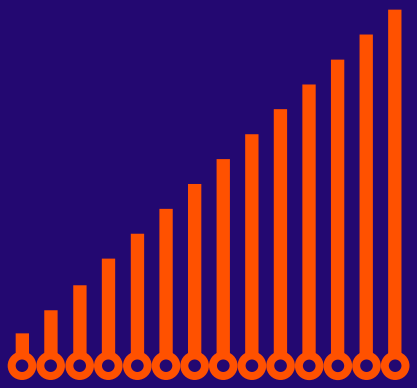
CENTRE OF PLANNING AND ECONOMIC RESEARCH

Issue 57, June 2025

GREEK ECONOMIC OUTLOOK



- Recent (macro-)economic developments
- Fiscal developments
- Human resources and social policies
- Reforms-Economic development
- Special topics

GREEK

Economic Outlook

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Contents

Issue 57 - June 2025

Executive Summary

Despite geopolitical tensions, the Greek economy demonstrates remarkable resilience

The Greek economy continues on an upward trajectory, despite persistent international challenges that shape a climate of uncertainty (see section 1.3). Prolonged geopolitical instability—centered on the Red Sea, the war in Ukraine, and the fragile US-China relations—impacts global trade and significantly affects the export potential of countries like Greece. At the same time, the recent decline in fixed capital investment is partly related to domestic factors, such as regulatory ambiguities in construction activity, while also reflecting a wait-and-see approach adopted by some investors due to global volatility. Interest rate adjustments by central banks, changes in monetary policy, and the slow recovery of the Eurozone increase overall concerns. *Amid this landscape, the Greek economy shows notable resilience.*

According to the latest ELSTAT data, GDP grew by 2.5% in the fourth quarter of 2024 and 2.2% in the first quarter of 2025, significantly outperforming the European average (see section 1.3). Private consumption was a key driver of support, bolstered by rising real incomes, declining unemployment, and controlled inflation. However, the slowdown in sectors such as service exports and tourism revenues reveals the Greek economy's dependence on external factors. *For the full year 2025, KEPE revised the growth rate to 2.2%, slightly lower than its previous estimate of 2.3%.*

The stock market's momentum confirms investor confidence

The dynamic performance of the stock market in 2025 *confirms increased investor confidence* (see section 1.4). Positive returns—especially in the large-cap index—the rise in total capitalization, and the successful issuance of government bonds are all linked to the country's credit rating upgrade. Law 5193/2025 on strengthening the capital market is expected to have a multiplier effect, facilitating SME access to financing and strengthening the link between production and capital markets.

Employment is rising

The labor market shows positive signs, with unemployment falling to 9% in March 2025 and a further increase in full-time employment (see section 3.1). Especially the sectors of professional services, education, and commerce record the highest growth. However, persistent issues remain: high unemployment rates among youth, women, and the long-term unemployed, as well as geographical disparities *that highlight the need for active labor policies and regional targeting*. Notably, the rise in job vacancies—particularly in tourism—indicates structural mismatches between labor supply and demand. This phenomenon significantly impacts the dynamics of the country's tourism product, especially in a period of intensifying competition among destinations.

Social inequalities persist

At the social level, although disposable income is rising, social inequalities remain (see section 4.1). Energy poverty has decreased among most non-poor households but has increased significantly among poor ones, with regional fluctuations. Energy adequacy remains insufficient in large parts of rural areas, with the regions of Eastern Macedonia and Thrace, Epirus, Thessaly, and the Ionian Islands showing the most pronounced deterioration. The worsening of this indicator is also evident among non-poor households, underlining the widespread nature of the problem. This highlights *the need for a cohesive policy on energy justice and infrastructure upgrades*.

Agriculture is a key factor for economic, social, and territorial cohesion

Agriculture is once again emerging as a key sector, not only for the economy but also for social and territorial cohesion (see section 4.2). Although its contribution to GDP is limited, its significance exceeds its productive dimension. The 2019–2023 period highlighted the sector's vulnerability due to the pandemic, the energy crisis, the war in Ukraine, and extreme weather events (e.g., Ianos, Daniel). The consequenc-

es were particularly severe in Thessaly, with serious damage to crops, infrastructure, and livestock. Despite a temporary increase in agricultural income, it is not linked to structural progress. On the contrary, there has been a decline in employment, deterioration in the input-to-output ratio, and increased dependence on imported inputs. The sustainability of Greek agriculture cannot rely on temporary support but *requires a targeted restructuring strategy, which includes upgrading the productive base, supporting employment, and diversifiying farms*.

The real estate market shows signs of overheating

In the real estate market, the recovery of property prices outpaces the growth in disposable income (see section 4.5). This creates barriers to affordable housing access, particularly for young people and vulnerable households. Investment activity has been boosted by programs such as the "Golden Visa," but demand for housing loans has declined since 2022, likely due to rising interest rates and prices. At the same time, housing credit is contracting, while programs like "My Home" are expected to contribute positively. Targeted interventions are needed to balance supply with affordability. *Housing thus emerges as a new social challenge.*

The labor share in GDP remains significantly below the European average

Labor compensation in Greece, as a percentage of GDP (34% in 2024), consistently lags behind the European average (47%) (see section 3.2). After improving until 2011–2012, the trend reversed due to adjustment programs, while the pandemic, inflation, and market structure have exacerbated the phenomenon. The productivity-wage gap remains positive in most sectors, indicating pressure on workers and underscoring the need to strengthen the role of labor. *There is now an urgent need to redefine how the generated wealth is distributed.*

Overall, the Greek economy is at a critical transitional phase

Maintaining the growth momentum of the Greek economy requires a comprehensive and multidimensional policy framework, capable of responding both to external challenges and internal structural weaknesses. Stimulating investment activity demands a stable and predictable regulatory environment that facilitates the utilization of productive capacity and mitigates the investor hesitation driven by global uncertainty. Simultaneously, further promotion of full, stable, and quality employment must become a central priority, with emphasis on removing integration barriers for youth, women, and the long-term unemployed. Addressing social and regional inequalities requires targeted policies ensuring universal access to decent living conditions, especially for vulnerable households and disproportionately affected areas. Supporting agricultural production on sustainable terms and balancing rising real estate prices with household affordability are also essential for a coherent and fair development strategy. In this context, strengthening the position of labor (particularly wage labor) and achieving a more balanced distribution of the fruits of growth are critical to enhancing resilience, social cohesion, and the long-term sustainability of the development model.

Professor PANAGIOTIS LIARGOVAS
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Centre of Planning and Economic Research (KEPE)

1. Recent (macro-)economic developments

KEPE, *Greek Economic Outlook,* issue 57, 2025, pp. 5-13

1.1. The evolution of aggregate demand components in 2024

1.1.1. Introduction - Domestic and foreign demand for 2024

Yannis Panagopoulos

This section records the macroeconomic trends of active aggregate demand until the end of 2024 as well as the economic climate from the beginning of the new year (2025) to April of this year.

Based on the annual data of the National Accounts of ELSTAT, as shown in Table 1.1.1, for 2024, we observe the relatively stable change in the growth rate of the economy compared to 2023 (2.30%). It should be briefly pointed out here that fixed capital formation had the most significant change (4.30%), followed by private consumption (1.90%) and the country's total exports (1.10%). However, there was a negative change of public consumption (by -4.10%).

For the existing components of domestic demand, which are also recorded in Figure 1.1.1, the positive contribution of private and the negative contribution of public consumption to GDP are 1.35 and -0.83, respectively. The contribution of gross fixed capital formation (4.30) for 2024 was significantly positive. In conclusion, as presented in Table 1.1.1 and Figure 1.1.1, the overall contribution of domestic demand is particularly positive as a GDP growth factor for 2024 (4.51).

As regards the share of domestic and external demand (i.e., domestic demand and the balance of goods and services) in GDP growth for 2024, the numbers are positive for two of the three sub-components (Figure 1.1.2). Specifically, the contribution of domestic demand and the change in Inventories to GDP growth were positive, with 4.51 and 5.42, respectively, while the Balance of goods and services turned out negative (-2.02).

The Economic Sentiment Index (ESI), as the future "proxy" of demand, reflects the expectations of households and businesses, and is presented in Figure 1.1.3 for the period 1/2024-4/2025. The ESI followed a period of volatility that started at 107.3 points in January 2024 and "returned" to 106 points in December 2024. Subsequently, as illustrated in Figure 1.1.3, the ESI continued its volatility in terms of household and business expectations, but with somewhat smaller variations.

Below is a more detailed discussion on the contribution of the country's Balance of goods and services to GDP for the whole year (2024) and for the last quarter of 2024.

Balance of trade (goods and services)

As far as the contribution of the balance of goods and services is concerned, the GDP rate of change for the whole of 2024 is now -2.02 points, in contrast to 0.29 points in 2023 (Table 1.1.1). Moreover, in the same table, we observe the limited growth of total exports in 2024 to 1.1%, as opposed to 1.94% in 2023. In more detail, we will refer separately to the rate of change of goods and to the rate of change of services in both sections (exports and imports). Starting with exports, it should be underlined that services, which constitute the relatively smaller part of exports, showed an annual increase of 3.80%, while goods, which are usually the largest part of exports, showed an average annual decrease of 1.60%. On the import side, services had a significant average annual increase of 6.80%, while goods had a slightly smaller average annual increase of 5.1%.

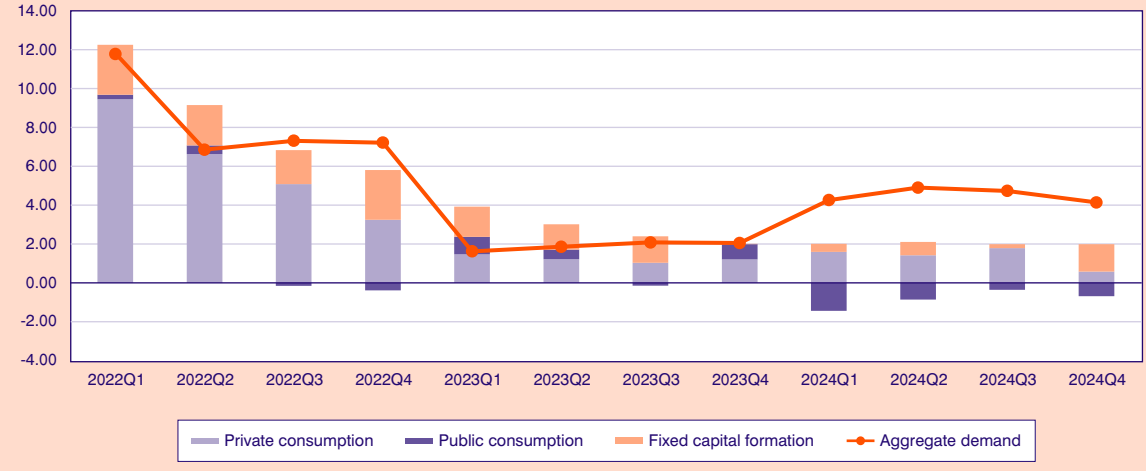
As regards the results from the last quarter of 2024 (Figure 1.1.4), we observe here that the results are better than the annual totals. We observe the positive contribution of exports to GDP, which is estimated at 1.29 points, but more important is the gradual limitation of the negative contribution of imports to GDP to -1.05 points. As we have already mentioned, in Figure 1.1.4, the net result for 2024Q4 was ultimately positive (0.29 points).

TABLE 1.1.1 Key macroeconomic factors
(seasonally adjusted)

	Million euros (constant prices)	Annual % change (constant prices)	
	2024	2023	2024
Private consumption	139,335	1.74	1.90
Public consumption	39,182	2.52	-4.10
Fixed capital formation	31,313	7.13	4.30
Domestic demand*	211,939	2.58	1.20
Exports of goods and services	70,264	1.94	1.10
Exports of goods	34,974	-0.28	-1.60
Exports of services	35,462	3.93	3.80
Imports of goods and services	86,465	0.96	5.50
Imports of goods	65,533	-0.24	5.10
Imports of services	20,868	5.28	6.80
Balance of goods and services (%, GDP)	-0.81		
GDP	197,654	2.34	2.30
Contribution to the GDP			
Domestic demand*		1.90	4.51
Balance of goods and services		0.29	-2.02
Change of inventories		0.34	5.42

Source: Quarterly National Accounts.
* Without change in inventories.

FIGURE 1.1.1
Components of domestic demand

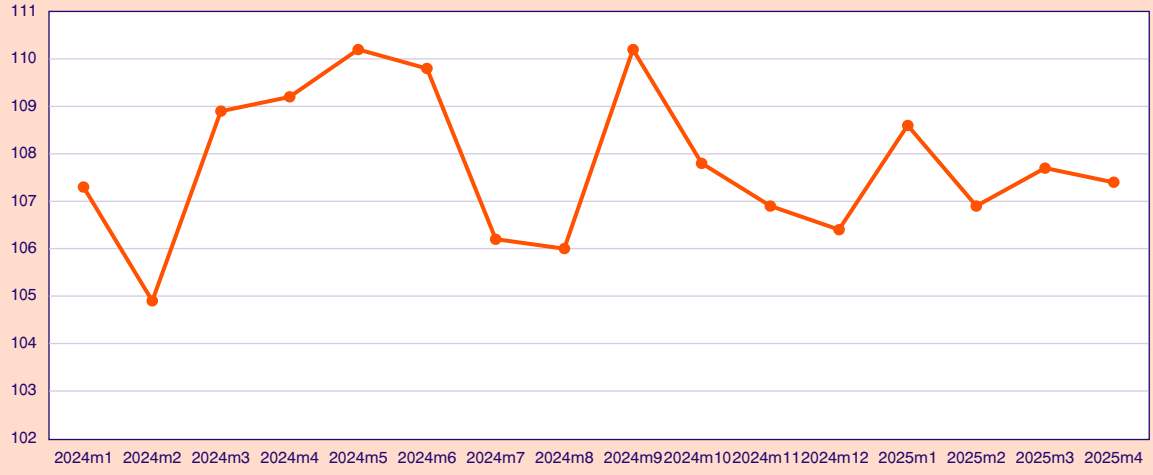


Source: National Accounts, ELSTAT, data processing by the author.

FIGURE 1.1.2
Domestic and net external demand

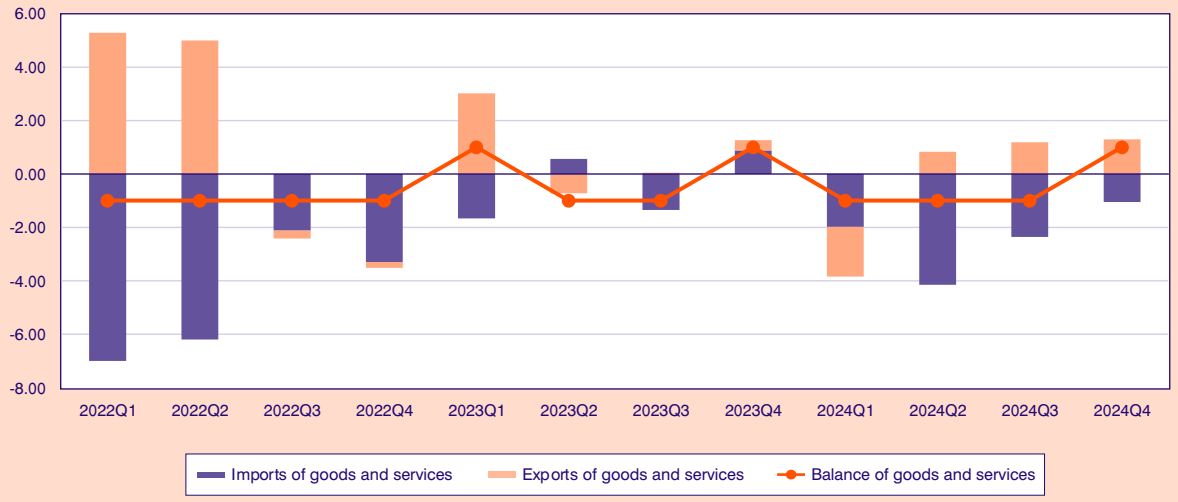
Source: National Accounts, ELSTAT, data processing by the author.

FIGURE 1.1.3
Economic Sentiment Index – ESI (2024/1-2025/4)



Source: Eurostat.

FIGURE 1.1.4
Components of external demand



Source: National Accounts, ELSTAT, data processing by the author.

1.1.2. Private consumption and investment

Konstantinos Loizos

1.1.2.1. Private consumption

Fluctuations of private consumption expenditure and moderate upward trend as a percentage of GDP in 2024

According to the quarterly seasonally adjusted *National Accounts*[1], the private consumption of households and NPISH[2] increased from 40,243 million euros in current prices in the first quarter of 2024 to 40,614 million euros in the second quarter, 41,236 million euros in the third quarter of 2024 and 41,457 million euros in the last quarter of that year. However, in terms of chain-linked volumes in 2020 constant prices, private consumption fell slightly from 35,294 million euros in the first quarter of 2024 to 35,285 million euros in the second quarter, rose again to 35,365 million euros in the third quarter of 2024 and subsequently fell to 35,260 million euros in the fourth quarter of 2024. The same trend of fluctuations is observed in terms of percentage changes[3] with respect to the previous quarter, based on seasonally adjusted chain-linked volumes, since private consumption presented a positive rate of change of 0.9% in the first quarter of 2024, 0.0% in the second quarter, 0.2% in the third quarter and a negative value of -0.3% in the last quarter of the same year. However, with respect to the corresponding quarter of the previous year, the corresponding rates of change were all positive with fluctuations and equal to 2.3%, 2.0%, 2.5% and 0.8%.

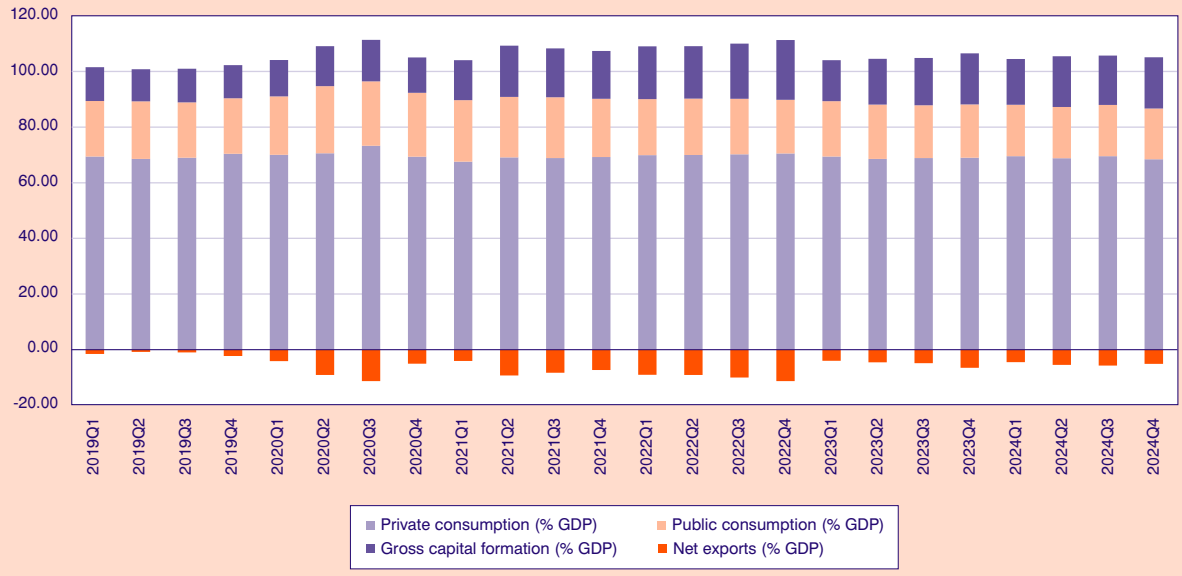
Private consumption, as a percentage of GDP, was 69.10% on average in the year 2024, registering a small increase from its average value in 2023, when it was 68.97%. Public consumption, on the other hand, as a percentage of GDP, was clearly smaller and equal to 18.38% in 2024, compared to 19.39% of the total public expenditure as a percentage of GDP in 2023. Things are different as far as gross capital formation (fixed capital and changes in inventories) is concerned, which was, on average, 17.72% of GDP in 2024 compared to 16.63% of GDP in 2023. Finally, the deficit in the balance of trade clearly increased on average as a percentage of GDP from -4.99% in 2023 to -5.20% of GDP in 2024 (See Figure 1.1.5). The above

1. *Quarterly National Accounts,* Press release, ELSTAT, March 7, 2025.

2. Non-profit institutions serving households.

3. Percentage changes are calculated using the formula $\frac{X_t - X_{t-1}}{X_{t-1}}$.

FIGURE 1.1.5
Evolution of private consumption and other components of demand as a percentage of GDP
(expenditure approach) (seasonally adjusted data in current prices)



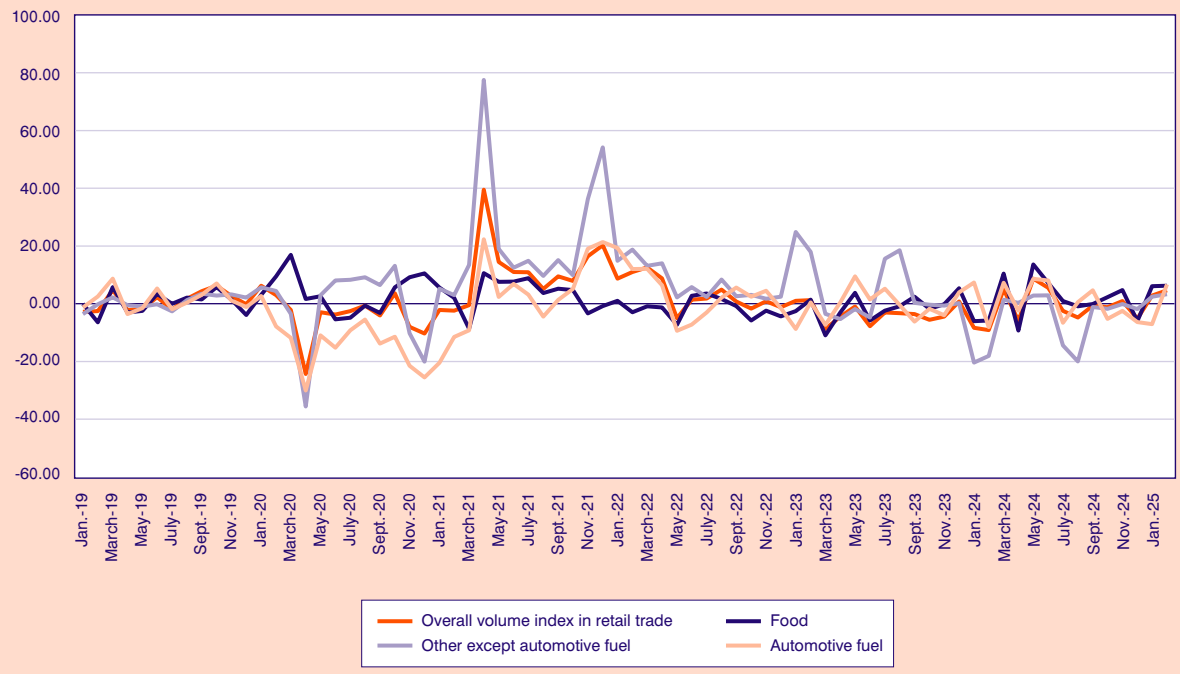
Source: ELSTAT, data processing by the author.

indicate that the trends we described in the previous issue of the *Greek Economic Outlook* continue to hold in terms of average percentage contribution to GDP, despite fluctuations among quarters concerning percentage changes, which also apply in the case of private investment, as we shall see below. In conclusion, the year 2024 was characterized, on average, by a rise in the shares of private consumption and gross private investment in GDP, along with a simultaneous fall in the share of public consumption and a rise in the share of the trade deficit in GDP, compared to 2023. This development could be considered positive, at least with regard to private investment, if it were not accompanied by the corresponding fall in net exports. The latter observation shows the country's difficulty in following an export-oriented development path, despite the rise of the share of investment in total expenditure and a GDP growth rate of 2.3% in 2024, as we have already seen in the previous sections.

Possible reversal of negative developments in retail trade in 2025

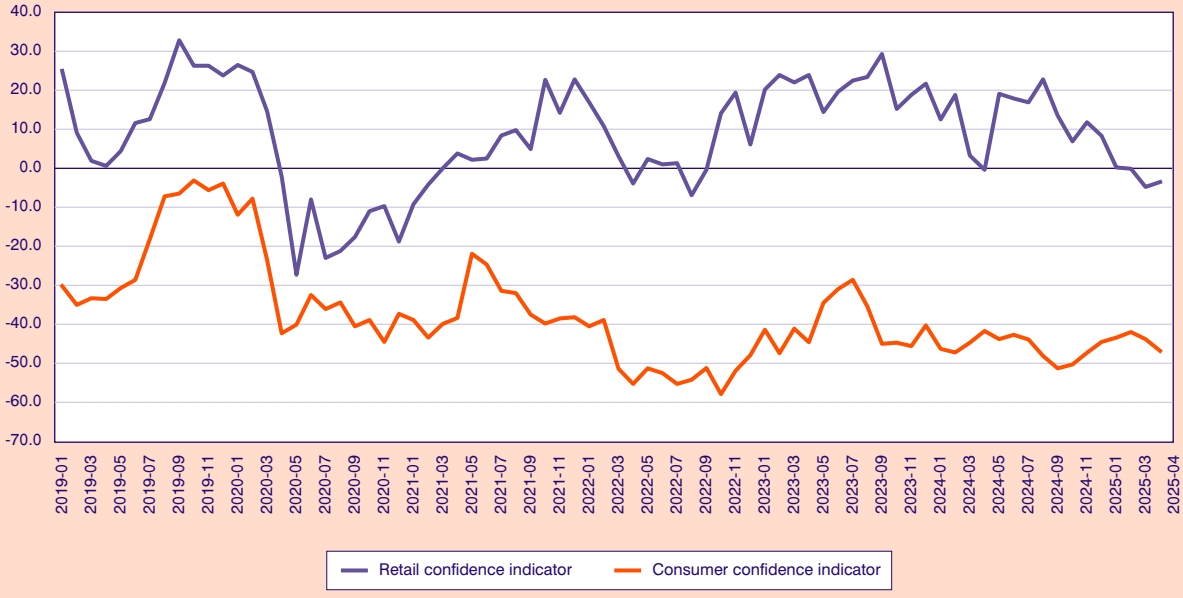
The evolution of retail trade in terms of percentage changes of the overall volume index continued, on average, to be negative in 2024 (-1.47%) with respect to the corresponding months of the previous year, based on ELSTAT monthly data (Figure 1.1.6). The corresponding negative value for 2023 was clearly higher (-3.25%), but we need to note the positive trends in the first two months of 2025 with an average of percentage changes in the overall volume index of retail trade of 3.73%. In food items, there was a small positive percentage change, on average, in 2024 (0.92%), which succeeded the negative one in 2023 (-1.22%) and eventually developed into a strong positive average percentage change (6.16%) in the first two months of 2025. On the contrary, in other items except food and automotive fuel, the positive average percentage change of 5.07% in 2023 became a negative one of -5.87% in 2024, only to become positive again and equal to 2.86% in the early months of 2025. Finally, in automotive fuel, the negative average rate of change of -0.62% in 2023 was replaced by a positive one of 0.42% on average in 2024, before becoming negative again and equal to -0.19% in the first two months of 2025. Therefore, despite maintaining negative average trends for the overall volume index and other items except food and automotive fuel and despite the small positive rate of changes for food and automotive fuel in 2024, turning into positive rates of change in all categories under examination except automotive fuel in 2025, there is room for optimism for the future developments in retail trade in 2025.

FIGURE 1.1.6
Percentage changes in the seasonally adjusted overall volume index and the main sector indices in retail trade



Source: ELSTAT, data processing by the author.

FIGURE 1.1.7
Confidence indicators in retail trade



Source: Eurostat, data processing by the author.

Uncertainty in expectations concerning retail trade

Inspecting the confidence indicators published by Eurostat (Figure 1.1.7 above), we observe that uncertainty in expectations continued, as depicted in the fluctuations of both indices during the entirety of 2024 and the first four months of 2025. In addition, in terms of average annual values, those indices are deteriorating. In particular, the consumer confidence indicator decreased from -39.97 in 2023 to -45.98 in 2024, with a slight improvement (-44.00) in the first four months of 2025. The retail confidence indicator decreased from 21.24 in 2023 to 12.62 in 2024 and further to -2.05 in the first four months of 2025.

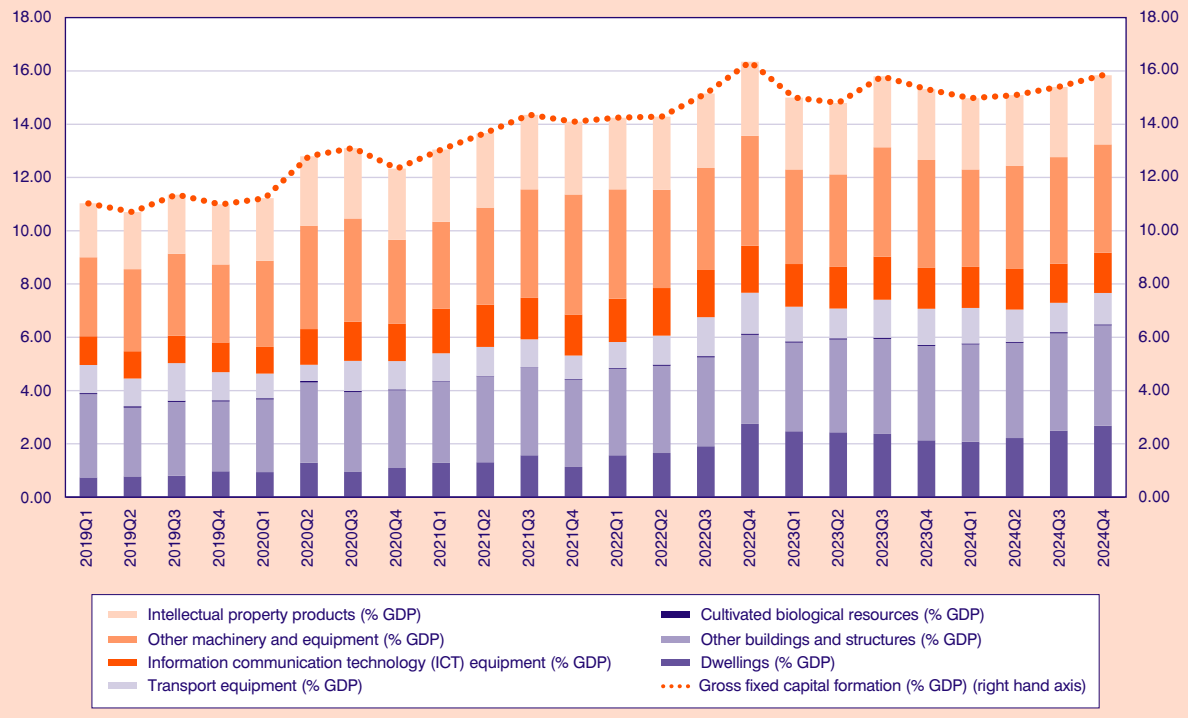
1.1.2.2. Investment

Generally positive developments in gross investment in 2024

Gross fixed capital formation increased from 8,665 million euros in the first quarter of 2024 in current prices to 8,906 million euros in the second quarter, to 9,133 million euros in the third quarter and to 9,592 million euros in the last quarter of 2024. On the contrary, in terms of chain-linked volumes in constant 2020 prices, gross fixed capital formation increased from 7,877 million euros in the first quarter of 2024 to 8,058 million euros in the second quarter, before declining to 8,042 million euros in the third quarter of 2024 and rising again to 8,471 million euros in the last quarter of 2024. The same fluctuation is observed in terms of the percentage rate of changes with respect to the corresponding quarter of the previous year, with positive rates of change of gross investment of 2.6% in the first quarter of 2024, 4.3% in the second quarter, and 1.3% in the third quarter, which was then followed by a high of 9.0% in the last quarter of 2024. Finally, the rates of change with respect to the preceding quarter were positive in the first two quarters of 2024 (1.3% and 2.3%), negative in the third quarter (-0.2%) and highly positive in the last quarter of 2024 (5.3%), according to the seasonally adjusted chain-linked volumes.

The average rate of change, with respect to the previous quarter of gross fixed capital formation as a percentage of GDP in current prices (Figure 1.1.8) in

FIGURE 1.1.8
Gross fixed capital formation as a percentage of GDP (overall and by asset)
(seasonally adjusted data in current prices)



Source: ELSTAT, data processing by the author.

2024 was positive and equal to 0.86%, in contrast with the negative average rate of change in 2023 (-1.47%). On the contrary, machinery and transport equipment as a percentage of GDP maintained its negative average annual percentage change, moving from -1.15% in 2023 to -0.62% in 2024. However, buildings (dwellings and other buildings and structures) maintained the trend observed for gross fixed capital formation as a percentage of GDP since from a negative rate of change -1.69% on average in 2023, they showed a positive average rate of change of 3.24% in 2024. The above indicates that in parallel with the rise of the share of gross investment in GDP in current prices and their fluctuations in percentage changes, their trend on average was positive in 2024 compared to 2023. The above provides a rather positive outlook for the evolution of the aggregate measure of gross fixed capital formation, despite the contradictory developments in its components.

Further fall of the share of machinery and transport equipment in gross investment in favor of buildings

According to Figure 1.1.9, the share of buildings in total gross fixed capital formation continued to increase at the expense of machinery and transport equipment in 2024. On average, the share of machinery and transport equipment in gross investment declined from 43.80% in 2023 to 43.17% in 2024, while that of buildings rose from 38.32% in 2023 to 39.30% in the corresponding period. The above do not signify any departure from the traditional emphasis on buildings in the Greek model of economic development, despite the occasionally different intentions of economic policies.

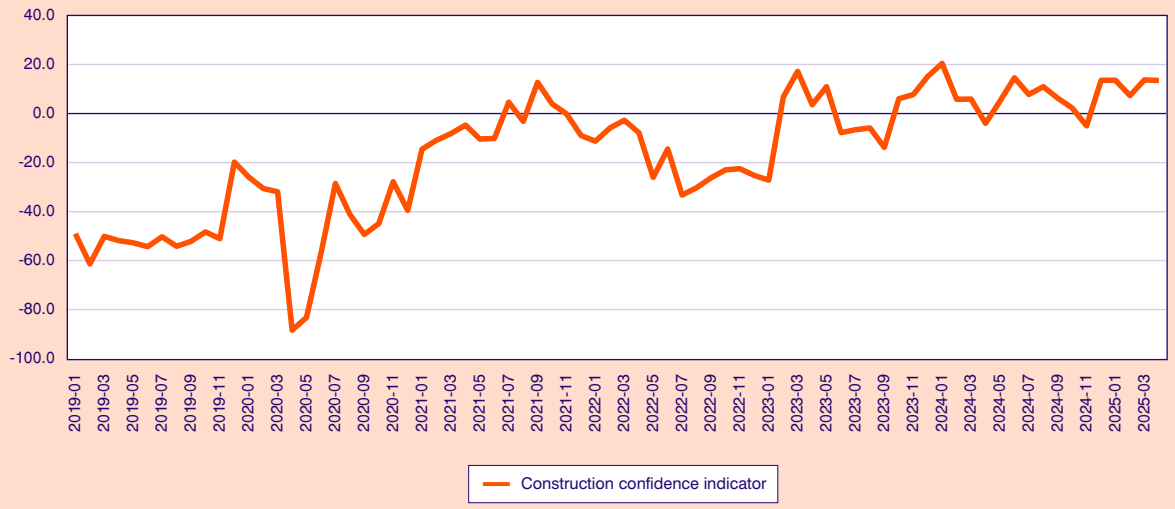
The improving trend of expectations in the construction sector is maintained

Despite fluctuations in the evolution of business expectations in the construction sector, the corresponding indicator presents a sustained improvement in terms of annual average values. Indeed, the average value of the construction confidence indicator in 2023 was 0.53 and rose to 6.98 on average in 2024, while this increase was maintained in the first four months of 2025 with an almost double value of 12.03. Therefore, we observe that optimism in the construction sector is preserved despite fluctuations.

FIGURE 1.1.9
Machinery, transport equipment and buildings as a percentage of gross fixed capital formation

Source: ELSTAT, data processing by the author.

FIGURE 1.1.10
Construction confidence indicator



Source: Eurostat, data processing by the author.

1.1.2.3. Conclusions

The above analysis demonstrates the moderate positive developments in the year 2024 for private consumption and investment expenditure. However, uncertainty persists concerning future developments in retail trade, as the relevant expectations indicate. On the other hand, despite positive developments in investment, we should not disregard the fall in the share of machinery and transport equipment compared to buildings, along with the rise in the trade deficit, which challenged any attempt at changing the productive model of the country. In any case, Greece showed positive economic growth rates in 2024 but, at the same time, through its performance, posed the basic policy dilemmas for the future. Ideally, the rising share of investment expenditure in GDP would continue and would be accompanied by a corresponding rise in the share of machinery and transport equipment as a percentage of total investment. This positive outlook for the Greek economy could be followed by small increases in consumption expenditures and a fall in the trade deficit in the future. However, the above are simply proposals. It is up to the coming economic policies and the corresponding behavior of economic agents to realize them.

KEPE, *Greek Economic Outlook,* issue 57, 2025, pp. 14-18

1.2. Developments in inflation in Greece and the Eurozone *Persistently high core inflation in Greece: Services and Housing-related drivers*

Emilia G. Marsellou

Introduction

According to the latest available data, inflation in Greece stood at 2.5% in May 2025, while core inflation –i.e., the overall index excluding volatile components such as energy and food– reached 3.6%, reflecting persistent inflationary pressures on the domestic component of prices.

At the level of individual categories within the Consumer Price Index (CPI), the highest annual percentage increases were recorded in the groups Hotels, cafés and restaurants (+6.8%), Clothing and footwear (+6.6%), and Housing (+6.0%). In contrast, only the Transport group showed a negative change, with prices declining by -2.8% year-on-year.

The upward trend in service prices continued to intensify, reaching 5.5% in May compared to 5.1% in April. Meanwhile, goods prices recorded a marginal positive rate of change of +0.2%, up from -0.4% the previous month (see Figure 1.2.2).

At the euro area level, according to Eurostat's preliminary estimates, inflation in May 2025 is expected to stand at 1.9%, marking a deceleration from 2.2% in April. The highest annual price increases are expected in the categories Food, alcohol and tobacco (+3.3%) and Services (+3.2%), while Non-energy industrial goods are expected to remain stable (+0.6%). The Energy category is estimated to remain in negative territory, with an annual percentage decline of -3.6%.

1.2.1. Greece

According to the latest data released by ELSTAT, the National Consumer Price Index (CPI) registered a year-on-year increase of 2.5% in May 2025, up from 2.0% in the previous month (Table 1.2.1). The rate of increase in the core CPI also accelerated, reaching 3.6%, compared to 3.5% in April and 3.2% in March.

The price sub-indices of goods and services categories with the highest annual increases in May 2025 (Table 1.2.2) were Hotels, cafés and restaurants (+6.8%), Clothing and footwear (+6.6%), and Housing (+6.0%). In contrast, the Transport category recorded a negative annual rate of change (-2.8%).

The largest contributions to the overall inflation rate in May 2025 came from the Hotels, cafés and restaurants group (+0.77 percentage points), followed by Housing (+0.71 p.p.) and Food (+0.55 p.p.). On the other hand, the Transport group exerted the most significant negative contribution, amounting to -0.40 percentage points.

The inflation rate based on the National All-Items Consumer Price Index (CPI) in May 2025 (2.5%) reflects the combined effect of changes in the sub-indices of the following goods and services categories. Specifically, the following increases were recorded:

- 2.6% in the category Food and non-alcoholic beverages. This increase is primarily attributed to rising prices in bread and cereals (+3.1%), meat (+5.3%), fresh fish (+8.4%), fresh whole milk (+3.0%), fruit (+13.2%), vegetables (+4.2%), sugar-chocolates-sweets-ice-creams (+7.4%), coffee, cocoa, and tea (+12.3%), and mineral water refreshments-fruit (+2.5%). These increases were partially offset by price declines in olive oil (-34.4%) and sauces and condiments (-6.3%).
- 1.7% in the category Alcoholic beverages and tobacco. The increase is mainly due to higher prices in not served alcoholic beverages (+2.0%) and cigarettes (+1.6%).
- 6.6% in the category Clothing and footwear, reflecting an increase in the prices of clothing and footwear.
- 6.0% in the category Housing. This increase is largely driven by higher prices in rentals for dwellings (+10.9%), services for the repair and maintenance of the dwelling (+5.8%), miscellaneous services relating to the dwelling (+2.5%), electricity (+18.0%), and natural gas (11.1%). These were partially counterbalanced by reductions in heating oil (-12.9%) and solid fuels (-3.9%).
- 1.8% in the category Health. The rise is mainly attributed to price increases in pharmaceutical prod-

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, %)
2024M05	117.7	-0.3	2.4	2.7	2.4	2.8
2024M06	118.2	0.5	2.3	3.0	2.5	3.4
2024M07	117.4	-0.7	2.7	3.1	3.0	3.8
2024M08	117.7	0.3	3.0	3.5	3.2	3.7
2024M09	119.8	1.8	2.9	3.7	3.1	3.6
2024M10	119.8	0.0	2.4	3.7	3.1	4.3
2024M11	119.3	-0.4	2.4	4.0	3.0	4.5
2024M12	119.5	0.1	2.6	4.1	2.9	4.4
2025M01	118.7	-0.7	2.7	3.8	3.1	4.4
2025M02	118.6	-0.1	2.5	3.6	3.0	4.2
2025M03	120.2	1.4	2.4	3.2	3.1	3.8
2025M04	120.3	0.0	2.0	3.5	2.6	3.8
2025M05	120.6	0.2	2.5	3.6	3.3	4.0

Sources: ELSTAT, Eurostat.

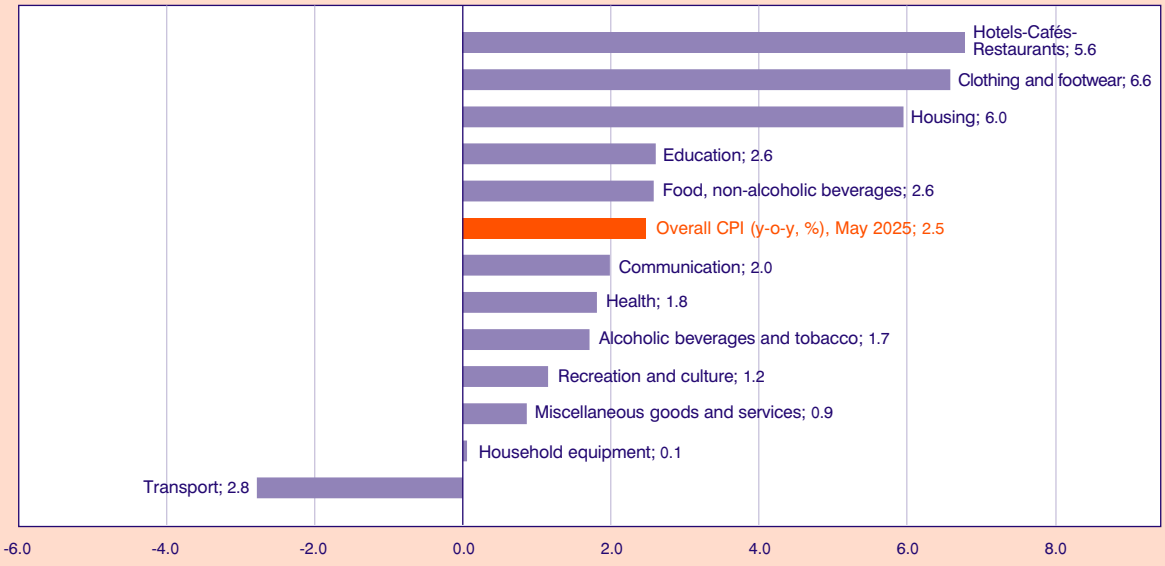
ucts (+1.9%), medical products (+3.3%), medical, dental, and paramedical services (+2.4%), and hospital care (+0.6%).

- 2.0% in the category Communication, mainly due to an increase in prices of telephone services (+2.4%).
- 1.2% in the category Recreation and culture. This increase is driven by rising prices in small recreational items, flowers, and pets (+2.0%), recreational services (+5.9%), and package holidays (+8.5%). These were partially offset by decreases in prices of equipment for the reception, recording and reproduction of sound and picture (-11.2%) and major durables for recreation and cultural (-1.5%).
- 2.6% in the category Education. The increase is mainly due to higher tuition fees for pre-primary and primary education (+2.1%) and secondary education (+3.1%).
- 6.8% in the category Hotels, cafés, and restaurants. This rise is primarily driven by price increases in restaurants-confectioneries-cafés-buffets (+6.8%) as well as hotels, motels, and inns (+5.5%).
- 0.9% in the category Miscellaneous goods and services. The increase is mainly due to higher prices in hairdressing salons and personal grooming establishments (+4.4%), other personal effects (+3.7%), social protection services (+6.8%), private insurance connected with health (+7.0%), and other services (+4.3%). These were partially mitigated by price reductions in other appliances and articles for personal care (-2.5%) and motor vehicle insurance (-1.0%).

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

- -2.8% in the category Transport. This decrease is primarily attributed to the decline in prices for secondhand motorcars (-5.0%) and fuels and lubricants (-10.2%). These reductions were partially offset by price increases in new motorcars (+3.0%), maintenance and repair of motorcars-motorcycles (+4.0%), other services for motorcars-motorcycles (+1.9%), and tickets for passenger transport by air (+9.3%).

FIGURE 1.2.1
Annual % changes in National CPI sub-categories (May 2025)



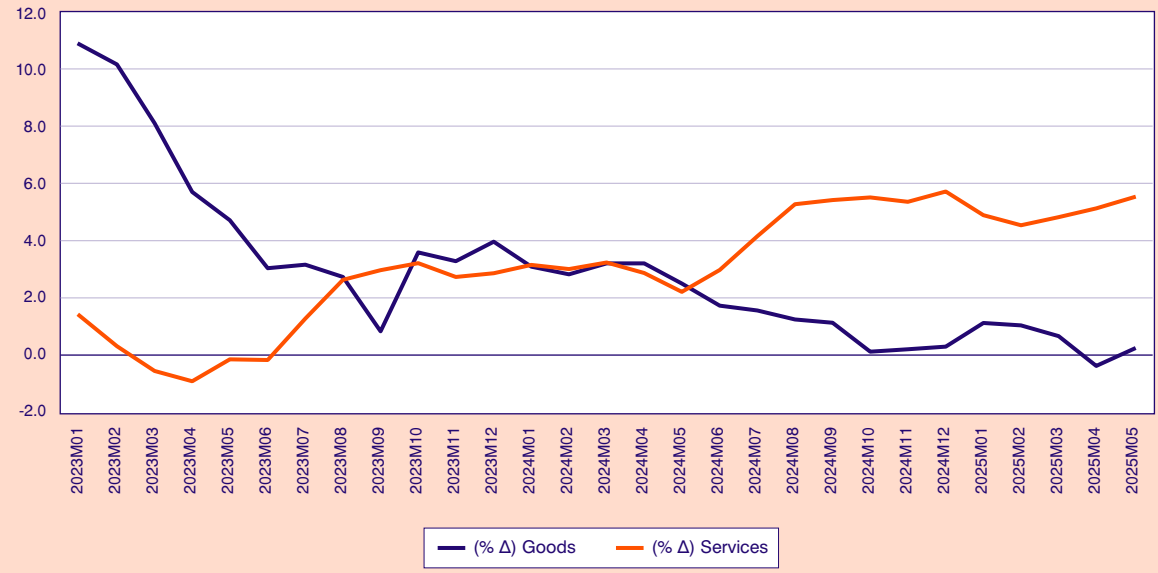
Source: ELSTAT.

TABLE 1.2.2 Annual % changes in National CPI sub-categories, January 2025-May 2025

Groups of goods and services	Jan.	Feb.	Mar.	Apr.	May
1 Food and non-alcoholic beverages	0.1	0.2	2.2	2.0	2.6
2 Alcoholic goods and tobacco	0.8	2.0	1.2	0.0	1.7
3 Clothing and footwear	5.4	6.4	3.6	4.6	6.6
4 Housing	4.6	5.1	5.9	3.4	6.0
5 Household equipment	-0.2	-0.7	0.2	-0.6	0.1
6 Health	3.5	3.4	1.6	1.7	1.8
7 Transport	3.3	0.3	-1.6	-0.8	-2.8
8 Communication	1.2	1.7	2.1	1.6	2.0
9 Recreation and culture	1.3	0.9	0.9	0.8	1.2
10 Education	2.6	2.6	2.6	2.6	2.6
11 Hotel-cafés-restaurants	5.1	5.5	6.0	6.4	6.8
12 Miscellaneous goods and services	2.3	2.3	2.2	-0.4	0.9
General Index	**2.7**	**2.5**	**2.4**	**2.0**	**2.5**

Source: ELSTAT.

FIGURE 1.2.2
Goods and Services price indices, monthly data, annual % change



Source: ELSTAT.

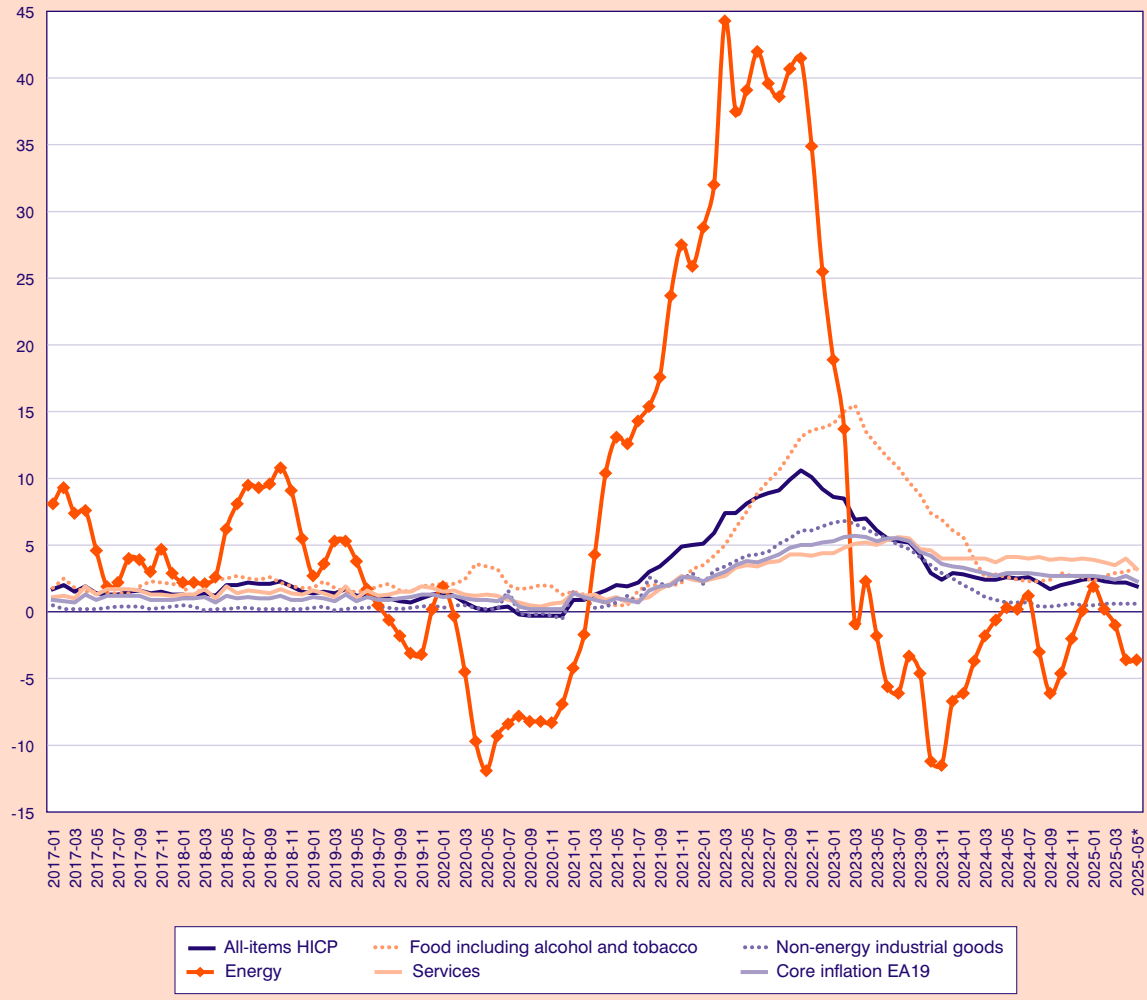
1.2.2. The euro area

According to Eurostat's flash estimate, the Harmonised Index of Consumer Prices (HICP) for the euro area is expected to reach 1.9% in May 2025, down from 2.2% in April 2025. At the same time, core inflation –excluding the volatile components of energy and food– is projected to decline to 2.3%, from 2.7% in the previous month.

