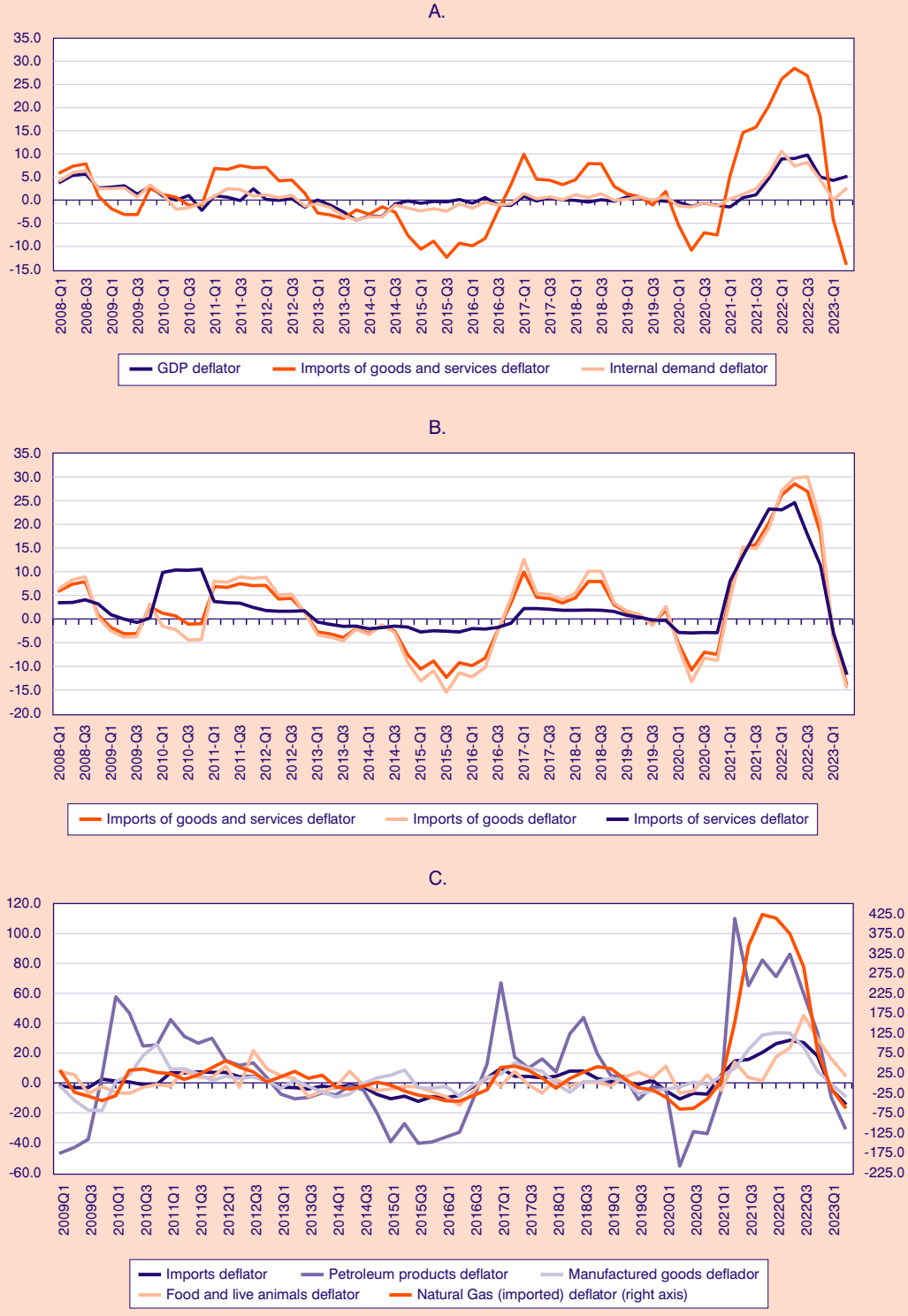
External and internal inflationary pressures in the Greek economy

National accounts price and cost data can be used to track inflationary pressures arising from imported goods and services via the import deflator, while inflationary pressures arising from domestic factors are captured by the GDP deflator. In this Box, we first examine the external factors, and, second, the internal ones.