Regarding the main components of the euro area HICP in May 2025, the highest annual rate of increase is anticipated in the category Food, alcohol and tobacco, at 3.3% (up from 3.0% in April). This is followed by Services, which are expected to exhibit a slowdown in annual inflation to 3.2%, from 4.0% in the previous month. The category Non-energy industrial goods is projected to maintain a stable annual growth rate of 0.6% for the fourth consecutive month, while Energy is expected to continue recording a negative annual rate of change at -3.6%, unchanged from April.

Among euro area member states, the highest HICP inflation rates in May 2025 are expected in Estonia (4.6%), Croatia (4.3%), and Slovakia (4.3%). Conversely, the lowest rates are anticipated in Cyprus (0.4%), France (0.6%), and Ireland (1.4%).

FIGURE 1.2.3
HICP in the euro area, monthly data, annual % change



Source: Eurostat.

* Flash estimates.

KEPE, *Greek Economic Outlook,* issue 57, 2025, pp. 19-21

1.3. Factor model forecasts for the short-term prospects in GDP

Macroeconomics Forecasting Unit
Ersi Athanassiou, Aristotelis Koutroulis, Emilia Marsellou, Theodore Tsekeris

The current section presents the forecasts of KEPE concerning the evolution of the rate of change of real GDP in Greece in year 2025.[1] The forecast is conducted using KEPE's dynamic structural factor model.[2] The underlying time series database used to estimate the model and produce the forecasts includes 125 variables,[3] covering the main aspects of economic activity in the country on a quarterly basis and spanning the period from the first quarter of 2000 up to the first quarter of 2025.

According to the latest data taken into account in the present forecast, covering the last quarter of 2024 and the first quarter of 2025, the Greek economy remains on a steady path, recording GDP growth rates significantly above the EU average. As indicated by the provisional data of the quarterly *National Accounts*, the rate of change of Greece's GDP reached 2.5% in the last quarter of 2024 and 2.2% in the first quarter of 2025, with private consumption still providing significant support to domestic demand, as expected on the basis of the further rise in incomes.

The volatile international environment and the uncertainties stemming from geopolitical tensions and evolving international trade disputes are having visible effects on indicators of the Greek economy concerning mainly exports and investment, without, however, causing significant deviations from the stable upward trajectory of economic activity in the country. The marginal decline in exports of services in the first quarter of 2025, and more particularly the pressures on receipts from transport services combined with the apparent slowdown in the growth of tourism receipts, are likely to be associated with a less favourable outlook for the European economy and international trade due to the instability in international trade relations. At the same time, the decline in fixed capital investment in the first quarter of the year, although partly related to one-off domestic factors such as the ambiguities in the regulatory framework for the construction of new buildings, is also a manifestation of a possible wait-and-see attitude on the part of some investors, given the uncertainty caused by the volatility of the international environment.

In the above context, Table 1.3.1 presents the updated econometric estimates for the rate of change of Greece's real GDP in 2025, based on KEPE's factor model and incorporating data up to the first quarter of the year.[4] According to the estimates, the average annual rate of change of real GDP for the whole of 2025 is projected at 2.2%, and the rates of change for the first and second halves of 2025, compared to the corresponding periods of 2024, are estimated at 2.3% and 2.1%, respectively. Forecasts on a quarterly basis show a smooth growth outlook in the course of the year (2.3% in the second quarter, 2.4% in the third quarter and 1.8% in the fourth quarter), with the Greek economy maintaining a significantly higher rate of growth compared to the expected EU average.

More specifically, for the first quarter of 2025, the quarterly data of the *National Accounts* at constant prices, compared to the corresponding quarter of 2024, depict a significant rise in domestic demand, fueled by the continuing rise in private consumption, the mild recovery in public consumption, as well as the further increase in inventories, which acted as a counterbalance to the decline in fixed capital formation. On the other hand, in the same period, external demand had a negative contribution to the rate of change in GDP, as imports increased and the growth rate of total ex-

1. The date of the forecast is June 11, 2025.

2. A detailed description of the model can be found in Issue 15 (June 2011, pp. 19-20) of KEPE's scientific journal entitled *Greek Economic Outlook*. See https://www.kepe.gr/images/oikonomikes_ekselikseis/issue_15enb.pdf.

3. The database incorporates both real economy and nominal variables, as well as a considerable number of variables reflecting expectations and assessments of economic agents, as reported in earlier issues of the *Greek Economic Outlook*. The seasonal adjustment of the time series is carried out by use of the Demetra+ software, using the TRAMO/SEATS filter.

4. According to the most recent ELSTAT *Quarterly National Accounts* publication, dated June 6, 2025.

TABLE 1.3.1 Real GDP rate of change in year 2025 (%, y-o-y)

	2025		
Quarters	**2025Q2**	**2025Q3**	**2025Q4**
Quarterly rate of change	2.30 [2.19 , 2.42]	2.36 [2.13 , 2.59]	1.82 [1.48, 2.15]
Mean rate of change, 1st half *	2.25 [2.19, 2.31]	-	
Mean rate of change, 2nd half	-	2.09 [1.81, 2.37]	
Mean annual rate of change *		2.17 [2.00, 2.34]	

Note: Values in brackets indicate the lower and upper boundaries of the 95% confidence interval of the forecasts. *The mean rate of change for the first half of 2025 and the mean annual rate of change for 2025 incorporate the officially available (provisional) data for the first quarter of 2025, on a seasonally adjusted basis.

ports was affected by the marginal decline in the export of services.

Regarding the course of indicators reflecting the activity of key sectors of the economy, developments in the first quarter of 2025, as compared to the corresponding quarter of the previous year, were mostly positive. First, in the industry sector, the overall industrial production index registered an increase, with index values moving upwards in all main subcategories except *consumer durables*. At the same time, a slight decrease was recorded in the turnover index in industry, with this, however, being mainly due to the decline in the price of energy goods, and sales boosted in most of the other subcategories. In the trade sector, the volume index in retail trade increased significantly, with positive and substantial growth being recorded in five of the eight relevant subcategories, and more specifically in *pharmaceutical products-cosmetics*, *books-stationery-other goods*, *furniture-electrical and household equipment*, *supermarkets* and *food-beverages-tobacco*. In the tourism sector, travel receipts registered a moderate increase, while in the construction sector private building activity presented a considerable decline, which was also reflected in the evolution of the production index in construction. Concerning the course of the domestic labor market, in the first quarter of 2025 a further improvement in conditions was observed, as the number of persons employed increased by 1.0% compared to the first quarter of the previous year and the number of unemployed persons decreased by 15.0%, respectively.

With respect to price data for the first quarter of 2025, developments were mixed with regard to energy costs, as the Brent oil price index declined and the European harmonized energy price index for Greece increased compared to the immediately preceding quarter. At the same time, average inflation remained at about the same level as in the previous quarter, with inflationary pressures varying significantly across key categories, remaining high in housing, clothing and footwear and hotels, cafés and restaurants. In terms of the yield of Greece's ten-year government bond, which is linked to the levels of uncertainty in the economy, an increase was observed compared to the fourth quarter of 2024, without, however, affecting the relative spread against the corresponding German bond. With regard to indicators reflecting the expectations and assessments of economic activity participants on the course of the economy, developments in the first quarter of 2025, compared to the fourth quarter of the previous year, were indicative of a small improvement in economic sentiment in Greece and in Europe, while business expectations in Greece strengthened in the industrial and construction sectors.

As the external environment is expected to remain volatile and unstable in the short term, it is clear that the risks surrounding the outlook for the Greek economy this year are on the downside, with domestic demand being called upon to provide critical support to GDP growth at a time when the slow growth rates of the European economy, the deterioration in international trade growth prospects and geopolitical instability are

not conducive to a more robust contribution from the export side. As regards private and public consumption, the outlook for incomes and the expected less restrictive fiscal stance are expected to sustain a significant positive contribution to GDP growth for the remainder of the year. With respect to fixed capital investment, the expected increased disbursements from the Recovery Fund and the strengthening of the Public Investment Programme will be crucial compensatory factors against the increased uncertainty, while the resolution of issues related to the licensing framework for construction activity may also contribute to a substantial increase in investment spending in the coming period.

1.4. Positive developments for the Greek capital market amid upgrades for Greece

Fotini Economou

1.4.1. Introduction

Despite the increased uncertainty observed in international markets in April, which inevitably affected the Greek stock market, the first four months of 2025 ended with positive returns, increased capitalization and transactions value. The European Central Bank (ECB) continued the interest rate de-escalation during the first four months of 2025, with the ECB Governing Council deciding on three cuts to key interest rates from the beginning of the year until April 2025. The performance of the Greek government bond market was also positive, marked by successful issues and strong investment interest.

The upgrades from international rating agencies continued with the reacquisition of investment grade status in March 2025 from Moody's (Table 1.4.1) (the only agency that had not yet granted investment grade to Greece), marking a milestone for the Greek market. This development, combined with the upgrades within investment grade by DBRS Morningstar and Standard & Poor's in March and April 2025, respectively, as well as the recent revision of Greece's outlook to positive by Fitch in May 2025, sends a positive message to the markets. These actions confirm the progress made by the Greek economy and are expected to have multiple positive impacts on the Greek government's borrowing costs and investment interest in the Greek capital market.

A significant positive development during the period under review was the enactment of Law 5193/2025, "Strengthening the Capital Market and Other Provisions", in April 2025, which includes important improvements in this direction. More specifically,[1] it comprises, among other things, tax and other incentives to enhance the operation and reliability of the Athens Stock Exchange (ATHEX) as well as to encourage demand and the listing of companies on the stock market (for example, granting an increased discount for expenses related to the listing of very small, small, and medium-sized enterprises on a regulated market, reducing the tax rate on interest from listed corporate bonds acquired by natural persons who are tax resi-

TABLE 1.4.1 Greece's credit rating

Rating Agency	Rating	Outlook	Date of last review
Standard & Poor's	BBB	Stable	18/4/2025
Moody's	Baa3	Stable	14/3/2025
Fitch	BBB-	Positive	16/5/2025
DBRS Morningstar	BBB	Stable	7/3/2025
Rating and Investment (R&I)	BBB-	Stable	9/9/2024
Scope Ratings GmbH	BBB	Stable	6/12/2024

Source: Public Debt Management Agency (PDMA)-May 2025.

1. See the relevant information note from the Ministry of Economy and Finance, available at https://minfin.gov.gr/enimerotiko-simeioma-gia-to-nomoschedio-enischysi-tis-kefalaiagoras-kai-alles-diataxeis/.

dents of Greece, and extending incentives for angel investors in investments in companies listed on a multilateral trading facility). Furthermore, the law aims at the institutional safeguarding of supervisory mechanisms (i.e., the Hellenic Capital Market Commission and the Bank of Greece), while simultaneously creating a comprehensive institutional framework for crypto assets, including measures to protect investors from unfair or illegal practices. Finally, it incorporates EU Directives and establishes measures for the implementation of capital market and financial sector Regulations, with the aim of complying with EU law.

This article presents a brief overview of the course of the Greek stock market during the first four months of 2025, focusing on key stock market indices and data. The course of the bond market is also presented for the same period. The final section of the article summarizes and concludes.

1.4.2. The course of the stock market for the first four months of 2025

The first four months of 2025 ended with positive returns for the Greek stock market. More specifically, according to ATHEX data (Table 1.4.2), the Athex Composite Share Price Index recorded a positive return of 15.55%, rising to 1,698.19 points from 1,469.67 points on 31/12/2024. Despite the turmoil observed in international stock markets in early April as a result of increased uncertainty regarding U.S. trade policy and the imposition of trade tariffs, the Greek stock market soon recovered, ending April and the first four months of 2025 on a positive note.

Moreover, the FTSE/Athex Large Cap index and the Athex ESG Index recorded returns of 17.60% and 17.48%, respectively, outperforming the Athex Composite Share Price Index; lower returns were recorded

TABLE 1.4.2 Prices and returns for selected indices of the ATHEX (30/4/2025)

	30/4/2025	Year min	Year max	Year change (%)
FTSE/Athex Large Cap	4,198.94	3,550.72	4,340.13	17.60%
Athex ESG Index	1,971.38	1,676.07	2,041.98	17.48%
Athex Composite Share Price Index	1,698.19	1,455.08	1,749.90	15.55%
Athex All Share Index	389.33	340.27	397.77	14.69%
FTSE/Athex Mid Cap Index	2,555.88	2,262.76	2,654.61	9.51%
Hellenic Mid & Small Cap Index	2,275.00	2,005.36	2,379.49	7.47%
FTSE/ATHEX CONSUMER STAPLES	8,247.29	6,653.46	8,309.50	23.30%
FTSE/Athex Banks	1,563.96	1,278.63	1,731.20	21.61%
FTSE/ATHEX FINANCIAL SERVICES	7,331.63	6,002.57	8,113.77	21.49%
FTSE/ATHEX CONSUMER DISCRETIONARY	5,790.91	4,770.42	5,811.71	15.01%
FTSE/ATHEX ENERGY & UTILITIES	5,601.42	4,945.68	5,902.60	12.50%
FTSE/ATHEX TECHNOLOGY & TELECOMMUNICATIONS	6,093.54	5,244.36	6,162.83	7.48%
FTSE/ATHEX INDUSTRIALS	7,361.97	6,534.30	7,838.15	2.86%
FTSE/ATHEX BASIC MATERIALS	5,134.47	4,549.74	5,724.63	2.33%
FTSE/ATHEX REAL ESTATE	4,759.73	4,359.91	4,957.63	-2.45%

Source: Daily official list of trading activity of the ATHEX 30/4/2025.

by mid- and small-cap indices, with the FTSE/Athex Mid Cap Index recording a return of 9.51% and the Hellenic Mid & Small Cap Index a return of 7.47%.

The performance of the sectoral indices of the ATHEX was also positive, with the only exception being the FTSE/ATHEX REAL ESTATE index, which recorded losses of -2.45% since the beginning of the year. Impressive returns of over 20% were recorded by the FTSE/ATHEX CONSUMER STAPLES index (23.30%), the FTSE/Athex Banks index (21.61%) and the FTSE/ATHEX FINANCIAL SERVICES index (21.49%). Note that the banking sector continues to outperform the Athex Composite Share Price Index in terms of returns.

According to ATHEX (2025) data, the market capitalization of the ATHEX reached €103.86 billion at the end of April 2025. Even though it is down by -1.86% compared to March levels (€105.83 billion), it recorded an increase of 11.41% compared to the end of December 2024 (€93.22 billion). The participation of foreign investors remains high, reaching 68.07% at the end of April 2025, with foreign investors recording outflows of €12.24 million and 55.9% of total transactions' value in April 2025. The cash value of settled transactions of April 2025 reached €3,982.29 million, recording a decrease of -19.66% compared to the end of the previous month, which was at €4,956.86 million, and an increase of 40.99% compared to April 2024, which was at €2,824.59 million. Furthermore, the cash value of settled transactions of equities was increased in April 2025, reaching €3,931.88 million compared to April 2024, which was at €2,771.67 million, recording an increase of 41.86%. The cash value of settled transactions of equities for the first four months of 2025 was also increased by 30.67%, reaching €15,103.30 million, from €11,558.57 million in the first four months of 2024.

Examining the uncertainty about the short-term course of the market with the help of the KEPE GRIV Implied Volatility Index, the so-called "fear" index, at the end of April 2025, there is a notable increase in uncertainty compared to the end of 2024, with fluctuations within the four-month period of 2025. This increase is recorded in April 2025 amid turmoil in international stock markets due to uncertainty about U.S. trade policy and its global implications. The KEPE GRIV index reflects the uncertainty of the derivatives market participants about the expected short-term course of the Greek market and is calculated on the basis of the FTSE/Athex Large Cap options prices. The KEPE GRIV index increased in April 2025, reaching 33.65% on 30/4/2025, from 23.10% on 31/3/2025. Moreover, the average daily value of the index increased compared to the previous month, reaching 33.92% in April 2025, from 24.28% in March 2025. The index moved above its historical average level (since January 2004) for the Greek market, which stands at 31.95%. The evolution of the index indicates an increase in uncertainty for the expected short-term course of the Greek market compared to the end of the previous month, with fluctuations within the first four months of 2025.

1.4.3. Greek Government T-bills, Greek Government bonds and corporate bonds during the first four months of 2025

The de-escalation of interest rates by the ECB continued in the first four months of 2025. More specifically, the ECB's Governing Council proceeded with three reductions in key interest rates during its January,[2] March,[3] and April 2025 meetings, based on the inflation outlook, the dynamics of underlying inflation and the strength of monetary policy transmission.[4] So, in the April 2025 ECB meeting, the interest rates on the deposit facility, the main refinancing operations and the marginal lending facility decreased to 2.25%, 2.40% and 2.65% respectively, with the ECB Governing Council being "determined to ensure that inflation stabilises sustainably at its 2% medium-term target", always taking into account the current conditions of uncertainty. Note that this is the seventh consecutive reduction in key interest rates by the ECB since June 2024, when the gradual de-escalation of interest rates began.[5] In this context, also taking into account the upgrades of the Greek economy, the successful issues by the Greek government continued, recording a reduced weighted average new funding cost by the end of March 2025 compared to the end of 2024.[6]

Yields on government treasury bills (T-bills) issued during the first four months of 2025 were also lower (Table 1.4.3). More specifically, the yields of 13-, 26- and 52-week T-bills issues were significantly lower com-

2. See ECB Press Release of the 30th of January 2025.

3. See ECB Press Release of the 6th of March 2025.

4. See ECB Press Release of the 17th of April 2025.

5. See Information about the ECB interest rates, Bank of Greece.

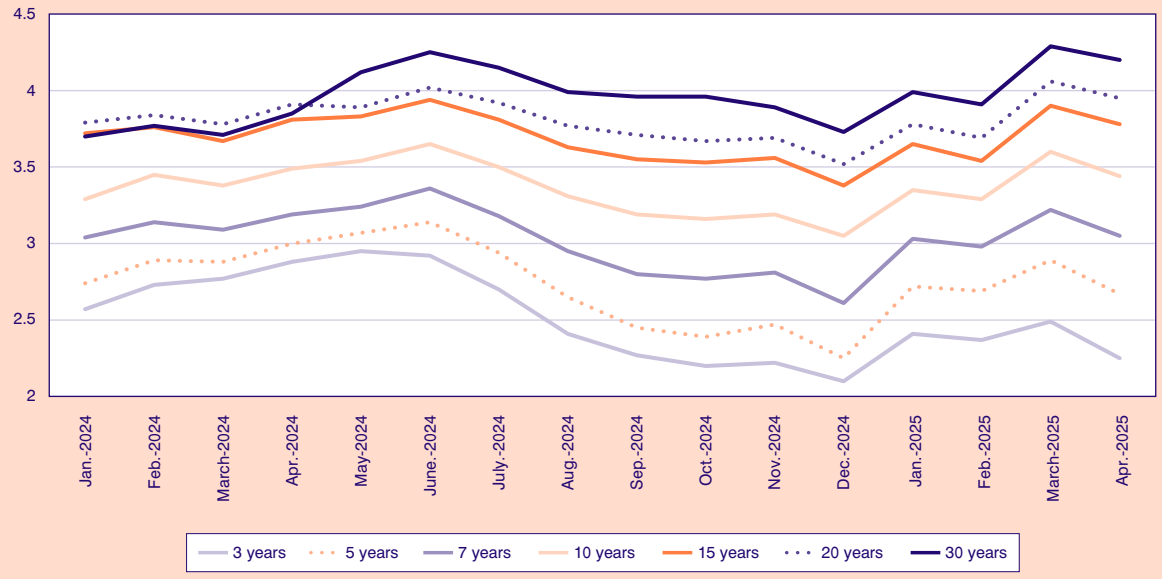
6. See Public Debt Management Agency Quarterly Bulletins No116 and No117, the latest available at the time of writing the article.

TABLE 1.4.3 Greek government T-bills yields (issues from the end of 2024 up to April 2025)

Auction date	13 weeks	Auction date	26 weeks	Auction date	52 weeks
29/4/2025	1.85%	23/4/2025	1.90%	5/3/2025	2.15%
2/4/2025	2.03%	26/3/2025	2.10%	4/12/2024	2.27%
29/1/2025	2.37%	19/2/2025	2.19%		
31/12/2024	2.82%	22/1/2025	2.45%		
		23/12/2024	2.61%		

Source: Ministry of Economy and Finance.

FIGURE 1.4.1
Monthly average yield (%) of Greek government benchmark bonds (Jan. 2024 – Apr. 2025) for maturities of 3, 5, 7, 10, 15, 20 and 30 years



Source: Bank of Greece.

pared to the respective ones at the end of 2024, with the largest decrease recorded for the 13-week T-bills. Furthermore, looking at the interest rates of the Greek government benchmark bonds, according to Bank of Greece data for the first four months of 2025 (Figure 1.4.1), even though the average monthly yield of the Greek government bonds increased for all maturities in April 2025 compared to December 2024, there was a decrease compared to March 2025 for all maturities (3, 5, 7, 10, 15, 20, and 30 years), with the largest decrease recorded for the 3-year bond. The picture is similar when comparing with the corresponding figures from June 2024, when the ECB began de-escalating interest rates, showing reduced average monthly yields for all maturities, with the 3-year bond recording the largest decrease.

Overall, the Greek government bond market had a positive course during the first four months of 2025, continuing the upward trend that began after regaining investment grade status in 2023, with successful bond

issues and strong investor interest reflecting investor confidence in the Greek economy. More specifically, in January[7] 2025, €4 billion was raised from the issue of a ten-year bond (with a Re-offer Yield of 3.637% and a coupon of 3.625%). In February[8] 2025, an additional €250 million was raised from the re-opening of the ten-year bond (3.625%) maturing on June 15, 2035, with a yield of 3.24%. The successful issues continued in March[9] 2025, raising €3 billion through the re-opening of 15-year and 30-year bonds with Re-offer Yields of 4.057% and 4.408%, respectively, marking a record by attracting a combined final orderbook in excess of €56.5 billion. Finally, in April,[10] €200 million was raised from the reopening of a five-year bond, with a yield of 2.34%.

Focusing on the corporate bond indices of the Athens Stock Exchange, according to ATHEX data, the Hellenic Corporate Bond Price Index[11] recorded marginal losses of -0.15% and the Hellenic Corporate Bond Index[12] recorded a return of 1.08% for the first four months of 2025.[13] Furthermore, even though the cash value of settled transactions of corporate bonds increased in April 2025 compared to April 2024, reaching €32.79 million from €25.94 million, respectively, recording a notable increase of 26.41%, it decreased by -2.04% for the first four months of 2025 compared to the first four months of 2024, falling to €120.79 million from €123.31 million, respectively.

1.4.4. Conclusions

Despite the increased uncertainty observed in international stock markets in early April 2025 regarding the direction of U.S. trade policy, the issue of trade tariff imposition, and the related global economic impacts, the first four months of 2025 ended with positive returns, increased capitalization and transactions value for the Greek stock market. The large-cap index recorded a higher return compared to the Athex Composite Share Price Index, while the mid- and small-cap indices recorded positive but smaller returns. Several sectoral indices recorded an impressive performance. The ECB's de-escalation of interest rates continued, while the course of the Greek government bond market was also positive, with successful issues and strong investment interest; at the same time, the weighted average new funding cost was reduced at the end of March 2025 compared to the end of 2024.

Among the significant positive developments of the period under review was Greece's reacquisition of investment grade by the international rating agency Moody's, along with upgrades within the investment grade by other international rating agencies, sending a positive signal of confidence towards the Greek economy. Furthermore, the passage of Law 5193/2025 on the strengthening of the capital market is expected, among other things, to facilitate the entry of small and medium-sized enterprises into the stock market and to increase investment interest in both stocks and corporate bonds. These developments are particularly important and can give further impetus to the Greek stock market, paving the way for achieving the next goal, which is the upgrade of the Athens Stock Exchange to developed markets.

References

Athens Exchange Group, *Monthly Statistics Bulletin AxiaNumbers,* Securities Market, April 2025.

Athens Exchange Group, *Monthly Statistics Bulletin AxiaNumbers,* Securities Market, April 2024.

7. See Public Debt Management Agency announcement of the 14th of January 2025.

8. See Public Debt Management Agency announcement of the 12th of February 2025.

9. See Public Debt Management Agency announcement of the 13th of March 2025.

10. See Public Debt Management Agency announcement of the 16th of April 2025.

11. Based on the net price of each bond.

12. Based on the net price, accrued interest and the value of the payments of each bond.

13. Returns on 28/4/2025 according to the daily official list of trading activity of the ATHEX of 30/4/2025.

KEPE, *Greek Economic Outlook,* issue 57, 2025, pp. 27-31

1.5. Recent developments and prospects of the global economic activity: Slowing economic growth amid protectionist policies and escalating geopolitical tensions

Aristotelis Koutroulis

The rise of trade protectionism and the escalation of geopolitical tensions have created conditions for an unusually volatile economic environment. The high uncertainty prevailing among households and businesses threatens to lock the global economy into extremely low rates of economic growth.

1.5.1. Recent developments and short-run prospects of the global economy

Since the beginning of the year, the global economy has entered a regime of unusually high uncertainty due to the dramatic change in US trade policy. At present, the strikingly volatile mood of the US political leadership does not allow for any secure assessments as to which tariff regime will prevail, let alone its effects on global productive activity and international trade. However, it is almost certain that the developments of recent months will have a negative impact on all aspects of the global economy.

As noted in the recent IMF report, the large increase in tariff protection comes at a time of high levels of economic and financial integration among national economies. Today's economic conditions are very different from those that prevailed for most of the last century. Modern production of material goods is based on complex systems of global production chains where a continuous flow of intermediate goods in multiple geographical directions is required before they take the form of a final product and reach the consumer. Therefore, increasing tariff protection can only burden cross-border flows of intermediate goods and disrupt the smooth functioning of international production chains (IMF, 2025).

The fact that the dramatic change in trade policy is not coming from a merely large economy is equally aggravating. It comes from the world's largest economy with a prominent leadership role in all aspects of global economic and financial activity. Indicative of the degree of interconnectedness and dependence of the rest of the world on the US are the percentages of this economy's participation in the international trade in goods. For example, in 2024, US imports accounted for 14% of world imports (UN, 2025). In the immediately preceding year, i.e., 2023, the shares of US-directed exports as a share of total exports of the respective national economy were 19% for Japan, 13% for China, 10% for Germany, and 75% (aggregated) for Mexico and Canada (OECD, 2025).

At the current juncture, the rise of trade protectionism is likely to adversely affect the global economy through a wide range of channels –trade diversion to less efficient producers, rising costs and lower output, higher prices for consumers and higher inflation, delays and deferrals in productive investment, reassessment of risks by financial institutions and increased pressures on international money and capital markets, rising financing costs, etc. All these in turn increase the challenges for economic policy, as both monetary authorities and national governments will again be called upon to pursue multiple goals with limited resources at their disposal. Above all, they increase uncertainty and pessimism among households and businesses, as reflected in the corresponding confidence indicators (OECD, 2025).

The unprecedented conditions in international trade have created a volatile and unpredictable economic environment at a time when the growth performance of the global economy –due to high public debt, anaemic productivity growth, and geopolitical tensions– was already below its pre-pandemic trend (UN, 2025). Against this background, international organizations estimate that the annual growth rate of global GDP in the current year will slow by about half a percentage point (see Table 1.5.1).

1.5.2. Inflation, employment, and investment

In most economies, inflation is expected to remain on a downward path for the second consecutive year. In 2025, global average annual inflation is estimated to fall to 4.3 percent from 5.7 percent in 2024 (IMF, 2025) (see Table 1.5.2). The continued decline in global inflation is driven by falling oil and other commodity prices due to weakening demand (UN, 2025).

TABLE 1.5.1 Real Gross Domestic Product[1,2]

(annual percentage changes)

	2024*				2025**				2026**			
	IMF	EC	OECD	UN	IMF	EC	OECD	UN	IMF	EC	OECD	UN
World economy	3.3	3.3	3.3	3.3	2.8	2.9	2.9	2.9	3	3	2.9	3
Advanced economies	1.8	1.9	:	1.8	1.4	1.5	:	1.3	1.5	1.7	:	1.3
USA	2.8	2.8	2.8	2.8	1.8	1.6	1.6	1.6	1.7	1.6	1.5	1.5
Euro area	0.9	0.9	0.8	0.9	0.8	0.9	1	0.8	1.2	1.4	1.2	1.1
Japan	0.1	0.1	0.2	0.1	0.6	0.7	0.7	0.7	0.6	0.6	0.4	0.9
United Kingdom	1.1	1.1	1.1	1.1	1.1	1	1.3	0.9	1.4	1.3	1	1.1
Developing economies	4.3	4.3	:	4.2	3.7	3.9	:	4	3.9	4	:	4.1
Brazil	3.4	3.4	3.4	3.4	2	2	2.1	1.8	2	1.5	1.6	2
Russia	4.1	4.3	4.1	4.3	1.5	1.7	1.3	1.5	0.9	1.2	0.9	1.5
India	6.5	6.5	6.2	7.1	6.2	6.4	6.3	6.3	6.3	6.4	6.4	6.4
China	5	5	5	5	4	4.1	4.7	4.6	4	4	4.3	4.4

Sources: IMF (2025); European Commission (2025); OECD (2025); and United Nations (2025).

* Estimations, ** Projections.

Notes: 1. The observed differences between the available macroeconomic projections partly reflect the differences between the macro-econometric models and the data used by each international organization.

2. The sub-group of emerging economies is included in the group of developing economies.

TABLE 1.5.2 Inflation[1]

(annual percentage changes)

	2024*			2025**			2026**		
	IMF	EC	OECD	IMF	EC	OECD	IMF	EC	OECD
World economy	5.7	:	:	4.3	:	:	3.6	:	:
Advanced economies	2.6	:	:	2.5	:	:	2.2	:	:
USA	3	2.9	2.5	3	3	3.2	2.5	2.3	2.8
Euro area	2.4	2.4	2.4	2.1	2.1	2.2	1.9	1.7	2
Japan	2.7	2.7	2.7	2.4	2.6	2.8	1.7	2.3	2.2
United Kingdom	2.5	3.3	2.5	3.1	3.6	3.1	2.2	2.6	2.3
Developing economies	7.7	:	:	5.5	:	:	4.6	:	:
Brazil	4.4	:	4.4	5.3	:	5.7	4.3	:	5
Russia	8.4	:	8.4	9.3	:	9.9	5.5	:	6.3
India	4.7	:	4.6	4.2	:	4.1	4.1	:	4
China	0.2	:	0.2	0	:	-0.1	0.6	:	1.4

Sources: IMF (2025); European Commission (2025); and OECD (2025).

* Estimations, ** Projections.

Note: 1. The sub-group of emerging economies is included in the group of developing economies.

In advanced economies, average inflation will be close to last year's levels. However, there are concerns about the persistence of high service price inflation due to ever-increasing housing costs. At the same time, goods inflation has also been on the rise recently due to rising food prices (OECD, 2025). In developing economies as a whole, average annual inflation in 2025 is expected to fall by 2 percentage points and approach its long-term trend. However, there is strong variation across countries, with inflation remaining above 10% in three quarters of developing economies (OECD, 2025; UN, 2025).

Despite the significant improvements recorded on the price front, the increase in tariff protection seems to have led to a rise in inflationary pressures and to an increase in inflationary expectations of households and firms (OECD, 2025). Also of great concern has been the expansion of the war in the Middle East and the possibility of a new wave of energy price increases due to disruptions in the supply of the respective products. To the extent that these factors do not take on such proportions as to divert inflation from its downward path, their impact will be limited to slowing the rate of inflation deceleration. Otherwise, the possibility of a dynamic resurgence of inflation at the global level seems quite likely.

As regards employment, labour market conditions in advanced economies have remained favourable throughout the past period. The resilience shown by these markets even after the US announcements on its new tariff policy is impressive. Despite growing uncertainty, slowing economies, and insufficient productive investment, OECD and EU analysts expect favourable labour market conditions to persist over the medium term with unemployment rates in the US, the euro area, Japan, and the UK remaining close to their 2024 levels (see Table 1.5.3).

In developing economies, the expected slowdown in economic activity is projected to have a negative impact on both employment and nominal wage growth. Not coincidentally, this assessment mainly concerns the Chinese economy as tariff increases by the US are expected to have a negative impact on purely export-oriented firms (UN, 2025).

TABLE 1.5.3 Annual unemployment rates (advanced economies)

	2024*		2025**		2026**	
	EC	OECD	EC	OECD	EC	OECD
USA	4	4	4.3	4.2	4.5	4.3
Euro area	6.4	6.4	6.3	6.4	6.1	6.2
Japan	2.6	2.5	2.5	2.5	2.5	2.5
United Kingdom	4.3	4.3	4.4	4.6	4.4	4.6

Sources: European Commission (2025) and OECD (2025).

* Estimations, ** Projections.

TABLE 1.5.4 World trade volume

(annual percentage changes, goods and services)[1]

	2023*	2024*	2025**	2026**
IMF	0.8	3.8	1.7	2.5
EC	1.1	2.9	1.8	2.2
OECD	1.2	3.8	2.8	2.2
UN	1.1	3.3	1.6	2.3

Sources: IMF (2025); European Commission (2025); OECD (2025); and United Nations (2025).

* Estimations, ** Projections.

Ongoing tensions in international economic diplomacy and increased tariff protection have created an explosive mix of conditions –reduced demand, high uncertainty, and increased financing costs– that is far from conducive to investment activity. Most companies seem reluctant and hesitant to proceed with investment projects, adopting a wait-and-see attitude. This behaviour is particularly evident in sectors with strong involvement of global production chains such as electronics, machinery, and vehicles (UN, 2025).

After a long period of sluggish investment activity, extremely low interest rates, and high corporate profitability, the latest developments raise serious concerns about the long-term prospects of economies. This is specifically mentioned in the latest OECD report. In particular, it points out that, over the last two decades, firms have been investing an increasingly smaller proportion of their profits and borrowed capital in tangible assets such as machinery. In turn, low rates of (physical) capital accumulation are holding back the growth rates of total factor productivity and slowing down the growth rates of potential GDP in both advanced and developing economies (OECD, 2025).

1.5.3. World trade and commodity prices

The intensification of protectionist policies through the implementation of a series of new tariff measures will inevitably halt the significant recovery in global trade recorded last year. Indicative of the impending downturn in goods trade is the significant drop in the manufacturing Purchasing Managers' Indices (UN, 2025). In contrast, trade in services, given the momentum it has gained in recent years, appears to be resisting in-

creased tariff protection. However, the projected decline in overseas transfers of goods and the possible reduction in demand for tourism services due to moderating income growth are expected to have a negative impact on services trade as well. Under these circumstances, international organisations estimate that the slowdown in the expansion of international trade this year will hover between 1 percent and 2 percent (see Table 1.5.4).

Regarding commodity prices, the rapid escalation of geopolitical tensions, following the military conflict between Israel and Iran, leaves no room for safe predictions. For example, in the reports of international organisations published up to the beginning of June, it was commonplace to predict a generalised fall in commodity prices due to low economic growth and limited demand (WB, 2025). For oil in particular, a 15.5% decline in the international price was expected in 2025 (IMF, 2025). Obviously, recent events in the Middle East seem to invalidate these predictions, as much will depend on how this new conflict unfolds in the near future.

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2. Fiscal developments

KEPE, *Greek Economic Outlook,* issue 57, 2025, pp. 32-39

State Budget, public debt, and outlook

Elisavet I. Nitsi, Yiorgos Ioannidis

2.1. Execution of the State Budget (Q1, 2025)

According to the most recent data,[1] the performance of the State Budget during the period January-April 2025 exceeded initial targets. On a modified cash basis, the State Budget recorded a surplus of 1,850 million euros, compared to a deficit target of 1,357 million euros. Likewise, the primary balance reached 5,148 million euros, significantly surpassing the target (1,973 million euros). Consequently, the primary surplus outperformed the target by 3,175 million euros. Nevertheless, the improvement in the overall fiscal balance is limited (excess of 44 million), due to the fact that a portion of the enhanced outcome stems from deferred expenditures or revenues accounted for in the 2024 fiscal year.[2]

Net revenue (see Table 2.1.1 and Graph 2.1.1) amounted to 23,059 million euros, exceeding the target by 229 million euros. Tax revenues reached 22,009 million euros, surpassing the target by 1,361 million euros or 6.6%, mainly due to increased receipts from indirect (e.g., VAT, excise duties) and direct taxation.[3] Specifically, indirect tax revenues include 8,878 million euros from VAT (+276 million euros relative to the target), 2,189 million euros from excise duties (+61 million euros), and 1,339 million euros from property taxation (+193 million euros). With respect to direct taxation, income tax revenues increased by 655 million euros, of which 590 million euros were derived from personal income tax and 192 million euros from other income categories. In contrast, corporate income tax revenue recorded a decline of 126 million euros, attributable to the advance payment of 2024 tax instalments. It is noteworthy that the revenue category "Transfers" fell short of the target, amounting to 1,820 million euros against a projected 3,158 million euros. This shortfall is largely explained by the non-receipt in April of the fifth instalment from the Recovery and Resilience Facility (TAA), which was eventually collected in May. Additionally, revenues classified under "Sales of goods and services" surpassed expectations, owing to the inclusion of 784.8 million euros from budget-neutral transactions associated with the new concession agreement for the Attica Tollway.

On the expenditure side, total outlays amounted to 21,209 million euros, falling short of the target by 2,977 million euros. The majority of this deviation is attributable to the postponement of transfer payments to Social Security Organizations (OKAs) and other General Government entities, amounting to 1,617 million euros, as well as to deferred cash disbursements for defence equipment procurement programmes (436 million euros), which do not impact the fiscal outcome of the General Government sector. With respect to the execution profile of expenditures (see Graph 2.1.2), spending on employee compensation remained at levels comparable to the previous year. Transfers showed a marginal increase compared to the same period of the preceding year, whereas social benefits exhibited a slight decline.

1. *State Budget Execution Monthly Bulletin,* General Accounting Office, May 2025.

2. Specifically, 2,053 million euros correspond to deferred payments from the ordinary budget, 736 million euros to deferred investment expenditures, and 342 million euros to tax revenues from the first two months of 2025, which have been recorded in the 2024 Budget.

3. This performance reflects the improved collection of 2024 income tax instalments and the earlier collection of a portion of personal income tax (439 million euros), facilitated by the early opening of the tax return submission platform in March.

TABLE 2.1.1 State Budget execution, January-April 2025, in mil. € on a modified base

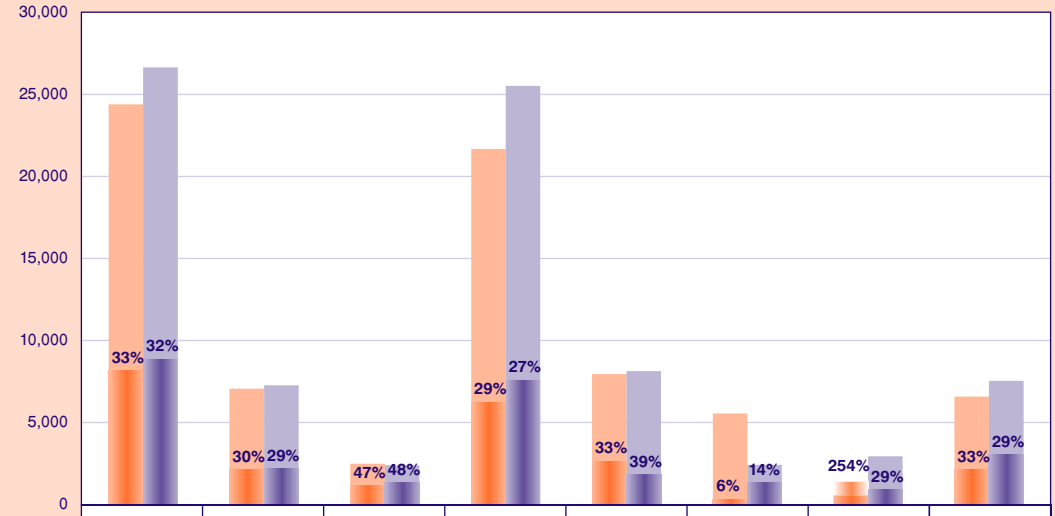
	Jan.-Apr. 2024	Jan.-Apr. 2025	
	Outcome[2]	Outcome	Budget estimates 2025[1]
State Budget			
Net Revenue	**22,538**	**23,059**	**22,830**
Revenue	**24,686**	**26,100**	**25,038**
Taxes	20,244	22,009	20,648
VAT	8,170	8,878	8,602
Excise taxes	2,115	2,189	2,128
Property taxes	1,165	1,339	1,146
Income tax	6,246	7,598	6,942
Social contributions	20	20	20
Transfers	2,663	1,820	3,158
Sales of goods & services	342	1,352	344
Other current revenue	1,400	899	849
Tax returns	2,148	3,041	2,209
Expenditures	**22,788**	**21,209**	**24,187**
Compensation of employees	4,886	4,925	4,877
Social benefits	80	35	63
Transfers	9,625	9,599	10,748
Purchases of goods & services	346	369	344
Subsidies	0	73	0
Interest payments (gross basis)	3,558	3,391	3,330
Other current expenditures	22	1	22
Non-allocated expenditure	0	0	794
Purchase of fixed assets	521	205	662
Public Investment Program (PIP)			
Revenue[3]	2,505	1,621	1,765
Expenditures	3,175	1,776	2,490
Recovery and Resilience Fund			
Revenue[4]	159	0	1,346
Expenditures[5]	576	835	858
State Budget Primary Balance[6,7]	**3,282**	**5,148**	**1,973**
State Budget Balance[6,7]	**-250**	**1,850**	**-1,357**

Source: General Accounting Office, Ministry of Finance.

TABLE 2.1.1 (continued)

Notes:
1. Budget estimates, as depicted in the 2025 Budget Introductory Report.
2. Data for the revenues and expenditures of the State Budget for the year 2024 are temporary and will be finalized with the ratification of the Revenue and Expenditure Report of the State for the fiscal year 2024.
3. Public Investment Budget revenues are included in lines “Transfers” and “Other current revenues”.
4. Revenues from the Recovery and Resilience Facility Fund are included in lines “Transfers”.
5. The Recovery and Resilience Facility Fund expenditures are heterochronic and the estimated payments for the months of January-April are expected to be made in the following two months (May and June).
6. + Surplus, - Deficit.
7. Data is presented according to the new economic classification (Presidential Decree 54/2018).

GRAPH 2.1.1
State Budget execution for total revenues for the first quarter of 2025

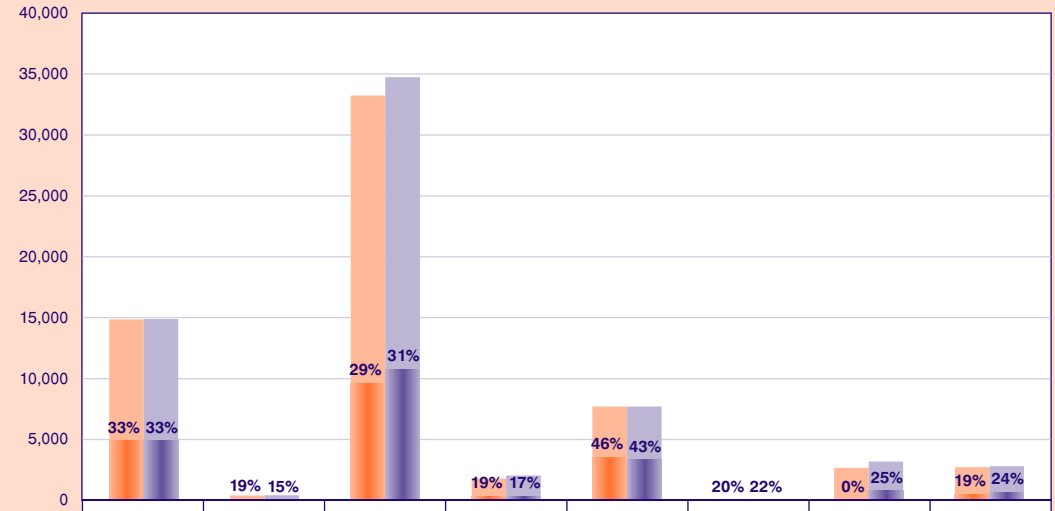


	VAT	Excise taxes	Property taxes	Income taxes	Transfers	Sales of goods & services	Other current revenue	Tax returns
Budget 2024	24,391	7,065	2487	21,669	7,960	5,559	552	6,588
Budget 2025	26,645	7,272	2394	25,519	8,131	2,417	2,949	7,539
Outcome 2024	8,170	2,115	1,165	6,246	2,663	342	1,400	2,148
Outcome 2025	8,878	2,189	1,339	7,598	1,820	1,352	899	3,041

Source: General Accounting Office, Ministry of Finance.

Note: The percentage refers to the execution during the first quarter.

GRAPH 2.1.2
Total State Budget execution expenditure for the first quarter of 2025



	Compensation of employees	Social benefits	Transfers	Purchases of goods & services	Interest payments	Other current expenditures	Non-allocated expenditure	Purchase of fixed assets
Budget 2024	14,850	411	33,229	1,792	7,701	111	2,668	2,727
Budget 2025	14,889	425	34,741	2,040	7,701	102	3,183	2,810
Outcome 2024	4,886	80	9,625	346	3,558	22	0	521
Outcome 2025	4,877	63	10,748	344	3,330	22	794	662

Source: General Accounting Office, Ministry of Finance.
Note: The percentage refers to the execution during the first quarter.

2.2. The evolution of Greek public debt, first quarter 2025

According to the latest data available from the Public Debt Management Agency,[4] on 31/3/2025 the General Government's debt amounted to 356.8 billion euros, increased by 915 million euros (0.3%) compared to the end of 2024, while it is reduced by 3.3 billion euros (0.9%) from the end of 2024. The debt has a fixed interest rate, and the weighted average duration is 18.9 years. The average repricing duration is 18.3 years, while the servicing cost on a cash basis including Swaps is 1.3%. The net debt result of the General Government, without cash reserves (which amounted 40.2 billion euros), reached 325.6 billion euros. The net debt of the General Government is reduced by 3 billion euros (0.9%) compared to the end of 2024 and by 9.9 billion euros (2.9%) from the end of 2024.

Regarding the Central Government's debt, it amounted to 402.1 billion euros, showing a decrease of 1.8 billion (0.4%) compared to the previous quarter, i.e., end of 2024, and by 3.4 billion (0.8%) compared to the corresponding quarter of 2024. In addition, cash deposits decreased by 671 million (3.7%) compared to the end of 2024 and by 2 billion (10.2%) compared to the first quarter of 2024.

The composition of Central Government debt in the first quarter of 2025 is depicted in Table 2.2.1. The debt of the Central Administration in the first quarter

4. *Public Debt Bulletin,* March 2025, Public Debt Management Agency.

TABLE 2.2.1 Central Government debt[1] (in million €)*

Period	2024Q1	2024Q4	2025Q1
Outstanding Central Government debt	**405,540.58**	**403,860.68**	**402,106.09**
Debt by type of interest rate			
Fixed[2]	405,540.58	403,860.68	402,106.09
Floating[2,3]	0.00	0.00	0.00
Debt by way of trading			
Tradable	298,856.90	304,079.14	293,537.45
Non-tradable	105,003.78	102,443.77	108,568.64
Debt by currency			
Euro	405,540.58	403,860.68	402,106.09
Non-Eurozone currencies	0.00	0.00	0.00
Cash Deposits of the H.R.[4]	**19,426.70**	**18,120.80**	**17,449.80**
Debt guaranteed by the Central Government	**28,704.30**	**28,130.64**	**27,731.04**

Source: Public Debt Bulletin, Public Debt Management Agency.

Notes:
1. Central Government Debt differs from General Government Debt (Maastricht definition) by the amount of intra-sectoral debt holdings and other ESA '95 adjustments.
2. The fixed/floating ratio is calculated taking into account: i) interest rate swap transactions, ii) the use of funding instruments by the ESM regarding the loans that have been granted to the Hellenic Republic and iii) the incorporation of the risk metrics of the EFSF's liability portfolio into the Greek debt portfolio.
3. Index-linked bonds are classified as floating rate bonds.
4. Included balance of dedicated cash buffer account, 15,697.3 million euro on 31/12/2024 & 31/3/2025.
* Estimates.

of 2025 is in its entirety at a fixed interest rate and in euros. Regarding the percentage ratio of Central Government debt based on the mode of negotiation, there is a small change in favor of negotiable debt over non-negotiable, which stood at 27% and 73%, respectively, during the period under examination against the previous quarter (25.4% and 75.3%, respectively), as well as against the corresponding quarter of 2024 (25.9% and 73.7%, respectively). In addition, as regards the guarantees granted by the Greek State, they dropped by 400 million euro or 1.4% compared to the end of 2024 and by 973 million euro or 3.4% compared to the corresponding quarter of 2024.

The distribution of debt, based on the residual maturity in the first quarter of 2025, is reflected in Table 2.2.2. Short-term Greek government securities (with maturity less than one year) represent 16.5% of the total, compared to 8.4% from the medium-term notes (with maturities of one to five years), and 75.1% from long-term issues (maturity after five years) from 17%, 11.4% and 71.6%, respectively, which were in the last quarter of 2024. Compared to the same quarter of 2024, an increase in the share of long-term securities is observed, with a decrease in short- and medium-term securities.

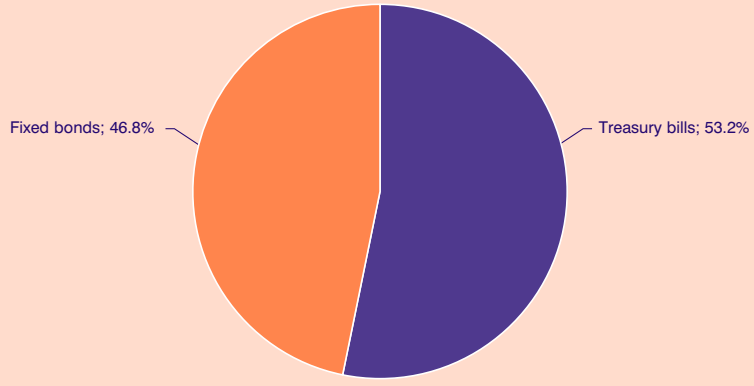
TABLE 2.2.2 Budgetary Central Government debt by residual maturity (amounts in mil. €)*

Period	2024Q1	2024Q4	2025Q1
Total amount	**405,540.58**	**403,860.68**	**402,106.09**
Short-term (up to 1 year)	69.797.43	68,491.64	66,374.25
Medium-term (1 to 5 years)	48,801.48	46,187.77	33,717.90
Long-term (more than 5 years)	286,941.67	289,181.27	302,013.94

Source: Public Debt Bulletin, General Accounting Office, Ministry of Finance.

* It concerns the volume of bonds, interest-bearing bills and short-term securities and not the total Debt of the Central Administration.

GRAPH 2.2.1
Composition of borrowing, first quarter 2025

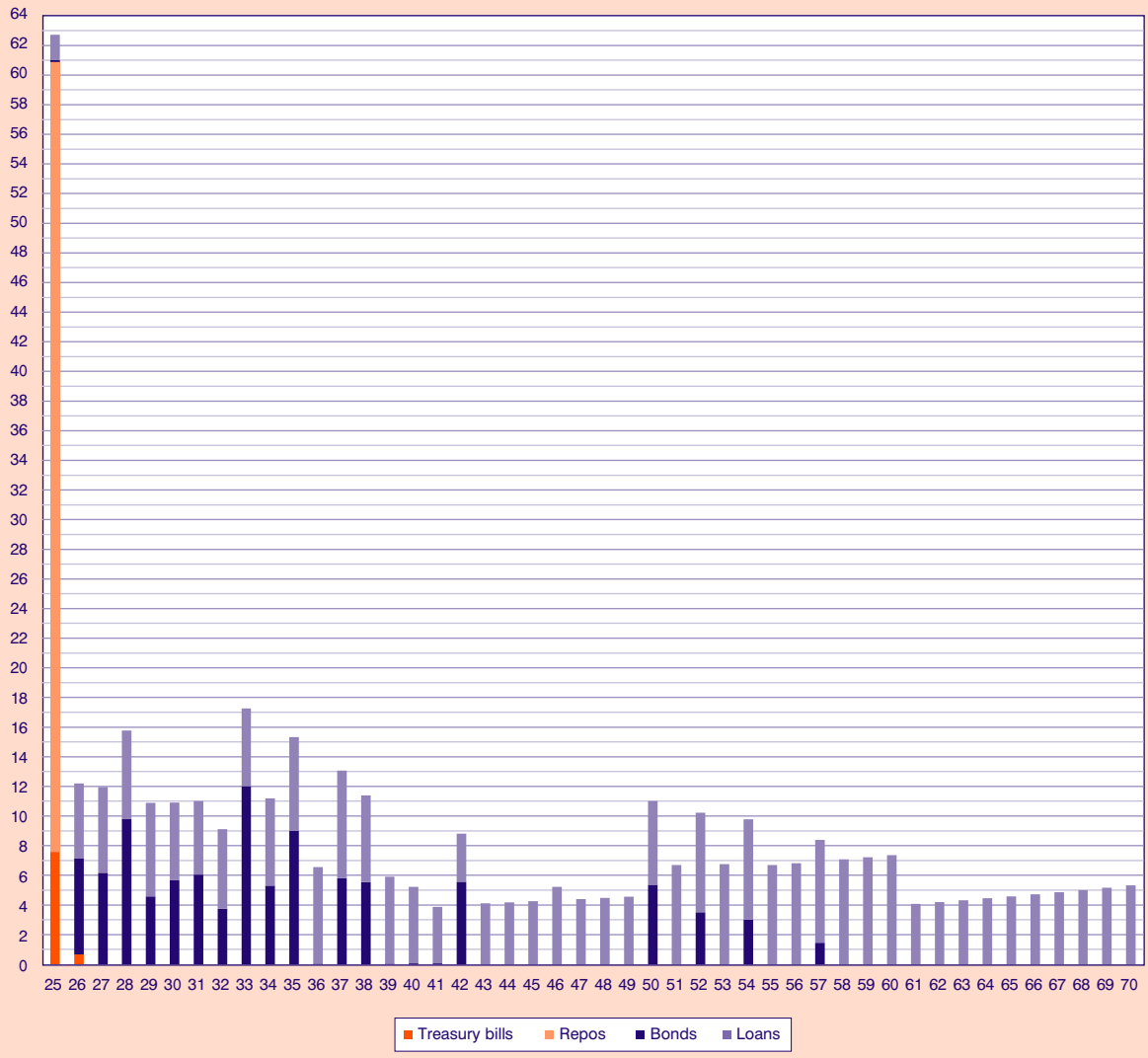


Source: Public Debt Bulletin, General Accounting Office, Ministry of Finance.

The average residual maturity of the total Central Government debt stood at 16.66 years, decreased from that of 16.85 years in the corresponding quarter of 2024. Furthermore, regarding the new borrowing of the Greek government during the reporting period, the weighted average maturity rose to 13.81 years, showing a decrease from the level of 16.54 years at which it had formed at the end of 2024. New borrowing for the first quarter of 2025 decomposes to 46.8% in fixed bonds and 53.2% in Treasury Bills (Graph 2.2.1).

Graph 2.2.2 shows the redemption schedule of the Central Government debt based on the latest published data. From the display of newer data, it seems that apart from the present year (2025), the dispersion of the burden of redemption of public debt has now leveled, with few exceptions, at less than 15 billion euros per year until 2070.

GRAPH 2.2.2
Redemption schedule of Budgetary Central Government Debt on 31/3/2025
(amounts in billion euro)



2.3. Fiscal figures perspectives

In the short to medium term, the outlook for the Greek economy and key fiscal indicators remains favourable. According to the Medium-Term Fiscal Strategy Framework (MTFS) 2025–2028 (published on 30 September), the General Government fiscal balance is projected to remain below the 3% of GDP threshold, reflecting an improvement of 0.6 percentage points compared to the projections set out in the 2024 Stability Programme for the years 2024 and 2025. In parallel, the structural primary surplus is expected to reach 2% of GDP in 2025, with a projected annual increase of 0.1 percentage points thereafter. Public debt as a share of GDP is following a downward trajectory, and sustainability assessments by the Bank of Greece confirm the persistence of this trend even under adverse macroeconomic scenarios. As a result, fiscal risks are currently assessed as contained.

Nevertheless, several medium-term challenges persist, notably the need for a further reduction in the public debt-to-GDP ratio. Despite the substantial decline observed in recent years, the ratio remains elevated. As concessional loans are progressively replaced by market-based financing, the vulnerability of the economy to external shocks is likely to increase. This underscores the imperative for (a) strengthening investment

activity and labour productivity, especially considering that, despite recent gains, the investment-to-GDP ratio continues to lag behind the euro area average; (b) increasing labour market participation and enhancing the quality of employment; (c) reinforcing climate policy measures, given the growing macroeconomic impact of climate change, as evidenced by the rising frequency of extreme weather events; and (d) maintaining inflation control, with particular attention to services, where price pressures remain persistent despite the overall disinflationary trend.

Finally, external headwinds may pose additional challenges. These include the deceleration of major euro area economies, the intensification of global trade frictions, and the escalation of regional geopolitical conflicts, all of which could adversely affect Greece's export performance, tourism revenues, and inflows of foreign direct investment.

3. Human resources and social policies

KEPE, *Greek Economic Outlook,* issue 57, 2025, pp. 40-47

3.1. Recent developments in key labour market variables

Ioannis Cholezas

3.1.1. Introduction

Employment continued to improve until the end of 2024, but slowed in the first months of 2025. In addition, underemployment decreased, as did the number of those working part time. On the other hand, the share of those working part time because they were unable to find full-time jobs remained stable. The increase in employment was accompanied by a small increase in real earnings. Most new jobs in the period 2023-2024 were created in industries like Professional, scientific and technical activities, Education or Wholesale and retail trade, repair of motor vehicles and motorcycles.

Unemployment decreased further, reaching 9% in March 2025. It is still high compared to other European countries, while traditionally, some groups –such as young people, women and foreigners– face greater difficulties in finding employment. The divergences in the unemployment rate continued between regions, and were sometimes alarmingly wide. What is worrying, however, is the increase in the number of the long-term unemployed, even though it is too early to draw any firm conclusions. Corresponding differences are also found in the evolution of the labour force, which increased on an annual basis, fuelled by the increase in the participation rate, as the population continued to shrink. Declining birth rates and the ageing of the population, as reflected in relevant indicators, portend a problematic situation for the future.

Paid employment increased in the first quarter of 2025, while more than half of the hires involved full-time jobs. Furthermore, approximately four in ten terminations were voluntary departures. Differences are identified in terms of gender, age and region. Finally, vacancies increased further, although, as a percentage, they remained close to the European average. Based on official data, vacancies are estimated at less than 69 thousand job posts in the business economy, but some estimates refer to 80 thousand vacancies in tourism alone. However, even the official data show a doubling of vacancies in the Accommodation and food service activities sector, i.e., in tourism, in 2024.

3.1.2. Labour Force Survey

The analysis that follows is based on either quarterly or monthly data from the Labour Force Survey (LFS) and explores the evolution of employment, unemployment, labour force and population.

Employment

The employment rate in Greece, i.e., the ratio of those employed to the total population, is low compared to other European countries. This means that, proportionally, the Greek workers bear a greater burden, as they must also support a larger-than-usual share of the non- employed population, namely children, the elderly and those who are economically inactive for various reasons.

The situation did not change in the last months of 2024, despite another annual increase in the employment rate. In the last quarter of 2024 (2024Q4), the employment rate for people aged 15-64 (15+ years) reached 63.4% (47.5%), i.e., 1.7 percentage points higher than in 2023Q4. Men continued to be employed more often than women (72% vs. 54.9%), as were people who have completed their studies compared to people aged 15-24 (17.5%), the majority of whom are still studying. In the first three months of 2025, the employment rate remained practically constant, showing a marginal change of +0.01 percentage points for people aged 15-74 compared to the corresponding first quarter of 2024.

By 2024Q4, the number of employed people aged 15-64 increased by 78.9 thousand (or 2.3%) on an annual basis, reaching 4.14 million people. This increase was mainly due to the increase in male employed, whose number increased by approximately 50 thousand compared to approximately 30 thousand for female employed. In addition, the number of employed people

over 65 years of age increased by approximately 17 thousand on an annual basis and the number of employed individuals aged 25-29 years by another 33.3 thousand. On the contrary, the number of employed people aged 30-44 years decreased by 28.3 thousand. In the first months of 2025, that figure showed signs of stabilization, as, on an annual basis, it declined in January, increased in February and dropped sharply in March. Overall, in the first quarter of 2025, the number of employed individuals decreased by 12.3 thousand people, since, in March alone, the annual decrease approached 46 thousand people. Although it is too early to draw any firm conclusions, in March 2024, the number of the employed increased by 115.6 thousand compared to the same month in 2023, while in the first quarter, the number of the employed increased by 130 thousand, when this year it decreased. Another alarming fact is that the last negative sign in the change in the number of employed people during the first quarter was reported in the years of the coronavirus (2020 and 2021) and earlier in 2014, when the labour market had not yet started to recover.

Additional employment parameters include the number of underemployed and part-time workers. By the end of 2024, the number of underemployed people aged 15-74 had further decreased to 83.6 thousand, most of whom were women (66.5%). This means that the underemployment rate decreased to 2% (3% for women and 1.2% for men), about one percentage point lower compared to 2023Q4. It should be noted that underemployment exceeded 7% in 2017, so the systematic decrease is a positive sign. Part-time employment, on the other hand, remained stable in the last quarter compared to the third quarter, but on an annual basis, it recorded a further decrease of 1.2 percentage points, to 6.3% (or 240.4 thousand people). The share of those working part-time because they were unable to find full-time employment remained stable on an annual basis at 38.2%. Remember that in the middle of the previous decade, this share reached 70%. However, stabilization could take place at a lower level, as the relevant EU27 share is about half. Finally, the wage cost index published by ELSTAT shows an annual (i.e., 2023Q4-2024Q4) increase close to 5%. Since non-wage costs remained stable in 2024 and inflation stood at 2.7%, the real increase was about half of that.

The 2.3% annual increase in employment was not evenly distributed across industries of economic activity. The major industries in terms of employment had a mixed sign. The number of employed people increased in four sectors and decreased in three others by the end of 2024. The largest decrease came from the Agricultural sector, where 37.4 thousand jobs were lost, followed by Public administration and defence, Compulsory social security and Human health and social work activities, with decreases as high as 13.8 thousand and 12.2 thousand jobs, respectively. In contrast, Professional, scientific and technical activities created the most new jobs (36.7 thousand), followed by Education (31.5 thousand) and Wholesale and retail trade, repair of motor vehicles and motorcycles (29.7 thousand). Small industries in terms of employment, such as Financial and insurance activities (-10.7%) and Arts, entertainment and recreation (+28.8%), experienced proportionally large changes.

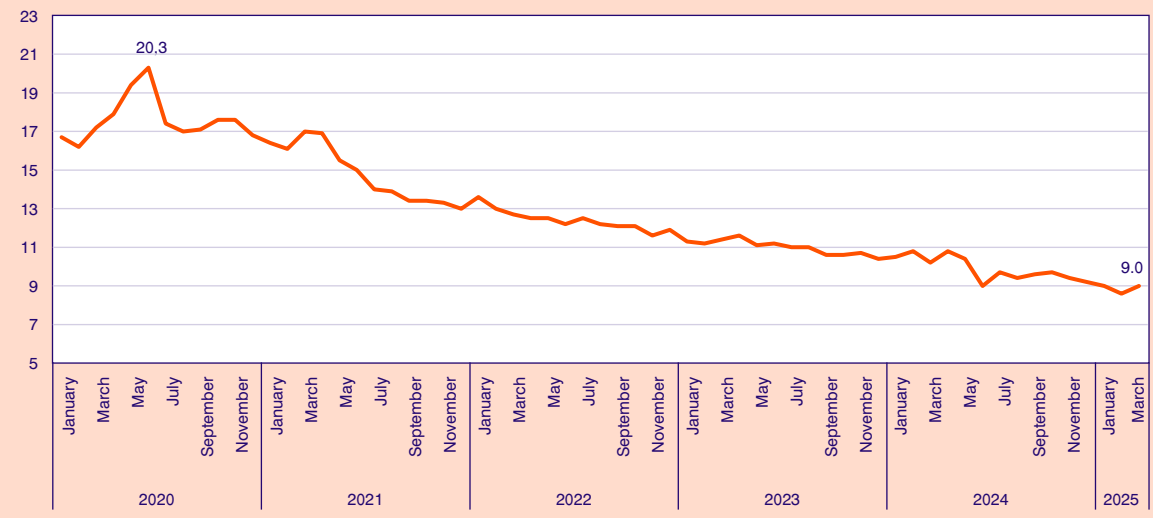
Unemployment

Improving labour market conditions are also reflected in the decline of the unemployment rate (see Graph 3.1.1), even though it is still higher than in most European countries. Indicatively, in March 2025, the unemployment rate reached 9%, the same as January, i.e., 1.2 percentage points lower than March 2024. This means that even today, one in ten people looking for a job cannot find one. What is more troublesome, however, is that the share of the long-term unemployed increased on an annual basis, reaching 53.5% (from 50.8% in 2023Q4). This finding deserves special attention, as it implies that policies to address unemployment, especially active ones, must consider an additional parameter that complicates the planning of effective interventions.

Examining the quarterly data of the Labour Force Survey up to the end of 2024, it appears that women are more often unemployed, as their unemployment rate reached 12.1% compared to 7.5% for men in 2024Q4. However, these rates are lower compared to 2023Q4. Employment prospects are even worse for youth aged 15-29, who face an unemployment rate of 19.3% compared to 7.7% for people over 30. However, the unemployment rate decelerated faster for young people (-2.9 percentage points since 2023Q4). Correspondingly, foreigners face worse employment prospects, with the unemployment rate reaching 14.8% in 2024Q4 compared to 9.7% for Greek citizens. The difference by nationality is wider in the case of women, reaching 8.7 percentage points (2.5 percentage points amongst men). A possible explanation is the different economic activities in which the two groups are concentrated.

Unsurprisingly, the differences in employment prospects across population groups persisted. For example, the unemployment rate for those with a master's degree and/or a doctorate was limited to 5% in the last quarter of 2024, while for those with a primary school

GRAPH 3.1.1
Adjusted unemployment rate (%), 15-74 years old



Source: Labour Force Survey, ELSTAT, processed by KEPE.

diploma or less, it reached 11.1%. On an annual basis, on the other hand, the unemployment rate decreased for all educational groups except for those with a master's degree and/or a doctorate (+0.3 percentage points) and high school graduates (+1.6 percentage points). Furthermore, although high school graduates do not face the worst employment prospects, they continue to constitute the majority of the unemployed (41.8%), followed by graduates of higher technical vocational education (22.5%).

Similar differences are also found between regions. Crete had the lowest unemployment rate in 2024 (6.4%) and the South Aegean the highest (15.5%). Attica, with 7.8%, had approximately half the unemployment rate of the South Aegean. The annual change is divided. Six regions recorded a decrease in unemployment and seven recorded an increase. The largest increase was recorded in the South Aegean (+11.3 percentage points) and the largest decrease in West Macedonia (-8.8 percentage points). The magnitude of these changes is not easy to justify. Finally, in Attica, the annual decrease in unemployment reached 1.3 percentage points.

Labour force

The labour force over 15 years of age, i.e., the number of people who are either working or actively seeking employment (i.e., unemployed), reached 4.7 million people in the last quarter of 2024, having increased by 56 thousand year-on-year (2023Q4-2024Q4). Most are men (55.6%), and about half (47.8%) belong to the 45-64 age group. The labour force participation rate increased year-on-year by 0.7 (1.2) percentage points for the 15+ (15-64) group to 52.5% (70.2%). This is one of the highest participation rates ever reported in Greece and the highest for the fourth quarter of the year.

However, women's participation rate continued to lag significantly behind men's: in the 15-64 age group, women's participation reached 62.5% compared to 77.9% for men. Accordingly, large differences are found in participation based on citizenship. Foreigners had participation rates over 10 percentage points higher than Greek citizens at the end of 2024 (62.9% compared to 52.1%). In fact, the difference was particularly noticeable amongst men (+22.5 percentage points for foreign nationals). Typically, more education leads to a higher participation rate. Thus, 90.3% of holders of a master's and/or doctoral degree participated in the labour force in 2024Q4, increasing the index by 1.3 percentage points compared to 2023Q4. The second largest increase was recorded among university graduates (+1.8 percentage points), who have the third highest participation rate, behind graduates of higher technical vocational education. Finally, the participation rate of people over 15 years old varied between the regions of the country, as in the last quarter of 2024, it ranged from 47.1% in Thessaly to 54.7% in

Attica. The largest increase in the last year was recorded in the South Aegean (+10.8 percentage points), and the largest decrease was in Western Macedonia (1.9 percentage points). An increase of 1.4 percentage points was also recorded in Attica.

Note that the increase in the labour force could compensate for the population decline discussed next and provide time for the planning and implementation of actions aimed at halting the population decline. However, there is obviously a limit to the increase in participation, and therefore, measures to reverse the declining population size should not be delayed.

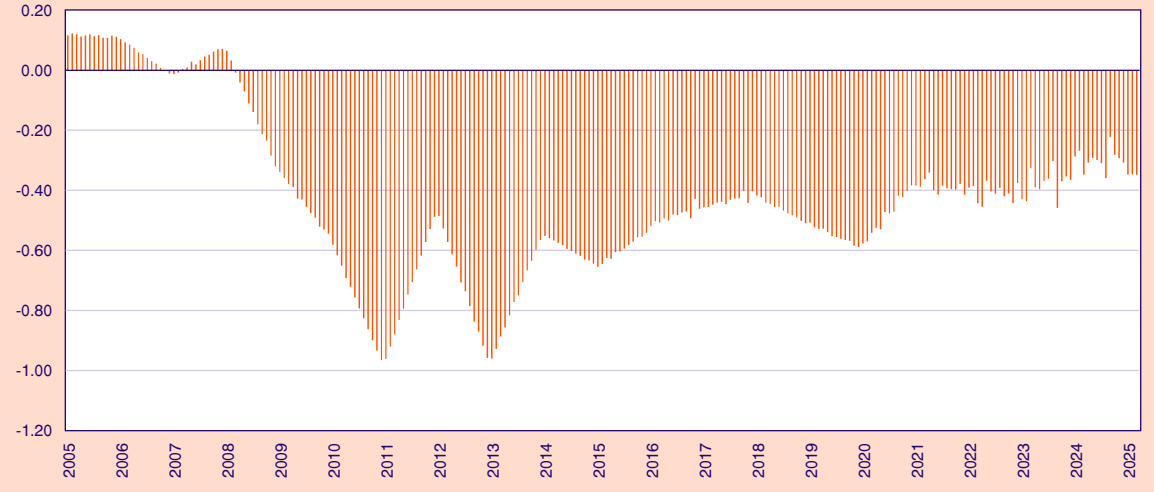
Population

The population in Greece aged 15-74 has been systematically decreasing since March 2008. The changes on an annual basis, that is, comparing the same month of consecutive years, became negative in March 2008 and have remained negative since then (see Graph 3.1.2). During the period 2008-2025, the largest proportional decreases were recorded at the end of 2010 and in the first months of 2011, as well as at the end of 2012 and the beginning of 2013, when, on a year-on-year basis, they reached or even exceeded 80 thousand people. The cumulative decrease for the period 2008-2025 (March to March) reached 8.5%, marginally exceeding 720 thousand people. Although the decline continued in the first months of 2025, it was clearly smaller compared to previous years. With some temporary spikes, the population decline has slowed and appears to be on a downward trend.

The quarterly data of the LFS allows for the investigation of the evolution of individual age groups of the population. The decrease in the population over 15 years of age in 2024 reached 22.14 thousand people. The largest decrease was recorded for the age group 30-44 (78.3 thousand or 4%) and the second largest for the group 20-24 (15.1 thousand or 3.1%). In contrast, the size of the age groups 15-19 (29.5 thousand or 5.1%) and 65+ (32.9 thousand or 1.3%) increased. Also, women showed a stronger decrease than men (13 thousand compared to 9.1 thousand), while gender differences are evident in some age groups, such as the 15-19 group, where the number of men remained relatively stable (0.7%), while the number of women recorded a strong increase (9.9%).

Comparing 2024Q4 to 2008Q4, the decrease in the population aged over 15 exceeded 425 thousand (or 4.5%). The average annual rate of decrease is approximately 0.7% in the period 2008-2024. Three age groups increased (15-19, 45-64 and 65+), and three age groups are responsible for proportionally significant decreases (20-24, 25-29 and 30-44), which exceeded 25% and reached 30% in some cases (25-29). The 30-44 age group recorded the largest decrease, reaching 683 thousand people, while the 65+ age group recorded the largest increase, reaching 405

GRAPH 3.1.2
Annual changes in population aged 15-74 per month



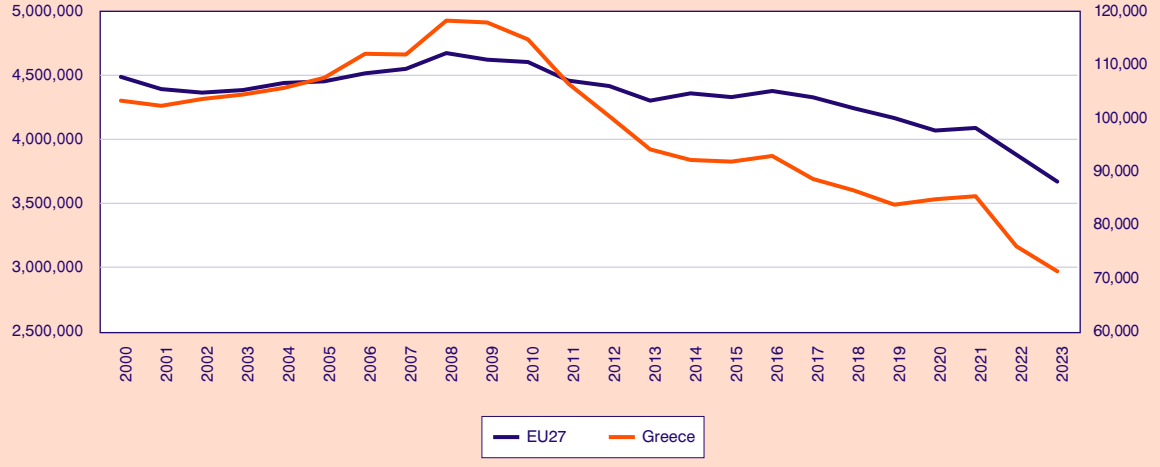
Source: Labour Force Survey (monthly data), ELSTAT, processed by KEPE.

thousand people. The negative prospects for population development in our country are reflected in a recent edition of the Ageing Report by the European Commission (Ageing Report, 2024[1]). It is estimated that the country's population will decrease to approximately 10 million people by 2030, exhibiting a cumulative decrease of more than 4% in the period 2022-2030 or an average annual decrease of more than 0.5%. The phenomenon of population shrinkage is not unique to Greece, as it characterises most Western societies.

Population development can be seen as a sum of positive and negative flows. Positive flows include births and the reception of immigrants, and negative flows include deaths and emigration to other countries. Births in our country have been decreasing in recent years, while deaths have been increasing, as, despite the progress of science, the population is ageing. It is characteristic that recent estimates by the European Commission (Ageing Report, 2024) determine the old-age dependency ratio[2] at 39 in our country, when at the EU level, it is 36.1; the economic old-age dependency ratio[3] was approximately ten points higher in Greece in 2022 compared to the European average (56.2 versus 45.7). The same report predicts that the old-age dependency ratio will increase in the coming years, reaching 46% in 2030 in Greece and 42% in the EU.

However, the picture of our country does not differ significantly from the European experience in terms of the evolution of births and deaths (see Graphs 3.1.3 and 3.1.4). Until the late 2000s, a period coinciding with the global financial crisis, births were increasing in Greece and the EU27. Since then, births have been decreasing more rapidly in Greece: in 2023, there were almost 40% fewer births compared to 2000, but only 21.5% fewer in the EU27. The course of deaths was almost stable in the EU27 until the mid-2010s and has been increasing systematically since then, with the highest values recorded during the coronavirus period. In Greece, deaths followed an upward trend, which accelerated during the coronavirus years. From then on, that is, from 2021 onwards, the number of deaths decreased both in Greece and in the EU27. Given the ageing of the population, deaths are expected to increase in the coming years, despite the extension of life expectancy by 1.7 years for men by 2030 (to 80.5 years) and 1.3 years for women (to 85.5 years). This is expected to put pressure on the insurance system and stir debate on the prospect of increasing the re-

GRAPH 3.1.3
Number of births, 2000-2023



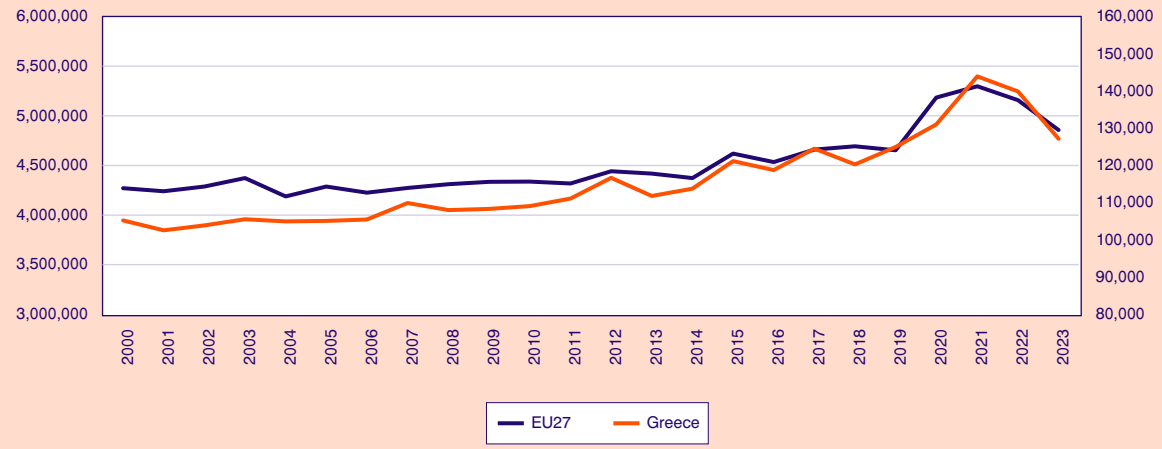
Source: Eurostat, processed by KEPE.

1. See here: https://economy-finance.ec.europa.eu/publications/2024-ageing-report-economic-and-budgetary-projections-eu-member-states-2022-2070_en.

2. The old-age dependency ratio is calculated as the number of people over 65 years of age per hundred people aged 20-64.

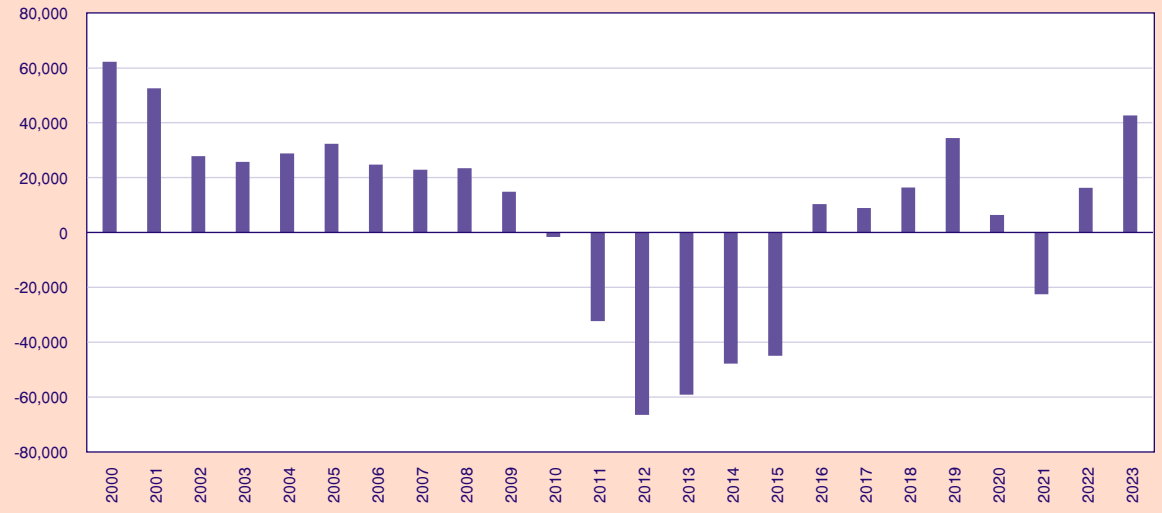
3. The economic old-age dependency ratio is calculated as the number of people over 65 years of age who are not economically active per hundred employed people aged 20-64.

GRAPH 3.1.4
Number of deaths, 2000-2023



Source: Eurostat, processed by KEPE.

GRAPH 3.1.5
Net migration flows (inflows-outflows)



Source: Eurostat, processed by KEPE.

tirement age and/or strengthening the participation of population groups that still have low participation and employment rates, such as women, young people and people with disabilities.

Despite the occasionally heated debate about the loss of population migrating abroad in search of better career prospects, especially the most educated, it seems that the balance of migration flows is generally positive (see Graph 3.1.5). This means that more people enter the country than leave. The exceptions are the years around the crisis, namely, the period 2010-2015, and the period of the coronavirus outbreak in 2021. The interpretation, however, requires caution, because one must not overlook changes in the qualitative composition of the population. For example, in the last quarter of 2024, the percentage of the population without Greek citizenship was 3%, while the corresponding percentage in 2008 was more than double (6.5%).

Therefore, it seems that many foreigners left the country. Correspondingly, tertiary education holders as a share of the population increased from 34.4% in 2008 to 40.2% in 2024. This share would probably have been even higher if it had not been for emigration in recent years. In any case, simply observing the evolution of various population groups does not provide a complete picture of population movement.

3.1.3. Paid employment

Employees constitute the majority of those employed in the Greek labour market. In 2024, approximately 7 out of 10 employed people aged 15-64 in Greece were employees (70.5%). Therefore, what happens in paid employment greatly affects the entire labour market, even though the share of employees remains low by European standards. Indicatively, in 2024, the percentage of employees in the EU27 was over 86%.

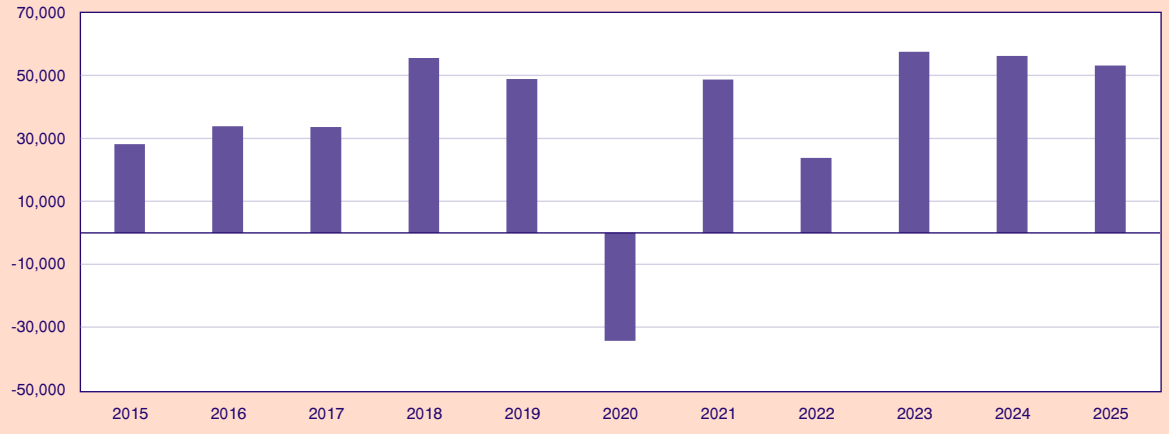
The balance of employment flows was negative in January and positive in February and March. The losses in January reached 15.5 thousand but were more than offset by the gains of the subsequent two months. At a quarterly level, the balance was positive (see Graph 3.1.6), as recruitments exceeded 658.5 thousand, while layoffs and resignations were limited to approximately 605.3 thousand, creating over 53.1 thousand new jobs. As is customary since the coronavirus, more than half of the recruitments were full-time, more than one in three were part-time and fewer than one in ten involved work-in-shifts job contracts. In addition, approximately 40.6% of separations were voluntary resignations.

Conversions of full-time contracts to flexible forms of employment reached approximately 10.5 thousand in the first quarter of 2025, slightly increased (+6.4%) compared to the corresponding period in 2024. In the last two years, the number of job contract conversions has been increasing, after the decrease recorded in 2023 (-20%). This increase could mean trouble, but at least conversions to work-in-shifts job contracts without the employees' consent have decreased further. Net new jobs were occupied mostly by women (56.6%), an increased rate compared to previous years. It is worth noting that compared to 2024Q1, the balance for men, although positive, was reduced by 4,165 positions, while for women it expanded by 1,086 positions. The balance was positive for all age groups except the 64+ group, while most new jobs were occupied by people aged 45-64 (36.4%), in line with previous experience. Finally, most new jobs in 2025Q1 were created in the regions of the South Aegean (15,423), Crete (13,609) and Attica (10,999). Only the regions of Epirus and Thessaly reported a negative balance.

3.1.4. Job vacancies

The shortage of personnel in the labour market in various sectors has been a topic of discussion in recent years. Indeed, job vacancies, the most common term,

GRAPH 3.1.6
Recruitment-departure balance (in thousands), 2025Q1



Source: ERGANI information system reports, Ministry of Labour and Social Security.

are increasing in the Greek economy and this, regardless of their number, should concern policymakers. A look at Eurostat data shows that in 2024, the vacancy rate for the business economy,[4] i.e., vacancies to the total number of employees, reached 2.6%, compared to 2.1% in 2023. If one considers that the number of employees in the business economy in 2024 reached 2.64 million, then the vacancies did not exceed 68.6 thousand, compared to approximately 53.1 thousand in 2023. Neither the number nor the job vacancy rate sounds too big compared to the European average (EU27: 2.5%). However, one should consider the following.

First, the vacancy rate has been increasing over time, starting from 1.5% in 2014 and 31.2 thousand vacancies and exceeding 68 thousand in 2024. The increasing trend means that stronger interventions in the labour market are needed before the situation becomes unmanageable. Various actions, such as the DYPA[5] JOBmatch platform or the Mechanism of Labour Market Diagnosis, as well as initiatives such as SEV's Skills4Jobs[6] or GSEE's vocational training programs,[7] are moving in the right direction. However, they must a) be fully linked to labour market needs, b) be utilized by beneficiaries, employers, employees and policymakers, and c) be evaluated within a reasonable timespan, so that any necessary corrective interventions can be made. If we consider that Greece does not have the institutions to successfully manage critical situations, it becomes clear how necessary it is to act before the situation escalates.

Second, not all industries are facing the same problem. For example, in Accommodation and food service activities (i.e., tourism), the job vacancy rate has always been higher than average: in 2023 it reached 4.2%, while in 2024 it is estimated at 8%, i.e., almost doubled. This index is more than double the European average and more than triple the index for the business economy. Also, vacancies reached 3.9% of employment in the Water supply, sewage treatment, waste management and remediation activities sector, 2.3 percentage points above the European average, and 3.5% in the Professional, scientific and technical activities sector, slightly above the European average (2.9%). The problematic supply-demand skills matching, low wages, demanding working conditions, etc., may be some of the reasons why specific sectors have more difficulty than others in finding suitable personnel. Steps are being taken in the right direction; however, judging by the increasing trend of the phenomenon, they are not sufficient.

Third, even in sectors that are comparatively doing better than the European average, such as the Information and communication sector, with the index being 1.9 percentage points lower than the European average (approximately one third), the problem cannot be considered negligible. Especially in the case of Greece, due to the abundance of small and micro firms, vacancies may have a stronger impact on their smooth operation, making growth more difficult, as there are no reserves in the staff and the scope for overlap between employees is limited.

Fourth, there is room for error in estimating vacancies, as declaring a job vacancy to DYPA is not mandatory. In addition, if the firm is not convinced that DYPA will facilitate the filling of the vacancy, then the incentive to declare it is further weakened. This means that official figures could seriously underestimate the phenomenon. For example, recent reports[8] raise the number of vacancies in tourism alone to 80 thousand this season.

4. The business economy includes all sectors of economic activity except the Agricultural sector, Public administration and defense, Education, Health and social security, Households as employers, Arts, entertainment and recreation, and Other service activities.

5. See here for information: https://jobmatch.dypa.gov.gr/.

6. See here for information: https://www.sev.org.gr/protovoulies-kampanies/skills4jobs/.

7. See here for information: https://www.inegsee.gr/tag/katartisi-kinoniki-drasi/.

8. https://money-tourism.gr/guardian-pano-80-000-kenes-theseis-ergasias-ston-elliniko-toyrismo-anazitisi-se-chores-tis-asias/

KEPE, *Greek Economic Outlook,* issue 57, 2025, pp. 48-51

3.2. Labor productivity and compensation in Greece: Investigating the emerging gap

Vlassis Missos

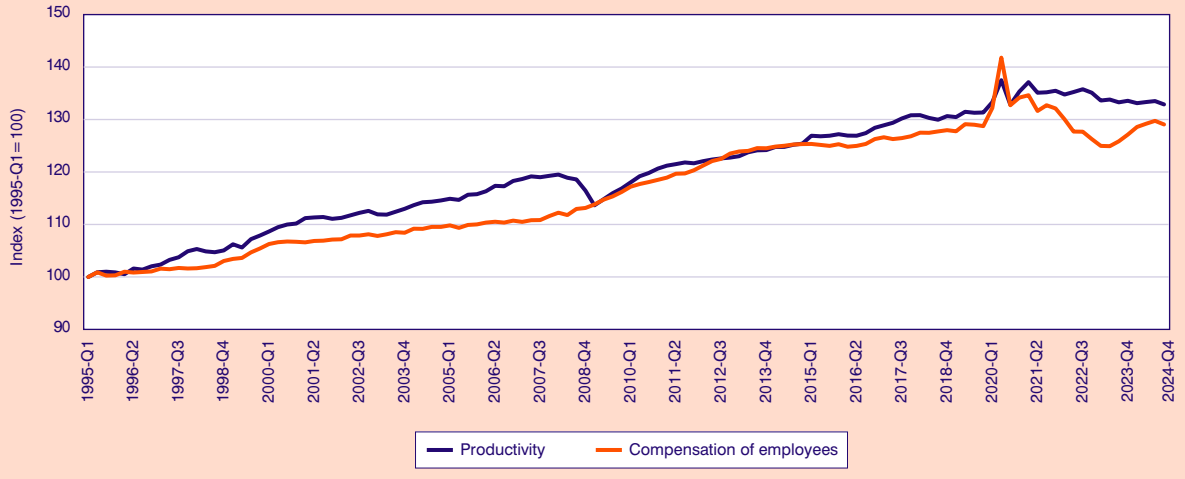
There is a widely held expectation that real wages should rise in line with productivity growth. In support of this view, Stansbury and Summers (2017, p. 44) note that "the substantial variations in productivity growth that have taken place in recent decades have been associated with substantial changes in median and mean real compensation." Similarly, Feldstein (2008) emphasizes that the relationship between productivity and wages is critical, as it shapes both the standard of living for workers and the distribution of income between labor and capital. Nevertheless, the long-term divergence between productivity and wages is increasingly associated with rising income inequality.

Although productivity gains are expected to lead to higher real wages, this presumption has been occasionally challenged by empirical research. In many advanced economies, evidence indicates that the connection between the two has weakened, a trend widely referred to as the "decoupling" between productivity and wages (Sharpe & Ashwell, 2021; Paternesi & Stirati, 2023). While the key causal factors for such a divergence remain debated, the empirical finding itself is well established. Below, the term "wage" refers to the gross compensation of employees.

In recent years, productivity growth in the Eurozone (EA-20) has remained stagnant. Although unemployment declined to 6.2% in 2024-Q4, the new jobs created have not contributed to higher gross value added (GVA), and average wages continue to face downward pressure. The growing gap between productivity and wages has become a central topic in macroeconomic research (Stansbury & Summers, 2017; Pasimeni, 2018; Teichgraber & Van Reenen, 2021). Analyzing this gap at the sectoral level can provide valuable insights into its structural causes and its implications for overall welfare.

To illustrate this, Figure 3.2.1 presents productivity and wage growth for the Eurozone. Following Brill et al. (2017), productivity is measured as real output per hour actually worked and labor compensation is defined as the total compensation of employees (gross), also divided by total hours worked. Both variables are converted into real terms using the 2015 sector-spe-

FIGURE 3.2.1
Real productivity and hourly compensation of employees, deflated, Eurozone (20 member states), 1995-Q1 to 2024-Q4



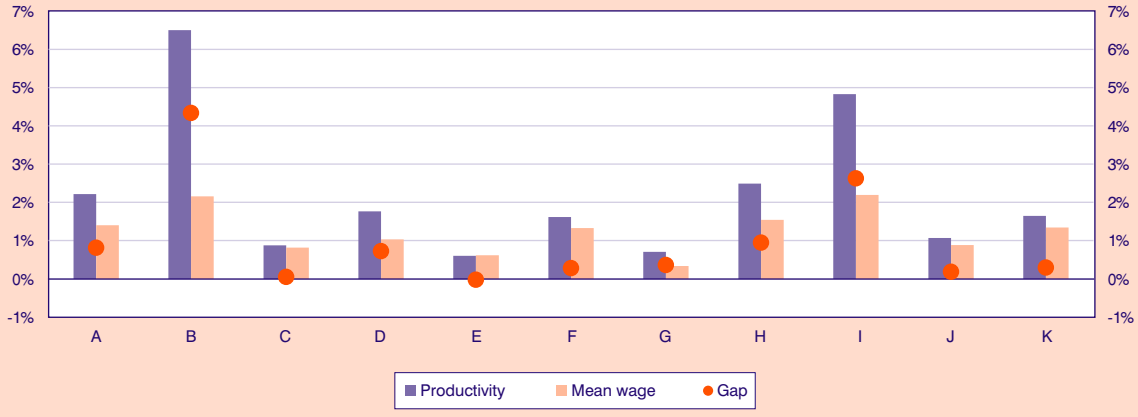
Source: Eurostat and calculations.

cific implicit deflators[1] and the analysis concentrates on the private business sector (non-farm business sector). Moreover, the real estate sector has been reduced by the part of imputed rents (see Basu & Foley, 2013).

As shown in Figure 3.2.1, the long-term trajectories can be divided into three distinct periods. From 1995-Q1 to 2009-Q1, productivity grew faster than average wages, ending with a sharp decline that coincides with the onset of the 2008 financial crisis. In the second period, from 2009-Q2 to 2020-Q2, productivity and wages move more closely together, until the COVID-19 pandemic brought significant volatility. The most recent period, from 2020-Q3 to 2024-Q4, is characterized by stagnant productivity and average wages that are both volatile and mostly declining.

At the euro area level, the initial phase reflects a widening gap between productivity and wages, followed by a brief period of convergence and a renewed divergence after 2020. In Greece, this most recent phase is particularly important. The annual full-time adjusted salary (FTAS) per employee, measured in purchasing power standards (PPS), is estimated to be the lowest among the EU27. Between 2018 and 2023, FTAS in Greece increased by only 7%, compared to an EU average of 19% (Yanatma, 2025). Labor costs were subject to sharp reductions in response to the deep recession and significant GDP contraction. In the absence of exchange rate flexibility, wage cuts were used as a primary tool to restore price competitiveness. As Theodoropoulou (2016, p. 41) notes, "labor market reforms were aimed at increasing the responsiveness of wages

FIGURE 3.2.2
Average productivity and mean wage growth, basic sectors, 2018-2023, Greece

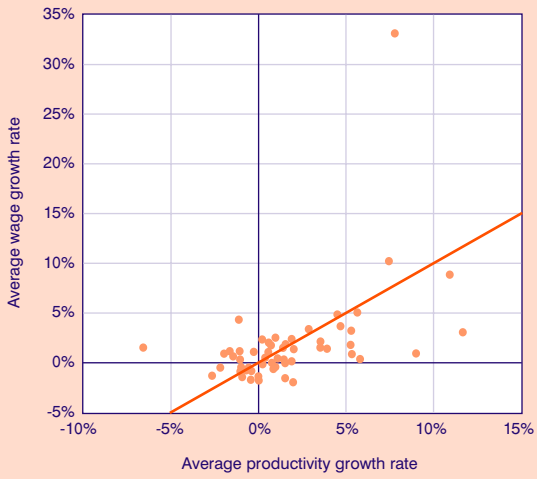


Source: Eurostat and calculations.

Note: [**A**] Manufacturing, [**B**] Electricity, gas, steam and air conditioning supply, Water treatment, Sewerage, waste collection, treatment and disposal activities; materials recovery, remediation activities and other waste management services, [**C**] Constructions, [**D**] Wholesale trade, [**E**] Retail trade, [**F**] Transports (land, air, water), Warehousing and support activities for transportation, Postal and courier activities, [**G**] Accommodation and restaurants, [**H**] Publishing activities, Motion picture, video and television programme production, sound recording and music publishing activities. Broadcasting and programming activities, Telecommunications, Computer programming, consultancy and related activities; information service activities, [**I**] Financial service activities, except insurance and pension funding, Insurance, reinsurance and pension funding, except compulsory social security, Activities auxiliary to financial services and insurance activities, [**J**] Legal and accounting activities, activities of head offices; management consultancy activities, Architecture and engineering activities; technical testing and analysis, Scientific research and development, Advertising and market research, Rental and leasing activities, Travel agency, tour operator and other reservation service activities, [**K**] Rest of services.

1. Different deflators lead to different results (Brill et al., 2017), and the choice is typically left to the researchers' discretion. However, according to Strain (2019), when examining the relationship between productivity and wages, the latter should be deflated using production cost prices rather than the consumer price index used to identify the level of welfare. Feldstein (2008) supports the same view.

FIGURE 3.2.3
Growth rate of productivity and wages, per hour worked, 55 sectors, Greece, average 1995-2023



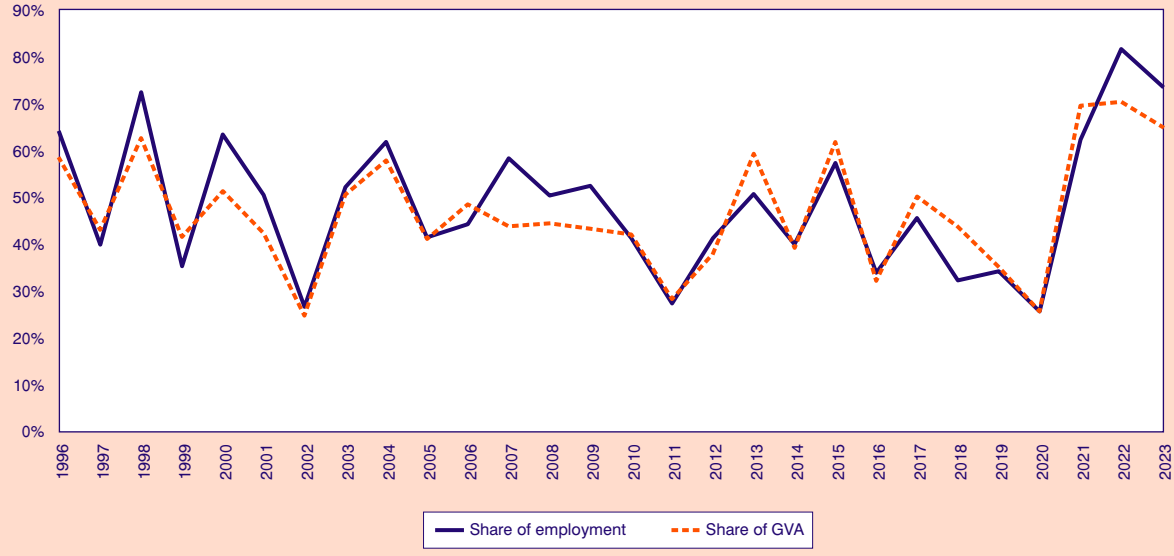
Source: Eurostat and calculations.

to the recession." These developments are consistent with broader structural changes in the economic model (Vaitsos & Missos, 2025) and the relative deterioration in living standards compared to other European countries (Missos et al., 2024; Missos, 2021).

This divergence becomes even more evident when examined at the sectoral level. Drawing on the approach of Theodoropoulou and Pierros (2025) for the Greek economy, Figure 3.2.2 above presents the average annual growth rates of productivity and wages across several aggregate sectors from 2018 to 2023. With the exception of retail trade (sector E), all sectors exhibit a positive productivity-wage gap, indicating that productivity growth has consistently outpaced wage growth. In a comparable manner, Figure 3.2.3 extends the investigation to long-term sectoral trends in the non-agricultural business economy. All data are expressed per hour worked. Over the period 1995–2023, 29 sectors show higher average productivity growth than wage growth. The 45-degree line in the figure serves as a reference point: sectors below the line exhibit faster productivity growth relative to wages, while those above it show the opposite.

Figure 3.2.4 provides a dynamic view of the productivity-wage gap by illustrating both the share of workers employed in sectors with a positive gap and the corresponding share of GVA generated by these sectors. From 1995 to 2020, approximately 45% of workers were employed in such sectors. However, between 2021 and 2023, this share increased sharply to over 70%. A similar trend is evident in the GVA share, pointing to a structural shift in the growth model. These developments indicate that an increasing portion of the

FIGURE 3.2.4
Share of employment and GVA in economic sectors with a positive productivity-wage gap, Greece, 1995–2023



Source: Eurostat and calculations.

workforce is now concentrated in sectors where productivity growth is outpacing wage growth.

Conclusion

The productivity-wage gap remains a critical determinant of the living standards and income distribution. In the most recent period (2020-Q3 to 2024-Q4), productivity across the euro area has stagnated, while wages have generally declined. In Greece, between 2018 and 2023, the gap was positive across most sectors. Long-term data show that 29 out of 55 business sectors have experienced higher productivity growth than wage growth. In the short term, the share of workers in sectors with a positive gap has increased markedly, from around 45% to over 70%. These findings underscore the importance of sectoral dynamics in understanding the evolving disconnect between productivity and compensation.

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3.3. The impact of the COVID-19 pandemic on self-perceived health in Greece

Athina Raftopoulou

3.3.1. Introduction

The COVID-19 pandemic has not only disrupted health systems worldwide but has also been associated with a variety of social and economic challenges, as well as signs of a decline in the quality of life in several countries. Studies report widespread mental health issues, including stress, anxiety, and depression, among the general population (Serafini et al., 2020), along with broader social and economic consequences (Clemente-Suárez et al., 2020).

This section presents key findings on the impact of the COVID-19 pandemic on self-perceived health in Greece, based on six waves (2018–2023) of the Greek version of the Income and Living Conditions (EU-SILC) survey. The longitudinal nature of the data—spanning the years before and after the pandemic's onset—enables the monitoring of population health outcomes across this critical period, including the initial outbreak and peak viral incidence with strict mobility restrictions, the vaccine rollout and targeted measures (particularly for the unvaccinated), the gradual easing of restrictions, and the transition toward normality. As such, the data provide valuable insights into the evolution of self-perceived health measures during this unprecedented time. The statistics are based on a sample of individuals aged 16 and over, observed across four consecutive years, with information on the relevant variables.

A modest increase was observed in the proportion of individuals reporting bad or very bad health, rising from approximately 7% in 2019 (pre-pandemic) to 11.5% in 2023. At the same time, the share of those reporting good or very good health declined from around 75% to 69%. The prevalence of chronic illness also rose, from 26.5% in 2019 to 34% in 2023. Similarly, the proportion of individuals experiencing limitations in daily activities due to health-related issues increased from about 24.5% to 34% over the same period. These trends point to a deterioration in the observed health measures following the onset of the pandemic. However, the analysis reveals that these effects are not uniform, with evidence of heterogeneity in the pandemic's impact across different population subgroups.

3.3.2. Baseline data and descriptive statistics

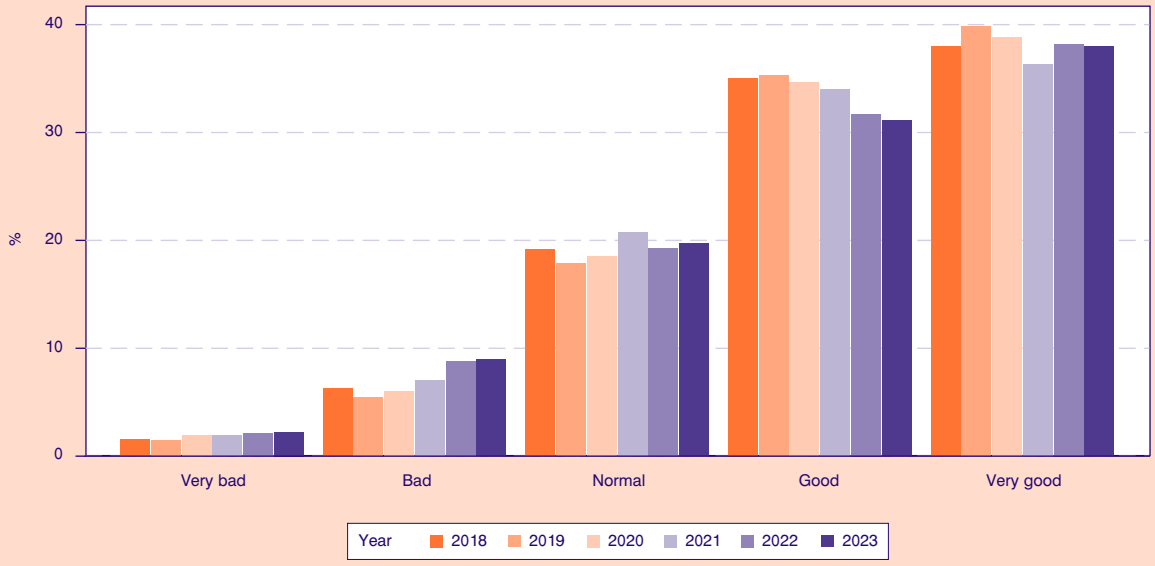
Two dimensions of health are presented. The first dimension refers to the general health status and in particular to self-assessed health[1] (SAH), while the second relates to physical health indicators and specifically to (a) whether an individual suffers from any chronic (long-standing) illness/condition and (b) whether an individual faces limitations in usual activities due to health problems.