Figures 1 and 2 show the developments in the prices of basic imported goods in Greece and the euro area, respectively. We observe that the differences between Greece and the euro area are negligible and any differentiation at the present time mainly concerns the intensity of the changes rather than their direction.

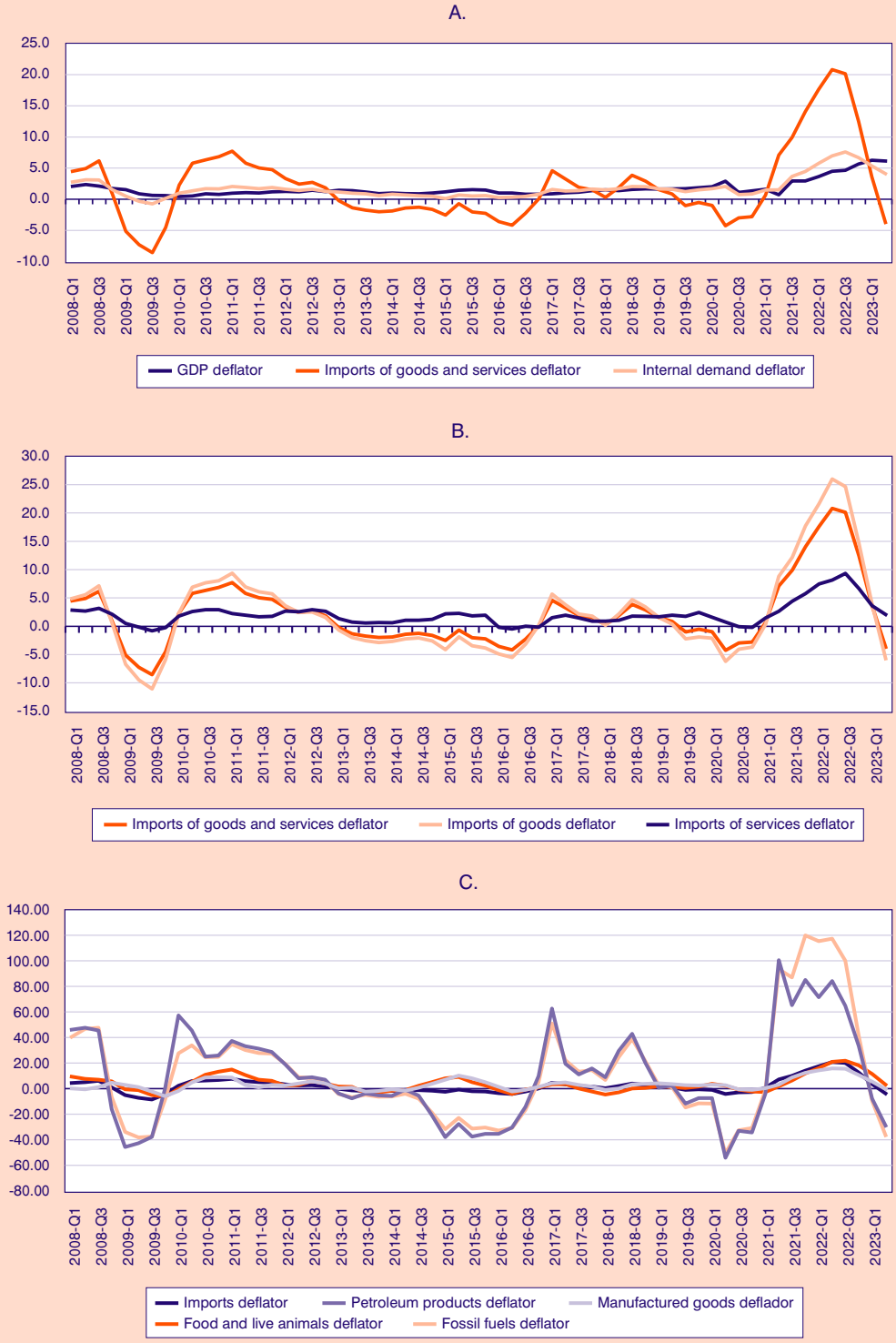
Figures 1 and 2 show the sharp increase in the Import deflator (+5.2% y-o-y in 2021q1, peaking at +28.5% y-o-y in 2022q2, and since then following a decelerating course, reaching -13.7% y-o-y in 2023q2). These strong exogenous price pressures are transmitted to the GDP and internal demand deflator developments that recorded exceptionally high rates exceeding 10.0%. In addition, in Figures 1B and 2B, we observe that in Greece and the euro area, respectively, the increases in the prices of imported goods were higher than those of services. In Greece, however, the increases in the prices of imported services were significantly higher compared to those in