SAH is based on responses to the general health survey question: "*How is your health in general?"*, which was originally coded on a 5-point scale (1 = very good, 5 = very bad), and later rescaled to ensure higher values correspond to better health (1 = very bad, 5 = very good). Figure 3.3.1 presents the distribution of SAH over time. There is a visible decline in 2021 in the proportion of individuals reporting their health as very good, compared to the pre-pandemic years (2018 and 2019). Part of this drop appears to have shifted toward the normal category, which shows an increase relative to pre-pandemic years. Interestingly, the share of respondents reporting very good health rises again in 2022 and 2023—approaching pre-pandemic levels, though it does not fully recover. Finally, there is a gradual increase in the share of the "bad/very bad" categories, which, however, represent a small share overall.

The physical health indicators, namely, (i) chronic illness and (ii) limitations in daily activities, are derived from survey responses to two questions: (a) "*Do you have any longstanding health problem or longstanding illness?*" and (b) *"For at least the past 6 months, have you been limited or experienced difficulties in activities that people usually do due to a health problem?",* respectively. As shown in Figure 3.3.2, between 2018 and 2023, the proportion of individuals reporting chronic illness and limitations in daily activities increased

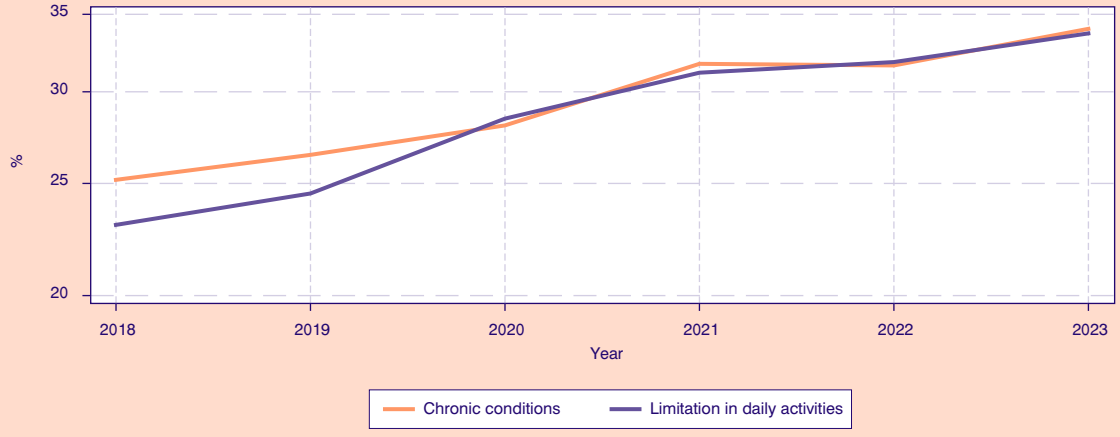
1. SAH is a concise measure in social science research, valued for its ability to capture broad aspects of health that more specific indicators may overlook. It most strongly reflects vitality – i.e., feeling full of life and energetic (Au & Johnston, 2014).

FIGURE 3.3.1
Evolution of SAH over time



Source: Income and Living Conditions Survey (SILC), ELSTAT, edit: Author.

Figure 3.3.2
Evolution of chronic illness and limitation in activities over time



Source: Income and Living Conditions Survey (SILC), ELSTAT, edit: Author.

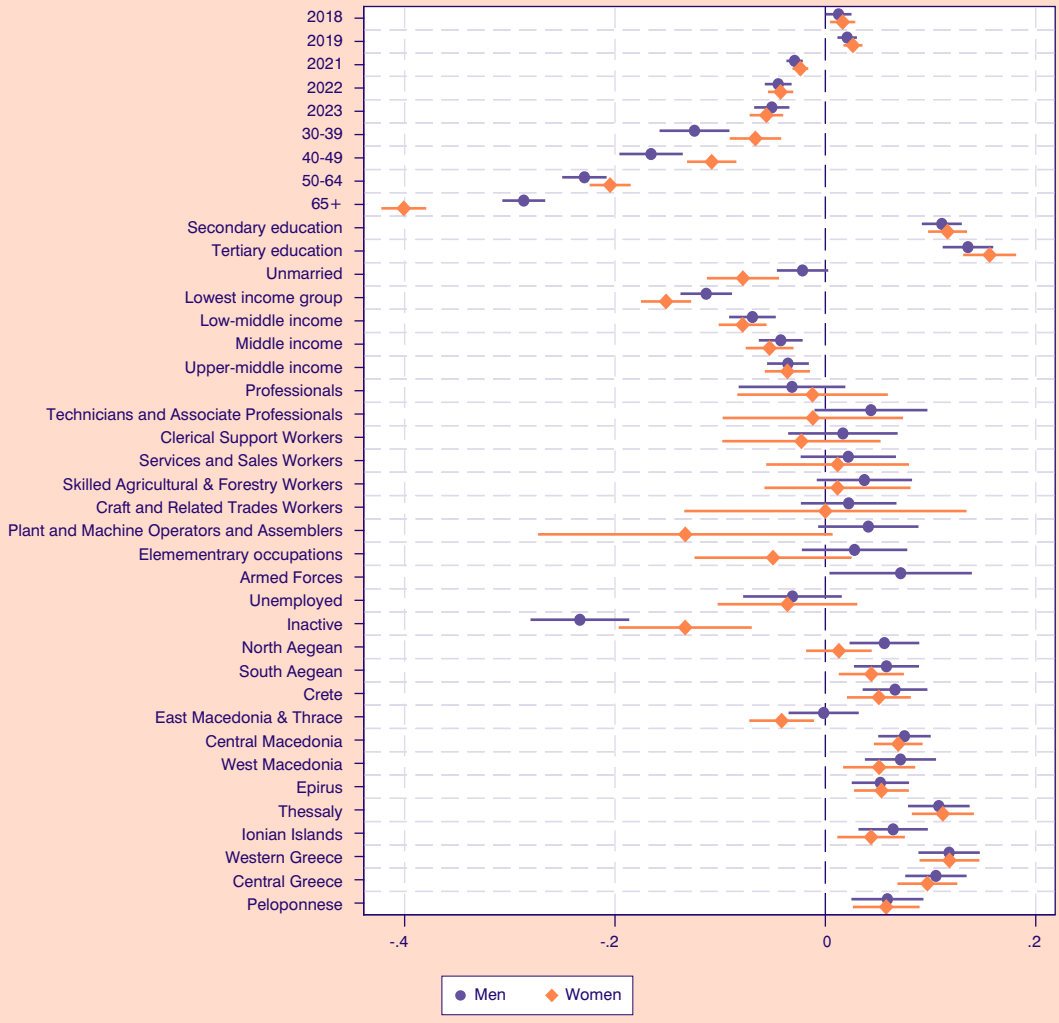
Notes: Chronic illness: 1 if individual reported longstanding health problems or longstanding illness, 0 otherwise, Limitation in daily activities: 1 if individual reported yes strongly/yes but not strongly limited, 0 otherwise.

steadily, with a particularly marked rise between 2019 and 2021. This sharp increase coincides with the onset and peak of the COVID-19 pandemic, suggesting an association between the pandemic and the deterioration of health outcomes. The convergence of these two indicators during this period implies that chronic conditions may have become more disabling or that the pandemic itself contributed to the onset or exacerbation of health limitations.

3.3.3. Heterogenous effects.

Figure 3.3.3 presents the estimated marginal effects of sociodemographic factors on the probability of reporting good health[2] by gender. The results indicate a notable decline in this probability after 2020 for both genders. Higher educational attainment is strongly associated with better SAH for both men and women. Income displays a clear gradient: individuals in the lowest in-

FIGURE 3.3.3
Marginal effects of sociodemographic characteristics on good health



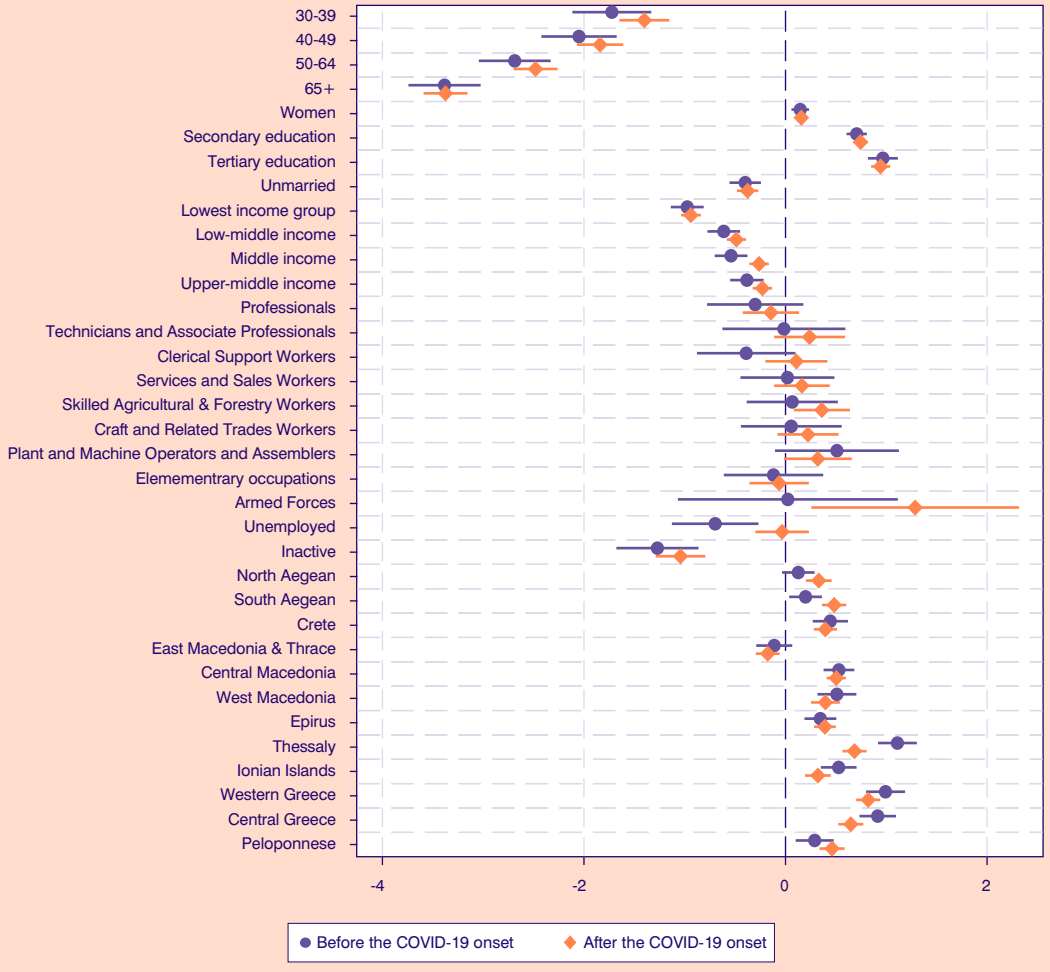
Source: Income and Living Conditions Survey (SILC), ELSTAT, edit: Author. Reference categories: year: 2020, age group: 17-29, education: primary, marital status: other, income: top 20%, occupation: managers, region: Attica.

2. Good health: 1 if the respondent answered that their health in general is good/very good, 0 otherwise.

come group are considerably less likely to report good health—particularly among women. Being inactive is linked to substantial health disadvantages, with the effect more pronounced among men. Notable regional disparities are observed, with most regions exhibiting higher probabilities of good health compared to the reference region, Attica.

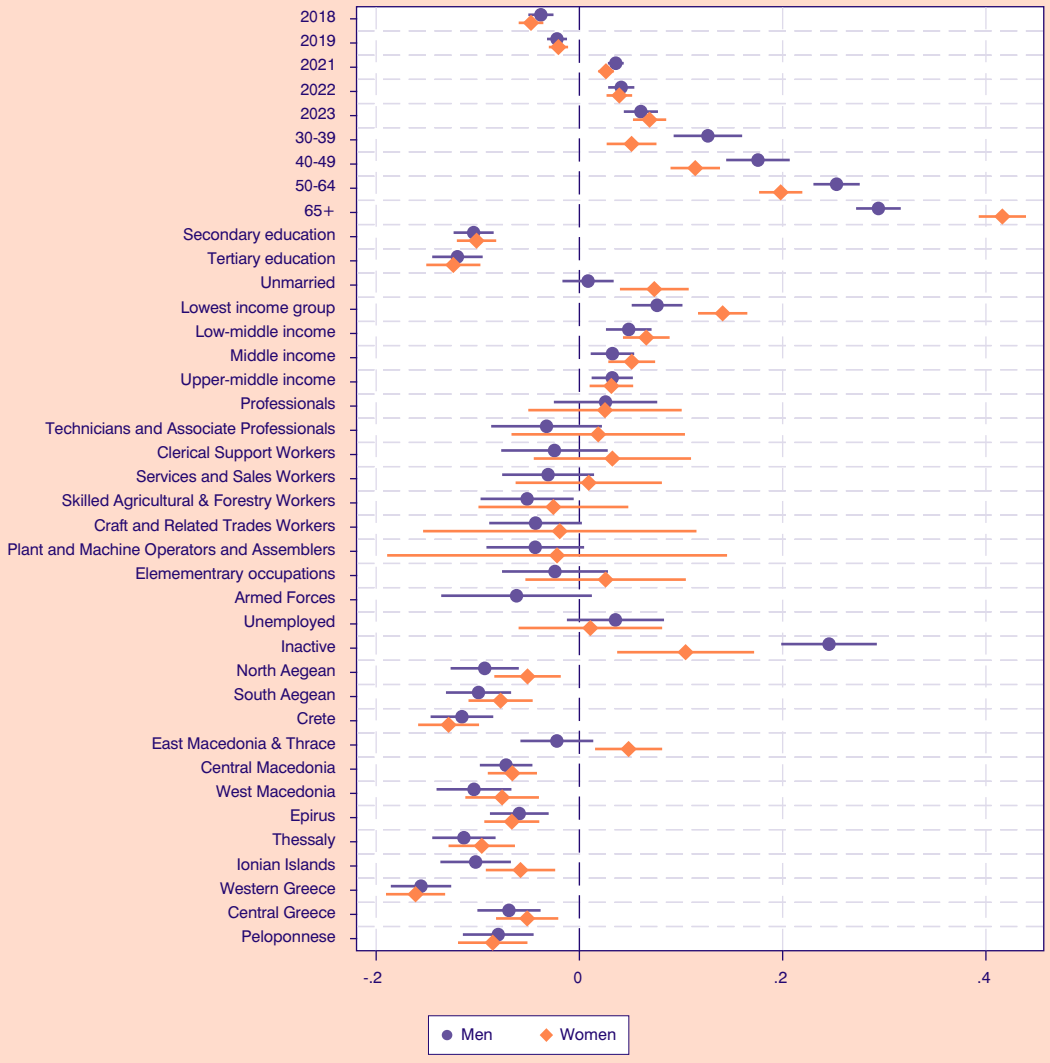
Figure 3.3.4 presents the estimated marginal effects of sociodemographic factors on the probability of reporting good health before and after the COVID-19 outbreak. In this graph, dots represent the pre-COVID-19 years (2018 and 2019), while diamonds correspond to the years following the pandemic outbreak (2020 onwards). The rightward shift of the diamond markers (post-COVID) compared to the dot markers (pre-COVID) for several categories suggests a narrowing of the health gap between certain groups and their respective reference categories. For example, unemployed and lower-income individuals—typically disadvantaged in terms of health—appear to be in a relatively better position during the pandemic compared to before. Individuals in high-level occupations (managers) appear to have experienced a relative decline, as the health gap between them and other occupational categories narrowed during the pandemic. The pandemic did not substantially alter regional patterns, with most areas outside of Attica (the reference region) showing con-

FIGURE 3.3.4
Marginal effects on good health pre/during COVID-19



Source: Income and Living Conditions Survey (SILC), ELSTAT, edit: Author. Reference categories: year: 2020, age group: 17-29, education: primary, marital status: other, income: top 20%, occupation: managers, region: Attica.

FIGURE 3.3.5
Marginal effects of sociodemographic characteristics on chronic illness



Source: Income and Living Conditions Survey (SILC), ELSTAT, edit: Author. Reference categories: year: 2020, age group: 17-29, education: primary, marital status: other, income: top 20%, occupation: managers, region: Attica.

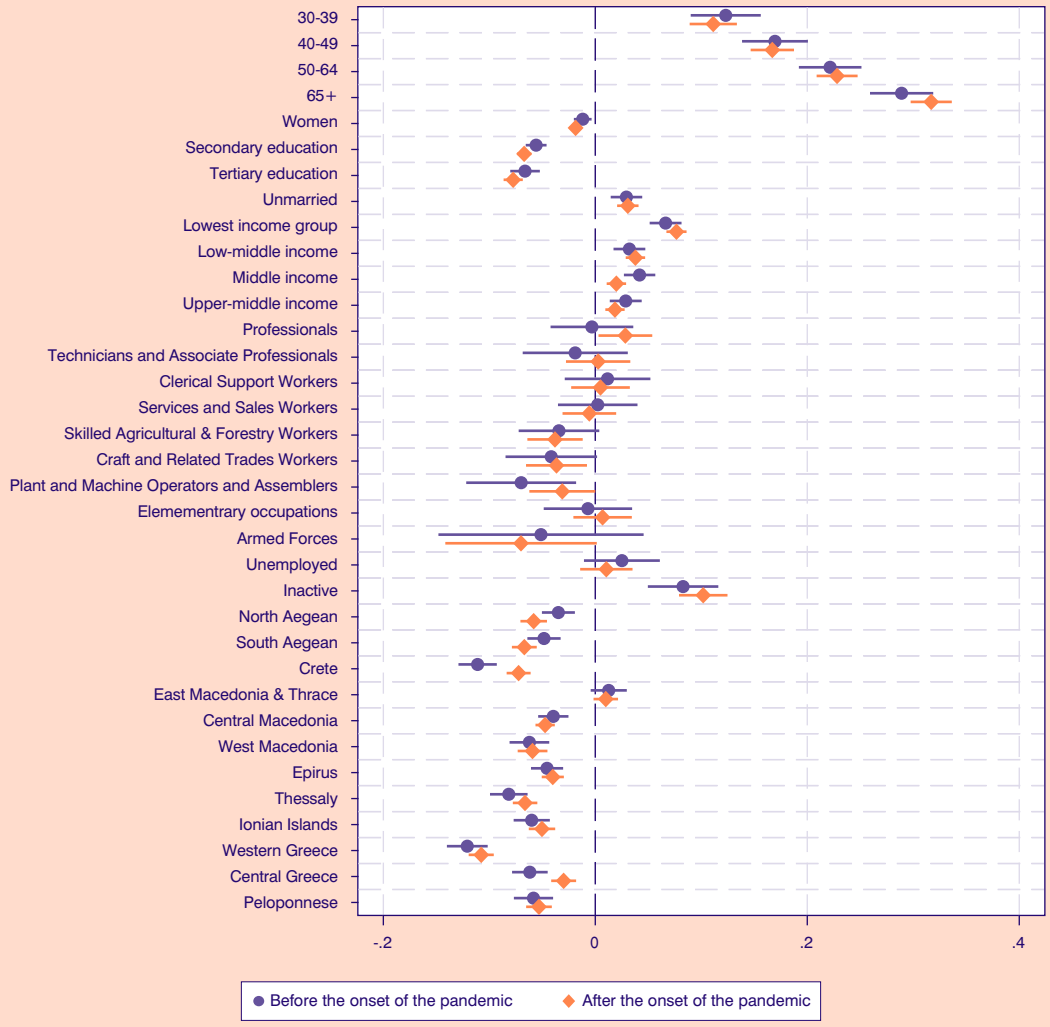
sistently higher probabilities of good health across both time periods, with only minor shifts between pre- and post-COVID years.

Figure 3.3.5 presents the estimated results for chronic illness, revealing an increase in the likelihood of reporting chronic illness after 2020 for both genders. Higher educational attainment is strongly associated with better health outcomes for both men and women. Individuals in the lowest income groups are considerably more likely to report chronic illness. Being inactive is linked to substantial health disadvantages, with the effect more pronounced among men.

Figure 3.3.6 suggests a widening gap between certain groups and their respective reference categories following the COVID-19 outbreak. In particular, older individuals, those with low incomes, and the inactive population show a higher probability of reporting chronic illness after 2020. However, the pandemic did not significantly alter these trends, with only minor shifts observed in the association between sociodemographic characteristics and chronic illness when comparing pre- and post-COVID years.

Figure 3.3.7 illustrates the marginal effects of sociodemographic characteristics on the likelihood of re-

FIGURE 3.3.6
Marginal effects on chronic conditions pre/during COVID-19



Source: Income and Living Conditions Survey (SILC), ELSTAT, edit: Author. Reference categories: year: 2020, age group: 17-29, education: primary, marital status: other, income: top 20%, occupation: managers, region: Attica.

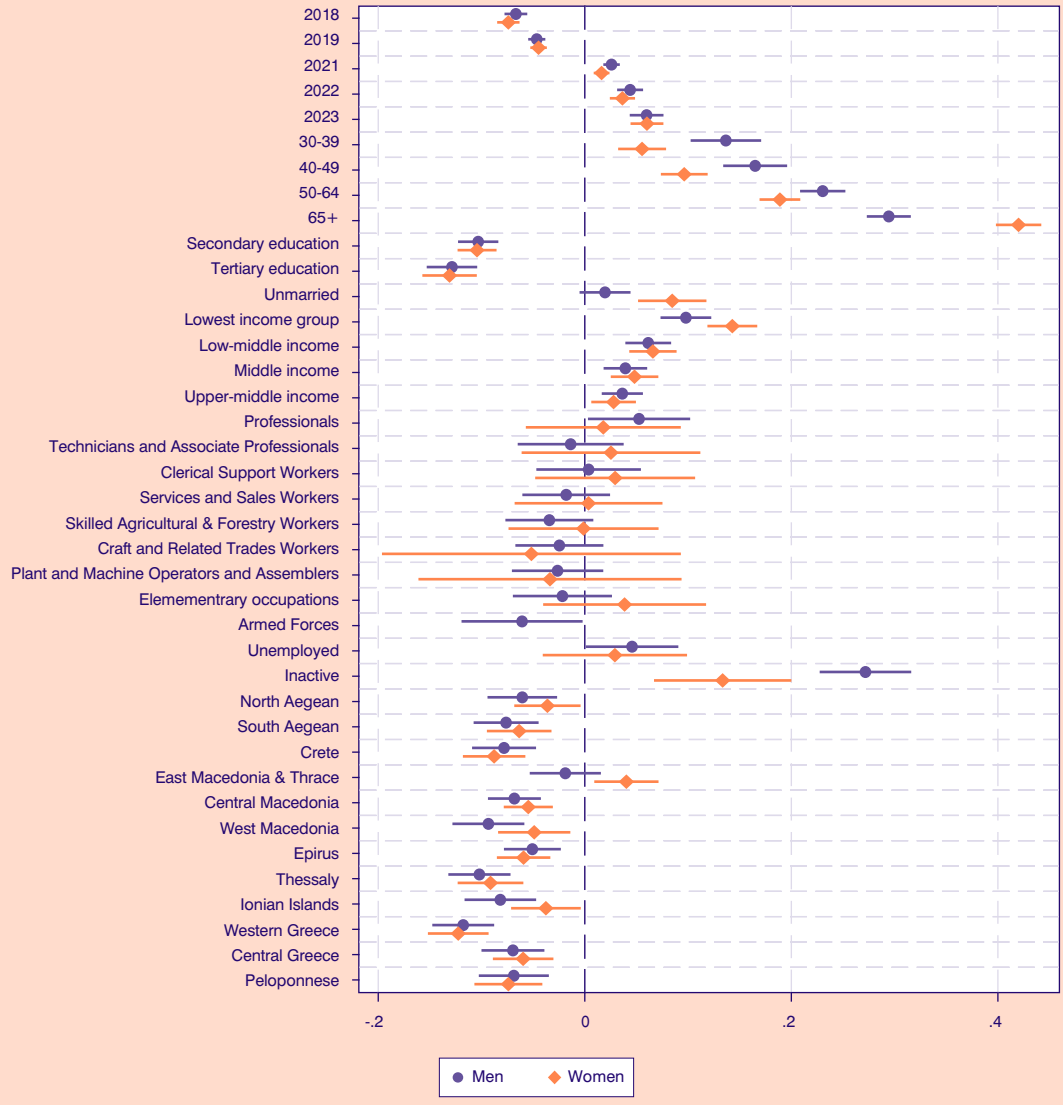
porting limitations in daily activities because of health problems. The results indicate a notable increase in this probability after 2020 for both genders. As expected, higher educational attainment is strongly associated with better health outcomes for both genders, and low-income individuals are considerably more likely to report limitations in activities due to health issues, in line with the previous findings.

Results indicate a narrowing gap between certain population groups and their respective reference categories in the prevalence of limitations in activities following the COVID-19 outbreak (Figure 3.3.8). Notably, unemployed and inactive individuals exhibit a lower probability of reporting limitations in daily activities in the post-COVID outbreak period. Only minor shifts were observed in regional patterns between the two time periods.

3.3.4. Conclusion

The COVID-19 pandemic had a clear, yet limited, impact on the health indicators investigated in this article, which relate to both physical health and the individual's general health perception. Despite fluctuations

FIGURE 3.3.7
Marginal effects of sociodemographic characteristics on limitation of daily activities

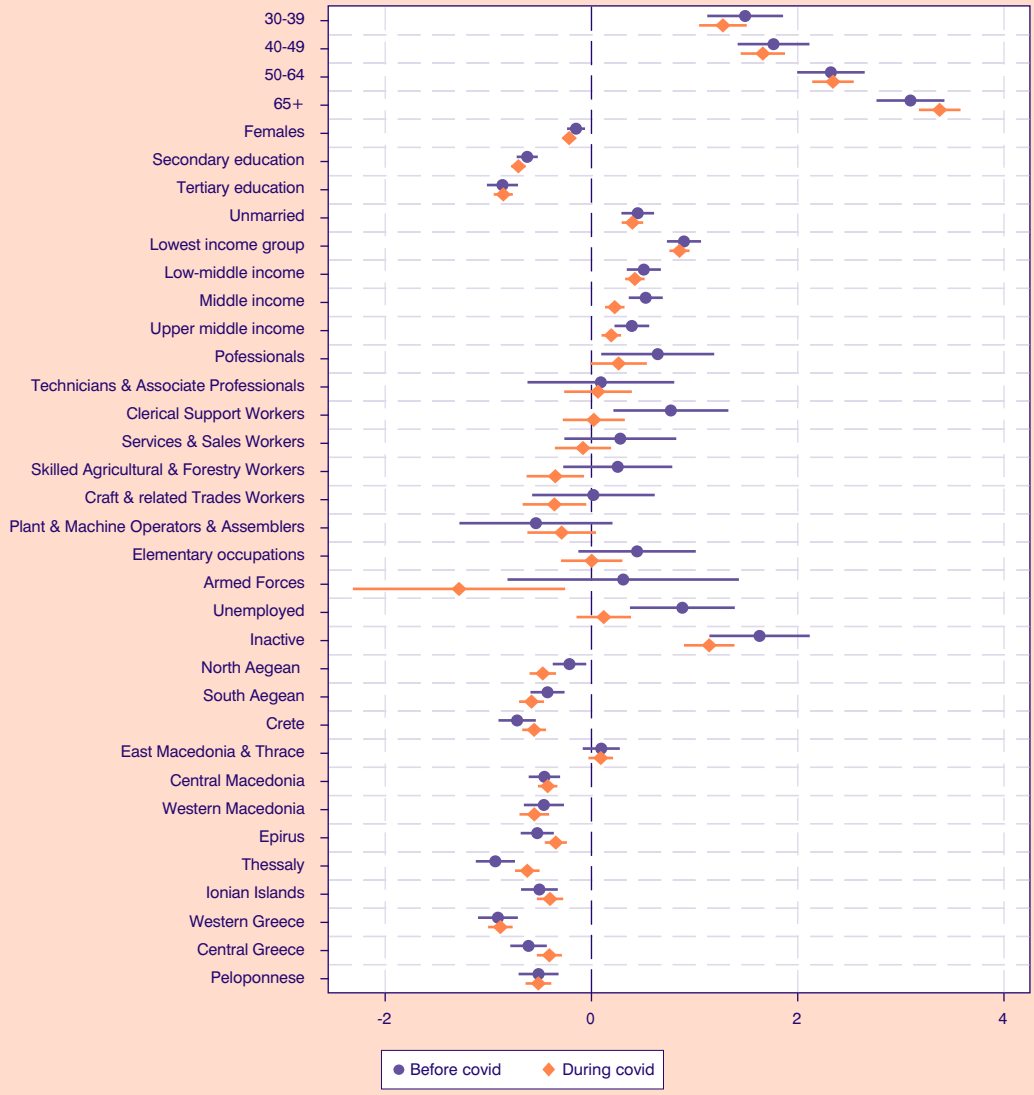


Source: Income and Living Conditions Survey (SILC), ELSTAT, edit: Author. Reference categories: year: 2020, age group: 17-29, education: primary, marital status: other, income: top 20%, occupation: managers, region: Attica.

–notably a slight increase in responses for 'poor/very poor' health– the overall proportion of people reporting 'good/very good' health remained stable, exceeding 65% throughout the period observed. This may suggest that, despite the extremely difficult circumstances of the pandemic, the general perception of the health status of the overall population remained relatively stable. However, the modest increase in negative self-assessments indicates that the health impact of the pandemic may not have been uniform across the population, suggesting the existence of more complex and possibly deeper consequences for specific population groups.

A closer examination of sociodemographic subgroups reveals heterogeneous effects. Interestingly, some disadvantaged groups, such as the unemployed and people belonging to lower income groups, showed relatively smaller declines in SAH in the years following the start of the COVID-19 pandemic, compared to their reference groups. In contrast, the economically inactive reported consistently worse outcomes across all health indicators, highlighting the psychological and

FIGURE 3.3.8
Marginal effects on limitation in daily activities pre/during COVID-19



Source: Income and Living Conditions Survey (SILC), ELSTAT, edit: Author. Reference categories: year: 2020, age group: 17-29, education: primary, marital status: other, income: top 20%, occupation: managers, region: Attica.

social consequences of being out of the labor market, effects that were particularly pronounced among men.

Results on chronic conditions show that although older and low-income individuals exhibited higher probabilities of reporting longstanding illness after 2020, the pandemic did not fundamentally reshape preexisting associations between sociodemographic factors and chronic illness. Only minor shifts in these relationships were observed when comparing pre- and post-COVID-19 onset waves. Similarly, limitations in daily activities—while rising overall—exhibited a narrowing of disparities between certain groups, with the unemployed and inactive paradoxically reporting fewer functional constraints in the post-outbreak period. Regional patterns likewise remained quite stable.

Taken together, these findings suggest that the traditional health disadvantage of low-income and unemployed populations was mitigated during the pandemic—likely not through marked improvements among the disadvantaged, but rather as a result of modest declines in health status among higher-income and employed individuals, particularly those in managerial

occupations, where greater responsibility and stress may have taken a toll.

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4. Reforms-Economic development

KEPE, *Greek Economic Outlook,* issue 57, 2025, pp. 61-67

4.1. Regional analysis of the energy poverty of Greek households: Recent developments

Vassilis Lychnaras,
Elisavet Nitsi

4.1.1. Introduction

According to the European Commission, energy poverty is defined as the phenomenon of households' exclusion from or poor access to energy, i.e., the inability to access basic energy services, such as electricity, natural gas, heating, cooling, etc. (EC, 2020). Energy poverty has become a severe problem caused by various factors, such as economic, social, and environmental, and, at the same time, affects many sectors, such as health, well-being, and the activities of people living under such conditions. Our previous work (Lychnaras and Nitsi, 2024) attempts to record and analyse the impact of the energy crisis of the period 2021-2022 on the energy poverty of Greek households.

The above-mentioned work, concerning the period 2018-2022, focuses on the analysis of the households' economic inability to keep the home adequately warm in winter, as recorded by ELSTAT, but at the same time, it also extends to the analysis of the differentiation of results between households at a regional level. One of the main results is that in 2022, the percentage of households with the economic inability to keep the home adequately warm increased to 19.2%, whereas for poor households, this percentage reached 39.7%. Similarly, such results occur regionally, for the total of households, but to a greater extent for poor households. Regarding the factors that affect energy poverty, apart from energy cost and the income level, there are also other parameters related to the socioeconomic characteristics of households (size, income sources, gender, age, etc.), the characteristics of the houses (surface, year of construction, type of house, energy efficiency, heating type, etc.), as well as the geographical parameters related to each region (population density, climatic conditions, etc.).

However, after 2022, energy prices have decreased and returned to levels before the energy crisis. Moreover, economic activity has returned to normal conditions, as restrictions due to the pandemic have been lifted. In this context, considering the above findings for the period 2021-2022 and according to latest available data from the Income and Living Conditions Survey (EU-SILC) of ELSTAT (2024), (reference period 2023), this paper focuses on recording and analyzing the evolution of energy poverty of Greek households, at a regional level, for the period 2022-2023.

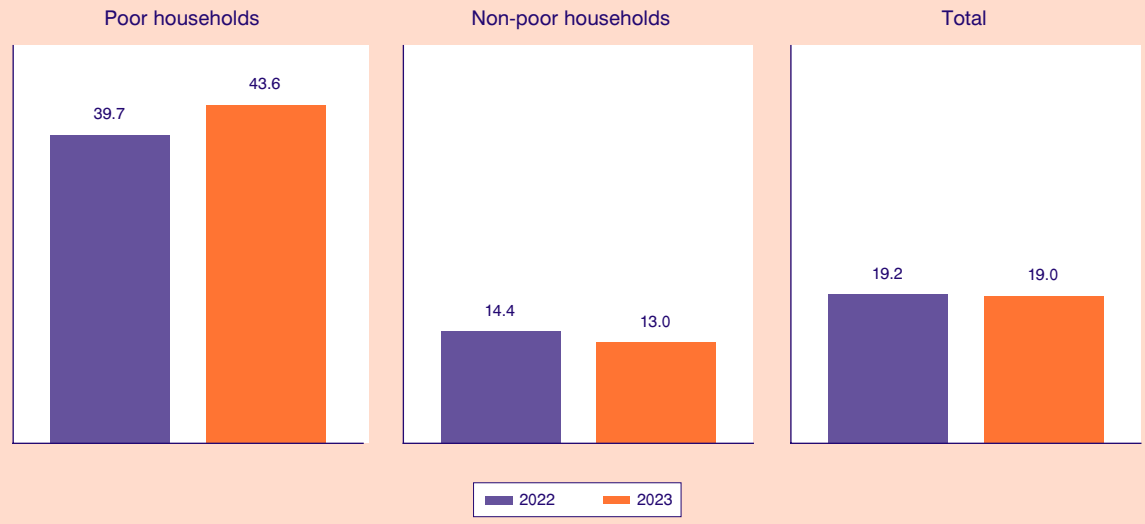
4.1.2. Evolution of households' energy poverty in Greece in the period 2022-2023

As mentioned before, increases in energy prices due to the global energy crisis of 2021-2022 had a significant impact on households, especially regarding heating costs. However, in 2023, energy prices returned to normal levels, both globally and in Greece. In particular, natural gas and electricity prices showed a significant decrease compared to 2022 levels. It is therefore interesting to examine whether this development had a positive impact on Greek households.

According to data from the Income and Living Conditions Survey (EU-SILC) of ELSTAT, the population at risk of poverty or social exclusion in 2023 rose to 26.9% of the total population, compared to 26.1% in 2022, i.e., a slight increase of 0.8 percentage points. In addition to that, the poverty threshold for a single-person household in 2023 increased to 6,510 euros, compared to 6,030 euros in 2022. Correspondingly, for households with two adults and two children under 14 years old, the poverty threshold in 2023 increased to 13,671 euros, compared to 12,663 euros in 2022.

Furthermore, the percentage of households that cannot to keep the home adequately warm in winter in 2023 amounted to 19%, decreasing only 0.2 per-

FIGURE 4.1.1
Percentage of households with inability to keep home adequately warm in winter, 2022-2023



Source: ELSTAT, Income and Living Conditions (EU-SILC), Own calculations.

centage points compared to 2022, which was 19.2%. On the other hand, there was a slight improvement among non-poor households, as the indicator decreased from 14.4% to 13% in the period 2022-2023. However, regarding poor households, the inability to keep the home adequately warm in winter increased from 39.7% in 2022 to 43.6% in 2023, i.e., almost 4 percentage points (Figure 4.1.1). Therefore, despite the economy's boost after the pandemic or the reduction of energy prices, there was a deterioration in energy poverty conditions among poor households. It is also important to point out that poor households represent only 20.1% of the sample (4,410 observations out of a total of 21,911 observations), thus affecting the final results of the sample the least compared to non-poor households.

Accordingly, Figure 4.1.2 presents the change in household income in 2022-2023 as well as the distinction between poor and non-poor households. We observe that, within one year, there was an increase of 8% in disposable income for all households, reaching 23,954 euros per year. Additionally, the annual income of non-poor households increased to 27,551 euros, recording an increase of 9.4%; for non-poor households, the increase was 7.6%, and the annual disposable income for 2023 amounted to 9,187 euros. It is also noted that the average income of poor households in 2023 represents only one-third (33.3%) of the average income of the non-poor and 38.3% of the total average income.

We therefore observe that despite the increase in income among all household categories, the percentage of poor households that were incapable of keeping the home adequately warm in winter has increased. The data show that poor households struggle to meet basic needs, such as food, housing, rent, etc., as prices have increased significantly. It is noteworthy that the individual Consumer Price Indices (CPI) between December 2022 and December 2023 have increased significantly. More specifically, the CPI for food has increased by 10.8 percentage points, for rent by 4.1 points, for health by 5.6 points, for education by 3.6 points and for catering and tourism by 6.4 points (ELSTAT, 2023). At the same time, while the CPI for natural gas decreased by almost 200 percentage points, prices for heating oil, the main option for heating among Greek households (more than half of total households in 2022), increased by 18.8 percentage points. Consequently, poor households tend to reduce their expenditure for energy in order to cover the increased cost of other basic needs, thus resulting in an increased risk of energy poverty.

FIGURE 4.1.2
Household Income, 2022-2023

Source: ELSTAT, Income and Living Conditions (EU-SILC), Own calculations.

4.1.3. Evolution of energy poverty at a regional level

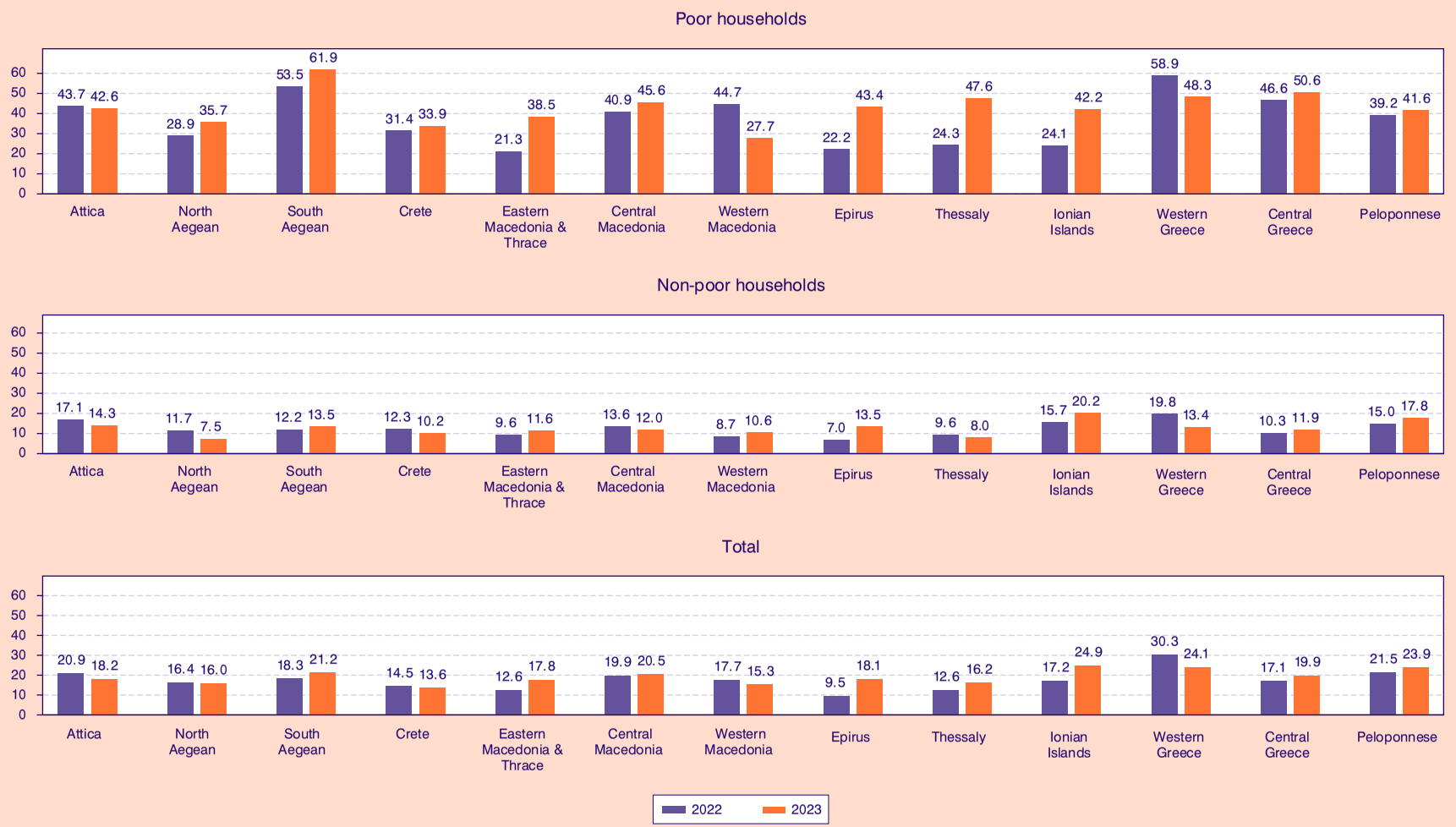
The above results show the importance of analyzing the phenomenon at a regional level. Figure 4.1.3 presents the index of economic inability to keep the home adequately warm in winter by region, for 2022-2023, while Figure 4.1.4 shows the corresponding evolution of household income by region. Results are presented both for the total number of households and by category, i.e., poor and non-poor households.

Regarding the energy poverty index for the total number of households, we observe that, despite the improvement of the index for the country (Figure 4.1.1), only 5 out of 13 regions showed improvement, i.e., a decrease of the inability to keep the home adequately warm in winter. On the contrary, the regions of Eastern Macedonia and Thrace, Epirus, Thessaly and the Ionian Islands showed a significant deterioration of the index. Regarding poor households, only three regions of the country (Attica, Western Macedonia and Western Greece) record an improvement. The rest of the regions record a deterioration of the energy poverty index, especially Macedonia and Thrace, Epirus, Thessaly and the Ionian Islands, in which the percentage of households with economic inability to keep the home adequately warm in winter doubles.

With regard to the analysis of the disposable income by region (Figure 4.1.4), we observe that in most cases and for the total of households, an increase is recorded. The only exceptions are the regions of the South Aegean, Western Macedonia and Western Greece, in which a slight decrease in income is observed. However, regional analysis for poor households shows that there are areas where the disposable income of households has increased and, at the same time, the inability to keep the home adequately warm has worsened (Table 4.1.1).

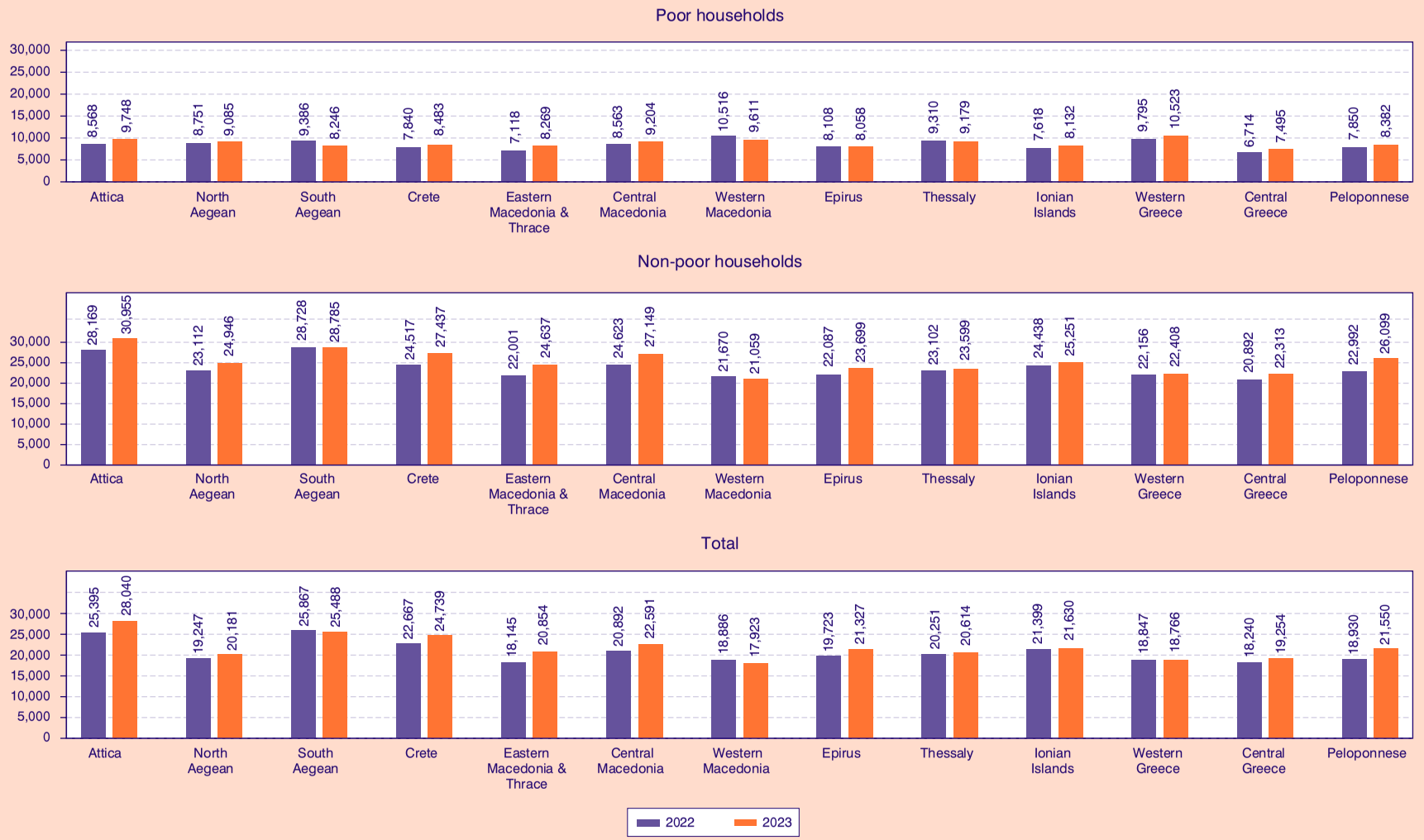
More specifically, for the total of households, this trend is observed to a great extent in the regions of Epirus (with an increase of 8.5% of the inability to keep the home adequately warm when disposable income increased by 8.1%) and Eastern Macedonia and Thrace (with an increase of 5.2% of the inability to keep the home adequately warm when disposable income increased by 14.9%). Smaller differences characterize the regions of Peloponnese, Central Greece, and Central Macedonia. This becomes more intense in the case of poor households. The regions in which a significant deterioration of the energy poverty index is observed, despite the simultaneous increase in income, are Eastern Macedonia and Thrace, with an index increase of 17.3% and a strong increase in income by 16.2% at the same time, as well as the Ionian Islands, with 18.1 and 6.7%, respectively.

FIGURE 4.1.3
Percentage of households with inability to keep home adequately warm in winter by region, 2022-2023



Source: ELSTAT, Income and Living Conditions (EU-SILC), Own calculations.

FIGURE 4.1.4
Household Income by region, 2022-2023



Source: ELSTAT, Income and Living Conditions (EU-SILC), Own calculations.

TABLE 4.1.1 Income percentage change (%) and inability to keep home adequately warm in winter in the period 2022-2023, by region

	Income			Ability to keep home adequately warm in winter		
Region	**Poor**	**Non-poor**	**Total**	**Poor**	**Non-poor**	**Total**
Attica	13.8	9.9	10.4	-1.1	-2.9	-2.8
North Aegean	3.8	7.9	4.9	6.8	-4.2	-0.7
South Aegean	-12.1	0.2	-1.5	8.4	1.3	3.0
Crete	8.2	11.9	9.1	2.5	-2.1	-0.9
Eastern Macedonia & Thrace	16.2	12.0	14.9	17.3	2.0	5.2
Central Macedonia	7.5	10.3	8.1	4.8	-1.7	0.6
Western Macedonia	-8.6	-2.8	-5.1	-17.0	1.9	-2.4
Epirus	-0.6	7.3	8.1	21.2	6.6	8.5
Thessaly	-1.4	2.2	1.8	23.3	-1.6	3.6
Ionian Islands	6.7	3.3	1.1	18.1	4.5	7.6
Western Greece	7.4	1.1	-0.4	-10.6	-6.4	-6.8
Central Greece	11.6	6.8	5.6	4.0	1.6	2.8
Peloponnese	6.8	13.5	13.8	2.4	2.8	2.4
Total	**7.6**	**8.6**	**8.0**	**3.9**	**-1.4**	**-0.2**

Source: ELSTAT, Income and Living Conditions (EU-SILC), Own calculations.

4.1.4. Summary and conclusions

While the global energy crisis of the period 2021-2022 appears to have a negative impact on household energy poverty until 2022 (Lychnaras and Nitsi, 2024), in 2023 the country's economy has returned to normal conditions, as restrictions due to the pandemic were lifted. At the same time, the consequences of the energy crisis were largely addressed, resulting in significantly reduced energy costs both for households and businesses. At the same time, according to data from the Income and Living Conditions Survey (EU-SILC) of ELSTAT, in 2023, an increase of disposable income took place compared to previous year, both for poor and non-poor households. Despite that, the same research shows that the percentage of the population at risk of poverty or social exclusion also recorded a slight increase in 2023.

Furthermore, in 2023, the percentage of households that were not able to keep the home adequately warm in winter appears to be slightly decreasing for the total number of households and for the non-poor households category. However, regarding poor households, the index records an important deterioration, increasing by almost 4 percentage points. Therefore, despite the increase in income in all household categories, and the simultaneous fall in energy prices, there has been a worsening in energy poverty conditions among poor households. These data demonstrate that this category of household faces difficulties meeting basic needs, such as nutrition, housing (rent), health, education, etc., sectors impacted by rising inflation in 2023, and thus limiting their energy expenditures.

Similar conclusions occur at a regional level, as in most regions an increase in household disposable income is recorded in 2023 compared to 2022. Howev-

er, with regard to the index of the inability to keep the home adequately warm in winter for all households, only 5 out of 13 regions showed an improvement, while for poor households, there was an improvement in the index for only 3 regions. Especially in the case of Eastern Macedonia and Thrace, Epirus, Thessaly, and the Ionian Islands, the percentage of poor households with the economic inability for sufficient heating almost doubled. Consequently, the trend of rising energy poverty appears at a regional level too, even if disposable income increases. Nevertheless, poor households are mostly affected by that, but non-poor households. Households as a total are also influenced.

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4.2. The impact of external crises on Greece's agricultural economy: A production and income analysis for the period 2019–2023

Ioanna Reziti

4.2.1. Introduction

Agriculture is one of the most vital sectors of the Greek economy and society. Although its contribution to GDP has declined as a percentage over the past decades, its strategic, social, and environmental importance remains significant.

First, agriculture ensures the country's food security, especially during periods of crisis such as the COVID-19 pandemic, the war in Ukraine, or climate-related disasters. Self-sufficiency in staple foods such as wheat, milk, vegetables, and olive oil is essential for national resilience.

Second, agriculture sustains the rural economy. Thousands of families derive their income from farming, particularly in remote and mountainous areas where employment opportunities are limited. At the same time, the primary sector activates numerous other branches of the economy, including agro-processing, trade, transportation, and agricultural inputs.

Third, agricultural production is one of Greece's core export drivers. Products such as olive oil, feta cheese, fruits, wine, and aromatic herbs are promoted in international markets, strengthening the trade balance and enhancing Greece's global identity through the Mediterranean diet.

Fourth, the agricultural sector is closely linked to natural resource management. Farmers are stewards of over 80% of the Greek land and are therefore key players in the protection of soil, water, and biodiversity. Depending on the practices employed, agriculture can function either as a threat or as an ally to the environment.

Finally, agriculture serves as a vehicle for cultural and historical continuity. The rural way of life, local knowledge, culinary traditions, and forms of collective organization associated with the countryside constitute an important part of Greece's intangible cultural heritage.

Based on these factors, it is clear that agriculture is not merely a productive activity. It is a cornerstone of food security, regional development, export competitiveness, environmental balance, and Greece's cultural identity. Its sustainable and equitable preservation constitutes a national priority.

This analysis examines the evolution of key economic and production indicators of the agricultural sector in Greece for the period 2019–2023. The selection of this five-year period is not accidental: 2019 marks the last year before a series of complex crises that decisively impacted agriculture (COVID-19 pandemic, extreme weather events, energy crisis), while 2023 is the most recent year for which validated statistical data are available from Eurostat. The comparison between these two years allows for the evaluation of the structural changes experienced by the sector and their effects on productivity, agricultural income, and employment.

4.2.2. The value of agricultural production

Agriculture is an activity that belongs to the primary sector of the economy and involves the harvesting of products from the land. The term "agricultural industry" is used to describe the sector of agricultural production, without implying that agriculture is industrialized or directly associated with the processing of raw materials.

Agricultural production in Greece is primarily based on small-scale holdings. Nevertheless, it constitutes an activity of vital importance for the economy, as it significantly supports the food and beverage processing industry. In 2023, the agricultural industry contributed €6 billion to Greece's total Gross Domestic Product (GDP). This contribution—measured as Gross Value Added (GVA) at basic prices, which is comparable to GDP at market prices—results from the difference between the value of agricultural output and the cost of the various inputs required in the production process, adjusted for taxes and subsidies on products. For this reason, it is important to examine both the structure and the composition of the value of agricultural production, as well as the individual inputs used.

The increase in the GVA of the primary sector (in current prices) by 11.05% (from €6.780 billion in 2019 to €7.529 billion in 2023) is tentatively positive, but it is not sufficient on its own to conclude that Greek agriculture has improved. It is essential to also consider productivity, production costs, and farmers' income.

TABLE 4.2.1 GVA of agriculture, GDP, & annual changes (2019–2023)

	GVA (producer prices, million €)	GDP (market prices, million €)	Contribution of GVA in GDP (%)	Annual change (%)
2019	5,644.39	185,181.2	3.05	
2020	5,466.14	167,539.5	3.26	-3.16
2021	5,396.37	184,574.6	2.92	-1.28
2022	6,365.48	207,854.2	3.06	+17.96
2023	5,996.09	225,196.9	2.66	-5.80

Source: Eurostat, Economic Accounts for Agriculture (aact_eaa).

Table 4.2.1 presents the GVA of agriculture, the GDP, and their relationship over the 2019–2023 period, emphasizing agriculture's contribution to the national economy and annual changes. The share of agriculture in total GDP remains limited but consistently measurable, hovering around 3%, and tends to increase slightly during periods of broader economic downturn (e.g., in 2020). In 2020, amid a generalized recession caused by the COVID-19 pandemic, agriculture demonstrated remarkable stability. Despite the decline in GVA in absolute terms, its relative contribution to GDP increased, as other sectors of the economy—such as tourism, food services, transport, and retail trade—experienced much sharper contractions. This phenomenon highlights the **resilience** of the primary sector during times of crisis, primarily due to the domestic nature of production, steady demand for food, and the existence of support measures. However, it does not reflect structural progress.

In 2022, a significant increase in agricultural Gross Value Added (GVA) was observed (17.96%), which cannot be attributed solely to structural improvements, but mainly to temporary and conjunctural factors. The rise in both international and domestic prices of agricultural products—driven by inflationary pressures and geopolitical instability following Russia's invasion of Ukraine—boosted the gross production value. At the same time, support provided through the Common Agricultural Policy (CAP), although consistently present over time, was temporarily reinforced through additional aid measures (e.g., emergency support due to increased input costs, the energy crisis, etc.). These measures had a compensatory effect and helped maintain and even expand production activity, ultimately leading to an increase in GVA.

In 2023, agricultural GVA declined significantly (-5.80%), and its share in GDP fell to 2.66%, the lowest level in the observed period. This decrease is not solely related to general economic trends but also reflects severe losses in agricultural output, mainly due to extreme weather events, most notably storm Daniel, which caused extensive damage to crops and infrastructure, especially in Thessaly, one of the country's most important agricultural regions. Furthermore, the continued rise in production costs, particularly for energy, fertilizers, and transportation, exerted additional pressure on the sector's profitability and competitiveness.

Despite the 11.05% increase in GVA for the primary sector over the period 2019–2023, agriculture's relative share in GDP declined from 3.05% to 2.66%, as total GDP grew at a faster pace (21.6%). This indicates that the primary sector lags other sectors in terms of dynamism, resulting in a diminished role within the country's productive structure. This development confirms the need for substantial structural interventions aimed at enhancing resilience, sustainability, and the contribution of the primary sector to the national economy in a more stable and lasting manner.

4.2.3. Contribution of sub-sectors to total agricultural production

Analyzing the percentage contribution of individual sub-sectors to the total value of agricultural production allows for a better understanding of the internal structure of the sector and provides insight into the relative weight of each productive activity.

Table 4.2.2 presents the structure of agricultural production in Greece for the years 2019 and 2023, high-

TABLE 4.2.2 Distribution of agricultural production by sector (% of total agricultural production value)

	2019	2023
Cereals	5.3	5.8
Vegetables & horticultural plants	13.0	12.7
Fresh fruits	14.7	15.3
Forage plants	6.8	6.9
Potatoes	2.3	1.4
Wine	0.9	0.5
Olive oil	6.7	10.0
Industrial crops	8.3	6.7
Crop production	**69.5**	**68.6**
Milk	8.1	11.0
Sheep & goats	3.3	2.5
Cattle	1.8	1.7
Pigs	1.7	1.3
Poultry	2.8	2.9
Eggs	2.3	2.7
Animal production	**21.5**	**23.7**
Agricultural services*	3.0	3.2
Secondary activities**	6.0	4.6

Source: Eurostat, Economic Accounts for Agriculture (aact_eaa01).

* Includes support activities in crop and animal production such as sowing, harvesting, spraying, and basic veterinary services.
** Includes small-scale processing, production of traditional products, and agritourism.

lighting the relative share of each sub-sector in the total production value. The analysis reveals small but meaningful changes that reflect broader trends in the agricultural sector.

Within crop production, cereals show a modest increase, possibly due to expanded cultivation areas or higher prices. Vegetables and floriculture maintain a consistently high share, with a marginal decline, indicating relative stability in production. In contrast, fresh fruits gain a larger share, potentially due to increased demand, improved quality, or stronger export orientation.

Forage crops maintain a stable contribution, reaffirming their close connection to livestock production. On the other hand, potatoes and wine show a decline, which may be linked to limited demand, cost-related challenges, or low competitiveness. Notably, the relative share of olive oil increased significantly, likely driven by its strong international image and rising prices. Industrial crops decreased their share, possibly due to volatile market prices, external competition, and increased production costs.

In the livestock sector, milk production shows a significant increase, which may be attributed to improved productivity and steady demand. In contrast, the share of sheep and goats, cattle, and pigs has declined, possibly reflecting the shrinking of small farms or broader challenges facing the sector. Poultry maintains a stable share, while eggs have increased their contribution, likely due to demand for affordable and nutritious food products.

Agricultural services show a slight increase, indicating a growing role of contract-based operations and greater reliance on specialized equipment. Converse-

ly, secondary activities have notably decreased their share. This decline may be related to limited technical or financial support, low profitability, or a tendency for producers to concentrate on core activities due to economic pressures.

4.2.4. The cost of agricultural inputs: Greek and European dimensions

The production of all agricultural goods involves significant costs. Farmers must purchase goods and services as inputs in the production process—such as seeds, fertilizers, animal feed, fuel for tractors, veterinary services, and more. Intermediate consumption in agriculture increased in Greece at a much faster rate than in the EU-27 (37.8% versus 20%) over the period 2019–2023, even though the price index of goods and services consumed in agriculture rose more moderately in Greece (33% versus 37.2%). This development highlights the disproportionate burden borne by Greek farmers in terms of production costs during the last five years, particularly amid successive crises (energy, inflation, supply chain disruptions). This divergence becomes even more evident when examining the developments in 2023. That year, input prices in the EU-27 saw a relative decrease (-4.6%), while in Greece, the reduction was marginal (just -0.22%) (Table 4.2.3). Specifically, intermediate consumption in the EU-27 declined by 2.9% in 2023 compared to 2022, whereas in Greece, the decrease was only 0.14%. This indicates that Greek agriculture did not benefit equally from the reduction in input prices. Indicative interpretations include the following:

- A possible overdependence of Greek agriculture on external inputs, without a corresponding improvement in efficiency.
- Lower resilience of the Greek primary sector to price shocks.
- A sign of structural weakness, indicating an urgent need for improved input management and technical support.

This trend is further underscored when examining production costs as a percentage of Gross Output (GO). In 2019, Greece had a clear comparative advantage, as input costs accounted for 48.8% of output, compared to 57.3% in the EU-27. However, by 2023, this advantage had almost disappeared: in Greece, the cost ratio had risen to 55.3%, approaching the corresponding EU-27 figure of 58.3% (*Source:* Eurostat, aact_eaa01).

The 6.5 percentage point increase in the input cost share of production in Greece clearly shows that Greek producers now retain a smaller portion of their production value as net income, while in the EU-27, the increase was marginal. This is a clear indication of deteriorating competitiveness and a critical compression of income, threatening the viability of many holdings, particularly small-scale farms.

TABLE 4.2.3 Price changes of agricultural intermediate inputs by category, 2019/2023 and 2022/2023

	% change 2019/2023	% change 2022/2023
Goods and services consumed in agriculture	32.9	-0.22
Seeds & planting stock	15.9	6.2
Energy & lubricants	29.0	-9.0
Fertilizers & soil improvers	72.3	5.9
Plant protection products	16.8	5.4
Veterinary expenses	15.8	5.2
Animal feed	39.3	3.0
Maintenance of buildings	32.9	11.1
Maintenance of equipment	24.3	9.0

Source: Eurostat, Price indices of the means of agricultural production, input (2015 = 100) - annual data (apri_ap_ina).

Table 4.2.3 above illustrates the evolution of intermediate input prices in agriculture, both over a five-year period (2019–2023) and on an annual basis (2022–2023). The data indicate that nearly all categories of inputs experienced notable price increases over the past five years, confirming the widespread pressure on production costs.

The most significant increases are observed in categories linked to energy and chemical inputs, such as fertilizers, energy, lubricants, and animal feed. Despite the sharp price hikes over the five-year period, the annual changes between 2022 and 2023 suggest a trend toward stabilization or mild de-escalation in certain categories, most notably energy and lubricants. However, most input categories still show positive annual changes, meaning their prices continue to rise, albeit at a more moderate pace.

Maintenance costs for buildings and equipment also recorded significant increases, reflecting broader inflationary pressures and the rising cost of materials and maintenance services. These developments underscore that the rise in agricultural production costs stems from multiple factors—not solely energy prices. The main contributors to the increase in production costs include the following:

- **Rising labor costs**: Wages increased by 9.4% in 2023, reflecting pressure for higher earnings in the agricultural sector.
- **Higher land rents**: Land rental prices rose by 3.5%, further burdening production costs.
- **Increased capital costs**: Capital-related expenses grew by 4.5%, with machinery rental costs up by 3.9% and loan interest rates by 5.3%.
- **Extreme weather events**: Storm Daniel in 2023 caused widespread damage to crops and infrastructure, increasing recovery costs and reducing productivity.
- **Structural weaknesses**: The small scale of agricultural holdings and the limited adoption of advanced technologies reduce efficiency and raise unit production costs.

4.2.5. Evolution of agricultural production in Greece

As shown in Table 4.2.4, during the period 2015–2019, Greek agriculture operated in a context of relative stability and moderate fluctuations. Price and quantity indices showed limited variability, with no strong deviations, reflecting a stabilization phase following the financial crisis. The nominal value of production remained close to 2015 levels, with only minor ups and downs, mirroring the subdued pace of both productive activity and price movements. However, in the five-year period from 2019 to 2023, agriculture shifted from this relative equilibrium into a phase of intense volatility, mainly driven by external crises and extreme weather events. The years 2019 and 2020 were characterized by a degree of balance, although 2020 was negatively impacted by the COVID-19 pandemic and

TABLE 4.2.4 Indices of value, price, and volume of the agricultural industry (2015=100)

	Nominal production value	Nominal price	Volume index
2015	100.00	100.00	100.00
2016	97.46	97.47	94.99
2017	102.09	98.89	100.96
2018	100.03	98.63	98.66
2019	103.47	98.76	102.19
2020	103.37	98.52	101.84
2021	97.85	108.04	105.71
2022	105.67	120.51	127.34
2023	88.92	139.74	124.25

Source: Eurostat, Economic Accounts for Agriculture, Indices, Volume, Price, Values (aact_eaa05).

storm Ianos, which caused significant damage to agricultural infrastructure and holdings, particularly in Thessaly. Despite these shocks, overall nominal value indicators remained stable, suggesting resilience within the sector. The year 2022 marked a turning point, with a sharp increase across all three core indicators—price, quantity, and total value—primarily due to global inflationary pressures, the energy crisis, and rising agricultural input costs. In 2023, despite sustained high levels of production and prices, a sudden decline in nominal value was recorded. This may be attributed to the devastating storm Daniel, which struck key agricultural regions and disrupted both the composition and marketability of agricultural output. Overall, the 2019–2023 period highlighted the structural vulnerability of Greek agriculture to external shocks, with consequences not limited to production volume, but also affecting the sector's overall economic efficiency.

4.2.6. Evolution of production and intermediate consumption in the agricultural sector

Table 4.2.5 presents the evolution of three key volume indicators for the agricultural sector in Greece over the period 2015–2023: Gross Value Added (GVA), total production, and intermediate consumption. These indicators, expressed in constant prices (base year 2015), reflect the following: changes in the net productive capacity of agriculture (volume of net value produced), changes in the quantity of output produced, independent of price fluctuations, and changes in the volume of inputs used, regardless of unit costs or prices. Additionally, the table includes the evolution of the productivity of Greek agriculture, calculated as the ratio of GVA to intermediate consumption, as well as the share of intermediate consumption in total production.

During the period 2015–2019, these indicators show a relative balance, with minor fluctuations in both production and input consumption, and productivity levels remaining close to unity.

From 2020 onward, a significant increase in input consumption is observed without a corresponding increase in production. This phenomenon intensifies in 2021, when the productivity index falls to 0.80, possibly due to the COVID-19 pandemic and damage caused by storm Ianos. The year 2022 was marked by intense cost pressures, but also by a robust recovery in agricultural output. Although productivity did not return to 2019 levels (0.98), there was clear improvement compared to the challenging year of 2021. The strong rebound in gross output indicates that the sector responded to challenges, but the persistently high level of intermediate consumption suggests fragile sustainability.

TABLE 4.2.5 Volume index of production and intermediate consumption of the agricultural industry (2015=100, basic prices)

	GVA	Gross output	Intermediate consumption	% Intermediate consumption	Productivity[1]
2015	100.00	100.00	100.00	100	1
2016	91.90	97.46	103.53	106.0	0.89
2017	98.84	102.09	105.68	103.3	0.94
2018	96.63	100.03	103.78	103.5	0.93
2019	102.76	103.47	104.38	100.7	0.98
2020	97.33	103.37	109.96	106.2	0.89
2021	87.21	97.85	109.60	112.2	0.80
2022	102.46	105.67	109.00	103.1	0.94
2023	69.99	88.92	106.40	127.1	0.66

Source: Eurostat, Economic Accounts for Agriculture (aact_eaa05).

[1] Author's calculations.

In 2023, the dramatic 16% decline in gross output compared to 2022 was likely due to the following:

1. Extreme weather events (such as storm Daniel in September 2023).
2. Market instability (e.g., reduced exports, downward price pressure).
3. Reduction in cultivated land, due to high costs or land abandonment.

The collapse in productivity in 2023 (0.66) marks the worst performance of the five-year period, showing that each unit of cost produced much less product value. Moreover, the share of intermediate consumption in gross output is a critical indicator of the sector's sustainability. The year 2019 represented a relatively balanced situation, with a ratio of 100.7%, suggesting a more sustainable relationship between cost and output.

In 2021, for every €1 of agricultural output produced, €1.12 was spent on inputs (fertilizers, fuel, seeds, pesticides, etc.), meaning production costs exceeded revenue. Agriculture operated at the margin or at a loss, a situation explained by the low GVA (87.21) combined with almost unchanged intermediate consumption (109.60) and a surge in input prices post-pandemic. A similar situation occurred in 2023, where production efficiency collapsed: for every €1 produced, €1.27 was consumed in inputs. The years 2021—and especially 2023—demonstrate that without control over input costs and protection from natural risks, agriculture becomes insecure and unsustainable.

Overall, the table reflects a deterioration in the physical productive efficiency of the agricultural sector, as input volumes increased without a parallel rise in output. This situation is not due solely to rising production costs (e.g., fertilizers, energy), but also to broader external pressures: geopolitical crises, market disruptions, extreme weather events, and economic instability. All these factors affect both farmers' capacity to produce and the marketability or pricing of their products.

Maintaining agriculture at a sustainable level critically depends on mitigating these pressures and strengthening two fundamental pillars:

- **Resilience**: the capacity of agricultural holdings to withstand shocks and adapt or recover rapidly.
- **Efficiency**: the ability to generate greater value from fewer inputs and lower costs.

In conclusion, the table highlights the urgent need for targeted policy interventions, investments in infrastructure and know-how, and the development of a more flexible and resilient production model to enhance the long-term sustainability of the agricultural sector in Greece.

4.2.7. Evolution of the agricultural workforce and farm income

Table 4.2.6 presents the evolution of the agricultural labor force in Greece over the period 2015–2023, showing index values for total employment, self-employed

TABLE 4.2.6 Agricultural workforce

	Total employment	Self-employed	Salaried employees
2015	100.00	100.00	100.00
2016	98.95	97.73	105.34
2017	92.52	91.13	99.82
2018	86.52	84.98	94.59
2019	80.90	79.24	89.63
2020	75.66	73.89	84.93
2021	73.82	72.03	83.24
2022	72.03	70.22	81.58
2023	70.29	68.45	79.96

Source: Eurostat, Agricultural Labor input statistics: Indices (aact_ali).

workers, and salaried employees, using 2015 as the base year. The table reveals a consistently declining trend in agricultural employment throughout the observed period. By 2023, total agricultural employment had decreased by nearly 30% compared to 2015, with the decline being both steady and uninterrupted.

The five-year period 2019–2023 is marked by a continuous downward trajectory in employment across both self-employed and wage-earning agricultural workers. Total agricultural employment declined by approximately 13% between 2019 and 2023. The reduction is more pronounced among the self-employed, a pattern that confirms the ongoing exit of small-scale farmers, the sector's inability to renew its human capital, and the ageing of the rural population. Meanwhile, salaried workers decreased at a slower pace, which may indicate a gradual consolidation of production into larger, more professionalized agricultural units, where the demand for specialized labor remains.

This trend did not reverse even during periods of external crises (such as the COVID-19 pandemic or extreme weather events like Ianos and Daniel), suggesting that the shrinkage of the agricultural workforce is structural rather than temporary.

This development undermines the viability of agriculture, the renewal of the sector, and the capacity to sustain domestic production. A targeted policy is needed to attract new farmers, strengthen agricultural education, and support employment in the primary sector under attractive conditions.

The Agricultural Income Indicator A will be used to assess the evolution of real agricultural income per labor unit over the period 2019–2023. Indicator A (also referred to as *"Agricultural income per Annual Work Unit – Indicator A"*) is a key metric used by Eurostat and the European Commission to monitor changes in agricultural income. It does not represent absolute income but is useful for comparing countries, evaluating the effectiveness of the Common Agricultural Policy (CAP), and tracking the sustainability of the farming profession.

Through the analysis of Indicator A, the extent to which farmers experience improvements or deteriorations in their economic conditions is examined, taking into account changes in the productive and policy framework, as well as the effects of external crises (such as the COVID-19 pandemic, natural disasters, and rising production costs).

Between 2015 and 2019, the agricultural income index increased by approximately 23.4% (Table 4.2.7). Following a drop in 2016, a steady recovery is observed, peaking in 2019. This period reflects increasing labor productivity in a context free of major external shocks.

The period 2019–2023 is marked by volatility and uncertainty. In 2020, the index reached a peak despite the damage caused by storm Ianos. The increase may be linked to lower costs due to crop losses and the provision of subsidies or compensation. The year 2022 marks the highest point in the series, despite high input costs (as shown in Table 4.2.5), likely due to favorable output prices. In 2023, agricultural income declined, mainly due to the sharp drop in production value caused by storm Daniel, rather than further cost increases, as input costs had already peaked in 2022 and slightly declined in 2023.

The sharp decline in agricultural income in 2023 highlights the low resilience of the primary sector, as the previous upward trend was not based on sustainable improvements in productivity or efficiency but rather on temporary factors. As shown in Table 4.2.5, productivity dropped significantly in 2023, while intermediate consumption remained high, indicating increased production costs without a corresponding rise in net value. Meanwhile, Table 4.2.6 reveals a steady and substantial decline in the agricultural labor force, which may partly explain the earlier rise in income per work unit, but also signals a weakening of the sector's productive base.

TABLE 4.2.7 Evolution of agricultural income (2015=100)

	Agricultural income per annual work unit (Indicator A)
2015	100.00
2016	88.94
2017	105.42
2018	107.22
2019	123.41
2020	132.00
2021	128.65
2022	142.78
2023	130.93

Source: Eurostat, Economic Accounts for Agriculture, Agricultural Income Indicators.

Overall, this situation underscores the need for targeted structural interventions aimed at enhancing the productivity, sustainability, and resilience of agricultural income in the face of future disruptions.

4.2.8. Main conclusions of the economic analysis

Greek agriculture continues to be a crucial pillar for the country's economic, social, and environmental balance. While its contribution to GDP remains limited, its role extends well beyond its narrow productive dimension: it ensures food security, helps maintain rural populations, supports exports, and plays a decisive role in natural resource management.

The period 2019–2023 proved decisive for the sector, revealing both its vulnerabilities and its limits in resilience. The COVID-19 pandemic (2020–2021), the energy crisis and inflation (2021–2022), the war in Ukraine (2022–2023), and severe climate events, including storm Ianos (2020) and storm Daniel (2023), were major external shocks that profoundly impacted agricultural production, cost structures, and producer confidence. Damage to farmland, irrigation systems, and livestock—especially in the plains of Thessaly—undermined not only the economic performance of farms but also their long-term viability.

The year 2020 was paradoxical: agriculture operated almost uninterrupted during the pandemic, yet Ianos caused significant damage to crop and infrastructure in critical agricultural areas such as Karditsa and Farsala. The year 2021 was marked by a sharp increase in production costs due to rising input prices and energy instability. The year 2022 saw high agricultural income, mainly due to global food price increases, but this rise was purely conjunctural and not the result of improved efficiency or productive capacity. Finally, 2023 was a turning point: storm Daniel devastated the Thessaly region, causing an unprecedented drop in production, leaving the sector with reduced output value, high costs, and historically low productivity.

Notably, although agricultural income per work unit increased over the five-year period, this change was not linked to structural progress. Instead, it reflects the gradual decline in agricultural employment and price increases for certain products, without substantial technological or organizational upgrading of farms. The input-to-output ratio worsened, while dependence on expensive imported inputs became even more pronounced.

The experience of 2019–2023 confirms that the sustainability of Greek agriculture cannot rely on temporary conditions or *ad hoc* support measures. A targeted reconstruction strategy is needed, focused on three key pillars:

1. Upgrading the productive base, through investments in agricultural technology, smart farming, and resource-efficient infrastructure (energy, water).
2. Strengthening the human dimension, via policies to renew the farming population, support employment, and create incentives for return and retention in rural areas.
3. Economic diversification of farm operations, with incentives for vertical integration, processing, agrotourism, and participation in high-value markets (e.g., PDO/PGI products, organics).

Only through targeted and spatially differentiated interventions can the sector's resilience be restored, agricultural income strengthened, and agriculture's contribution to regional development and national food security ensured.

KEPE, *Greek Economic Outlook,* issue 57, 2025, pp. 77-81

4.3. External trade of agri-food products

Athanasios Chymis

4.3.1. Greece's overall external trade

The main characteristic of Greece's total external trade in 2024 is that it continues to have a large deficit. Table 4.3.1, which presents the general picture of foreign trade, shows that the already large deficit in the trade balance widened by about 10% (9.76%), which in absolute numbers reached €35 billion (€34.91 billion). Specifically, while total imports increased by 2.54% and reached €84.85 billion, total exports decreased by 1.97% and fell below €50 billion (€49.94).

As usual, the oil trade is shown separately because it distorts the overall picture due to its size. Thus, non-petroleum imports increased by 5.39% and reached €63.22 billion, while the corresponding exports recorded a slight increase of 1.63% and reached €35.03 billion. This implies an increase in the deficit of 10.47% to €28.19 billion.

Trade in agricultural products and food (agri-food products) increased in imports by 7.76% to €11.20 billion and exports by 3.95% to €11.28 billion. This development results in a significant reduction in the surplus from €460 million in 2023 to just €80 million in 2024. Despite this outcome, agri-food products have the largest percentage increase in exports among total trade categories, a development that has been quite common since the beginning of the economic crisis back in 2009. This is also the reason why the agri-food trade has eliminated the deficit of €3 billion (in 2008) and turned it to a surplus in 2020.

Table 4.3.1 also illustrates the trade other than oil products and agri-food, i.e., all other industrial/technological products. The weakness of the Greek economy in industrial products is clearly visible since imports ran at a rate of 4.90% and exports at only 0.57%. Moreover, the imports of industrial products (€52.02 billion) are more than double the exports (€23.75 billion), and the corresponding deficit (€28.27 billion) is also greater than the exports of these products.

This image of trade is not auspicious for the future of the Greek economy, which shows that despite the great crisis it has gone through, it remains structurally unchanged. The Greek economy has not undertaken those major reforms needed to attract productive (greenfield) foreign direct investments, which are the ones that will effectively shield it from future crises (Harms & Méon, 2018). Moreover, it is this kind of foreign direct investment that can give the necessary impetus to domestic production and thus exports, particularly of innovative industrial and high-tech products.

4.3.2. Agrifood products trade

It is true that the agri-food products trade has had a positive evolution throughout the period from 2009 onwards, i.e., since the beginning of the economic crisis. As noted above, the deficit peaked at €3 billion in 2008 and turned into a surplus for the first time in 2020, after 36 years. Moreover, the Greek agri-food sector has managed, with difficulty so far, to keep this surplus, except in 2022. However, this year's trend, if maintained, can quickly wipe out the surplus and turn it into a deficit again.

Specifically, in 2024, the surplus shrank by 81.73%, and it is difficult to predict whether it will exist in 2025. Agri-food imports grew at a rate of 7.76% and came quite close to exports, which grew by only 3.95%. During the period 2020-2024, the average annual rate of change of imports (13.9%) exceeded that of exports (12.0%); if maintained as a trend, it is only a matter of time before the surplus turns into a deficit again.

Tables 4.3.2 and 4.3.3 present the evolution of imports and exports, respectively, of the main categories of agri-food products. In Table 4.3.2, the year 2010 is also listed indicatively as the year with relatively low imports due to the entry of the Greek economy into the financial crisis. Accordingly, in Table 4.3.3, 2009 is listed as the year with the lowest exports. In this way, the table eloquently illustrates the growth dynamic of exports, which, since 2009, have turned the significant deficit of €3 billion into a surplus in 2020. The resilience of the agri-food sector during the economic crisis as well as during the pandemic have been analyzed in previous articles of this column.

In general, it is observed that the ranking of the various product categories remains generally stable. Meat

TABLE 4.3.1 Total trade of goods and agri-food products (in billion €)

	2020	2021	2022	2023	2024	% change 2022-2023	% annual rate 2020-2024
				Imports			
Total imports	48.69	64.24	93.05	82.75	84.85	2.54	14.9
Petroleum products imports	9.71	16.96	32.47	22.76	21.63	-4.99	22.2
Total imports (except petr.pr)	38.99	47.28	60.58	59.98	63.22	5.39	12.8
Agri-food products	**6.65**	**7.86**	**10.20**	**10.39**	**11.20**	**7.76**	**13.9**
Imports except agri-food pr.	32.34	39.42	50.38	49.59	52.02	4.90	12.6
Agri-food %	*17.1*	*16.6*	*16.8*	*17.3*	*17.7*		
				Exports			
Total exports	30.74	39.95	54.68	50.94	49.94	-1.97	12.9
Petroleum products exports	6.73	11.27	20.11	16.48	14.91	-9.51	22.0
Total exports (except petr.pr)	24.01	28.69	34.57	34.47	35.03	1.63	9.9
Agri-food products	**7.18**	**8.35**	**9.91**	**10.85**	**11.28**	**3.95**	**12.0**
Exports except agri-food pr.	16.83	20.34	24.66	23.61	23.75	0.57	9.0
Agri-food %	*29.9*	*29.1*	*28.7*	*31.5*	*32.2*		
				Trade balance			
Total balance	-17.96	-24.29	-38.37	-31.80	-34.91	9.76	18.1
Excluding petroleum products	-14.98	-18.59	-26.01	-25.52	-28.19	10.47	17.1
Agri-food	**0.52**	**0.49**	**-0.30**	**0.46**	**0.08**	**-81.73**	**-36.7**
Excluding agri-food prod.	-15.50	-19.08	-25.72	-25.98	-28.27	8.83	16.2

Source: Hellenic Statistical Authority (ELSTAT), own calculations.

consistently occupies the first place, which is expected because the Greek economy has a very low degree of self-sufficiency in meat products. Dairy is almost always in second place, but there is a noticeable difference between it and meat products. Due to the increased production of feta cheese in Greece, dairy exports are equally important, and there is often a surplus in this category, unlike meat products, whose exports are very small compared to imports.

Fruit and vegetables are by far the leading category of agri-food exports. In 2024, 31.7% of agri-food exports were fruits and vegetables, a percentage that is remarkably stable throughout time (it was 31.6% in 2009). However, imports are also important since they are consistently in third place in terms of imports, covering approximately 12% of total agri-food imports.

Cereals, coffee/tea, and animal feed categories have significant imports, and only cereals have equally significant exports. It is expected that an economy like Greece, which does not produce coffee, would not have significant coffee exports, but such low exports of animal feed are hardly expected. When adding up the imports of meat products, dairy products, animal feed as well as oil seeds, which, for the most part, are used for livestock consumption, they reach 40% of total agri-food imports. This means that the Greek economy is spending around €4.5 billion on products that it could produce itself in the largely abandoned countryside.

TABLE 4.3.2 Imports of agri-food products categories in million € (M €)

	2010		2020		2021		2022		2023		2024	
	M €	%	M €	%	M €	%	M €	%	M €	%	M €	%
Meat products[a]	1,160	18.4	1,132	17.0	1,218	15.5	1,582	15.5	1,762	17.0	1,886	16.8
Dairy	770	12.2	819	12.3	934	11.9	1,297	12.7	1,233	11.9	1,414	12.6
Fruit-Vegetables	672	10.7	817	12.3	898	11.4	1,061	10.4	1,184	11.4	1,331	11.9
Cereals	541	8.6	664	10.0	831	10.6	1,081	10.6	979	9.4	992	8.9
Coffee, tea, etc.	376	6.0	436	6.6	502	6.4	617	6.0	683	6.6	864	7.7
Feeding stuff	371	5.9	548	8.2	659	8.4	811	7.9	810	7.8	833	7.4
Fish	384	6.1	423	6.4	544	6.9	706	6.9	684	6.6	766	6.8
Various foodstuff	356	5.7	376	5.7	423	5.4	503	4.9	502	4.8	544	4.9
Tobacco	310	4.9	286	4.3	340	4.3	398	3.9	458	4.4	504	4.5
Beverages	370	5.9	235	3.5	324	4.1	445	4.4	493	4.7	503	4.5
Oils and fats	232	3.7	224	3.4	367	4.7	568	5.6	488	4.7	459	4.1
Oil seeds	173	2.7	186	2.8	220	2.8	302	3.0	305	2.9	360	3.2
Sugars	220	3.5	209	3.1	225	2.9	360	3.5	378	3.6	317	2.8
Raw materials	111	1.8	134	2.0	167	2.1	182	1.8	188	1.8	213	1.9
Wood	148	2.3	132	2.0	157	2.0	221	2.2	196	1.9	173	1.5
Hides-skins	76	1.2	14	0.2	18	0.2	30	0.3	18	0.2	13	0.1
Total	**6,299**[b]		**6,653**		**7,855**		**10,204**		**10,390**		**11,197**	

Source: Hellenic Statistical Authority (ELSTAT), own calculations.

[a] Includes live animals and meat products.

[b] The sum of values for each product may not equal to 'Total' because some categories with insignificant values such as cotton, natural rubber, other natural textile fibers, wool and jute are not included.

TABLE 4.3.3 Exports of agri-food products categories in million € (M €)

	2009		2020		2021		2022		2023		2024	
	M €	%	M €	%	M €	%	M €	%	M €	%	M €	%
Fruit-Vegetables	1,264	31.6	2,425	33.8	2,514	30.1	2,868	28.9	3,226	29.7	3,575	31.7
Dairy	278	7.0	805	11.2	920	11.0	1,117	11.3	1,347	12.4	1,469	13.0
Oils and fats	283	7.1	570	7.9	745	8.9	1,047	10.6	1,437	13.2	1,097	9.7
Tobacco	421	10.5	550	7.7	629	7.5	798	8.1	929	8.6	1,019	9.0
Fish	477	11.9	728	10.1	807	9.7	940	9.5	956	8.8	1,011	9.0
Cereals	339	8.5	467	6.5	611	7.3	777	7.8	822	7.6	906	8.0
Cotton	305	7.6	397	5.5	685	8.2	638	6.4	420	3.9	431	3.8
Various foodstuff	128	3.2	376	5.2	400	4.8	470	4.7	451	4.2	419	3.7
Beverages	169	4.2	235	3.3	281	3.4	337	3.4	339	3.1	356	3.2
Meat products[a]	70	1.8	138	1.9	189	2.3	241	2.4	237	2.2	276	2.4
Feeding stuff	44	1.1	120	1.7	135	1.6	185	1.9	213	2.0	220	2.0
Coffee, tea, etc.	31	0.8	86	1.2	100	1.2	102	1.0	115	1.1	138	1.2
Sugars	86	2.2	75	1.0	90	1.1	107	1.1	106	1.0	114	1.0
Oil seeds	59	1.5	101	1.4	97	1.2	137	1.4	114	1.1	111	1.0
Raw materials	18	0.5	58	0.8	70	0.8	72	0.7	72	0.7	76	0.7
Hides-skins	18	0.5	30	0.4	57	0.7	55	0.6	49	0.5	48	0.4
Wood	7	0.2	12	0.2	14	0.2	15	0.2	16	0.1	15	0.1
Total	**3,998**[b]		**7,177**		**8,347**		**9,909**		**10,852**		**11,281**	

Source: Hellenic Statistical Authority (ELSTAT), own calculations.

[a] Includes live animals and meat products.

[b] The sum of values for each product may not equal to 'Total' because some categories with insignificant values such as wool, natural rubber, other natural textile fibers and jute are not included.

Oils and fats, tobacco, and fish are three important categories for exports. Fish production, despite the crisis in the fish farming sector, seems to be managing to maintain a trade surplus. Such a surplus should not only be maintained but also increased given the potential of an economy surrounded by sea and abundant areas suitable for fish farming. Tobacco, a traditional product, continues to keep its trade balance in surplus, which is positive. Oils–essentially olive oil, the most characteristic product of the Greek agricultural sector–have indeed a strong surplus.

However, the amount of the surplus depends on a) global production, which determines the prices, and b) the weakness of domestic production to increase the value added through the manufacturing process of standardization, bottling and marketing. Therefore, any increase in the value of exports are mainly the result of rising prices from exogenous factors and not from a domestic increase in the value added of the exported product.

4.3.3. Concluding remarks

It is interesting to note that crises (economic, pandemic) highlight the potential of the agri-food sector. During the 10-year economic crisis, the agri-food sector significantly reduced the trade deficit, while during the pandemic, in 2020, the sector achieved a surplus for the first time in 36 years.

The Greek economy (and not only) has the characteristic that in times of crises, it reduces the trade deficit, which, however, increases again rapidly in times of growth. This is logical since in times of crises, the world limits its demand, while in times of growth, it increases it. The problem with the Greek economy, however, is a structural one. Specifically, it has not yet reformed its production model so that the economy significantly increases not only its imports but also its exports when it grows. Consequently, in times of economic growth, the Greek economy faces a rapid widening of the trade deficit which, ultimately, undermines its future growth potential.

The agri-food sector has managed to maintain a surplus, although last year it almost disappeared. It will be interesting to see what happens this year and in the years to come: whether the surplus persists, even if only in years when the prices of certain products are favorable (e.g., a sharp rise in the price of olive oil or cotton), or whether the agri-food sector returns to a trade deficit.

Reference

Harms, P. & Méon, P. G. (2018). Good and useless FDI: The growth effects of greenfield investment and mergers and acquisitions. *Review of International Economics*, *26*(1), 37-59.

KEPE, *Greek Economic Outlook,* issue 57, 2025, pp. 82-91

4.4. GDP income approach: The case of Greece

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Christos Chrysanthakopoulos

4.4.1. Introduction

The Greek economy continues to exhibit a resilient recovery, with the growth rate of real Gross Domestic Product (GDP) consistently exceeding the average of both the European Union and the Eurozone since the outbreak of the COVID-19 pandemic in 2020.[1] This trend indicates a transition towards a phase of structural economic reconstruction. This outcome is attributable not only to the strengthening of domestic demand and investment, but also to the sustained implementation of strict fiscal discipline, as reflected in the achievement of substantial primary surpluses. At the same time, the unemployment rate has declined substantially, reaching 9% in March 2025 (a level comparable to that of January 2009), further supporting indications of the formation of conditions conducive to a sustainable recovery in the domestic labor market. These developments have unfolded despite the ongoing global disruptions, including enduring and escalating geopolitical tensions in the broader region and the revival of trade frictions, highlighted by the reimplementation of protectionist policies following the re-election of US President Donald Trump (such as tariffs that had been preannounced during his election campaign).

In this context, the analysis of GDP through the lens of the income approach could gain particular significance. Such an approach considers GDP as the sum of the main income components generated within the economy: compensation of employees (i.e., wages and salaries, and employers' social contributions), gross operating surplus and mixed income (i.e., profits of corporations and self-employed individuals), and taxes on production and imports less subsidies. This perspective enables the assessment of how well the wealth generated in the economy is distributed among the factors of production (labor and capital) and allows for the exploration of trends related to inequality, the sustainability of growth, and social cohesion. Overall, the income approach of GDP serves as a vital instrument for assessing the qualitative aspects of economic development, especially in a context where macroeconomic stability coexists with rising social and geopolitical challenges.

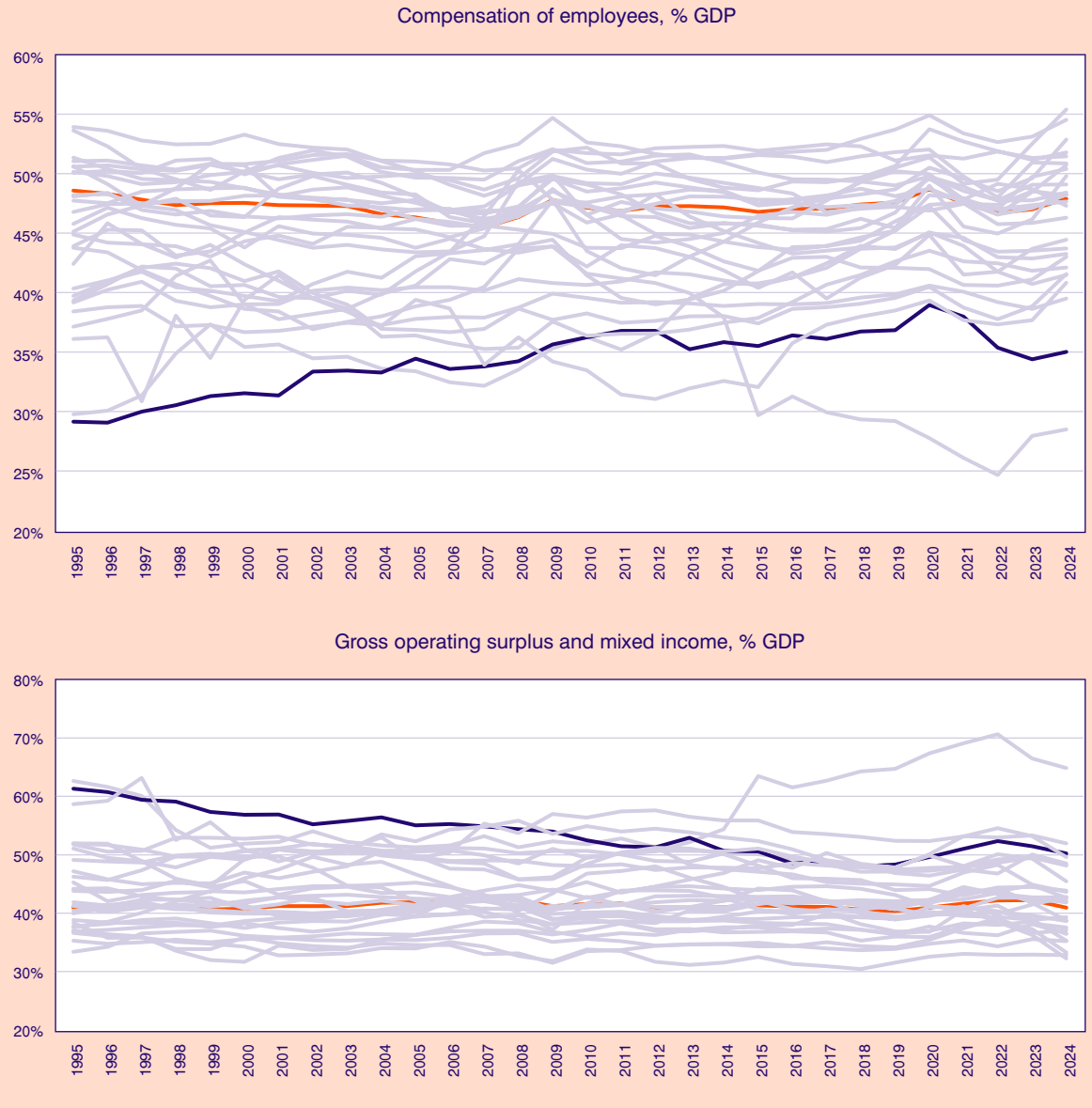
4.4.2. Share of compensation of employees and share of gross operating surplus and mixed income

Figure 4.4.1 presents the evolution of compensation of employees, as well as the gross operating surplus and mixed income, as a percentage of GDP for the EU27 member states (EU27) from 1995 to 2024. The blue line represents Greece, while the orange line corresponds to the EU27; all other lines depict the remaining EU27 countries. It is observed that the trajectory of compensation of employees in Greece, as a share of GDP (approximately 34%), has consistently lagged behind the European average (around 47%). Specifically, while the European average has remained relatively stable from 1995 to the present, Greece began at a much lower level (29.1% in 1995) and showed gradual improvement until 2011-2012, reaching 36.8%. However, this upward trend was interrupted by the outbreak of the economic crisis and the implementation of fiscal adjustment programs, which were accompanied by wage reductions and a weakening of employees' bargaining power. Following a peak of 39% in 2020, a renewed decline is observed, with the share of compensation of employees falling to 35% in 2024; a development that may be linked to the effects of the pandemic, inflationary pressures, and the structural characteristics of the labor market. This situation suggests that the Greek economy continues to face structural challenges in the distribution of generated wealth, with labor capturing a comparatively smaller share. This raises concerns regarding the sustainability of the growth model and highlights the need to strengthen workers' purchasing power through targeted policies that reinforce the role of labor and contribute to a more robust growth.

On the contrary, the gross operating surplus-to-GDP ratio represents the standardized-with-GDP surplus (or

1. In 2024, the growth rate of real GDP stood at 2.3% for Greece, compared to 1.0% for the EU27 and 0.9% for the Eurozone. *Source:* Eurostat, https://ec.europa.eu/eurostat/databrowser/view/nama_10_gdp__custom_16617288/default/table?lang=en.

FIGURE 4.4.1
Compensation of employees and net operating surplus as a percentage of GDP



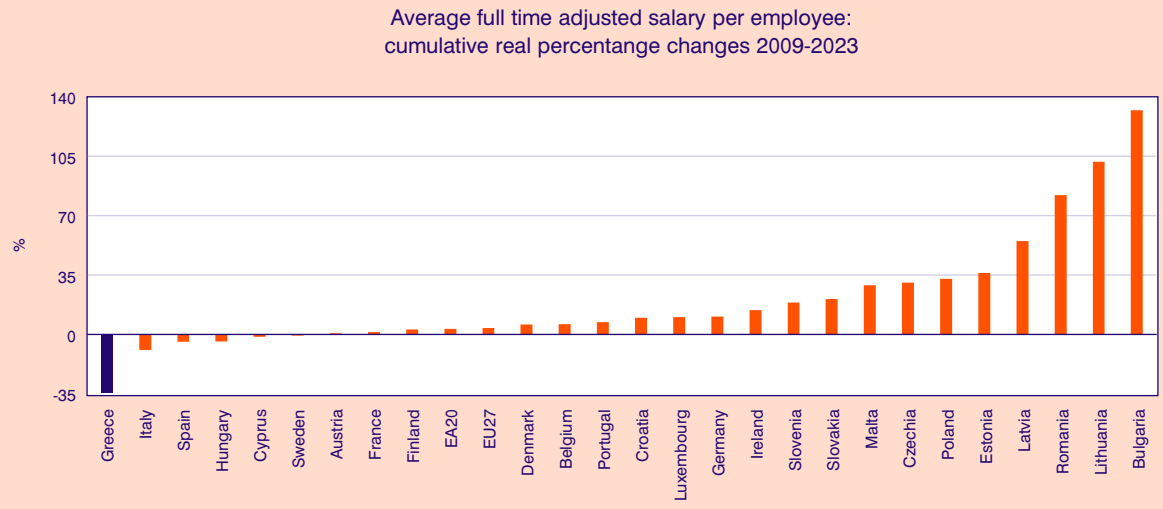
Source: Eurostat. Authors' calculations.

deficit) on the value of output of production activities [1] after the costs of intermediate consumption, compensation of employees and taxes less subsidies on production have been deducted, but [2] before payments and receipts of income related to the borrowing/renting or owning of financial and non-produced assets have been taken into account.[2]

Greece started from a particularly high level of gross operating surplus and mixed income (61.3%) in 1995, and although it experienced a downward trend until approximately 2016 (48.5%), it has consistently remained significantly above the European average, which has remained stable around 41.5%. Over the last four years (2021-2024), this indicator for Greece

2. See European Central Bank (2010), https://www.ecb.europa.eu/pub/pdf/annrep/ar2010en.pdf.

FIGURE 4.4.2
Cumulative real percentage changes in the average annual gross wage per employee, adjusted for full-time employment, 2009-2023



Source: Eurostat. Authors' calculations.

has shown a renewed upward trend, exceeding 50% of GDP. The persistently high level of operating surplus (an average of nearly 54%) suggests that most of the economic value generated in Greece is directed toward the capital factor of production. This could be attributed to the overall market structure of the Greek economy, low wage levels, or the large number of self-employed individuals, raising concerns about the equitable distribution of wealth and the sustainability of the country's growth model. Furthermore, the post-pandemic recovery appears to have further enhanced the profitability of businesses and banks (see e.g., *bankflation*, *greedflation*, and *shrinkflation*).

Regarding the third component of GDP according to the income approach, i.e., taxes on production and imports less subsidies, it represents the smallest share compared to the other two components. More specifically, it has historically hovered around 11.5% for the EU27 and approximately 12% for Greece.

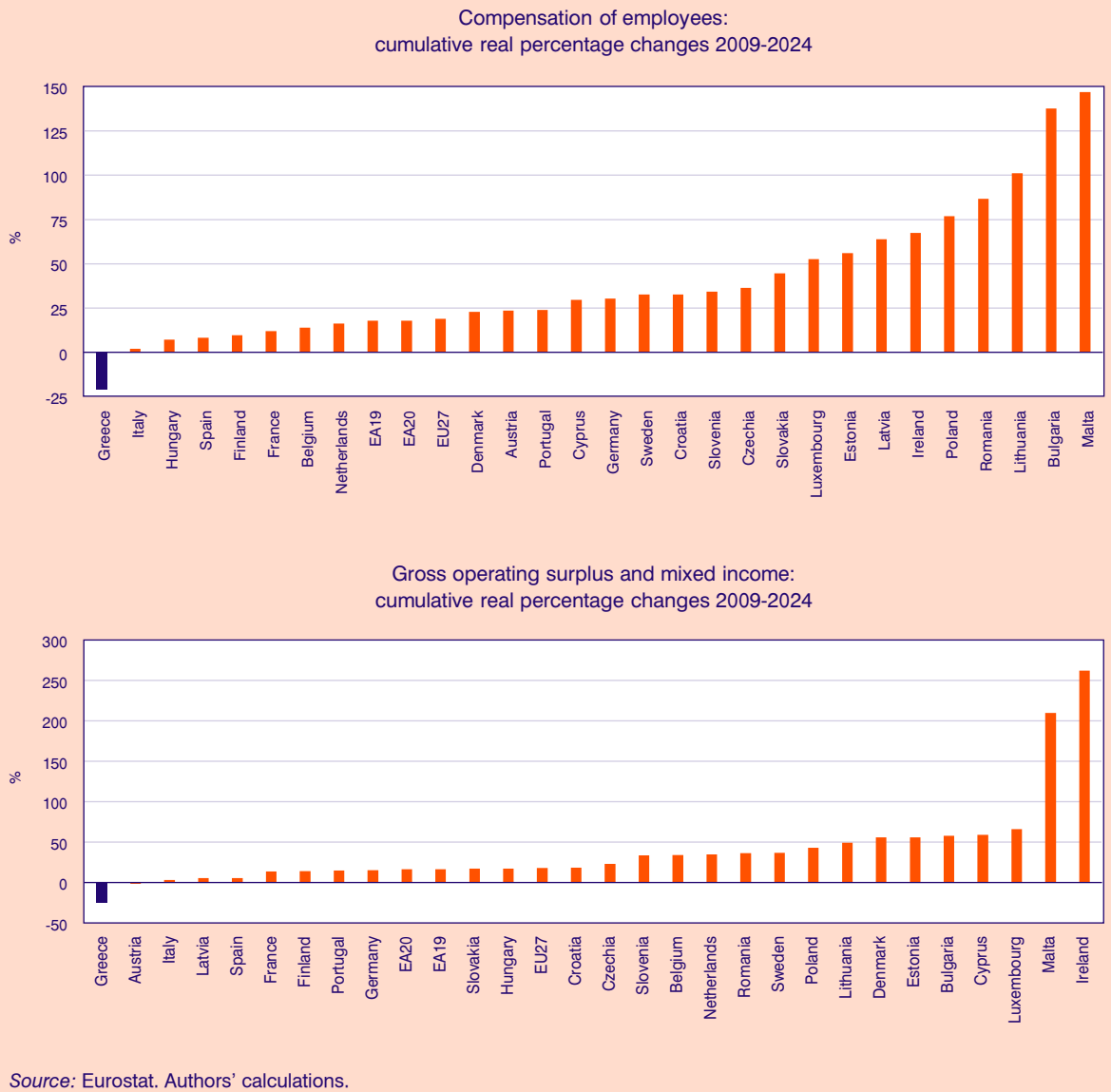
As previously discussed, the data on compensation of employees is further supported by Figure 4.4.2, which presents the cumulative real changes in the average annual gross wages (adjusted for full-time employment per employee) over the period from 2009 to 2023, which is the most recent year available. Greece ranks last among the EU27 countries, recording the largest negative change in real terms (-34.3%), highlighting the country's long-term wage stagnation in comparison to the rest of Europe. Italy and Spain follow, recording real wage changes of -9.2% and -4.2%, respectively. On the contrary, Bulgaria (132%), Lithuania (102%), and Romania (82%) exhibit the highest increases, reflecting an ongoing process of wage convergence toward the European average.