FIGURE 1 (Greece)
A) GDP, Imports and Internal demand deflators,
B) Deflator of imports, goods and services,
C) Deflators of basic categories of imported goods
(Annual percentage changes %, quarterly data)



Source: Eurostat, KEPE calculations.

FIGURE 2 (Euro area)
A) GDP, Imports and Internal demand deflators,
B) Deflator of imports, goods and services,
C) Deflators of basic categories of imported goods
(Annual percentage changes %, quarterly data)

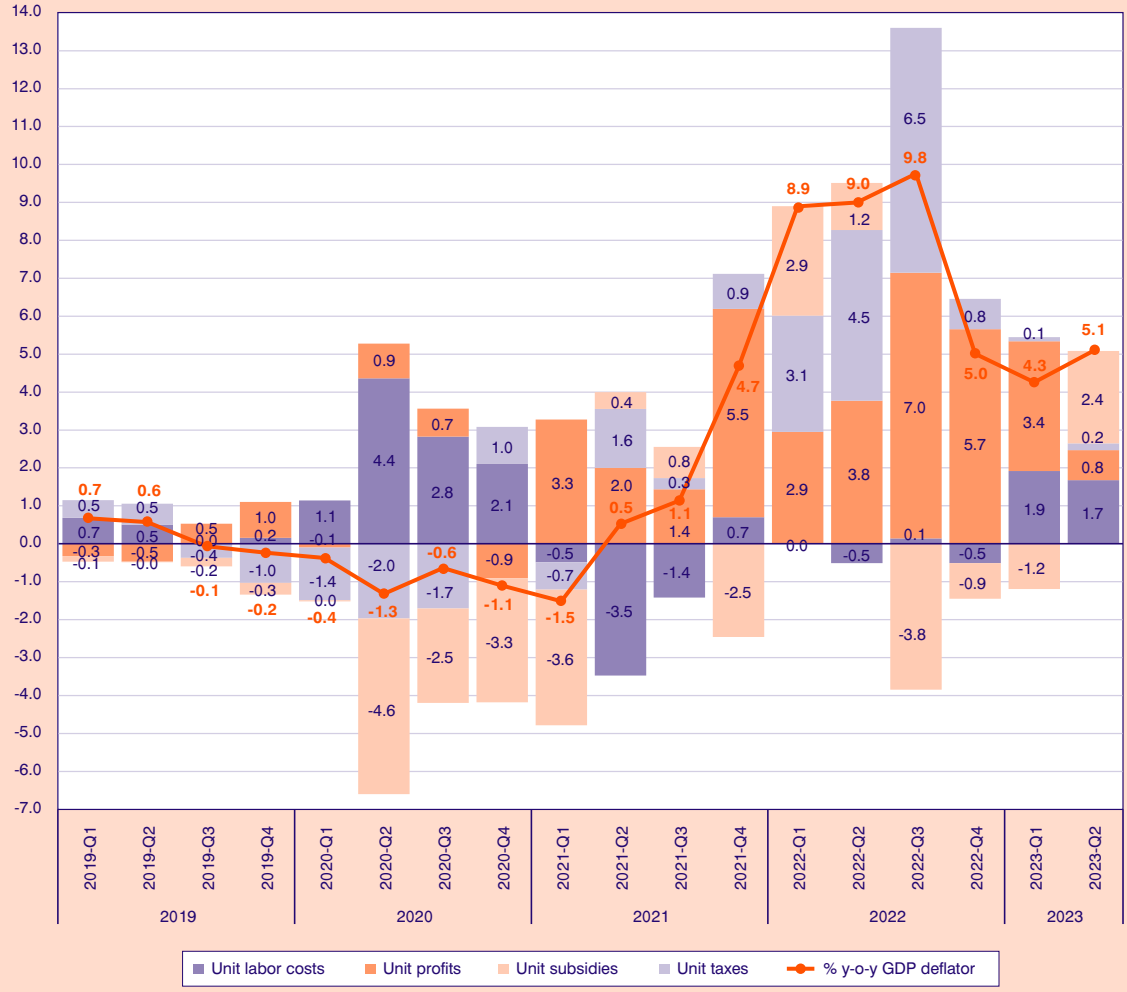


Source: Eurostat, KEPE calculations.

the euro area. Finally, Figures 1C and 2C for Greece and the euro area reflect the "energy crisis" where among the main imported goods, the prices of fossil fuels were the ones that recorded by far the largest increases in the period 2021q2-2022q4. On the other hand, the GDP and domestic demand deflators are almost identical because they both relate to price developments at the domestic level.

In this context, we attempt to investigate the contribution of each income category in shaping the final price of the product using the GDP deflator. Specifically, the GDP deflator is broken down into its components, and we calculate the contribution of each to its percentage change. Since GDP does not include the value of intermediate consumption and therefore it is not possible to directly calculate the effect of changes in the prices of raw materials on the price of the product, we follow an indirect approach applied in a number of recent works [e.g., ECB (2006); Hahn (2019); Hahn (2021); Arce et al. (2023); Hahn (2023); Weber and Wasner (2023), among others]. According to this approach, income distribution is involved in the analysis, and through it, the behavior of enterprises is captured, i.e., the way enterprises choose to shape the prices of products under the pressure of increases in input prices. If the prices of energy or raw materials increase and, at the same time, a falling tendency of the contribution of the unit

FIGURE 3
GDP deflator decomposition
(Annual percentage changes %, p.p. contributions to annual percentage changes, quarterly data)