This highlights the significant pressure on the purchasing power of workers in Greece, as well as the structural nature of wage stagnation, which persists even during periods of economic recovery. The recent surge in inflation, particularly from 2021 onwards, has further exacerbated this situation, as rising prices have not been adequately matched by corresponding wage adjustments, thereby intensifying the decline in real wages.

4.4.3. Cumulative real percentage changes in compensation of employees and in gross operating surplus and mixed income for the period 2009-2024

Turning our interest to the cumulative real percentage change in compensation of employees over the period 2009-2024 (see Figure 4.4.3), a first observation is that most EU27 member states exhibit a total increase exceeding 20%. In addition, a smaller group of countries falls within a range of positive values up to 20%, whilst Greece stands out as the only EU27 country with a negative change, nearly -21%. The countries with the highest increases in compensation of employees are

FIGURE 4.4.3
Cumulative real percentage changes in compensation of employees, and in gross operating surplus and mixed income, 2009-2024



Source: Eurostat. Authors' calculations.

Malta (147%), Bulgaria (138%), Lithuania (102%), and Romania (87%). On the contrary, alongside Greece, the countries with the lowest increases are Spain (8.3%), Hungary (7.2%), and Italy (2%). For the EU27 and the Eurozone, the corresponding cumulative real changes are 18.9% and 17.9%, respectively.

As regards the cumulative real changes in gross operating surplus and mixed income for the period 2009-2024 (see Figure 4.4.3), Ireland stands out with a remarkable increase of 262%, followed by Malta with 210%. Luxembourg follows with 66%, Cyprus with 59%, Bulgaria with 58%, Estonia and Denmark with 56%, and Lithuania with 49%. At the lower end of the ranking are Austria (-1.6%) and Greece (-25%), while Latvia (5.1%) and Spain (5.3%) are marginally higher. The EU27 and the Eurozone record cumulative changes of 17.7% and 16.3%, respectively.

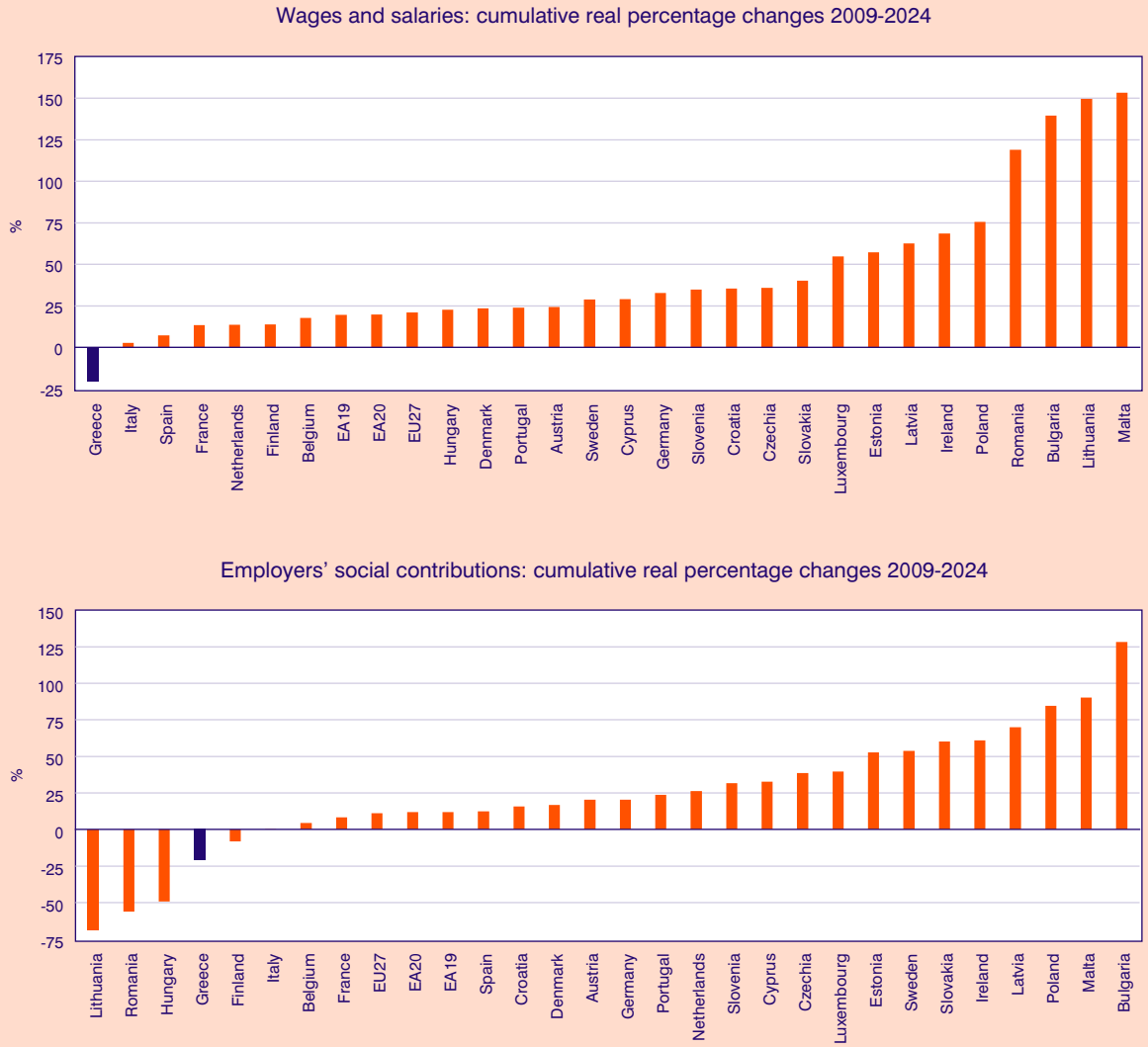
Focusing on the two components of compensation of employees (see Figure 4.4.4), i.e., wages and salaries, and employers' social contributions, the following observations can be made. Regarding wages and salaries, Malta (153%), Lithuania (150%), Bulgaria (140%), and Romania (119%) occupy the leading positions. At the lower end of the wages-salaries spectrum are

Greece (-20.8%), Italy (2.6%), and Spain (7.2%). This pattern closely mirrors the overall compensation of employees. For the EU27 and the Eurozone, the corresponding figures are 21.1% and 19.7%, respectively.

Regarding the employers' social contributions, however, notable differences emerge compared to wages and salaries. More specifically, Lithuania ranks last with a real change of -69%, followed by Romania (-56%), Hungary (-49%), Greece (-20.9%), Finland (-8.1%), and Italy (0.4%). At the opposite end, Bulgaria holds the highest increase at 128%, followed by Malta (90%), Poland (85%), and Latvia (70%). For the EU27 and the Eurozone, the respective figures are 11.2% and 11.9%.

Combining the above-mentioned results on "wages and salaries" and "employers' social contributions" with those on "compensation of employees" and "average annual gross wages adjusted for full-time employment per employee" reveals several significant findings. Among the countries at the forefront of compensation of employees increases (Malta, Bulgaria, Lithuania, Romania, Poland, and Ireland), it is noteworthy that Ireland, Malta, Bulgaria, and Poland manage to achieve high cumulative real percentage changes

FIGURE 4.4.4
Cumulative real percentage changes in wages and salaries, and employers' social contributions, 2009-2024



Source: Eurostat. Authors' calculations.

across all four categories during the period 2009-2024. Bulgaria records triple-digit increases in all four categories mentioned, while Malta achieves this in all categories except the category of average wages adjusted for full time per employee with a 2-digit increase. In addition, another remarkable finding pertains to Latvia and Estonia. These countries report, respectively, real increases of 64% and 56% in compensation of employees, 63% and 57% in wages, 70% and 53% in employer social contributions, while in the category of average wages adjusted for full-time employment per employee, Latvia records a 55% increase and Estonia 36%.

On the contrary, Lithuania and Romania appear to have achieved significant cumulative real increases in both wages and salaries and average wages adjusted for full time per employee, while simultaneously experiencing a substantial decline in employers' social contributions in real terms. Nonetheless, this decline has not hindered their accelerated convergence toward the European average in terms of purchasing power. Hungary has also recorded a similarly high negative cumulative real change in employers' social contributions (-49%), but its cumulative wage increase (23%) in real terms was considerably lower compared to Romania and Lithuania. The corresponding figures for average wages adjusted for full-time employment per employee are -4.1% for Hungary, 82% for Romania, and 102% for Lithuania.

Last but not least, regarding Greece, it is the only country within both the Eurozone and the EU27 that exhibits [1] a persistent divergence from the European average, in terms of purchasing power, with respect to average wages adjusted for full-time employment per employee, and [2] a negative cumulative real percentage change across all four aforementioned categories: nearly -21% in compensation of employees, wages and salaries, and employers' social contributions, and -34.3% in average wages adjusted for full time per employee.

Overall, it could be argued that, in terms of the broader wage setup (i.e., compensation of employees, wages and salaries, employers' social contributions, and average wages adjusted for full-time employment per employee), both in real terms and in terms of purchasing power, a deteriorating trend has been recorded for the average Greek employee compared to 2009. Conversely, an improving trend has been observed, especially for the average Bulgarian, Lithuanian, Romanian, and Polish employee over the same period.

4.4.4. Cumulative percentage changes in compensation of employees by branch of economic activity in Greece

Figure 4.4.5 presents the cumulative percentage changes in compensation of employees by sector of economic activity in Greece from 2009 to 2024, both in nominal and real terms. The largest real declines are observed in the Financial and insurance activities sector (-50.8%) and the Construction sector (-49.5%), reflecting the impact of the financial crisis and internal devaluation on the sectors most affected by the contraction of investments and reduced demand. Following these are the Arts, entertainment, and recreation sector (-31.9%) and the Public administration and defense sector, which records a decrease of 29.9%. This decline is probably linked to the austerity measures implemented during the crisis period, particularly the abolition of the 13th and 14th salaries in the public sector, as well as the freezing of wage increases. In addition, the Secondary sector experienced a decrease of 19.7% in real terms, whereas Wholesale and retail trade showed a comparatively smaller real decline of approximately 5%. Conversely, notable real-term increases were recorded in the Real estate activities sector (47.9%) and the Primary sector (39.8%), followed by Professional, scientific, and technical activities (27.9%) and the Information and communication sector (9.5%).

The disparity between nominal and real changes highlights the corrosive effect of (positive) inflation, which effectively diminishes and absorbs nominal increases in several sectors. Overall, Figure 4.4.5 shows a markedly uneven recovery, with some sectors remaining stagnant or even deteriorating in real terms, whilst others record impressive real-term gains. Such a situation raises important questions regarding the structure and priorities of the Greek economy's growth model.

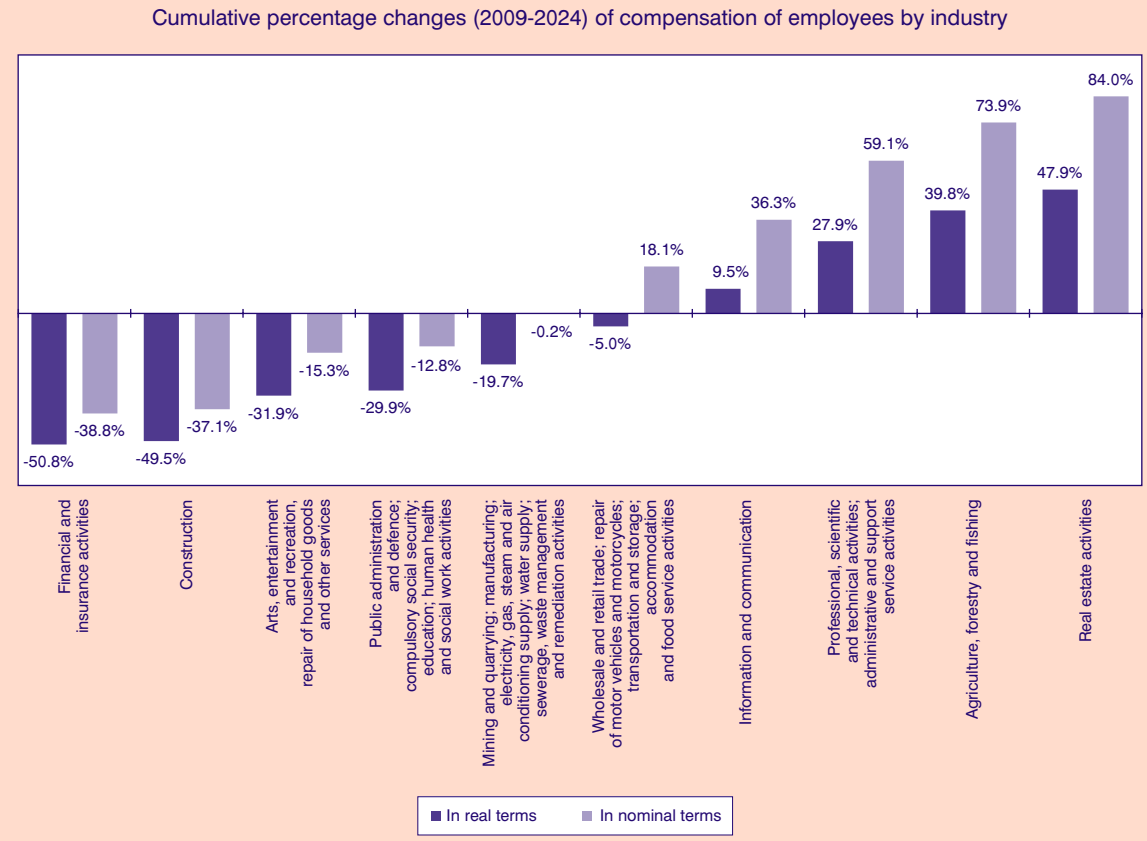
4.4.5. GDP and geopolitical risk

Recent geopolitical developments across various fronts worldwide have heightened uncertainty and underscored the strategic importance of countries such as Greece. These developments have both direct and indirect effects on economic activity and market expectations.

Table 4.4.1 shows that Greece consistently exhibits one of the strongest positive correlations between geopolitical risk[3] and (leads of) GDP, particularly in the early years following the onset of such risk. This places

3. Caldara, D. & Iacoviello, M. (2022), Measuring Geopolitical Risk, *American Economic Review, 112*(4), 1194-1225.

FIGURE 4.4.5
Cumulative changes in compensation of employees by sector of economic activity, 2009-2024



Source: ELSTAT. Authors' calculations.

Greece in contrast to many EU27 and Eurozone countries, which display weaker or even negative correlations over the same periods. Compared to countries such as Germany, Estonia, Ireland, and Malta, where geopolitical risk is negatively correlated with economic activity during several periods, Greece stands out as significantly different, likely due to the unique linkage between the geopolitical environment with defense expenditures,[4] external support, and strategic investments.

The positive correlation observed between geopolitical risk and Greek GDP[5] can be explained by a series of specific factors. First, increased geopolitical risks are often accompanied by fiscal expansion through higher public expenditures, which typically boosts GDP in the short term (Blanchard & Perotti, 2002).[6] Second, the rise in military spending in Greece appears to contribute positively to economic growth in the short run, whilst having a negative impact over the long term (Tsitouras et al., 2024).[7]

4. It is worth noting that for the period 1995-2023, based on data from the World Bank, military expenditures as a percentage of GDP in Greece have hovered around 3%, exceeding the European average by approximately 150 basis points.

5. At this point, it should be noted that the positive correlation may reflect the role of geopolitical risk as a driving factor behind increased public spending, international support, and strategic importance, or it may simply represent a statistical correlation without any causality.

6. Blanchard, O. & Perotti, R. (2002), An empirical characterization of the dynamic effects of changes in government spending and taxes on output. *The Quarterly Journal of Economics, 117*(4), 1329-1368.

7. Tsitouras, A., Tsounis, N., & Papapanagos, H. (2024), Defense Spending and Economic Growth: An Empirical Investigation in the Case of Greece. In: Tsounis, N., Vlachvei, A. (eds), *Applied Economic Research and Trends*. ICOAE 2023. Springer Proceedings in Business and Economics. Springer, Cham, pp. 299-320.

TABLE 4.4.1 Correlation between global geopolitical risk at period t and nominal GDP, Y, at period t+h, where h = 0, 1,..., 9, 10

	Y t	Y t+1	Y t+2	Y t+3	Y t+4	Y t+5	Y t+6	Y t+7	Y t+8	Y t+9	Y t+10
EU27	24.2%	18.5%	13.7%	-2.2%	4.0%	10.9%	11.5%	9.6%	2.5%	0.1%	-6.9%
EA20	24.8%	19.4%	14.5%	-1.3%	4.5%	11.2%	11.6%	9.3%	2.2%	-0.8%	-7.8%
EA19	24.9%	19.4%	14.5%	-1.4%	4.5%	11.2%	11.5%	9.2%	2.1%	-0.8%	-7.7%
Belgium	22.8%	16.5%	10.9%	-4.9%	0.5%	7.0%	8.6%	8.1%	4.2%	3.0%	-2.3%
Bulgaria	21.6%	14.5%	9.9%	-7.8%	-0.5%	9.1%	13.1%	13.1%	7.1%	2.6%	-5.6%
Czechia	21.1%	16.3%	10.5%	-3.2%	5.2%	14.3%	16.6%	16.4%	7.5%	2.2%	-9.3%
Denmark	24.5%	15.6%	11.6%	-2.6%	2.9%	9.3%	9.1%	8.0%	0.2%	-1.6%	-6.7%
Germany	22.4%	15.1%	8.2%	-8.9%	-4.3%	1.9%	2.7%	2.1%	-1.4%	-0.3%	-3.2%
Estonia	21.1%	14.7%	10.5%	-2.8%	4.4%	10.5%	9.2%	4.2%	-3.1%	-4.2%	-7.2%
Ireland	29.0%	19.9%	13.9%	-1.9%	1.9%	4.5%	1.0%	-5.2%	-13.2%	-17.0%	-20.9%
Greece	23.8%	30.5%	37.1%	37.7%	50.8%	65.1%	65.0%	52.5%	22.8%	-12.5%	-43.9%
Spain	25.2%	24.0%	23.1%	10.5%	18.7%	26.5%	26.1%	20.9%	7.4%	-3.9%	-19.5%
France	22.8%	18.1%	13.9%	-0.8%	5.1%	11.6%	12.6%	11.3%	5.6%	4.5%	-1.0%
Croatia	24.1%	22.0%	19.9%	2.8%	11.1%	21.0%	23.0%	20.8%	8.3%	0.0%	-13.4%
Italy	29.4%	26.1%	21.7%	6.0%	12.0%	18.6%	17.9%	15.0%	6.2%	1.0%	-9.5%
Cyprus	24.2%	18.5%	15.6%	0.4%	8.8%	18.9%	22.1%	21.7%	12.7%	4.5%	-11.3%
Latvia	18.4%	13.8%	10.0%	-0.5%	10.9%	21.1%	20.6%	11.4%	-2.8%	-5.9%	-11.0%
Lithuania	22.8%	16.3%	11.4%	-5.2%	2.4%	10.7%	11.3%	8.2%	-0.7%	-2.1%	-7.1%
Luxembourg	19.2%	12.3%	7.9%	-6.6%	-0.8%	6.5%	8.7%	8.4%	3.5%	3.5%	-0.3%
Hungary	27.7%	26.7%	21.3%	3.8%	8.5%	11.9%	11.0%	6.0%	-4.9%	-7.4%	-16.0%
Malta	23.6%	15.8%	9.1%	-11.4%	-7.9%	-2.4%	-0.2%	0.0%	-4.4%	-5.4%	-9.7%
Netherlands	27.4%	20.5%	14.9%	-3.4%	2.5%	10.6%	12.1%	10.6%	2.6%	-1.6%	-10.0%

TABLE 4.4.1 (continued)

	Y t	Y t+1	Y t+2	Y t+3	Y t+4	Y t+5	Y t+6	Y t+7	Y t+8	Y t+9	Y t+10
Austria	21.2%	15.2%	9.6%	-5.0%	0.9%	7.6%	8.8%	7.6%	3.1%	1.6%	-2.8%
Poland	21.1%	13.4%	8.8%	-9.1%	-0.7%	8.9%	12.3%	13.4%	5.3%	5.0%	-3.9%
Portugal	30.5%	25.9%	20.7%	2.1%	8.1%	15.3%	16.2%	13.3%	2.9%	-5.6%	-19.1%
Romania	17.9%	13.3%	10.4%	-4.6%	5.2%	14.9%	17.0%	13.5%	3.3%	-1.1%	-10.0%
Slovenia	23.1%	19.0%	14.2%	-2.0%	5.9%	15.1%	17.3%	14.4%	4.2%	-2.6%	-13.2%
Slovakia	13.5%	10.1%	7.6%	-4.6%	4.1%	14.5%	19.6%	20.3%	14.0%	11.7%	2.7%
Finland	23.0%	16.7%	11.8%	-0.4%	5.9%	12.9%	13.2%	10.0%	2.3%	1.8%	-3.0%
Sweden	18.0%	11.0%	6.6%	-6.5%	-1.5%	2.4%	1.2%	1.7%	1.5%	13.9%	15.3%

Source: Eurostat and Caldara & Iacoviello (2022). Authors' calculations.

Note: Strong orange shade corresponds to lower correlation coefficient values, whilst as the shade tends towards purple, a higher correlation between variables is indicated.

In addition, during periods of heightened tensions, Greece gains increased geostrategic importance, which may translate into additional European or international funding and enhanced investment in critical infrastructure. At the same time, the structure of the Greek economy, with its emphasis on domestic demand, may mitigate the immediate negative effects of external threats on economic activity. Finally, the positive correlation may also be partly due to temporal coincidence with other developments, such as the strong post-COVID-19 economic recovery or significant surges in tourism.

4.5. Trends in the Greek real estate market

Artemis Stratopoulou

4.5.1. Introduction

Residential real estate prices in Greece have returned to an upward trajectory since 2018, exhibiting an 8.7% rise in 2024, following a persistent downward trend from 2009 to 2017 (the "bust" phase of the Greek real estate market).[1] The sharp increase in residential prices from 2018 onwards indicates a significant recovery after the extensive losses incurred in the decade following the 2008 Global Financial Crisis (GFC). Before the outbreak of the GFC (1998-2008), the Greek real estate market experienced a period of robust growth, characterized by increased housing demand, underpinned by the positive economic conditions prevailing in this period, which pushed residential prices upward. Nowadays, house prices remain elevated, triggering discussions among policymakers and academics about the factors driving this sharp rise in residential prices during the current recovery phase.

The determination of real estate prices in the real estate market is driven by both supply-side and demand-side factors. Supply-side factors could include policy-related drivers (such as land-use or building regulations) as well as non-policy drivers (such as geographical conditions) and the degree of competition in the construction industry. For instance, the high population density observed in areas like Athens or Santorini, combined with increased residential investment in these areas, pushes house prices upwards. Housing supply tightness also plays a crucial role. For instance, in European countries, the rigid housing supply leads to higher increases in real house prices under positive housing demand shocks driven by financial, labor market, or demographic changes (Andrews *et al*., 2011). This probably explains the high residential prices recorded during the boom phase in the Greek residential real estate market (1998-2008).

On the other hand, demand-side determinants could include, among others, demographic factors (e.g., population growth, migration flows), macroeconomic variables (e.g., disposable income, real GDP growth, unemployment rate), financial factors (e.g., mortgage loan demand, interest rates), and fiscal policy measures (e.g., property taxation).[2] Greek household gross disposable income per capita fell sharply in the aftermath of the 2008 Global Financial Crisis and continues to lag behind peers (e.g., Spain, Italy, and Portugal). Moreover, although the unemployment rate dropped by 17.7 percentage points between 2013 and 2024, it remained above (10.1%) that of Italy (6.5%) and Portugal (6.5%) in 2024, according to data by Eurostat. As of March 2025, the borrowing cost for households purchasing a home in Greece was 3.65%, higher than in Spain (2.82), Italy (3.21), and Portugal (3.14). At the same time, mortgage lending for house purchases remains suppressed in Greece.

Housing-related assets constitute the largest part of household balance sheets in the euro area (Bielskis, 2023). The high homeownership rate observed in Greece, compared to other European countries, suggests an increase in household wealth in recent years. At the same time, it determines house price expectations, along with income levels and housing prices.

In the current juncture, the mix of persistent economic growth, the rise in residential investment, and the implementation of various real estate-related policies are some of the key drivers shaping the upward trajectory of house prices in Greece.

4.5.2. Property prices, income, and housing affordability

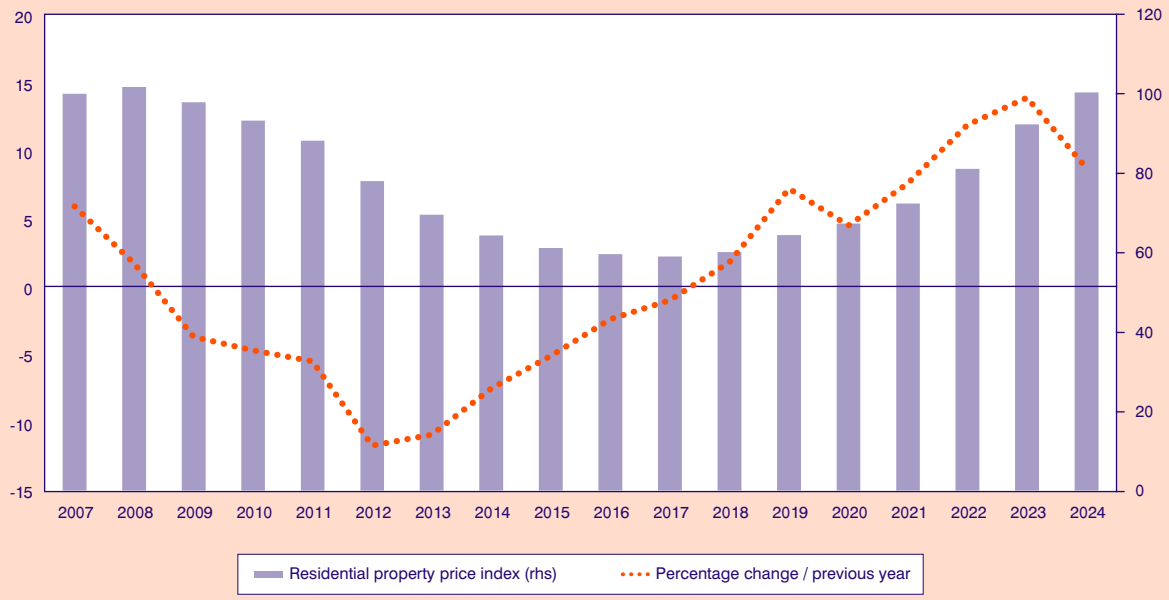
4.5.2.1. Rising property prices

The bust and recovery phases are evident in Figure 4.5.1, with the recovery phase starting in 2018

1. See Alpha Bank (2020) for a discussion on the historical boom, bust, and recovery phases of the Greek residential property market and their relationship with business and credit cycles.

2. For a detailed discussion on the determinants of house prices, see also, among others, Andrews *et al*. (2011), Panagiotidis and Printzis (2016), Tsatsaronis and Zhu (2004), Schnure (2005), André (2010).

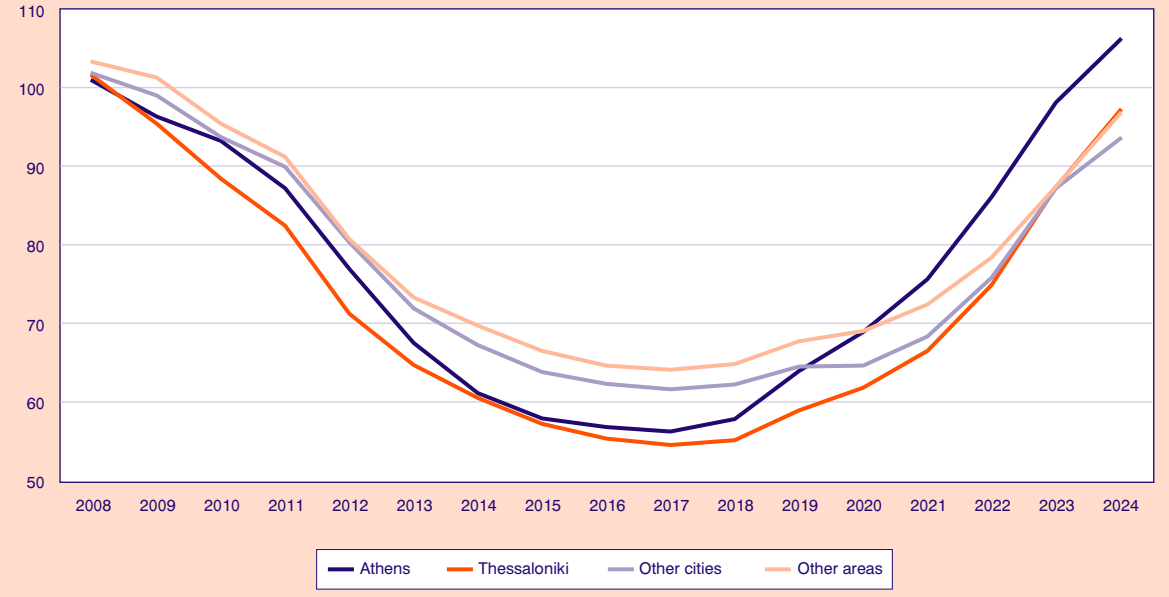
FIGURE 4.5.1
Residential property price index (2007 = 100)



Source: Bank of Greece.

Note: Provisional data for 2024.

FIGURE 4.5.2
Residential property price index by geographical location



Source: Bank of Greece.

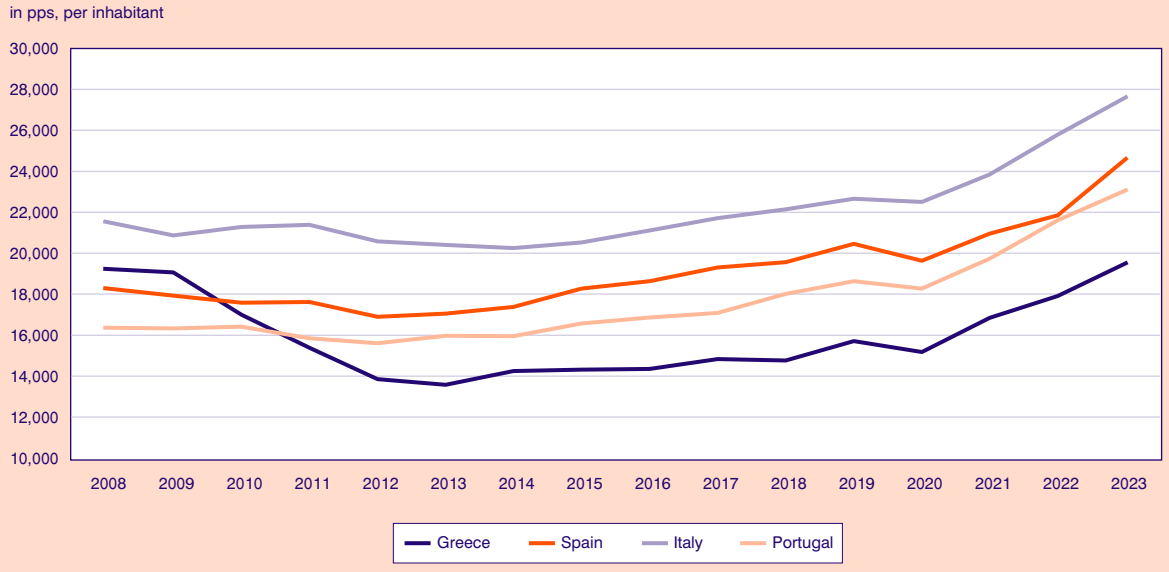
Note: Provisional data for 2024.

and continuing till today; the residential property prices recorded the highest annual growth rate in 2023 (13.9%), since 2007, largely offsetting the sharp decline in prices following the 2008 GFC. According to the latest available data by the Bank of Greece, in 2024, house prices remained high at 100.4, slightly surpassing the 2007 index (100). Decomposing the residential property price index by geographical location (i.e., Athens, Thessaloniki, other cities, and other areas), it is evident that house prices in Athens record higher growth rates compared to other areas. In 2024, the residential price index for Athens stood at 106.1, an increase of 8.2% compared to the previous year (provisional data). House prices in Thessaloniki, other cities, and other areas remained significantly lower than in Athens in 2024, with indices at 97.1, 93.5, and 96.7, respectively. Furthermore, prices in Athens appear to be rebounding to their pre-crisis levels, while prices in Thessaloniki, other cities, and other areas remain somewhat lower (Figure 4.5.2 above).

4.5.2.2. Disposable income remains low

Following a period of rising household disposable income (with the average growth rate standing at 5.8% during 2001-2008, according to data by Eurostat), the 2008 GFC caused a significant reduction in Greek household disposable income, eroding the purchasing power of Greek households and their ability to purchase a new home. For instance, household disposable income decreased by nearly 11% in 2010. Small recovery signs have been apparent since 2014, with the household disposable income rising by 2.8% on average during 2014-2021.[3] In 2022 and 2023, household disposable income increased significantly, rising by 6.4% and 9%, respectively. However, despite the increases in the latest years, the gross disposable income of households in Greece remains well below the respective incomes in Spain, Italy, and Portugal (see Figure 4.5.3). Moreover, the gross disposable income in these countries returned to its pre-crisis levels faster than in Greece.[4]

FIGURE 4.5.3
Adjusted gross disposable income of households per capita



Source: Eurostat.
Note: Estimated data in 2023 for Portugal.

3. Note that in 2020, household disposable income fell by 3.4% due to the negative economic implications of the Covid-19 pandemic and the subsequent containment measures.

4. The indicator reflects the purchasing power of households and their ability to invest in goods and services or save for the future by accounting for taxes and social contributions and monetary in-kind social benefits. It is calculated as the adjusted gross disposable income of households and Non-Profit Institutions Serving Households (NPISH) divided by the purchasing power parities (PPP) of the actual individual consumption of households and by the total resident population.

4.5.2.3. Rising house prices outpacing disposable income: A growing affordability gap

House prices in Greece have grown faster than disposable income since 2018. In 2022 and 2023, the gap between the two increased significantly; in 2023, the house price growth rate was higher, by almost 5 percentage points, than the disposable income growth rate, pointing to a growing affordability issue (Figure 4.5.4). More precisely, the residential price growth rate was 11.9% in 2022 and 13.9% in 2023, while disposable income grew by 6.4% and 9%, respectively. One of the most common measures used to assess housing affordability is the price-to-income ratio, defined by the OECD as the nominal house price index divided by the nominal disposable income per capita. The price-to-income ratio indicates that if house prices grow faster than income, the price-to-income ratio increases, implying that a house becomes less affordable on average. Figure 4.5.5 illustrates the standardized price-to-income ratio for Greece between 2008-2024, which stood at 104.8 in 2024, higher than its respective value in 2023 (103.3).[5] In both years, the ratio exceeded its long-term average (100), suggesting that the purchase of housing property became less affordable for households.

However, according to Svensson (2023), the price-to-income ratio is considered a misleading indicator, as it disregards mortgage rates and other housing costs. Alternatively, the Housing Affordability Index (HAI) is presented as an additional metric in Figure 4.5.6. The HAI index was constructed by Biljanovska *et al*. (2023) by combining information on a) the average house price, b) the income of a median household, c) the average mortgage rate, d) the typical LTV ratio, and e) the typical maturity of a mortgage. An index value of 100 indicates that a median-income household has exactly enough income to

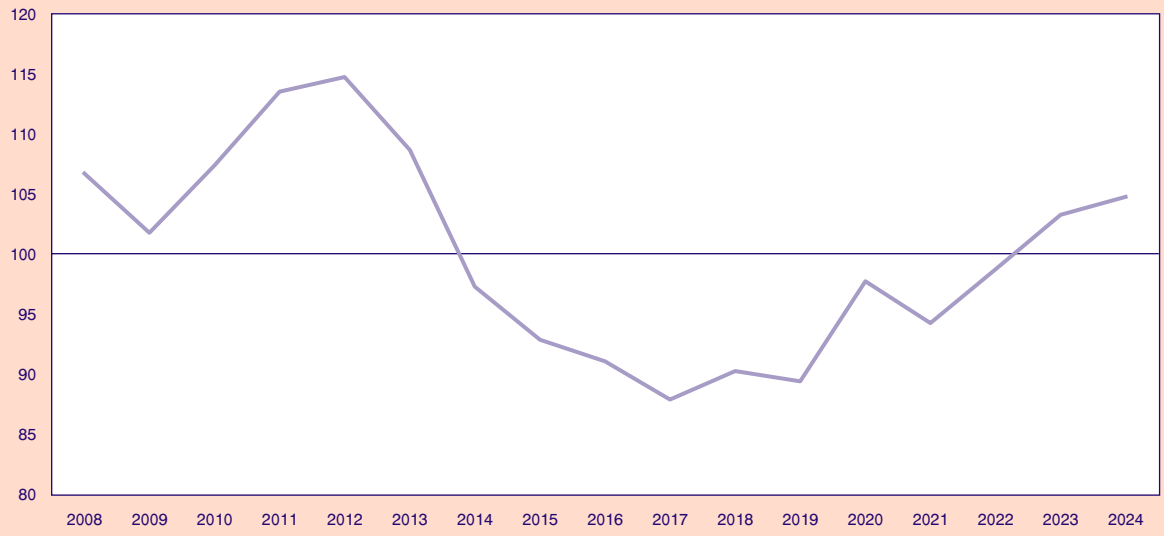
FIGURE 4.5.4
Disposable income and house price growth rates

Source: Eurostat and Bank of Greece.

Note: Eurostat data for adjusted gross disposable income is presented.

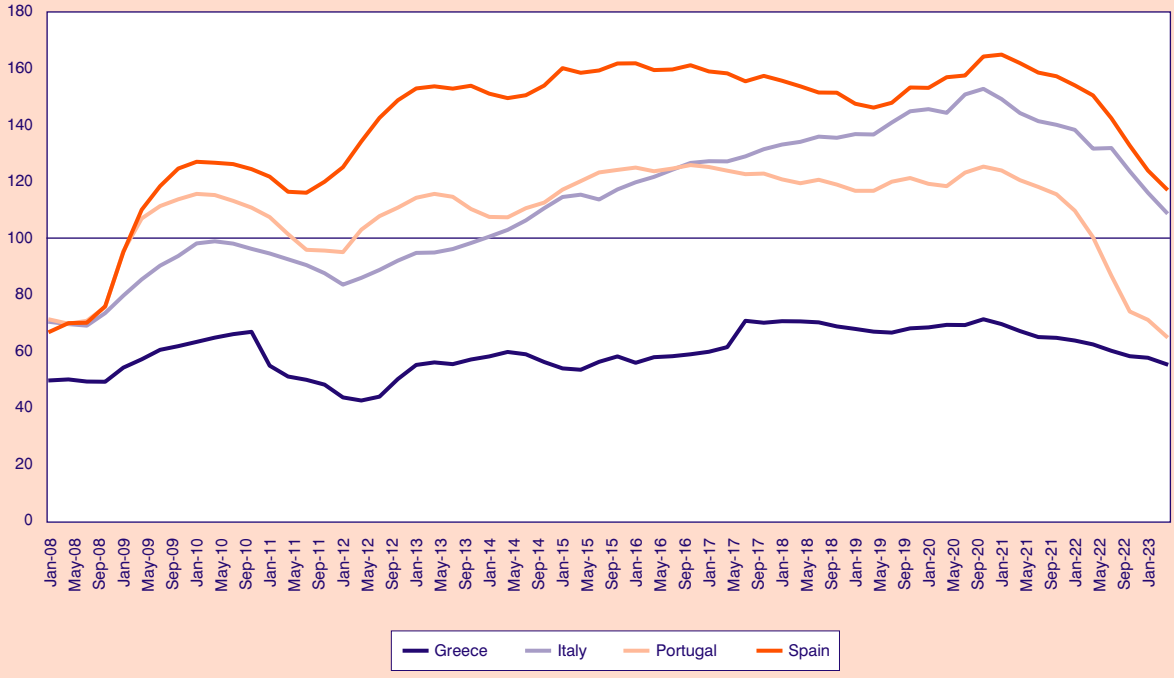
5. According to the OECD (2024): "The standardised price-income ratio shows the current price-income ratio relative to its respective long-term average. The long-term average, which is used as a reference value, is calculated over the whole period available when the indicator begins after 1980 or 1980 if the indicator is available over a longer time period. The standardised ratio is indexed to a reference value equal to 100 over the full sample period. Values over 100 indicate that the present price-rent ratio, or price-income ratio, is above its long-run norms. This provides an indication of possible housing market pressures".

FIGURE 4.5.5
Standardised price-income ratio



Source: OECD.

FIGURE 4.5.6
Housing affordability index



Source: Biljanovska *et al*. (2023). Housing affordability: A new dataset. International Monetary Fund.

qualify for a mortgage loan on an average-priced home; an index value above 100 indicates that a household has more than the qualifying income, while a value below 100 indicates that a household does not have sufficient income. According to the data presented in Figure 4.5.6, Greece scores well below 100 compared to Italy, Spain, and Portugal, having an average HAI score of 60, which is significantly lower compared to the average scores of 113 for Italy, 109 for Portugal and 140 for Spain. This means that the average Greek household does not have sufficient income to qualify for a mortgage on an average-priced home. This result is also supported by the latest study by Alpha Bank, titled "Decoding Housing Affordability in Greece", where 54% and 68% of the survey respondents stated, respectively, that purchasing or renting a house in Greece at market prices is not a feasible option.

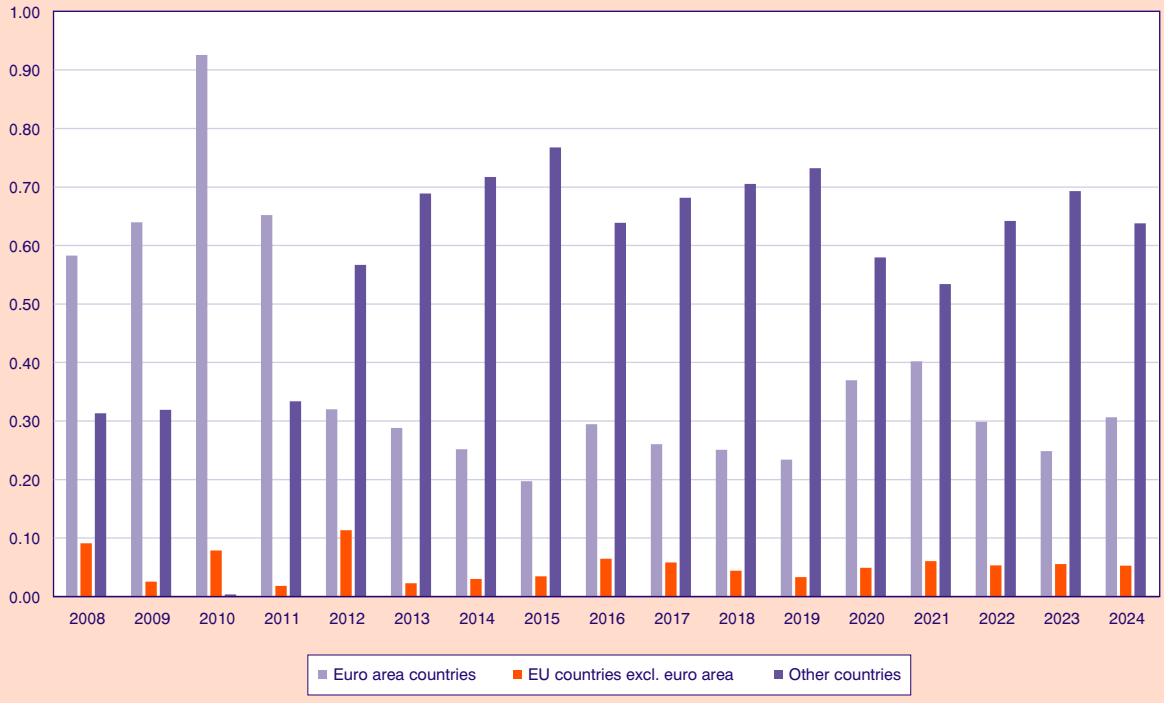
The deteriorating housing affordability conditions for the Greek households are also evident in the sharp increase in housing rental prices since 2018. According to HICP data by Eurostat, the actual rentals for housing in Greece recorded an average annual change of 4.8% in 2023 and 5.1% in 2024. To this end, the Greek government recently announced that part of the fiscal overperformance gains in terms of the primary surplus achieved in 2024 will return to renters in the form of the cost of one month's rent received each November, starting from 2025.

4.5.3. Foreign and domestic investment

4.5.3.1. Foreign investment and golden visa impact

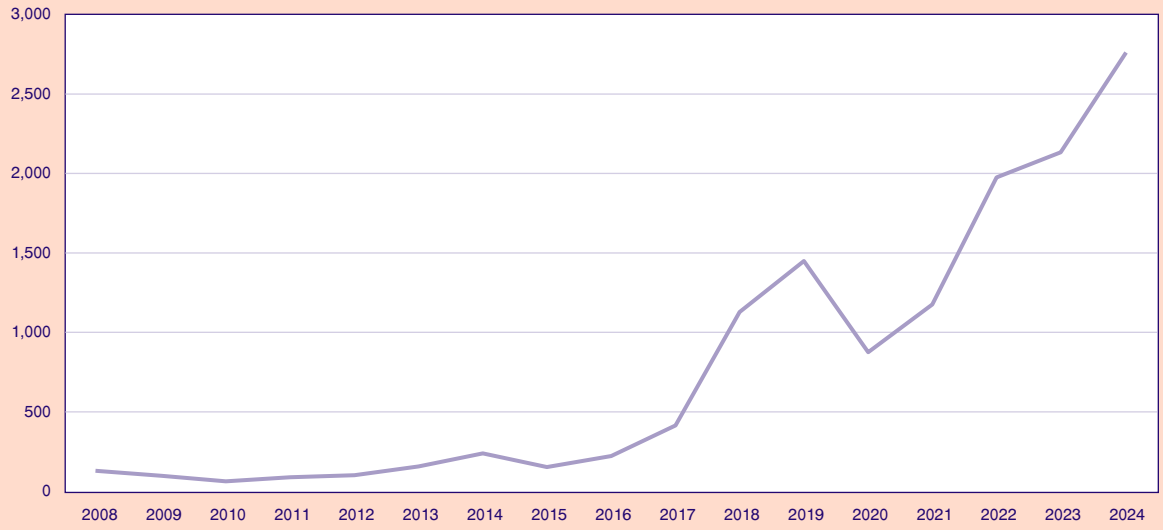
Increasing residential real estate prices were fueled, among other things, by the implementation of the Golden Visa program, adopted by the Greek government in 2013. In the subsequent years, housing demand from foreign investors skyrocketed, accelerating property transactions and pushing residential prices upwards. This trend was most prominent in major cities like Athens and popular tourist destinations such as Santorini and Mykonos. As shown in Figure 4.5.7, net foreign direct investment (FDI) from other countries increased, particularly in the years following the program's launch, reaching an average of 70% of total FDI. The major advantage of the Golden Visa program is that it grants five-year residency per-

FIGURE 4.5.7
Share of real estate net FDI in Greece by country of origin



Source: Bank of Greece, author's calculations.

FIGURE 4.5.8
Net foreign direct investment in Greece, real estate (million euros)



Source: Bank of Greece.

mits to citizens outside the European Union (EU) who invest at least €250,000 in the Greek real estate market. However, since 2024, the Golden Visa threshold has been modified as follows: investment of at least €800,000 for the Attica region; the regional units of Thessaloniki, Mykonos, and Santorini; and the islands with a population of over 3,100 inhabitants. For the rest of the country's regions, the value of the real estate property investment is set at €400,000. In any case, the investment must be made in a single property and not in multiple properties of lesser value. The investment limit increase for obtaining a Golden Visa by the Greek government was aimed at managing the real estate market crisis and curbing the excessive demand by foreign investors, which has significantly contributed to the increase in property prices and rents, making it difficult for domestic buyers and tenants to afford a house.

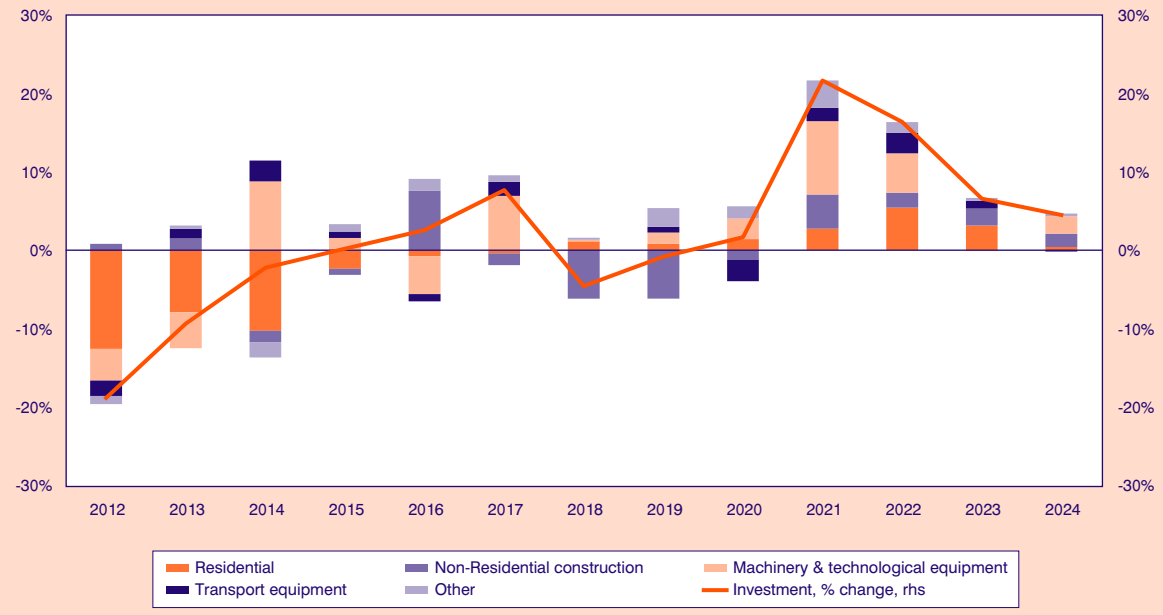
As shown in Figure 4.5.8, according to Bank of Greece data, net foreign direct investment (FDI) in Greece has followed an upward trajectory, peaking at record-high levels after 2017. A decline occurred in 2020 due to the Covid-19 pandemic, followed by clear signs of recovery, reaching €2.75 billion in 2024. In 2023, data indicates that nearly 30% of FDI was directed toward the real estate market, with Manufacturing and Financial and insurance activities following at 14.2% and 9.1%, respectively.

4.5.3.2. Domestic investment

Investment dropped significantly in the years following the 2008 GFC, with the largest component contributing to this reduction being the decline in residential investment. However, according to *National Accounts* data by ELSTAT, since 2018, residential investment has turned positive again, growing gradually and representing 5.4% and 3.1% of total investment in 2022 and 2023, respectively, the highest contributions among all investment categories. In 2024, residential investment stood at 0.4%, lower compared to its contribution in the previous years (Figure 4.5.9). Moreover, there seems to exist a co-movement between residential investment and residential price growth rates, particularly since 2018 (Figure 4.5.10). Residential investment grew considerably from 2018, reaching a 57.8% annual change in 2022. Moreover, residential investment in Greece remained significantly lower than in other European countries in 2024 in terms of GDP (Figure 4.5.11). More precisely, residential investment in 2024 for Greece stood at 2.3% of GDP, considerably lower than the euro area average (5.8%) and other countries' investment, i.e., Italy (6.8%), Spain (5.8%), and Portugal (3.9%).

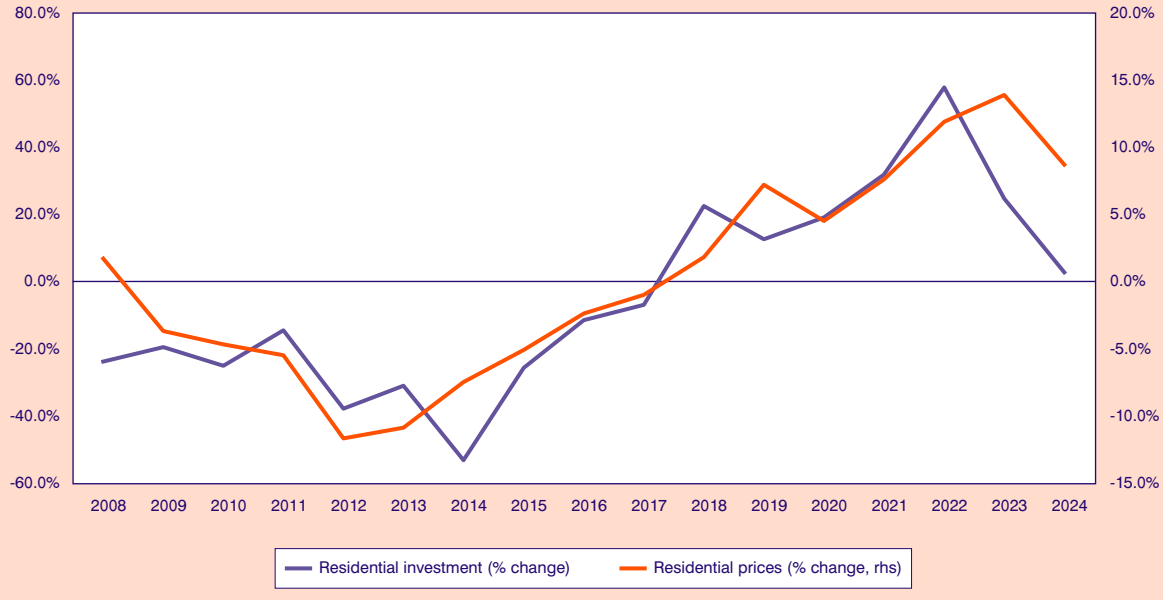
Moreover, data by the Bank Lending Survey (BLS), which is conducted by the national central banks of the euro area, in collaboration with the European Central

FIGURE 4.5.9
Investment contributions in Greece



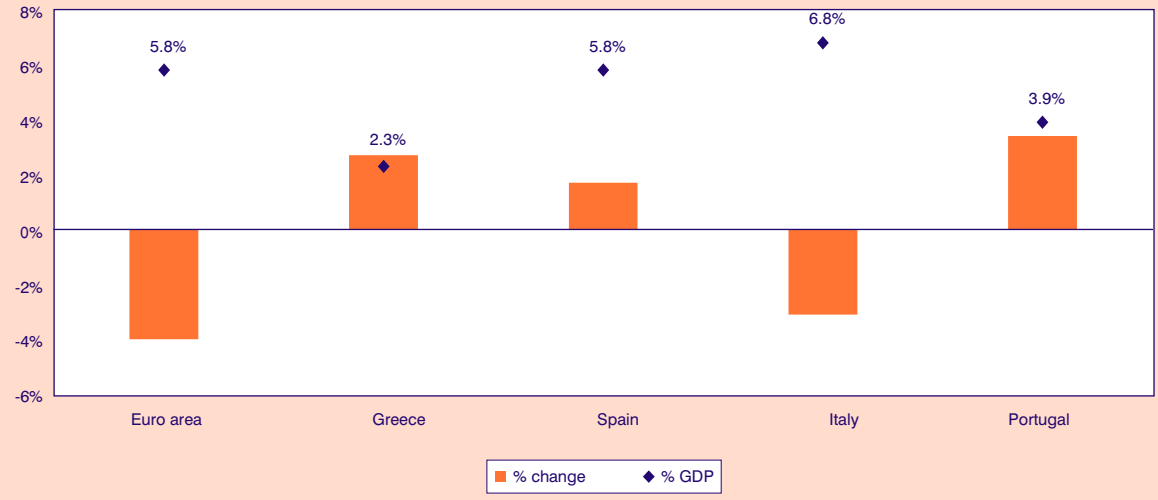
Source: ELSTAT and author's calculations.

FIGURE 4.5.10
Rates of change of residential investment and residential prices in Greece



Source: ELSTAT, Bank of Greece.

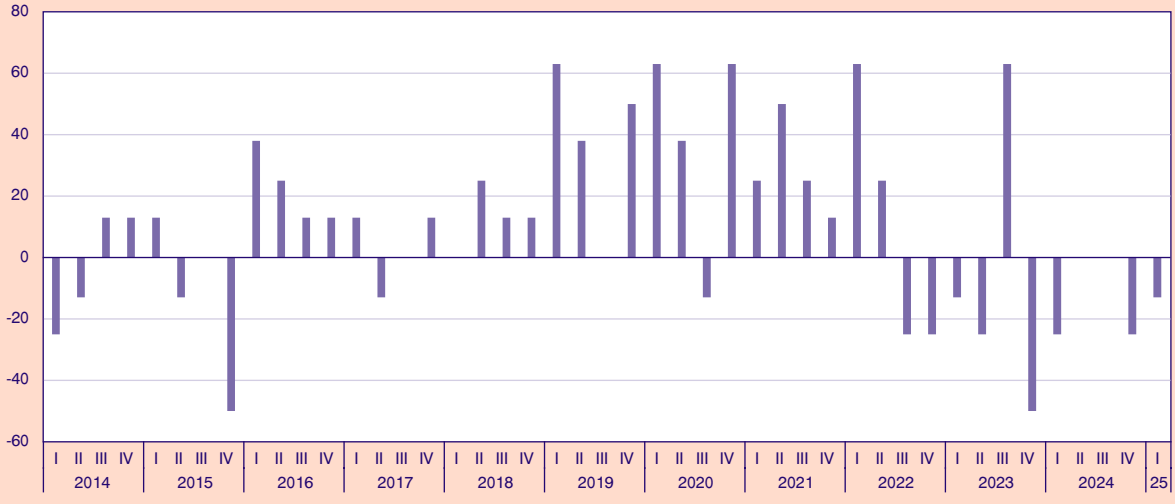
FIGURE 4.5.11
Residential investment in 2024



Source: Eurostat.

Note: Provisional data for Greece and Spain and estimated for Portugal.

FIGURE 4.5.12
Household loan demand for house purchases



Source: ECB BLS Survey.

Bank (ECB), show that although household loan demand for house purchases experienced an upward trajectory in the years after the 2008 GFC, this trend reversed from 2022Q3 (Figure 4.5.12 above), probably due to rising interest rates, inflationary pressures, and increasing real estate prices, particularly in 2022 and 2023.[6] However, in 2023Q3 there was a rise in housing loan demand, as recorded by banks, probably reflecting the launch of the subsidized housing program "My Home", which started in April 2023 (Q2 of 2023). Housing loan demand reflects only demand for loans regardless of whether the loan is obtained or not. However, household mortgage loan financing has been experiencing negative growth rates in the last years according to data by the Bank of Greece (-3.7% in 2022, -3.6% in 2023, and -2.6% in 2024).

4.5.4. Conclusion

Historically, the Greek real estate market has gone through different phases, moving from boom, bust, and recovery phases. Although property prices have rebounded significantly in recent years, particularly in Athens, data show that the residential price growth rate outpaced the disposable income growth rate, pointing to a widening affordability gap. Various factors have affected residential property prices, including investment patterns, like the impact of the Golden Visa program. Residential investment has turned positive again since 2018, with its highest contributions in total investment taking place in 2022 and 2023. However, household loan demand for house purchases has fallen since 2022, likely due to rising interest rates and increasing real estate prices. At the same time, mortgage loan financing has been on the decline in the last years. On the contrary, subsidized housing programs like "My Home" are expected to stimulate loan demand. For these reasons, targeted policy interventions are required to balance housing supply, affordability, and sustainable investment.

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6. The Bank Lending Survey (BLS) is conducted four times a year and provides information on bank lending conditions in the euro area. It includes information on the supply of, and demand for, loans to enterprises and households. The BLS questionnaire contains specific questions to banks related to the change of household loan demand for house purchases over the past three months.

KEPE, *Greek Economic Outlook,* issue 57, 2025, pp. 102-111

Evaluating values versus views: A proposal to increase credit rating agency transparency

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Panayotis Gavras*

Abstract

This article proposes the introduction of a standardized table of key economic indicators to accompany sovereign credit rating assessments. The proposed table would present the most recent data alongside five-year averages for selected macroeconomic indicators, offering a more transparent and objective basis for evaluating sovereign creditworthiness. Transparency could be further enhanced by ranking each indicator according to the decile into which it falls compared to the ratings of all other rated sovereigns. The proposal aims to balance subjective analysis with the inclusion of objective metrics, fostering greater credibility in CRA ratings and enabling more informed decision-making by market participants. The challenges of over-reliance on qualitative data and the need to harmonize subjective and objective factors are also discussed, highlighting the importance of maintaining a nuanced approach to sovereign credit assessments. The main value added of this proposal lies in the enhancement of ratings frameworks, as the standardized table can mitigate the inherent subjectivity of credit rating agency (CRA) assessments, increasing accountability without altering their methodologies.

Keywords: *Sovereign credit ratings, Credit rating agencies, Financial transparency.*

JEL Classification: *G18, G24, G28.*

1. Introduction

Credit ratings represent opinions on the creditworthiness of an entity, and serve as a crucial tool for evaluating financial risk. According to Standard & Poor's (2017), "Credit ratings are opinions about credit risk. They can express a forward-looking view of an entity's capacity and willingness to meet its financial obligations, as well as the credit quality of individual debt issues, such as corporate or municipal bonds, and the likelihood that these issues may default."

Although several credit rating agencies (CRAs) exist, the market is dominated by three major players: Standard & Poor's Global Ratings (S&P), Moody's Investors Service (Moody's), and Fitch Ratings (Fitch). Moody's and S&P account for around 80% of the global market, and with Fitch, the "Big Three" collectively hold over 90% of the market share. This article focuses on these three CRAs, though the central recommendations apply to all CRAs.

CRAs generally operate under two main business models: the more common issuer-pays model, where the entity being rated commissions the agency to assess its creditworthiness, and the less common investor-pays model, where the CRA independently evaluates an entity and makes its findings available to subscribers (White, 2010). The Big Three all use the issuer-pays model. In both cases, credit ratings are vital for debt issuers, investors, and other market participants, as they provide essential information for due diligence, investment decisions, and risk assessment. In essence, credit ratings facilitate financial market activity by offering easily accessible information that would otherwise be difficult or costly to gather, while also enabling comparisons across asset classes and individual entities within those classes.

For all rated entities, including sovereigns, credit ratings play a pivotal role in determining the terms under

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which they can access capital markets, including loan amounts, terms, and interest rates (Blanchard and Johnson, 2013). A lower credit rating generally leads to higher borrowing costs, as investors view these entities as riskier (Cantor and Packer, 1995). Consequently, lower-rated sovereigns face higher interest rates on loans and bonds, making it more expensive and challenging to secure financing, especially during periods of market stress (Reinhart and Rogoff, 2011). This can limit their ability to raise capital on favorable terms, as lenders typically demand higher interest rates to compensate for the perceived risk (Ferri et al., 1999). At the same time, cases exist where a country's debt level increases with higher ratings (Duygun et al., 2016). This apparent paradox may either be due to the fact that higher rated countries are able to borrow more or because the assessor believes that the country possesses structural advantages which permit easier servicing of debt obligations, such as a broader tax base, more stable receipt of tax revenues, or a more reliable track record of timely debt servicing.

Despite the widespread use of sovereign credit ratings, methodological differences among the Big Three and the inability to quickly and easily compare key economic indicators across sovereigns make it challenging for investors to formulate their own informed opinions.

There is considerable academic literature on the bias and subjectivity of sovereign credit ratings. Indicatively, Ferri et al. (1999) suggested that CRAs aggravated the East Asian crisis by initially failing to predict its emergence and thereafter becoming excessively conservative. Specifically, CRAs downgraded East Asian crisis-affected countries more than what would have been justified by these countries' worsening economic fundamentals. Reinhart (2002) observed that sovereign credit ratings tend to be reactive, especially for emerging market economies, with a significantly higher probability of downgrade, while Kaminsky and Schmukler (2002) suggested that rating agencies could contribute to financial market instability in emerging economies. Gültekin-Karakaş et al. (2011) provided evidence that CRAs give higher ratings to developed countries regardless of economic fundamentals, which, according to these authors, should be of core importance in the sovereign ratings assessment. Along the same line of thought, Tennant et al. (2020) identified a statistical bias in sovereign credit ratings against poor countries whenever their fundamentals change, highlighting a cause for concern since such biases can have self-fulfilling consequences. Vernazza and Nielsen (2015) broke down the sovereign credit ratings assigned by CRAs into objective and subjective components and found that the objective component has explanatory power to predict defaults in the short and long run. De Moor et al. (2018) found that the subjective component of the Big Three tends to be large and significant, especially for low-rated countries. In a similar vein, Tennant and Tracey (2016) found distinctions between ratings actions taken for high-income and low-income countries, while Hadzi-Vaskov and Ricci (2019) provided further evidence of bias and subjectivity in sovereign credit ratings.

A simple, but substantive, step towards addressing the problems of lack of transparency or difficulty of comparison would be to introduce into every CRA rating of a sovereign a standardized table of macroeconomic indicators, together with a decile ranking to show how the rated country's indicator compares to other countries. Thus, the reader may see for themselves and decide if the ratings analysis is consistent and aligns with their own expectations.

The remainder of this article is structured as follows: Section 2 explores the challenges and controversies surrounding the role of credit ratings, particularly the oligopolistic nature of the credit rating industry and the regulatory entrenchment of CRAs. Section 3 presents a case study that illustrates the complexities of sovereign credit ratings, using two countries to highlight how qualitative factors influence ratings. Section 4 introduces a framework for integrating standardized economic indicators into sovereign credit ratings, proposing a method to enhance transparency and reduce subjectivity in CRA assessments. Section 5 evaluates the trade-offs involved in implementing a standardized data table, weighing the potential costs and benefits of this reform. Finally, Section 6 offers concluding remarks, discussing the broader implications of the proposed changes and the role they could play in improving CRA transparency and for other asset classes as well.

2. Challenges and controversies in the role of credit ratings

Credit ratings are integral to the financial sector, providing vital information for risk assessment, certification, and credibility (IMF, 2010; Bolton et al., 2012). However, two significant concerns undermine their effectiveness. First, the credit rating industry is characterized by oligopolistic tendencies and substantial barriers to entry (White, 2010). Second, credit ratings are deeply entrenched in regulatory frameworks, which raises issues about private entities playing a key role in the provision of a public good.

TABLE 1 Brief profile of the Big Three CRAs

Rating agency	Year of foundation	Number of sovereigns assessed	Frequency of assessment*	Number of categories used in a sovereign assessment	Number of indicators used in the assessment	Approach
Moody's	1914	130-140	At least annually	4 (Economic strength, Institutions and governance strength, Fiscal strength, Susceptibility to event risk	30-40	A structured approach that uses a combination of quantitative and qualitative factors.
S&P Global	1860	130-140	At least annually	5 (Institutional and governance effectiveness, Economic structure and growth prospects, External liquidity and international investment position, Fiscal performance and flexibility, Monetary flexibility)	20-30	A structured approach that uses a combination of quantitative and qualitative factors.
Fitch Ratings	1914	120-130	At least annually	5 (Structural features, Macroeconomic performance, Public finances, External finances, Monetary policy and inflation)	20 - 30	A structured approach that uses a combination of quantitative and qualitative factors.

* All Big Three CRAs may issue more frequent reports or outlooks between official rating updates, especially when there are major global or domestic developments affecting the sovereign.

The oligopoly stems from the dominance of the Big Three CRAs, who control most of the market. New entrants face considerable challenges in gaining credibility due to the incumbents' economies of scale, established track records, and client networks (White, 2010). This dominance reinforces their market position, as users rely on their methodologies to compare rated entities across sectors and geographies. Table 1 above profiles the Big Three CRAs.

While there are differences in how the agencies weigh each factor, the general approach revolves around a combination of economic, fiscal, institutional, and external indicators. Qualitative assessment of governance and political risks play a critical role, especially in countries where these factors are more volatile. Although the Methodologies used by the Big Three can sometimes lack transparency, they remain vital to informed investment decisions, thus influencing capital flows and economic stability.

A more critical issue is the incorporation of CRAs into regulatory systems. Since the 1970s, credit ratings have been embedded in frameworks like the Basel Accord, which dictates bank capital requirements (Bank for International Settlements, 2024). This reliance on private, profit-driven agencies to assess creditworthiness creates potential conflicts of interest. Unlike regulators, CRAs are driven by shareholder value, raising concerns about their alignment with broader financial stability objectives (Bolton et al., 2012). The regulatory dependence on CRAs compels borrowers to use their ratings to access capital, influencing financial decisions across markets. This dynamic reinforces the oligopoly, as the Big Three exert disproportionate control over borrowing costs and investment behavior (European Union, 2023).

Furthermore, CRAs have a significant impact on economic policy. A downgrade or negative outlook can prompt governments to alter fiscal policies, sometimes sacrificing long-term growth to maintain more favorable credit conditions. This highlights the outsized influence of CRAs, whose assessments can sway sovereign and investor decisions, regardless of their accuracy.

Embedding credit ratings in regulatory frameworks also poses systemic risks. During the 2008 Global Financial Crisis (GFC), CRAs were widely criticized for inflating ratings on complex financial products, which contributed to the financial collapse. The GFC revealed how private ratings, when woven into dynamic regulatory systems, could be exploited to create false impressions of reduced risk. Post-GFC reforms have aimed to minimize CRA reliance on regulatory frameworks (European Union, 2023; United States, 2010).[1]

However, transitioning away from this system is politically challenging and costly. Regulatory changes allowing greater flexibility, such as dynamic capital ratios, have proven equally susceptible to manipulation. Financial institutions continue to exploit regulatory loopholes, as seen in the lead-up to the GFC. In conclusion, while frameworks like Basel seek to promote financial stability, the substantial reliance on CRAs introduces significant challenges. The industry's oligopolistic nature, combined with regulatory entrenchment, gives CRAs disproportionate influence over financial markets and policymaking. Despite efforts at reform, the fundamental structure of the system remains intact and unlikely to change fundamentally, and the role of CRAs is likely to remain contentious.

3. A paradox in credit ratings: The case of Oiland and Fairland

This section examines the challenges in sovereign credit rating assessments by comparing two countries: Oiland and Fairland.[2] The discrepancies in their ratings highlight the influence of qualitative judgments in CRA evaluations. While both countries have distinct economic structures, the rating gap underscores how subjective factors like governance, institutional strength, and geopolitical considerations often outweigh quantitative metrics such as debt levels or fiscal performance.

Fairland, a wealthy European economy with stable growth, a strong industrial base, and high private savings, maintains an A/AA credit rating despite its significant debt. Oiland, an emerging market heavily reliant on oil and gas exports, is rated in the BB range despite robust growth and continued positive prospects. This disparity is driven by qualitative factors such as governance and geopolitical stability, which are rated

1. For example, Directive 2013/14/EU of the European Parliament and of the Council amends three other EU Directives and repeatedly mentions "reducing sole and mechanistic reliance on such credit ratings" as an objective in its opening articles. Also, the US Dodd-Frank Wall Street Reform and Consumer Protection Act contains several instances of removing references to credit ratings and/or reliance on credit ratings.

2. Oiland and Fairland are based on actual countries, selected for demonstration purposes due to the counterintuitive contrasts in their macroeconomic indicators and their credit ratings.

more favorably for Fairland. These subjective judgments contribute to rating inconsistencies, even when quantitative indicators suggest a narrower gap.

The rating paradox is evident: Fairland, with lower growth prospects and a higher fiscal deficit and public debt, enjoys a better rating due to stronger qualitative factors. These include higher scores on institutional strength, governance quality, and geopolitical stability, which are often interpreted differently by CRAs. Fairland's governance structures are seen as more robust and transparent than those of Oiland, which faces greater risks due to its dependence on oil prices and lack of diversification.

The weight assigned to qualitative factors varies across CRAs. Some emphasize institutional quality and geopolitical risks, while others prioritize economic fundamentals like debt ratios and fiscal discipline. This subjectivity leads to rating discrepancies. While qualitative factors are important, especially in the ratings-fiscal discipline nexus (Duygun et al., 2016), their interpretation is shaped by analysts' biases, risk appetite, and data availability (Cantor and Packer, 1995). CRAs prioritize these factors differently, contributing to divergent ratings (Bhatia, 2002). Standardized indicators–such as those assessing fiscal health, debt sustainability, and economic diversification–provide a more objective framework, although they do not fully capture a country's institutional and political complexities.

For example, various indicators of public debt viability exist, such as currency reserves, the size (and percentage as a share of GDP) of government revenues, the degree of diversification of government revenues (e.g., if a government is overly dependent on one source, or if there is a balance so that it may overcome a sudden shortfall from one area without an increase in risk), the volatility of government revenues, fluctuations in debt servicing obligations, roll-over risks, etc.

Introducing standardized tables of indicators into credit assessments can expose discrepancies between quantitative measures and qualitative judgments, increasing transparency and improving the credibility of sovereign ratings. While disagreements over specific assessments may persist, a transparent, well-structured rationale promotes informed debate. Ultimately, sovereign credit ratings are shaped by both objective indicators and subjective assessments. Greater transparency and the use of standardized benchmarks can mitigate the impact of subjectivity, ensuring a more balanced evaluation of economic fundamentals and institutional strength.

The Oiland and Fairland case demonstrates the need for a standardized approach to presenting economic data, which would enhance transparency, reduce reliance on subjective factors, and allow for clearer comparisons across sovereigns. Ultimately, integrating standardized financial indicators into the rating process would improve accountability and enable investors to make more informed decisions. The variation in the country's risk levels can be attributed to differences in the sources of risk (Damodaran, 2020), which include governance factors such as political stability, the legal system, and the rule of law, among others. However, investors need to be clear on the portion of the sovereign rating that is attributed to objective and not-so-objective factors.

4. A framework for the integration of standardized economic indicators in sovereign credit ratings

Efforts to enhance the accuracy and transparency of Credit Rating Agencies (CRAs) are both commendable and necessary. However, the assessments provided by CRAs will inherently remain opinions that are subject to bias. By definition, an opinion reflects a specific perspective shaped by both objective and subjective factors. In the case of sovereign ratings, CRAs rely on methodologies that incorporate 'objective' metrics–such as macroeconomic indicators, statistical outcomes, and ratios derived from these indicators–to form conclusions. These conclusions, while important, are influenced by the inherent subjectivity of interpretation. Whether the rating is perceived as accurate, biased, neutral, pro-lender, or pro-borrower, it remains an opinion, even as methodologies evolve or change (Bolton et al., 2012; White, 2010).

While it is appropriate to critically assess CRA methodologies and seek improvements, one promising approach to introducing greater objectivity into the process involves including a standardized set of key economic indicators. Regardless of the proprietary methodology used by any given CRA, they should be required to incorporate an established set of macroeconomic indicators in every sovereign rating assessment, as well as to indicate into which decile the sovereign being rated falls in relative to other sovereigns, both in the most recent years and averaged over five years.[3] This

3. The inclusion of the average would add greater context, permitting readers/users of CRA reports to see if the most recent result follows a trend or if it is an outlier relative to the performance of other years.

would offer a clearer picture of the country's economic performance. Specifically, each indicator would display the most recent result (e.g., the end-of-2024 figure for an assessment conducted in 2025), as well as a five-year average, from 2020-2024, to contextualize recent trends. For each indicator, the country's performance would then be ranked globally for both the most recent year and the five-year period, placing the country's result into a decile. The set of indicators can be further enhanced by adding selected indicators with demonstrated predictive power for sovereign economic performance, such as business and consumer confidence indices. This approach would provide a clear, quantitative comparison of how the sovereign performs relative to its global peers (White, 2010; IMF, 2010).

To implement this proposal, a comprehensive database containing the latest five-year averages for approximately 200 countries would need to be established and maintained. A ranking system would allow readers/users of CRA reports to easily understand where a country stands for each indicator. For instance, if a country's result for a given indicator is placed in the first decile, it would indicate that it is in the top 20 out of 200 globally for that metric. A second-decile placement would signify a ranking between 21 and 40 out of 200, and so on. Table 2 below provides a conceptual example of how such a ranking table might be structured, using some illustrative indicators that encompass various dimensions of economic performance, such as growth, volatility, fiscal and monetary management, competitiveness, and vulnerability.

The selection of indicators could extend beyond the initial set provided in Table 2. While 10-12 core indicators might strike an optimal balance between comprehensiveness and relevance, other indicators could capture additional aspects of economic vulnerability, changes in terms of trade, economic diversification, financial market volatility, and external dependencies. Furthermore, Table 2 can include volatility measures, such as the mean absolute deviation of the economic indicators. The goal is to provide the most recent available data while offering a longer-term perspective through five-year averages, enabling readers to discern whether the latest result represents a trend or a

TABLE 2 Indicative Table of selected indicators for a country

	Indicator	Current year	Decile ranking for the current year	5-year average	Decile ranking for 5-year average
1	Real GDP growth, %				
2	GDP per capita (US$)				
3	Inflation (CPI Avg.)				
4	Official unemployment (end of period) %				
5	Consolidated Budget Balance/GDP, %				
6	Total external debt/GDP %				
7	Total public debt/GDP %				
8	Short-term external debt/Reserves %				
9	Trade balance/GDP %				
10	Current Account balance/GDP %				
11	Months import cover (FX/Imports x 12)				
12	Exchange rate change vs. US Dollar/EUR				

Note: The selected indicators are indicative, and the set of indicators can be extended further, including backward- and forward-looking indicators. Also, the table can contain not only historical values but also projected ones.

'one off' result.[4] The credibility of the data source is paramount in such an endeavor. Several international institutions maintain extensive databases of economic indicators that could serve as key resources for this initiative (IMF, OECD, World Bank Group). Alternatively, the task of preparing and maintaining the dataset and rankings could be outsourced to a trusted third-party organization, such as a respected think tank, an international financial institution, or an academic body, as the costs of producing such a dataset would be trivial compared to the size of the credit rating industry (Litan and Rutledge, 2014).

Fitch Ratings' current "Peer Analysis" feature exemplifies the potential utility of this standardized table of indicators, as it provides a comparative set of macroeconomic indicators for a sovereign relative to other similarly rated sovereigns. However, the existing peer analysis falls short in several respects. First, it includes a mixture of one-year results and three-year averages but does not present both together, making it difficult to evaluate trends comprehensively. A five-year average would offer a more robust long-term perspective than a three-year average. Second, the data sources are mixed and not clearly attributed, making it challenging to assess some indicators' credibility. Third, the scope of comparison is limited to other sovereigns rated by Fitch Ratings, which excludes the broader global context. Finally, the peer analysis includes an extensive set of indicators, some of which are not directly relevant to assessing creditworthiness.

Despite these shortcomings, Fitch Ratings peer analysis demonstrates the potential value of a standardized approach to economic indicator comparison. By introducing a more transparent, globally comparative table of key indicators, CRAs could provide a clearer, more objective basis for their sovereign assessments. This proposal could also be extended beyond sovereign ratings to other asset classes, including financial institutions, corporate entities, and issued instruments (Litan and Rutledge, 2014). For financial institutions, relevant indicators might include capital adequacy ratios, liquidity, balance sheet growth, and profitability metrics, while for corporates, sector-specific indicators could be introduced to account for industry-specific characteristics.

The remainder of this section introduces the case of Greece, whose credit ratings from the time of the Eurozone crisis until the present have been a prominent topic of analysis and study.

The existing literature has demonstrated the role credit ratings played in the deterioration of borrowing conditions for sovereigns during the Eurozone debt crisis, while there is also no strong evidence that the way CRAs treated Greece during that period lacked impartiality (EU Commission Report, 2011; De Santis, 2012).

Turning to the present, as of May 2025, Greece has been restored to investment grade status by the Big Three CRAs, a development which reflects improvements in its fiscal and public debt situation, as well as its stabilization and the marked improvement in its economic prospects. It could be argued that the return to investment grade is not fully justified on the basis of the level of certain key indicators such as the high public debt level compared to similarly rated countries, and the structural current account deficit, indicators which normally suggest higher risk for the servicing of debt. In addition, if Greece were not a member of the Eurozone, thus benefiting from the Euro area umbrella, and had not undertaken a substantial set of deep structural reforms, its ratings might not have reached investment grade. However, the diligent and credible fiscal management (European Commission, 2024), combined with the institutional support provided by the European Union and the European Central Bank, has led CRAs to give added weight to these qualitative factors in their assessments. Thus, cases such as Greece underscore the value of the proposal in this article, which essentially sets aside and provides an easy basis for the comparison of quantitative data (the selected indicators) in addition to the qualitative factors.

An additional factor for consideration is the adequacy and sufficiency of the economic indicators which are taken into account during the ratings assessment of a country, and the potential need to expand the number and type of indicators considered, particularly in a fast evolving environment. However, this represents part of a broader debate, and any discussion of the actual number, scope, and type of indicators to include in Table 2 is beyond the scope of this article and will need to be the subject of a future analysis. As the economic context and its influencing factors evolve rapidly (geopolitical tensions, trade wars, climate change, financial crises), the indicators used for credit assessment may also require regular review and updating. In the final analysis, the assessments of CRAs must be consistent in scope and timing with the existing situation and the context in which the analysis takes place.

4. The average may hide instances of large swings, for which a measure of volatility such as standard deviation could be considered. However, this would add to the complexity of the table of indicators to a degree which may well outweigh the benefit of this added information.

5. Evaluating the trade-offs: The feasibility and impact of standardized data

When considering the costs and benefits of implementing a standardized data table in sovereign credit rating assessments, the cost side is relatively straightforward to estimate. The incremental costs associated with data collection, processing, publication, and ongoing maintenance are minimal. Much of the necessary information is publicly available through reliable sources and databases. The core tasks involve gathering the relevant data, processing it to compute five-year averages for key indicators, organizing the data by deciles, and publishing the results. While time-consuming initially, especially when assembling the dataset for the first time, these tasks are neither overly complex nor financially burdensome. The data and the associated indicators would already be familiar to financial professionals, including investors, analysts, and other stakeholders engaged in due diligence and financial analysis. Furthermore, the proposal highlights the need for an integrated understanding encompassing rigorous economic factors from a universally accepted data source.

A potential critique of standardizing financial and economic ratios is that it may overlook the unique characteristics of individual countries. However, this very objection highlights the value of the standardized table. The table compels readers to engage critically with the data, encouraging them to form independent judgments, whether in agreement or disagreement with the CRA's analysis.

On the benefits side, quantifying the advantages of such a table is more challenging. Nevertheless, the utility of a standardized, easily interpretable format is evident. A well-constructed table would enable readers to immediately assess whether a CRA's rating aligns with broader economic indicators or deviates significantly from expectations. If the latter occurs, this should prompt further investigation, which in turn could compel CRAs to provide more detailed explanations of their ratings, thus enhancing accountability, as well as transparency.

This demand for greater context and rationale behind rating deviations constitutes one of the most significant benefits of the proposed table. By shedding light on the reasoning process, the table would empower users to assess, more readily and more critically, whether they agree with the rating provided. Moreover, the standardized table could facilitate the entry of new actors into the credit rating industry. More straightforward comparability across agencies would allow users to assess how closely a new agency's ratings align with expectations based on standard and common indicators, thereby reducing the informational barriers that currently favor well-established CRAs.

In sum, requiring a standardized set of financial indicators in sovereign credit ratings would promote transparency, encourage critical engagement, and potentially foster greater competition within the rating industry, all at minimal additional cost.

While integrating standardized economic indicators offers a more transparent, objective foundation for credit rating assessments, it is crucial to acknowledge that certain critical factors affecting sovereign risk are inherently subjective and difficult to quantify. Governance quality, political risk, and institutional strength–key drivers of sovereign creditworthiness–cannot be fully captured by objective economic metrics alone. These factors significantly shape a country's long-term stability and fiscal outlook but are challenging to express in purely numerical terms. For example, political stability impacts economic policies, while governance quality influences a country's ability to implement reforms. These aspects involve nuanced judgments about political dynamics, historical context, and the quality of institutions, which are subject to interpretation and may differ across analysts and CRAs. Attempts to develop quantitative proxies, such as governance indicators or indices of political risk, often fail to capture the full complexity of these qualitative elements.

Thus, while a standardized data table can enhance transparency by providing a clearer quantitative basis for comparison, it must complement, not replace, the qualitative assessments that account for governance, institutional strength, and geopolitical considerations. Integrating these subjective elements into the broader rating framework requires CRAs to balance objective data and qualitative analysis, and provide clearer explanations for their assessments, especially when these assessments deviate from the expectations created by the actual economic outturn. Greater transparency in how these subjective judgments are made, alongside objective data, would allow users to engage with the rationale behind a rating more critically.

CRAs could address this by explaining how subjective factors are weighted and assessed. Additionally, creating a more standardized approach to reporting qualitative judgments–such as providing transparency in the rating methodology, including explicit qualitative risk factors–could enhance the objectivity and accountability of ratings while acknowledging the indispensable role of subjective analysis in sovereign risk assessment.

6. Concluding remarks

The methodological discrepancies among the Big Three and the over-reliance on proprietary models reduce transparency and objectivity in the rating process. Introducing a standardized table of economic indicators into the credit rating process offers a straightforward, minimally disruptive reform that enhances transparency and comparability. It is simple to produce and maintain, transparent, and easy to use. The introduction of the table represents a minor adjustment to the overall credit rating process at minimal additional cost, but it provides users with valuable comparative information and can therefore help reduce reliance on ratings. The table readily makes it much easier for a reader/user to evaluate the assessment CRAs make and decide whether it aligns with the reader's own views, values, and risk appetite. As such, it can be implemented quickly and easily; indeed, it would be in the interest of the CRAs themselves to do so in order to enhance the user friendliness, comparability, and, ultimately, the credibility of the ratings they issue. Even if one believes the inclusion of such a table has limited upside value, it most definitely has zero downside cost. The added transparency can improve accountability, fostering a more informed and critical assessment of CRA decisions by market participants.

However, the implementation of this framework is not without its challenges. One potential risk is over-reliance on quantitative data. While standardized economic indicators provide valuable objectivity, they cannot fully capture qualitative factors such as political stability, governance quality, or institutional strength, which are crucial to sovereign risk assessments. The complexity of these factors means that purely quantitative approaches might oversimplify a country's broader risk profile. To address this, CRAs must ensure that subjective elements remain integrated into their methodologies, with transparent explanations of how–and how much–qualitative judgments are applied alongside quantitative metrics.

Another challenge is harmonizing subjective and objective assessments**.** While objective data provides a clear and measurable framework, qualitative factors require nuanced interpretation and are often subject to individual analyst biases. Ensuring consistency and fairness in how these subjective judgments are made is essential to avoid discrepancies in ratings across agencies. Greater transparency in the methodologies used to weigh qualitative factors could help mitigate these concerns.

Overall, the proposed standardized table enhances the objectivity of CRA assessments, but it must complement–rather than replace–the subjective analysis essential for evaluating sovereign creditworthiness. By striking a balance between objective metrics and subjective judgments, CRAs can improve their ratings' accuracy and credibility, benefiting investors, policymakers, and the broader financial markets. Moreover, while this article focuses only on the credit ratings of sovereigns, a similar 'objective supplementary page' could be envisioned for other rated entities such as financial institutions, non-financial corporations, and even issued instruments.

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Income, age, consumption practices and inflation

Yiorgos Ioannidis*

Abstract

This article examines the heterogeneity of inflation across income and age groups in Greece, with a focus on household-level differences in consumption patterns and their implications for the Consumer Price Index (CPI). Using microdata from the Household Budget Survey, we re-estimate subgroup-specific CPIs and assess the extent to which the inflationary shock of 2021–2022 disproportionately impacted households. Our results show that the poorest households, as well as those headed by younger or older individuals, consistently faced higher inflation rates, even after overall inflation began to subside. In addition, we investigate the characteristics of households reporting expenditure that exceeds their annual income, analyzing the underlying drivers of this phenomenon. Our main finding is that excessive expenditure primarily stems from the inability of households to meet basic needs due to insufficient income. Lastly, we identify two distinct consumption thresholds—at the medium and upper end of the income distribution—which appear to mark entry points into the middle and upper classes and reflect structural positions within the socioeconomic consumption hierarchy.

Keywords: *Consumption, Consumer, Price Index, Inflation, Consumer hierarchy, Consumption patterns, Private debt.*

JEL Classification: *C8, E2, D1, H0, J1, Z1.*

1. Introduction

The type and quantity of goods consumed by households varies according to their income, characteristics and social status. Because of these differences in consumption patterns, the effects of inflation are not the same for all. In this article, we re-estimate the Consumer Price Index (CPI) for households belonging to different income groups, as well as for households belonging to different age groups. In the second part, we study the number and characteristics of households with a level of expenditure that exceeds their income. In the last section, we provide an initial estimation of consumption thresholds, i.e., the points where the household appears to move upwards in the consumption hierarchy.

2. Literature review

It is well documented that the inflation faced by households varies according to their consumption profile. For example, several studies have found that the elderly face higher inflation than other population groups (i.e., Amble and Stewart, 1994; Hobijn and Lagakos, 2003, 2005; Cardoso et al., 2022), that the range of change in inflation is low for households with a high level of education and higher for poorer households (McGranahan and Paulson, 2005) and that only one-third of households experience inflation close to the average (Crawford and Oldfield, 2002). Moreover, several comparative studies have found a positive correlation between inflation and poverty and economic inequality (i.e., Easterly and Fischer, 2001; Thalassinos et al., 2012; Jaravel, 2019, Wimer et al., 2019)

Recent research has come to similar conclusions. For example, Kaplan and Schulhofer-Wohl (2017), Jaravel (2019) and Argente and Lee (2021) found that poorer households in the US consistently face higher inflation than richer households, even in periods when inflation declines. Orchard's (2022) study confirmed earlier findings by Snyder (1961) that in periods of recession, the prices of goods consumed mainly by lower income groups fall at a slower rate than the prices of goods consumed by middle- and higher-income groups, while in times of inflationary pressures, the prices of goods consumed by poorer households increase more rapidly than those consumed by richer households. Kim and Lin (2024), studying econometrically a sample of 108 countries over the period 1995-2021, found that after a certain point, inflation increases the income share of richer households, i.e., increases economic inequality. According to their research,

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– Opinions or value judgments expressed in this article are the author's own and do not necessarily reflect those of the Centre of Planning and Economic Research.

this point ranges between 2% and 3% for high-income countries and between 3% and 5% for middle- and low-income countries. Simmilary, Cavallo (2020) and Jaravel & O'Connell (2020) analyzed inflation-induced inequality during the COVID-19 pandemic. Cavallo (2020) updated the expenditure weights by using data from electronic transactions in the US and found that inflation for poorer households was 1.12% compared to 0.57% for richer households. Finally, Missos et al. (2024) studied the effect of inflation on the purchasing power of households of different income brackets over the period 2008-2022 in Greece and found that the first quintile was disproportionately affected, with the difference estimated at 3.1 percentage points for 2022.

Regarding the recent inflation crisis in Europe, many studies conclude that inflation has disproportionately affected poorer households. For instance, Claeys and Guetta-Jeanrenaud (2022), studying the cases of Belgium, Italy, and France, found that low-income households experienced higher inflation (by 1.4, 1.7, and 0.3 percentage points, respectively) than richer households. Adunts et al. (2022) found that the poorest and single-parent households in the Czech Republic faced higher inflation than the general population, mainly due to the higher share of income being geared towards covering housing and energy costs. Cardoso et al. (2022) found that inflation in Spain mainly affected the elderly, while Kuchler et al. (2023), looking at the case of Denmark over the period 1996-2022, found that from 2020 onwards, the inflation experienced by the poorest 20% of households was about three percentage points higher than the inflation experienced by the richest 20% of households. Menyhert (2022), in a report prepared for the European Commission, estimated the potential impact of price increases on indicators of material and social deprivation, energy poverty and absolute poverty. The main finding was that as of August 2021, the inflation shock increased the material and social deprivation index in the European Union by about two percentage points, while the corresponding increase in energy poverty and absolute poverty indices amounts to about five percentage points.

Finally, some studies assess the impact of the support measures adopted by governments to mitigate the effects of inflation and the energy crisis. The common thread is that government interventions have had a positive impact in terms of protecting the poorest households but have failed to eliminate the negative redistributive effects. For example, Amores et al. (2023) studied the redistributive effects of the recent inflation crisis in the euro area, in combination with the support measures adopted by governments, using data from EUROMOD, EU-SILC and national Household Budget Surveys. Their analysis showed that poorer households experienced significantly higher inflation and welfare losses than richer households and that fiscal support measures compensated for about one-third of income losses. Bankowski et al. (2023), studying the relationship between the inflation shock and fiscal policy in the euro area, estimated that in the absence of the support measures, the average consumer price index in the euro area would have been about 1.7 percentage points higher. They also found that the support measures contained the inflation of the poorest households, which nevertheless continued to exceed the inflation faced by the richest households by 1.2 percentage points. Similarly, Curci et al. (2022) studied the impact of the inflation shock and fiscal stimulus measures in Italy in the second half of 2021 and found that although government interventions contained inflation by about two percentage points and limited the income losses of the poorest households by about 70%, the final position of the poorest households relative to the richest worsened. Finally, Pierros and Theodoropoulou (2022) examined the impact of inflation and government measures to address the energy crisis on households in different income categories. They found that in September 2021, the inflation faced by the poorest 20% was 3.1 percentage points higher than that faced by the richest 20% and that the increase in energy and food costs was the most important cause of inequality. According to their findings, government support to households was important but insufficient for low-income households.

3. Databases and methodology

According to the Hellenic Statistical Authority (ELSTAT), the calculation of the CPI (after 2015) is done by a variant of the Laspeyres formula. Specifically, the calculation of the index is based on the following formula (a similar methodology is followed for the calculation of indicators above the 5-digit level of COICOP5, as well as the general CPI):

$$R_h^{t,T} = R_h^{12,T-1}\left[\frac{\sum_{i=1}^{q} w_i^T R_i^{t,T} / R_i^{12,T-1}}{\sum_{i=1}^{q} w_i^T}\right], \qquad (1)$$

where

$R_h^{12,T-1}$ = the index of the h-score five-digit, in December of year $T-1$,

w_i^T = the weighting factor of the priced item i, in year T,

$R_i^{t,T}$ = the index of the priced item i, in month t of year T,

$R_i^{12,T-1}$ = the index of the priced item i, in December of the year $T-1$,

As for the data, they come from two sources. The first is the monthly price surveys of ELSTAT, which record the prices of a wide range of goods. The high frequency and wide range of price surveys (a total of 49,460 price surveys in 27 cities) provide an accurate picture of price changes. The second source is the annual Household Budget Survey (HBS), which collects detailed information regarding household characteristics and expenditure. The latter are derived from the weights of each priced good/service.

However, conducting the HBS in "waves" within the year, and the time required to process the data, results in a two-year time lag. Thus, the latest available data in, e.g., January 2024 is the HBS of 2022. So, for the estimation of the 2024 CPI, the 2022 HBS data are used, and so on. Because the composition of the 'representative household basket' may change within these two years, and to reduce the discrepancies, ELSTAT weights the expenditure of the HBS used ($t-2$) based on December of the previous year ($t-1$). Therefore, the estimation of the CPI is carried out on the basis of a corrected but heterotemporal basket of goods. In times of low inflation, this is not a problem since changes in the household consumption profile are small; in any case, this imperfection cannot be corrected, as it is due to objective time constraints.

However, in times of strong inflationary pressures–such as the one we are considering–the use of a heterotemporal basket (even if corrected) may not take into full account the significant adjustments in consumption caused by inflation. On the other hand, the objective constraints imposing the use of a heterotemporal basket are retroactively eliminated. That is, today (2025) we can re-estimate the 2022 CPI using as weights those derived from the HBS of the corresponding year. In this case, the need to correct the weights based on the December CPI of the previous year is also eliminated. Consequently, the estimation of the CPI can be done with a simplified version of equation (1), which takes the following form:

$$P_L = \frac{\sum_{i=1}^{n} p_i^t q_i^0}{\sum_{i=1}^{n} p_i^0 q_i^0} \equiv \sum_{i=1}^{n} \left(p_i^t / q_i^0\right) s_i^0 . \qquad (2)$$

In this article, the CPI has been re-estimated using the primary data of the HBS, based on the updated basket. That is, we calculated the weights for each year based on the HBS of the respective year (and not the year $t-2$). The exception is the estimation for the years 2023 and 2024 where, due to lack of data, formula (1) was used. As expected, this causes slightly different estimates from those obtained by ELSTAT.

The second reason for differentiating the results has to do with the data we use. To estimate the weights, ELSTAT includes in household expenditure three categories of expenditure not included in the HBS: (a) transfers to third parties (code 128011-12), (b) traffic taxes (code 128013) and (c) fines (128014). On average, these expenditures add about 3% to household expenditure, but we do not know their distribution by sub-group. Given this limitation, our estimates are based on the expenditure recorded solely in the HBS, i.e., 97% of the expenditure used as the basis of calculation by ELSTAT. The impact is limited (less than 0.05 percentage points); hence, it does not significantly distort our results.

Our estimation of the CPI for the household sub-groups was–as in the case of ELSTAT–based on the restrictive "one price" hypothesis, according to which households face the same price for each product or service they consume. The assumption is obviously restrictive because the price of each good varies according to its characteristics. The cost of buying a computer, a mobile phone or a car depends on the specific characteristics of the product in question, and it is very likely that poorer households will buy cheaper mobile phones than richer households. These differences may affect the inflation faced by different households. For example, let us imagine that households only buy mobile phones. However, poor households buy only (cheap) phones *A* and rich households buy only (expensive) phones *B.* Therefore, a possible increase in the price of (expensive) phones *B* will not affect the inflation of poor households (since they only buy phones *A*). However, if we use the average price of phones (*A* and *B*), an increase in the price of (expensive) *B* will increase the average price of the 'mobile phone' category and will affect the estimated inflation of all households (rich and poor). In other words, to accurately estimate the CPI of a sub-group of households, it is not enough to know the expenditure allocation of this sub-group but also the change in prices of the specific products consumed by this sub-group. But this record does not exist. Based on the above, we estimated the CPIs by the restrictive one price assumption, so the differences in inflation faced by the household sub-groups are due solely to the variation in the share of total expenditure that is oriented towards each category of goods.

Finally, classifying households solely on the basis of income underestimates the impact of household size. Based on the above, the division of households into quintiles and deciles was based on the equivalent average individual net income (i.e., income excluding taxes and income in kind). As a weighting factor, the equivalent household size "OECD scale" was used.

4. The income dimension

To estimate the Consumer Price Index, we need to calculate the breakdown of relative expenditure, i.e., the part of total household expenditure that is allocated to each category of goods and services. Table A1 (Annex) shows this distribution for the poorest and richest households in the twelve main categories of goods and services for the years 2016-2024.

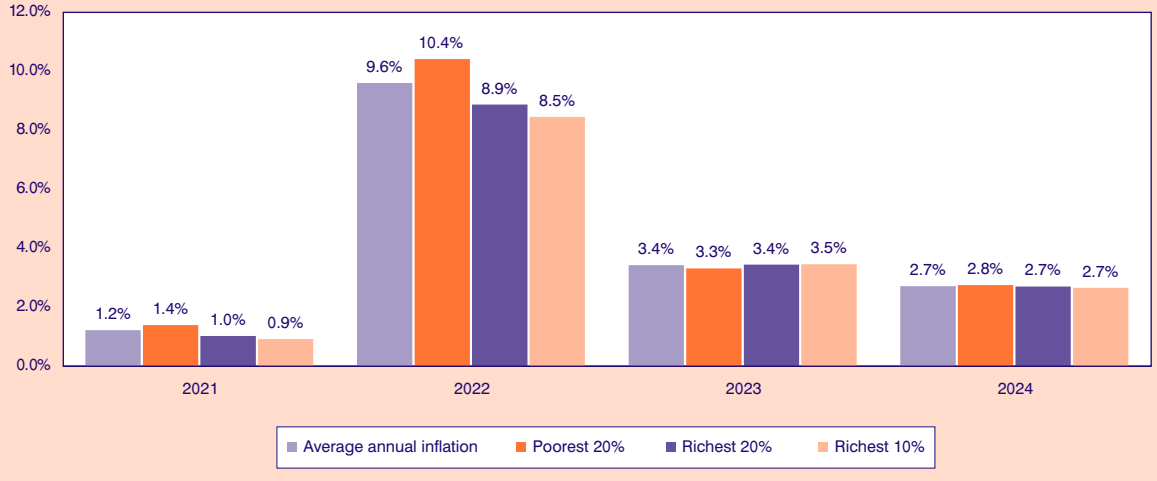
As can be seen, the relative expenditure of the poorest 20% of households (P20) on food, housing and communication is significantly higher than the corresponding expenditure of the richest 20% (R20). For instance, in the year 2022, 53.1% of total P20 expenditure was geared towards meeting food, housing and communication needs, compared to 33.7% for R20 and 30.4% for R10. Further analysis shows that for P20, the highest relative expenditures are (a) for food, due to flour (bread, cereals, flour, etc.), meat, dairy products and vegetables; (b) for housing, due to electricity, heating and rent; and (c) for communications, due to mobile phone services.

In contrast, richer households allocate a larger share of their expenditure to travel, leisure, hotel-cafeteria-restaurant and other expenditure (which includes personal grooming, jewellery and all kinds of insurance and third-party services to the household). In 2022, these expenditures accounted for 38.0% and 39.7% of R20 and R10, respectively, compared to only 24.4% of P20. The highest relative expenditures of the richest households are (a) on transport, due to the purchase of transport; (b) on leisure, due to expenditure on large recreational equipment and musical instruments; and (c) on other goods and services, due to insurance (health, travel, etc.).

Figure 1 shows the estimate of average annual inflation based on our updated CPI calculations. As we can see, in both 2021 and 2022, the average inflation faced by P20 was higher than the national average, with the difference being 0.2 percentage points (pp) for 2021 and 0.9 pp for 2022. In contrast, richer households faced lower inflation. In particular, R20 households faced lower inflation by 0.2 p.p. in 2021 and by 0.7 p.p. in 2022, while R10 households faced even lower inflation (by 0.5 p.p. in 2021 and by 1.1 p.p. in 2022). In short, in 2021, the richest 10% of households faced 0.5 percentage points lower inflation than the poorest, while in 2022, the gap widened to 1.9 percentage points. Subsequently, with the gradual easing of inflationary pressures, these differences disappeared. In 2023 and 2024, all households faced roughly the same inflation rate, with deviations not exceeding 0.1 p.p.

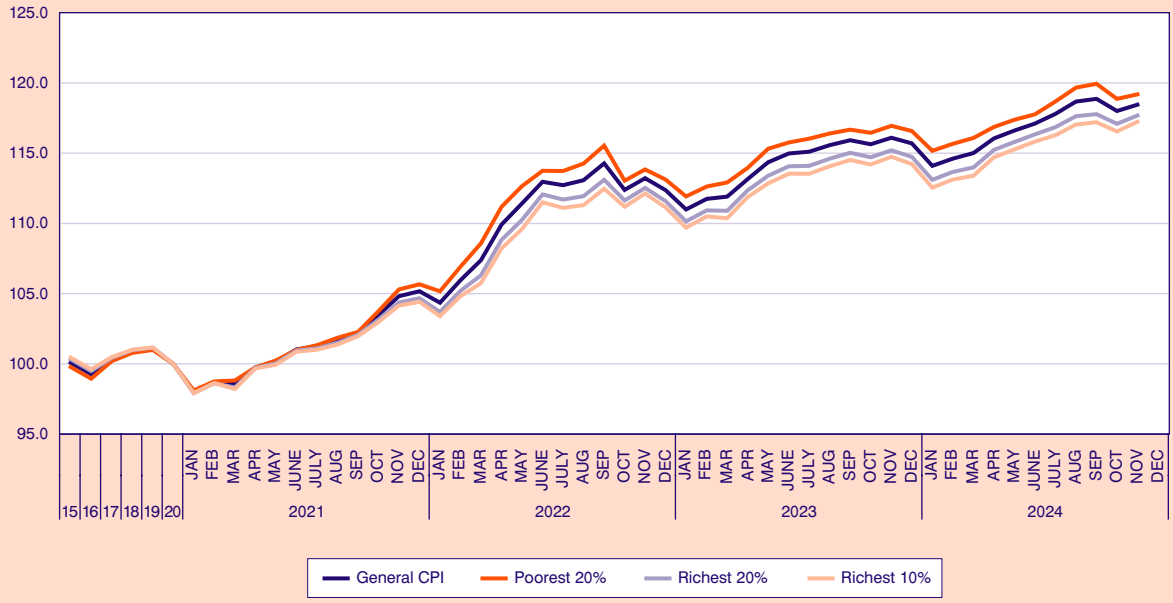
So, it could be argued that the inflationary shock of 2020-2021 has subsided and its effects were temporary. Unfortunately, this is not the case. Inflation measures the change in prices from year to year, and thus "has no memory". Therefore, equalising inflation rates

FIGURE 1
Average annual inflation based on the updated CPI for households of different income groups



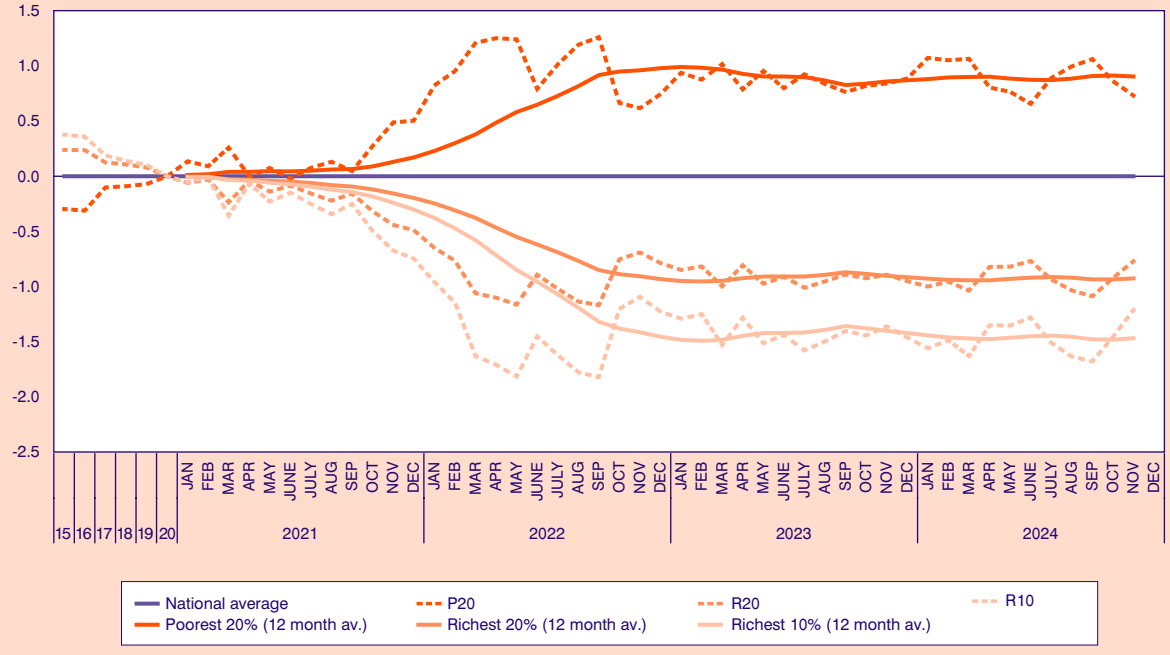
Source: Author's estimates.