Source: Eurostat, KEPE calculations.

profit in the formation of prices is observed, this is an indication that enterprises are "absorbing" part or all of the increase in cost production. Otherwise, if the contribution of unit profit remains unchanged or increases, this implies that the price of the product has increased by the same amount as the increase in costs or even more (Hahn, 2023).

The GDP deflator can be decomposed into unit profits (gross operating surplus plus mixed income per unit of real GDP), unit labor costs, and taxes on production minus subsidies per unit of real GDP. Figure 3 presents the percentage point contributions of each component of GDP to the rate of change of the GDP deflator or core inflation.[1]

Figure 3 shows the evolution of domestic inflation as it passes through two successive phases: the phase of falling prices due to the pandemic crisis, which lasted from the first quarter of 2020 to the first quarter of 2021, and the phase of rising prices where, due to the normalization of the pandemic after the vaccination of the population, economic and social activity resumed (2021q2), releasing several months of compressed consumption that resulted in supply chain bottlenecks. Inflation was reinforced by the energy crisis shocks following the war in Ukraine in February 2022, and peaked in 2022q3. Since then, inflation has been deescalating as increases in fossil fuel prices have weakened, and since the first two quarters of 2023, they have declined.

During the pandemic crisis, in 2020, domestic price increases were mainly driven by unit labor costs (with a contribution ranging between 1.1 and 4.4 percentage points) and secondarily by unit profits (positive contribution but significantly smaller, ranging between 0.7 and 0.9 p.p. with the exception of 2020q4). It is noted that these contributions were shaped to a large extent by state subsidies aiming to support employment and businesses affected by the Covid-19 pandemic, as can be seen from their rather large contribution (2.5-4.6 p.p.).[2]

This situation is reversed in the period 2021q1-2023q2. In this period, the contribution of unit profits is positive and particularly large in contrast to that of unit labor costs, which has a small (negative or positive) contribution. On average during this period, unit profits contributed to domestic inflation by 3.58 p.p., while unit labor costs had a negative contribution of -0.19 p.p. In 2022q3, the GDP deflator recorded the highest annual growth (9.8%), and unit profits contributed to this increase by 7.0 p.p. and unit labor costs by 0.1 p.p. In the first two quarters of 2023, unit labor costs increased their percentage point contributions: in the first quarter with 1.9 p.p. (up from the -0.5 in 2022q4 due to the subsidies) while unit profits remained well above with 3.4 p.p., and in the second quarter contributed slightly lower with 1.7 p.p., while unit profits with 0.8 p.p. It is noted that the government subsidies related to Covid-19 were suspended, and then resumed from 2022q3, after the Russian invasion of Ukraine and the dramatic increase in natural gas and oil prices, until 2023q1 when prices had sufficiently receded.

In what follows, we decompose the gross operating surplus into its components in order to identify those individual income accounts that drive the increases in the contribution of the unit gross operating surplus outlined before.

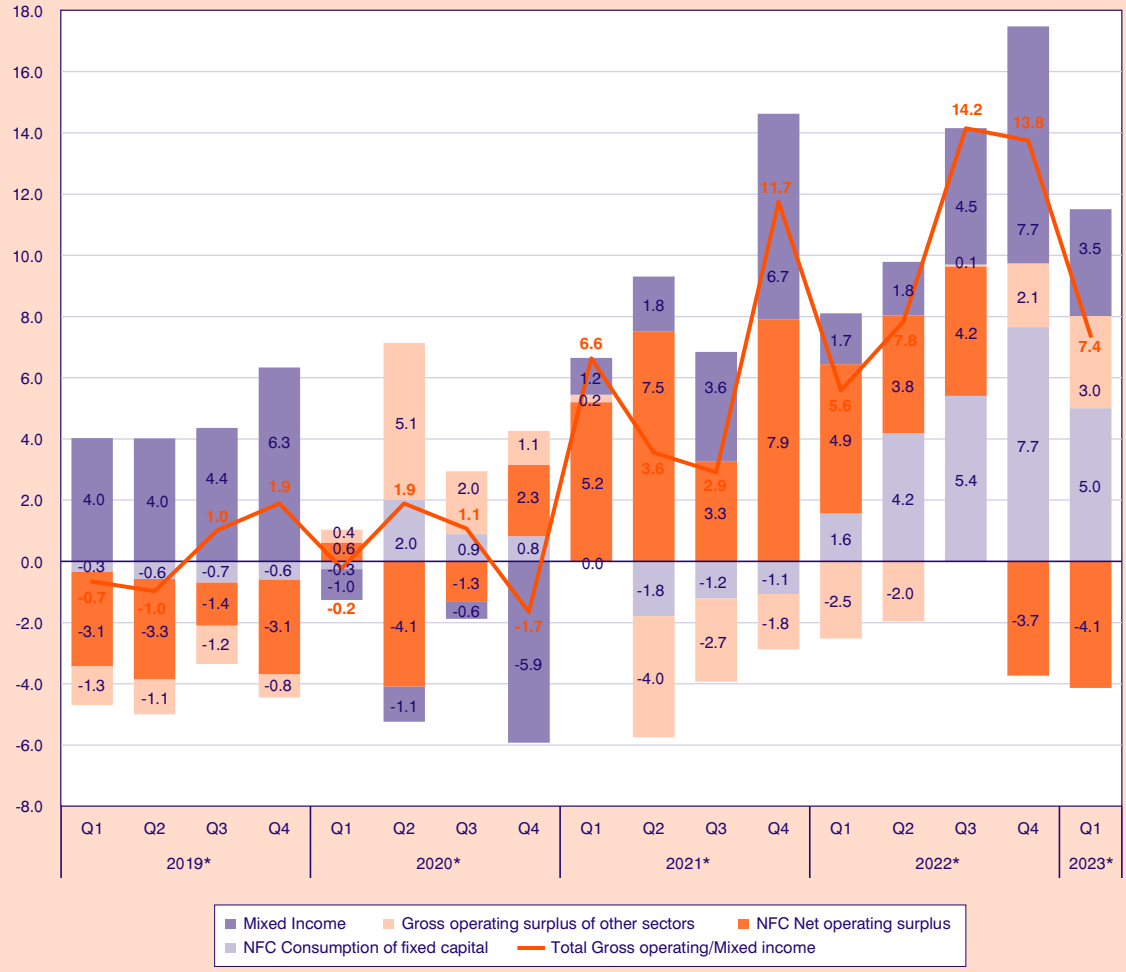
In the previous analysis, the account of the gross operating surplus and mixed income for the whole economy was used. However, this account is the sum of several income categories that are not directly related to the formation of prices in consumer goods and services such as a) the consumption of fixed capital, b) the net operating surplus from all institutional sectors [non-financial corporations (NFCs), financial corporations (FCs), households (HHs) and non-profit institutions serving households (NPISH), general government], c) mixed income, and d) rents, interest, and other income from corporate assets. Consequently, the concept of profits that better serves the purpose of this analysis is that of the net operating surplus of NFCs, which more closely approximates business profits (Haskel, 2023).

Figure 4 shows that the unit net operating surplus of NFCs and the unit mixed income in the two-year period 2021-2022 had the largest percentage point contributions to the growth rate of unit profits. However, the momentum of the former appeared to be

1. Due to the high correlation of the rate of change of the GDP deflator with indicators of core inflation, the income components of GDP are important determinants of core inflation (Hahn, 2023). There are a number of different definitions of core inflation (Clark 2001; Wynne 2008). The most common in the literature is inflation excluding Energy and inflation excluding Food, alcohol and tobacco.

2. The contribution appears negative because it is subtracted from the income categories. The income categories and their contributions appear larger because they include the subsidies.

FIGURE 4
Unit profits decomposition
(Annual percentage changes %, p.p. contributions to annual percentage changes, quarterly data)



Source: Eurostat, KEPE calculations.

* Provisional data.

running out in the last quarter of 2022, while that of the mixed income strengthened in both subsequent quarters for which there are available data. On the other hand, the percentage point contribution of the unit consumption of fixed capital has been particularly large over the period from 2022q1 until 2023q1. Cumulatively, for the period 2021-2022, the (unit) net operating surplus of NFCs contributed to 50.0% of the increase in unit profits, when, on average over the same period, it represents 17.4% of total profits, the (unit) mixed income contributed 43.7%, and the consumption of fixed capital 22.3%. In other words, the contribution of NFCs' unit profits and unit mixed income together account for 93.7% of the increase in total unit profits.

The analysis shows that during the period 2021-2022 and especially for the period 2022q1-2022q4, which is characterized by strong exogenous inflationary pressures mainly in the energy sector, unit profits increased their contribution to domestic price increases as reflected in the percentage increase of the GDP deflator. Moreover, as we have seen, the growth of unit profits (gross operating surplus in the economy as a whole) was driven by the NFCs net operating surplus and the mixed income per unit of real GDP. These conditions provide evidence that companies have chosen not to absorb increases in energy costs by passing them on to product prices and, at the same time, have strengthened their net operating surplus.

The results of the analysis add to a series of works on other countries, the euro area and the USA [Hahn (2021); Arce et al. (2023); Hahn (2023); Weber and Wasner (2023) among others]. There are several interpretations of the above observed behaviour. Some businesses may raise their prices to protect their profit margins. Since in the initial phase of inflation there was excess demand, a price increase would not result in a loss of market share. According to another interpretation, some companies increase their profit margins to recover losses from previous years. Another possible cause lies in the attempt to create "cushions" in an environment of high uncertainty. In a similar vein, some firms form expectations that inflation will continue and therefore discount increases in production costs by adjusting product prices accordingly. Finally, another interpretation focuses on the "seller's inflation", i.e., the ability of some companies with a large market share to raise prices (Weber and Wasner, 2023). In the current juncture, whatever the motivation behind enterprises' pricing policy, this behaviour prolongs high interest rate policy and risks triggering an economic recession.

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