FIGURE 2
Consumer Price Index by household income group



Source: Author's estimates.

FIGURE 3
Deviation of the CPI of households of different income groups from the national average



Source: Author's estimates.

between richer and poorer households after 2023 simply means that the relative position of the two groups did not change in those two years due to inflation. However, their relative position had already been altered by developments in the previous two years (2021 and 2022). In order to see how the price level faced by each household group has evolved, we need to look at the evolution not of inflation but of the Consumer Price Index (CPI), which incorporates the past impact.

Figure 2 shows the CPI for all households (dark blue line), for the poorest 20% of households (P20, orange line), for the richest 20% of households (R20, purple line) and for the richest 10% of households (R10, light orange line) for the years 2015-2024. As we can see, the changes of the CPIs follow those of the General Index, but the inflation shocks in 2021 and 2022 pushed the P20 CPI to levels consistently above the average. In contrast, the CPI of the richest households moves steadily below the average. Indeed, it appears that the inflation shock of 2021-2022 reversed the trend that characterized the years from 2015-2020, during which the CPI of poorer households was marginally below both the overall average and that of richer households.

To fully capture the range of deviation, we construct Figure 3 above, which shows the deviation of the subgroups' CPI from the national average (if the curve moves above the horizontal axis, this means that the CPI of the respective group is higher than the national average and vice versa). The dotted lines correspond to the monthly estimate and the solid lines to the 12-month average. As we can see, the divergence in the CPI of the poor, which started in the fourth quarter of 2021, became entrenched in 2023 and is expected to persist in 2024, if there are no changes in the composition of the poor household basket. The average deviation from the national average is around one percentage point. In contrast, the richest households face a CPI that moves consistently between 1.0 and 1.5 percentage points below the national average. The crucial point is that although the deviations from the national average are not large (hovering close to one percentage point), their sum, i.e., the deviation between the poorest and the richest, is significant, reaching 2.5 percentage points. Moreover, this discrepancy is persistant and risks becoming entrenched. Consequently, the inflation shock of 2021-2022 has consolidated a situation where poorer households face a consistently higher average price level than richer households. Similarly, the equalisation of annual inflation rates in 2023 and 2024 resulted in a consolidation of inequality, causing neither a deterioration nor an improvement.

5. The age dimension

Similarly to the above, the calculation of relative household expenditure towards each category of goods and services is necessary in order to estimate the CPI by age group (Table A2, Annex). As seen in Figure 4, a consumption pattern emerges that is quite sensitive to the age of household members. Younger people spend more on recreation and housing, older people on housing and health, and the intermediate age groups show increased expenditure on clothing, education, transport and holidays (hotels), part of which certainly covers the needs of younger household members.

As seen, we can group the relevant expenditure into three broad categories.

The first group includes expenditure on goods/services that increase/decrease steadily with age. A typical example is the relative expenditure on food and health, which tends to increase with age (these expenditures account for 21.2% of total expenditure for aged 18-24 households, compared to 38.6% for households aged 65 and over). In contrast, related expenditure on spirits-tobacco and leisure tends to decrease with increasing age. The relative expenditure of these two categories amounts to 16.3% of total expenditure for the youngest (18-24 years old) compared to 4.9% for the oldest (65+ years old). Expenditure on telecommunications also increases (with age) but remains low (3.9% for the youngest and 4.9% for the oldest).

The second group includes items whose expenditure curves have a parabolic shape. That is, they increase/decrease up to a certain age, but then the slope of the curve reverses. The inflection point-age varies, but the pattern is generally constant over the years we have examined. For example, relative expenditures on clothing, travel and education increase with age but decline after a point. In contrast, expenditure on housing decreases with age, but after a certain age, it increases to the point where the ends of the age pyramid face the highest housing expenditure among the population (19.4% for the youngest, 17.8% for the oldest, 14.8% for the average).

Finally, there is a third group of goods whose relative expenditure remains more or less the same for almost all age groups. This includes spending on hotels and on various (mainly) personal services ("Miscellaneous goods and services"). In the case of hotels, the average expenditure of all age groups ranges between 11.1% and 12.7% with the exception of the over 65s, where it falls back to 7.7%. In the case of "personal goods and services", the average expenditure ranges

FIGURE 4
Expenditure distribution per age group (HBS 2022)

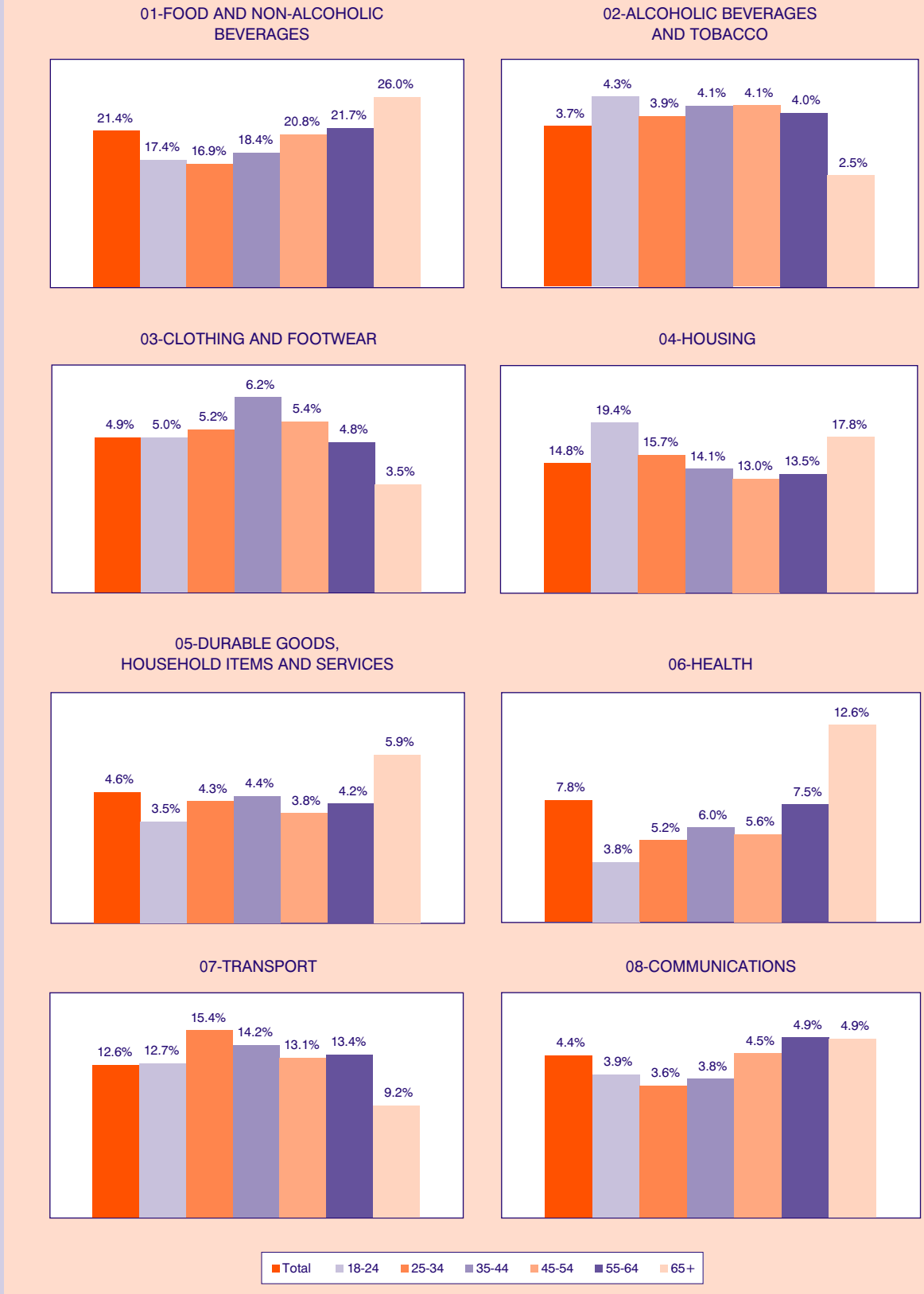
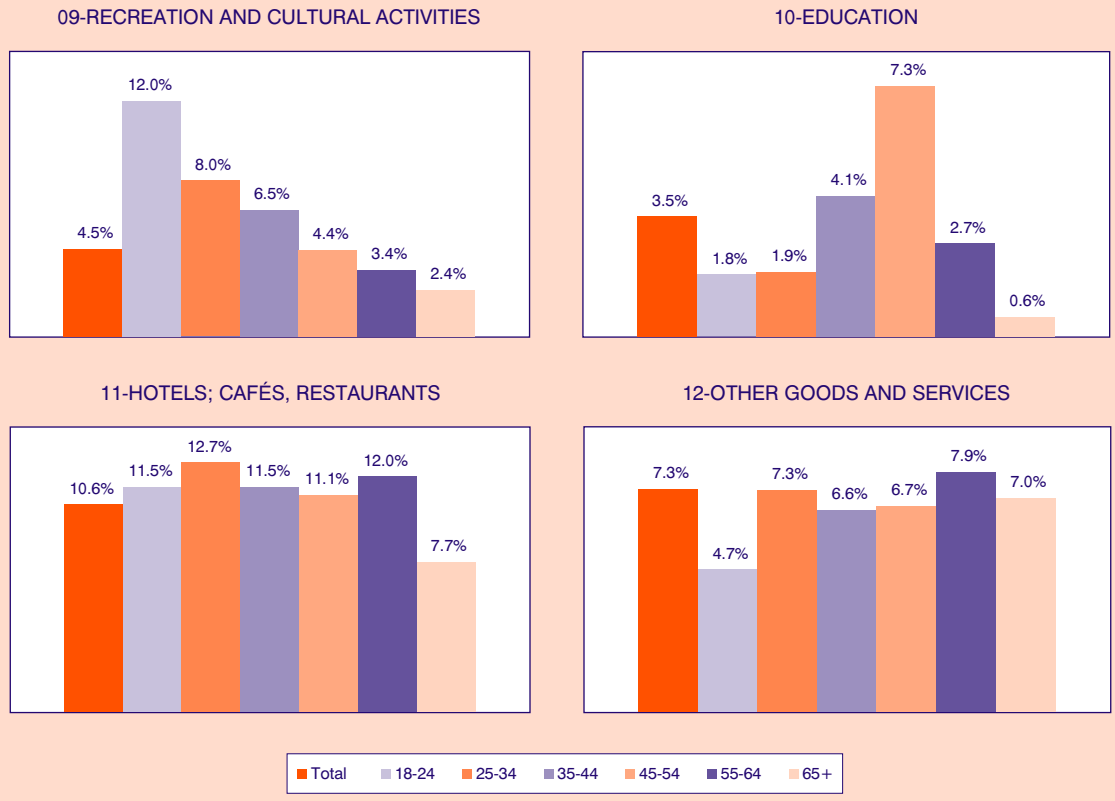
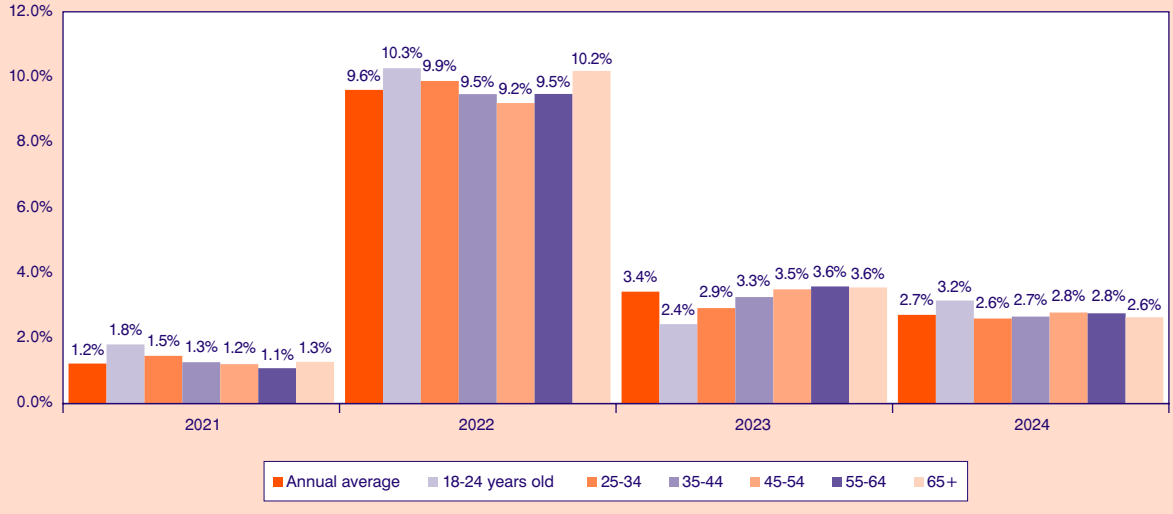


FIGURE 4 (continued)



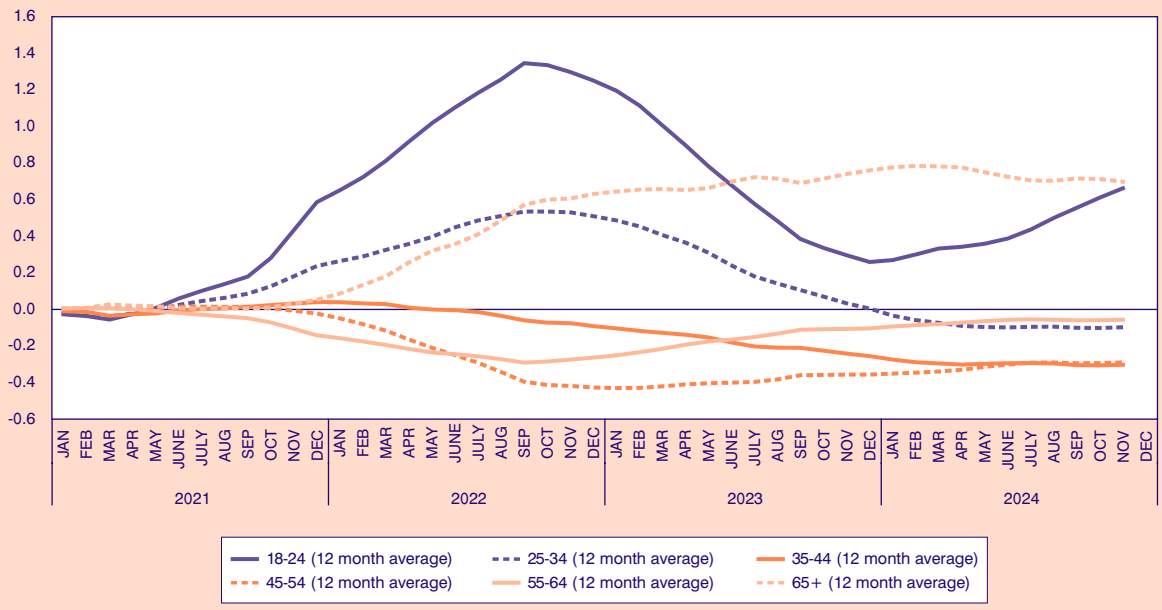
Source: HBS 2022.

FIGURE 5
Average annual inflation based on updated household CPI for different age groups



Source. Author's estimates.

FIGURE 6
Deviation of the CPI of households of different income groups from the national average per age group



Source. Author's estimates.

between 6.6% and 7.9%, except for young people up to 24 years old, where it falls to 4.7%.

As expected, the above differences in consumption patterns also cause different average inflation and CPI indices. Nevertheless, in the case of age, the deviations from the average are smaller than those found for income groups. As shown in Figure 5, the 2022 inflationary shock hit mainly at the extremes of the age pyramid. Moreover, the price deceleration (2023 and 2024), although affecting all age groups, further worsened the position of younger and older households (Figure 6). As we can see, the CPI of the youngest (15-25 years) and oldest (65+ years) households has been moving steadily above the national average by about 0.8 percentage points.

6. Households with excessive expenditure

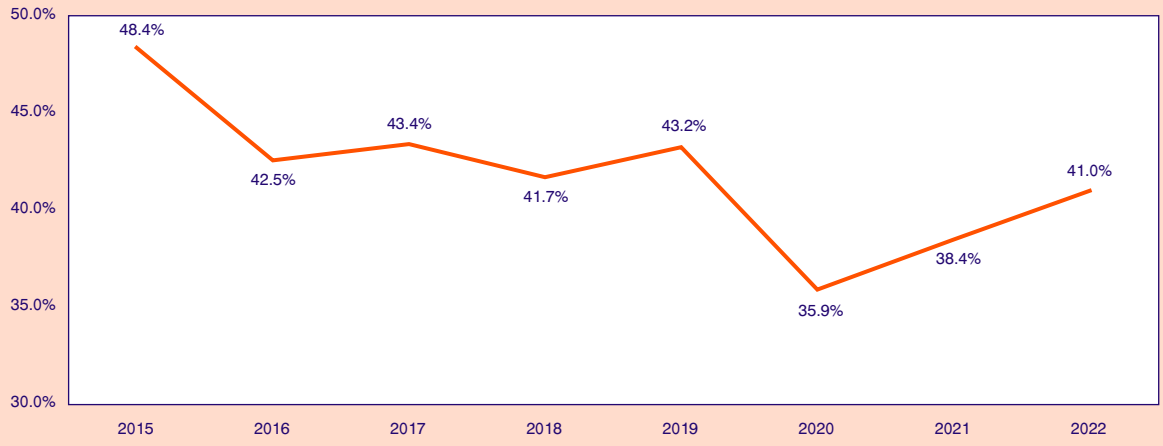
It is expected that each year some households will incur expenditure in excess of their annual income (excessive expenditure). The proportion of such households for the period 2009-2022 is captured in Figure 7. The first observation is that this percentage has been at a high level over time, generally above 40%. In the period 2009-2020, there was a significant deceleration, probably due to the gradual improvement in the state of the economy, but also due to the reduction in the consumption of certain goods and services (mainly leisure and cultural expenditure) as a consequence of the containment measures adopted in response to the COVID-19 pandemic. Subsequently, however, due to inflationary pressure, the index increased again, reaching 40.9% in 2022.

There might be several reasons behind this observation.

Firstly, excessive expenditure might be related to the inability to fully cover living expenses due to low income. Poorer households allocate a larger share of their income to the purchase of basic goods, and price increases combined with the effort/need to maintain the previous level of consumption may force some households to incur expenditures that exceed their income (Amores et al., 2023).

Secondly, documented excessive expenditure might be due to a household's inability to calculate its real income and/or due to the deliberate concealment of income, if the latter stems from activity in the shadow economy. After all, the HBS income data are not derived from administrative sources but are based on the self-declaration of the sampled individuals. There-

FIGURE 7
Percentage of households reporting expenditure above their income (2009-2022)



Source: ELSTAT data processing.

fore, it is possible that some households may not be able to accurately calculate "net monthly income after deduction of taxes", and it is also expected that some households may not declare income that they have concealed from the tax authorities. In fact, the data analysis raises reasonable suspicions of tax evasion, given that in the year 2023, among households belonging to the richest 10% of the population and with rental income as their main source of income, 53.9% reported excessive expenditure (compared to 25.7%, which is the average for households with excessive expenditure among the richest 10%).

The third reason for excessive expenditure has to do with the nature of this expenditure. There is expenditure that is "exceptional" in the sense that it is not repeated on an annual basis. These costs may be foreseeable or unforeseeable. A typical example of such expenditure is the purchase of consumer durables such as a washing machine, a refrigerator, a computer, etc. Every household knows that during the next decade, they will probably need to replace a consumer durable (extraordinarily foreseeable expenditure). Similarly, there is unforeseen damage that may cause replacement costs for consumer durables (i.e., a broken window). In other words, the purchase of a new car, the replacement of a computer that has broken down, moving to another place of residence, the replacement of durable goods damaged by some unforeseen cause (theft, natural disasters, etc.), a health problem, etc., are all reasons that can conjecturally push the household's annual expenditure above its annual income. In conclusion, it is to be expected that each year some households will experience higher spending than their income, not because they are in permanent economic difficulty but because it is time to replace a consumer durable or because a child spilled orange juice on mom's computer.

This raises the question of the actual number of households that cannot meet fixed obligations due to economic difficulties. To answer that, we may subtract from the total number of households with excessive expenditure those belonging to the first and third group. The calculation of the number of households with excessive expenditure can be done based on the following equation:

$$NB = Y - Exp, \tag{3}$$

where *NB* is the Net Balance of the household, *Y* is the total income of each household and *Exp* is the total expenditure on the purchase of consumer goods. It follows that when *NB* is negative, the household has excessive expenditure. The modification of equation (3) allows us to estimate alternative scenarios. In particular, we can estimate equation (4)

$$NB^{-x} = NB - Exp_x \tag{4}$$

which gives us the household balance after deducting some type of expenditure (Exp_x). For instance, depending on the expenditure we deduct (Exp_x) we can estimate the number of households with excessive ex-

TABLE 1 Households with excessive expenditure (HBS data 2022)

Households with excessive expenditure which...	**40.9%**
...is not due to the purchase of luxury goods (NB_LUX)	39.7%
...is not due to the purchase of luxury goods and/or the purchase of consumer durables (NB_dur)	35.6%

Source: Author's calculations.

penditure after deducting luxury expenditure. It is obvious that $-NB^{-x} < -NB$, i.e., the number of households with a negative budget balance resulting from equation (4) is smaller than that resulting from equation (3).

For the purposes of this article, two versions of NB^{-x} were evaluated.

The first version (NB_LUX) gives us the number of households with excessive expenditure after subtracting a small range of expenditure that can relatively safely be classified as "luxury expenditure". In this version, Exp_X equals expenditure on buying a new car (code 0711), parking spaces (code 07241), boats (code 0921), musical instruments (code 0922), leisure equipment (code 09424), group trips abroad (code 09602), jewelry and watches (code 1231), home, health and travel insurance (codes 1252, 1253 and 12542), investment and tax consultancy fees excluding accounting services (code 12662). In short, the number of households with a negative BAL_LUX gives us a picture of households with excess expenditure not due to the purchase of "luxury" goods.

The second version (NB_dur) gives us the number of households with excess expenditure after deducting both luxury expenditure (NB_LUX) and total expenditure on durable household goods (code 05), which includes the purchase of furniture, carpets, decorative items, linen, large and small household appliances, kitchen and dining room equipment, garden equipment and household services. In other words, NB_dur corresponds to a strict scenario where any kind of expenditure on durable goods is treated as a one-off expenditure. Alternatively, NB_dur gives us a picture of the number of households that would continue to have excess expenditure even if they did not purchase any consumer durables.

It should be noted that the above methodology, as well as the resulting estimates, should be treated with some caution and as giving approximate values. After-all the methodology used is based on reasonable but not empirically tested assumptions. Moreover, some of the "luxury" expenditure may not be luxury at all. Not all jewelry and watches are gold, not all boats are yachts, not all group trips are to Swiss ski resorts, and as Vittorio de Sica showed in *The Bicycle Thief* (1948), the loss of a means of transport may be equivalent to the loss of a livelihood.

Having said that, Table 1 presents the results of the different scenarios. As we see, only a small part of the excess household expenditure is due to the purchase of luxury goods. Subtracting this expenditure reduces the percentage of households with a budget deficit by only 1.3% (from 40.9% to 39.7%). Similarly, removing the expenditure on consumer durables reduces the index to 35.6%. This means that 35.6% of households would continue to have excessive expenditure even if they did not purchase luxury goods and consumer durables.

Moreover, age and level of income are strongly correlated with the likelihood of excessive expenditure (Table A3, Annex). For instance, almost all households aged 18-24 fall into the excessive expenditure category. Similarly, the probability of excessive expenditure decreases as the (equivalent) income of the household increases. This "rule" holds for all sub-distributions based on household type. For instance, excessive expenditure is demonstrated in 82.0% of the households of the 1st income decile and 61.3% of the households of the 2nd decile (the corresponding ratio for the R10 households is 25.7%). Interestingly, the transition from the 5th to the 6th and from the 9th to the 10th deciles is accompanied by an increased probability of excessive expenditure. We will discuss this later on.

Regarding the socio-economic status of the household, excessive expenditure characterizes 97.8% of the households headed by a student and 63.4% of households headed by an unemployed person. The

lowest ratio of excessive expenditure is for households headed by a pensioner (63.4%). This is perhaps surprising, especially as it is not linked to either income or expenditure levels. Both the average income (equivalent and total) and average expenditure of pensioners are lower than the employed and higher than the unemployed or inactive. However, pensioner households are less likely to have excessive expenditure. The interpretation probably should be attributed to consumer ethos stemming from the reduced possibility of future income growth that dictates an adjustment of consumption behaviour to the current level of income.

Finally, the number of underaged children is positively correlated with the probability of excessive expenditure, while the number of adults in the household is negatively correlated with the possibility of excessive expenditure. Thus, single-parent families are in the worst position (79.2% of households with excessive expenditure) and households with more than 2 adults and no minor children are in the best position (28.7%). Moreover, almost all single-parent families with 2 children demonstrate excessive expenditure regardless of income level, followed by single-parent families with 1 child and households with 2 adults and 3 children, etc. These results are consistent with the findings of Missos (2021) who, by examining the impact of the social protection system on inequality and poverty in Greece and the EU, found that in Greece, the poverty rate of single-parent households appears extremely high.

7. Consumer patterns, income and position in the consumer hierarchy

The type and quantity of goods consumed by households are determined by the level of income, the type of good and, finally, social status. Bourdieu (1979), in his seminal work *The Distinction*, showed that consumption is not merely an economic activity or a purely individual choice. On the contrary, it has deep symbolic meanings in the sense that it sends out signals regarding the social status of individuals. Individuals' consumption choices reflect a habitus that is a result of their social environment and the social class to which they belong. At the same time, consumption is also a mechanism for reproducing the social hierarchy since–through access to different types of goods and services–the upper classes ensure that their children will inherit the cultural and social capital necessary to maintain their social position. Similarly, economic literature is familiar with the distinction between basic and luxury goods. Basic goods and services are defined as goods and services that are necessary for everyday living, such as food, clothing, housing, education and health. Due to their nature, an increase in the price of basic goods does not cause a significant decrease in consumption. Nevertheless, an income increase does not cause a corresponding increase in consumption; on the contrary, it reduces relative expenditure, which is known as Engel's law (Engel, 1857). In contrast, luxury goods are not necessary for the survival of the household, but they provide a higher level of comfort, status or satisfaction (typical examples are jewelry, designer clothes, holidays, etc.). These goods are characterised by high elasticity, i.e., they are strongly influenced by both income and price changes (Veblen 1899; Basmann et al., 1988). In this case, an income increase causes an increase in consumption, and an increase in price causes a decrease in consumption.

In the previous sections, we saw that income and age are related to the relative expenditure of households on various goods. But beyond the major categories of expenditure (food, housing, etc.), increasing income causes significant variations in the type of goods consumed. For example, the increase in income, in terms of

- food, increases the relative expenditure on confectionery, beef, fresh fish and seafood, cheese, butter, fresh fruit but reduces relative expenditure on bread, rice, pasta, poultry, frozen fish and vegetables
- housing costs, increases the relative expenditure on heating oil and gas and reduces the relative expenditure on rent, LPG or solid fuels
- transport, reduces the relative cost of travel by train and bus and increases the relative cost of travel by air and boat
- education increases the relative expenditure on preschool and primary education and reduces the relative expenditure on other categories of education, including higher education
- culture, holidays and personal care expenditure, increases the relative expenditure on museums, foreign holidays, the purchase of boats and musical instruments and decreases the relative expenditure on cinema, photographic services and domestic holiday packages
- hotels, jewellery, watches, home and health insurance, financial services, in short, almost all categories of (related) personal care expenditure increase with rising income, with the exception of expenditure on small electrical appliances (hairdryers) and funeral expenses.

The above is not surprising. The poor eat more bread and pasta, commute by bus, heat their homes with gas

or wood, go to the cinema. The rich eat more sweets, go out more often, go on holiday abroad, travel in their own cars and spend much more on personal care and luxury goods. Death 'evens them out', as rising incomes do not seem to fund more expensive funerals (the absolute funeral expenditure of the richest 20% of households is just 0.3 times higher than the poorest 20%).

Moreover, the likelihood of excessive expenditure decreases as income increases. In Figure 8 the solid line captures the probability of excessive expenditure by twenty percentile (5%) income bracket. The dashed line captures the trend as a second-degree polynomial. As we see, the general trend is downward, i.e., the probability of excessive expenditure decreases as household income increases.

Nevertheless, there are some "spikes", i.e., points corresponding to a higher level of income and a higher probability of excessive expenditure. For the 2022 HBS, these points are the 11th, 12th, 15th and 20th income bracket. If we were to construct the corresponding curve for each year of the period 2009-2022, we would get a similar picture. The spikes are not always at the same bracket, but they tend to cluster around some brackets. As we see in Figure 9, in a total of 14 years, the passage to the 9th and 11th bracket is accompanied by an increase in the probability of excessive expenditure in 50% of the years. Similarly, the passage to the 16th bracket is associated with an increased probability of overspending in 64.3% of the years, while the corresponding figure for the passage to the 18th is 57.1%. So, there are indications of two turning points. The first is close to the middle of the income scale, and the second is at its upper end. What is the reason for this?

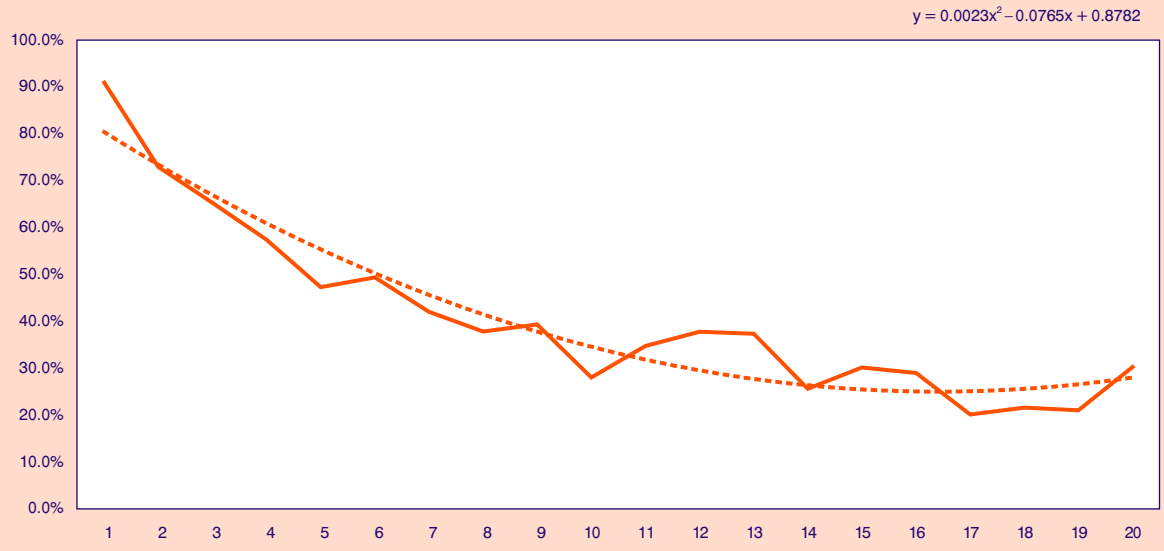
A firm answer to the question would require a panel-data database to study how the consumption patterns of the households change with their income. Unfortunately, this data does not exist in Greece, but we can formulate some hypotheses for future testing.

One interpretation relates to the household's ability to finance an instantaneous excessive expenditure. An excessive expenditure can be financed either from the past (through savings) or from the future (e.g., payment by instalments and/or credit card). Both financing possibilities are extremely limited for a poor household. However, an increase in household income increases both sources of finance accordingly. In other words, when income increases, the household can cover the cost of a temporal excessive expenditure either from past savings or from its future income.[1] Also, it is reasonable to assume that although past and future cost-covering possibilities increase linearly with income, the use of the possibility is instantaneous and only after a threshold is met. The thresholds we find may correspond to those points at which the household is able to exercise the increased ability of past and/or future financing.

The second interpretation is of a sociological nature. Suppose that a household's consumption is not determined by a rational utility-maximizing behavior but by a combination of the level of income, the social class to which it belongs and the economic constraints it faces (Lavoie 1994, 2006). Therefore, an increase in income leads not only to an increase in consumption of luxury goods but also to the creation of new consumption needs. Bourdieu's perspective helps us to deepen this interpretation. According to Bourdieu, middle-class consumption is upward looking in the sense that it seeks to emulate the consumption of the upper classes. Each household has a 'reference group', which is not the group to which it belongs but the group to which it aspires to belong. The further the household is from its reference group, the more difficult the comparison with it (and its consumption patterns). However, when the household approaches the boundaries of the above class (due to an increase in income), the comparison becomes easier, as the household's network of social relations changes and starts to include people from the immediately higher class. In this context, excessive expenditure might be the result of a consumption "over-effort" due to the household's attempt to meet new consumption patterns. In this context, the thresholds we have identified are also the entry thresholds to the middle and upper classes.

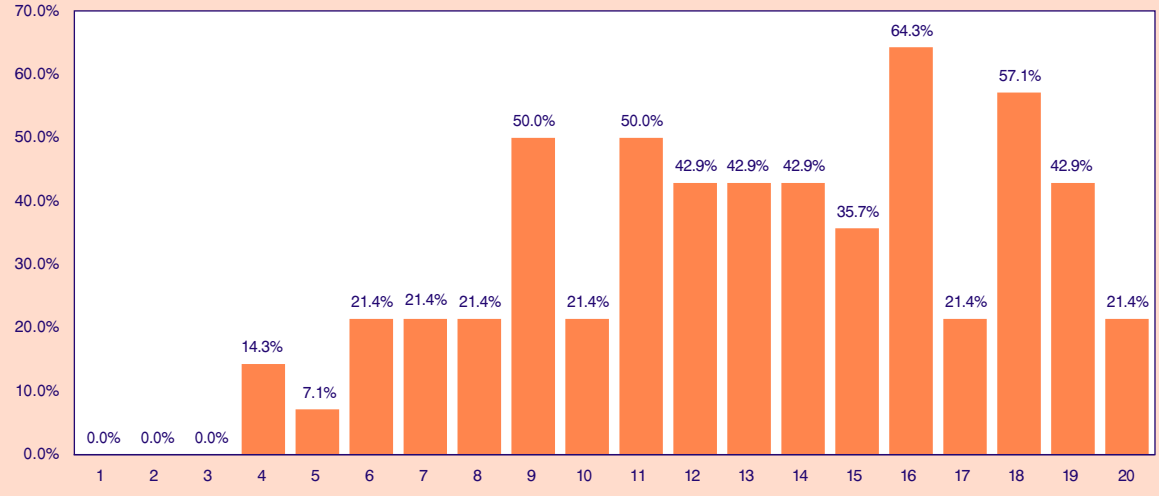
1. In the 2022 HBS, we find 3,788 households (0.2% of the total) that declared an excess of expenditure over €100,000 and 24,674 households (1.5%) that declared an excess of expenditure between €50,000 and €99,000. The same households show exceptionally high expenditure in two main categories: "071 Purchase of means of transport" and "092 Other recreational equipment", which include pleasure boats, musical instruments, etc. ELSTAT officials confirmed that these two categories consistently show extremely high prices due to the consumption of ultra-luxury consumer goods.

FIGURE 8
Probability of excessive expenditure per income ventiles (2022)



Source: ELSTAT data processing.

FIGURE 9
Frequency of increased likelihood of overspending during the transition to a higher income decile (2009-2022)



Source: ELSTAT data processing.

Annex

TABLE A1 Distribution of household expenditure across main categories of goods and services

	2016	2017	2018	2019	2020	2021	2022	2023*	2024*
Total of households									
1. Food and non-alcoholic beverages	21.3%	21.4%	21.1%	20.8%	20.6%	23.8%	22.6%	21.4%	20.5%
2. Alcoholic beverages and tobacco	4.2%	4.0%	3.9%	3.8%	3.5%	4.0%	3.9%	3.7%	3.7%
3. Clothing and footwear	6.0%	6.0%	5.9%	5.9%	6.0%	4.8%	5.2%	4.9%	4.3%
4. Housing	13.7%	14.2%	14.4%	14.4%	14.3%	15.7%	15.0%	14.8%	16.2%
5. Durable goods, household items and services	4.8%	4.6%	4.5%	4.5%	4.6%	4.3%	4.6%	4.6%	4.4%
6. Health	7.8%	7.7%	7.5%	7.7%	7.3%	8.2%	8.3%	7.8%	7.7%
7. Transport	12.0%	12.1%	12.1%	12.2%	12.6%	11.5%	11.9%	12.6%	13.0%
8. Communications	4.3%	4.3%	4.3%	4.2%	4.2%	4.7%	4.8%	4.4%	4.5%
9. Recreation and cultural activities	4.9%	4.8%	4.8%	4.8%	5.0%	3.6%	3.9%	4.5%	4.5%
10. Education	3.4%	3.3%	3.4%	3.3%	3.4%	3.9%	3.5%	3.5%	3.5%
11. Hotels, cafés, and restaurants	10.3%	10.3%	10.9%	11.2%	11.5%	8.2%	9.1%	10.6%	10.5%
12. Other goods and services	7.3%	7.3%	7.1%	7.1%	7.0%	7.2%	7.3%	7.3%	7.2%
P20									
1. Food and non-alcoholic beverages	25.2%	26.4%	24.9%	25.6%	24.7%	27.8%	28.0%	26.7%	25.6%
2. Alcoholic beverages and tobacco	5.4%	5.0%	5.0%	4.3%	4.2%	4.6%	4.3%	3.8%	3.9%
3. Clothing and footwear	4.7%	4.5%	4.8%	5.0%	4.9%	4.6%	3.9%	4.7%	4.1%
4. Housing	17.7%	17.9%	17.8%	17.6%	18.2%	19.4%	19.3%	18.5%	20.2%
5. Durable goods, household items and services	3.7%	3.1%	3.1%	3.6%	3.4%	3.8%	3.8%	4.1%	3.9%
6. Health	7.3%	5.7%	5.8%	7.1%	6.4%	6.6%	7.4%	7.6%	7.6%
7. Transport	8.9%	9.7%	11.2%	9.7%	10.2%	8.8%	8.1%	9.7%	10.0%
8. Communications	4.5%	4.7%	4.7%	5.0%	4.7%	5.3%	5.8%	5.3%	5.4%
9. Recreation and cultural activities	3.5%	3.1%	3.5%	3.1%	3.6%	2.4%	2.4%	2.7%	2.7%
10. Education	2.9%	3.7%	3.4%	2.9%	3.6%	3.4%	3.0%	3.1%	3.1%
11. Hotels, cafés, and restaurants	9.8%	9.5%	9.7%	9.5%	9.9%	7.1%	7.4%	8.0%	7.9%
12.Other goods and services	6.4%	6.7%	6.1%	6.7%	6.2%	6.2%	6.5%	5.9%	5.8%
R20									
1. Food and non-alcoholic beverages	17.0%	16.7%	16.8%	15.8%	16.3%	19.6%	17.5%	16.3%	15.6%
2. Alcoholic beverages and tobacco	3.6%	3.4%	3.2%	3.2%	3.1%	3.7%	3.1%	3.3%	3.4%
3. Clothing and footwear	7.0%	7.5%	7.0%	6.7%	6.7%	5.0%	6.4%	5.3%	4.7%
4. Housing	10.9%	11.5%	11.5%	11.9%	11.7%	13.5%	12.2%	12.2%	13.4%

TABLE A1 (continued)

	2016	2017	2018	2019	2020	2021	2022	2023*	2024*
R20 (continued)									
5. Durable goods, household items and services	5.8%	5.1%	5.5%	5.4%	5.4%	4.8%	5.5%	5.6%	5.3%
6. Health	7.3%	8.6%	8.0%	8.1%	7.8%	9.1%	8.9%	7.5%	7.5%
7. Transport	14.5%	14.2%	13.6%	14.3%	14.4%	12.9%	13.3%	13.9%	14.4%
8. Communications	3.7%	4.0%	3.9%	3.7%	3.8%	4.3%	4.0%	3.7%	3.8%
9. Recreation and cultural activities	6.3%	6.5%	6.6%	6.8%	6.7%	5.2%	5.8%	7.1%	7.1%
10. Education	3.6%	3.0%	3.3%	3.8%	3.5%	4.4%	4.3%	4.0%	4.0%
11. Hotels, cafés, and restaurants	11.5%	11.7%	12.4%	12.9%	12.7%	9.1%	10.5%	12.6%	12.5%
12. Other goods and services	8.7%	7.7%	8.3%	7.4%	7.8%	8.5%	8.4%	8.4%	8.4%
R10									
1. Food and non-alcoholic beverages	15.3%	15.4%	15.1%	13.9%	14.8%	18.1%	15.8%	13.8%	13.2%
2. Alcoholic beverages and tobacco	3.5%	3.5%	3.0%	3.1%	2.8%	3.5%	2.9%	3.2%	3.3%
3. Clothing and footwear	7.1%	7.8%	7.5%	6.8%	6.9%	4.7%	7.0%	5.7%	5.1%
4. Housing	10.2%	11.3%	10.7%	10.9%	10.9%	12.4%	10.9%	11.0%	12.0%
5. Durable goods, household items and services	6.2%	5.0%	5.9%	5.8%	5.5%	5.5%	6.1%	6.0%	5.8%
6. Health	7.5%	8.8%	8.3%	8.8%	8.0%	8.8%	8.8%	7.5%	7.5%
7. Transport	15.3%	14.8%	14.1%	14.4%	15.2%	13.3%	13.4%	14.2%	14.7%
8. Communications	3.5%	3.9%	3.7%	3.4%	3.7%	4.0%	3.7%	3.4%	3.5%
9. Recreation and cultural activities	6.7%	7.4%	7.3%	7.8%	7.6%	6.3%	6.6%	8.8%	8.8%
10. Education	3.7%	2.8%	3.3%	4.4%	3.8%	5.0%	5.1%	4.4%	4.4%
11. Hotels, cafés, and restaurants	11.5%	11.8%	12.4%	13.2%	12.9%	9.3%	11.1%	13.4%	13.3%
12. Other goods and services	9.4%	7.6%	8.7%	7.4%	8.0%	9.1%	8.6%	8.6%	8.5%

* Weighting based on December of year $t-1$.

Source: Estimates based on HBS 2016–2022.

TABLE A2 Distribution of household expenditure across main categories of goods and services by age group

	2021	2022	2023*	2024*	2021	2022	2023*	2024*
	18-24 years old				25-34			
1. Food and non-alcoholic beverages	19.7%	17.4%	16.6%	16.2%	18.6%	16.9%	16.1%	15.8%
2. Alcoholic beverages and tobacco	3.8%	4.3%	4.3%	4.4%	3.8%	3.9%	3.9%	4.0%
3. Clothing and footwear	7.2%	5.0%	4.3%	3.9%	6.0%	5.2%	4.6%	4.1%
4. Housing	24.8%	19.4%	21.1%	21.2%	17.5%	15.7%	17.1%	17.2%
5. Durable goods, household items and services	3.1%	3.5%	3.4%	3.4%	4.2%	4.3%	4.1%	4.1%
6. Health	3.6%	3.8%	3.8%	3.8%	5.8%	5.2%	5.2%	5.2%
7. Transport	13.4%	12.7%	13.0%	13.5%	15.2%	15.4%	15.9%	16.4%
8. Communications	4.2%	3.9%	4.0%	4.1%	3.9%	3.6%	3.7%	3.8%
9. Recreation and cultural activities	3.5%	12.0%	11.9%	11.9%	5.7%	8.0%	7.9%	7.9%
10. Education	1.7%	1.8%	1.8%	1.8%	2.0%	1.9%	1.9%	1.8%
11. Hotels, cafés, and restaurants	9.6%	11.5%	11.3%	11.2%	10.6%	12.7%	12.5%	12.4%
12. Other goods and services	5.4%	4.7%	4.6%	4.7%	6.6%	7.3%	7.2%	7.3%
	35-44				45-54			
1. Food and non-alcoholic beverages	19.6%	18.4%	17.6%	17.3%	21.8%	20.8%	20.0%	19.6%
2. Alcoholic beverages and tobacco	4.0%	4.1%	4.2%	4.2%	4.5%	4.1%	4.2%	4.3%
3. Clothing and footwear	6.8%	6.2%	5.5%	5.0%	5.2%	5.4%	4.8%	4.4%
4. Housing	14.2%	14.1%	15.5%	15.6%	13.5%	13.0%	14.3%	14.4%
5. Durable goods, household items and services	4.5%	4.4%	4.3%	4.3%	3.6%	3.8%	3.7%	3.7%
6. Health	6.1%	6.0%	6.0%	6.0%	6.3%	5.6%	5.6%	5.6%
7. Transport	14.6%	14.2%	14.7%	15.2%	12.8%	13.1%	13.6%	14.1%
8. Communications	3.9%	3.8%	3.9%	4.0%	4.8%	4.5%	4.6%	4.7%
9. Recreation and cultural activities	5.8%	6.5%	6.4%	6.5%	4.1%	4.4%	4.4%	4.4%
10. Education	4.5%	4.1%	4.1%	4.0%	6.4%	7.3%	7.3%	7.2%
11. Hotels, cafés, and restaurants	9.2%	11.5%	11.4%	11.3%	10.1%	11.1%	10.9%	10.9%
12. Other goods and services	6.6%	6.6%	6.6%	6.6%	6.9%	6.7%	6.7%	6.8%
	55-64				65+			
1. Food and non-alcoholic beverages	22.9%	21.7%	20.8%	20.4%	27.1%	26.0%	24.9%	24.4%
2. Alcoholic beverages and tobacco	4.5%	4.0%	4.0%	4.1%	3.0%	2.5%	2.6%	2.6%
3. Clothing and footwear	5.1%	4.8%	4.2%	3.8%	3.6%	3.5%	3.0%	2.8%
4. Housing	12.8%	13.5%	14.8%	14.9%	17.9%	17.8%	19.4%	19.6%
5. Durable goods, household items and services	4.0%	4.2%	4.0%	4.0%	5.8%	5.9%	5.6%	5.7%
6. Health	9.4%	7.5%	7.5%	7.5%	11.9%	12.6%	12.5%	12.5%
7. Transport	11.8%	13.4%	13.9%	14.3%	8.3%	9.2%	9.5%	9.8%
8. Communications	5.3%	4.9%	5.0%	5.2%	5.5%	4.9%	5.0%	5.1%
9. Recreation and cultural activities	3.2%	3.4%	3.4%	3.4%	2.0%	2.4%	2.4%	2.4%
10. Education	3.1%	2.7%	2.7%	2.7%	0.4%	0.6%	0.6%	0.6%
11. Hotels, cafés, and restaurants	10.3%	12.0%	11.9%	11.8%	7.1%	7.7%	7.6%	7.5%
12. Other goods and services	7.6%	7.9%	7.8%	7.9%	7.3%	7.0%	6.9%	7.0%

* Weighting based on December of year $t-1$.

Source: Estimates based on HBS 2016–2022.

TABLE A3 Share of households with excessive expenditure

	Total	Income decile									
		1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
Total	**40.9**	**82.0**	**61.3**	**48.3**	**39.9**	**33.6**	**36.3**	**31.5**	**29.6**	**20.9**	**25.7**
Age											
18-24	**92.7**	98.7	89.6	-	-	61.1	31.2	100.0	100.0	-	-
25-34	**52.5**	86.7	68.0	43.5	74.2	46.8	60.6	48.1	27.0	40.1	35.5
35-44	**50.9**	83.8	84.3	54.9	53.8	43.0	54.0	40.2	49.9	27.0	43.2
45-54	**47.5**	87.5	68.4	71.5	47.5	38.0	39.8	35.5	29.8	28.8	29.4
55-64	**40.2**	85.0	62.1	49.8	51.0	39.9	36.1	28.4	28.8	11.4	18.4
65-74	**30.6**	71.8	53.7	35.4	28.2	25.9	24.6	25.2	22.3	17.6	12.4
75+	**29.3**	69.4	49.0	34.9	23.5	21.4	16.5	17.5	11.5	12.9	16.8
Socio-economic status of the reference person											
Pupil, student, conscript	**97.8**	100.0	-	-	-	-	-	-	-	-	-
Unemployed	**63.4**	86.2	63.0	36.8	49.4	26.5	23.6	46.0	27.9	0.0	0.0
Self-employed	**52.2**	91.4	73.5	73.6	60.5	48.2	54.4	47.5	44.5	26.0	32.0
Unfit for work	**51.6**	70.9	48.9	43.4	45.3	50.7	13.8	100.0	23.0	76.6	0.0
Manual worker (public sector)	**46.5**	66.1	93.5	76.7	50.0	43.1	40.4	34.6	26.4	17.3	49.0
Employee (private sector)	**45.7**	100.0	65.8	60.2	75.4	38.0	68.3	47.1	41.0	24.2	35.0
Manual worker (private sector)	**44.9**	78.4	77.6	49.4	50.1	34.9	40.7	26.1	29.7	33.5	13.1
Economically inactive person	**44.3**	76.4	47.4	38.8	33.1	27.6	25.9	11.1	23.3	22.8	0.0
Employee (public sector)	**43.1**	94.2	100.0	69.6	51.9	49.0	41.1	38.8	45.0	23.8	32.0
Farmer	**39.6**	81.7	68.2	43.6	22.7	39.4	21.3	14.1	13.5	4.6	10.6
Pensioner	**27.6**	71.3	52.1	34.4	24.6	25.3	18.6	23.4	15.8	13.9	13.8
Household type											
One adult with dependent children	**79.2**	88.0	83.6	86.0	90.0	85.3	18.8	59.3	78.8	56.3	32.5
Two adults with dependent children	**52.2**	84.1	78.0	64.5	54.7	42.0	49.0	41.4	39.5	29.6	40.5
One adult	**47.9**	84.4	52.2	46.3	36.1	41.1	45.9	38.7	34.5	34.8	30.2
More than two adults with dependent children	**40.9**	75.8	46.2	50.3	30.1	34.1	40.4	32.9	13.2	5.0	36.1
Two adults	**28.7**	79.8	54.4	37.6	33.9	24.1	22.4	22.1	19.8	14.4	15.9
More than two adults	**28.7**	73.2	69.1	29.2	27.8	22.4	21.9	21.8	26.3	13.6	18.2

TABLE A3 (continued)

	Total	Income decile									
		1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
Equivalent household size (modified OECD scale)											
1.60 (1 adult with 2 children)	**86.1**	85.7	100.0	100.0	100.0	100.0	-	-	-	-	100.0
1.30 (1 adult with 1 child)	**77.6**	86.3	77.1	80.1	100.0	100.0	-	48.1	100.0	100.0	-
2.90 (2 adults with 3 children)	**70.7**	100.0	-	100.0	-	-	-	-	-	-	-
2.70	**63.0**	-	100.0	-	-	100.0	-	-	-	-	-
1.80	**57.8**	89.4	76.6	74.1	74.4	44.4	63.1	63.4	40.4	48.2	41.9
3.50	**57.0**	-	100.0	-	-	-	-	58.2	-	-	-
2.60	**54.7**	86.5	66.4	44.7	16.6	-	100.0	-	40.7	-	69.8
2.80	**54.5**	100.0	75.8	34.4	51.9	47.2	21.6	100.0	100.0	-	56.4
2.10	**51.1**	87.4	73.6	68.7	49.2	40.7	39.1	46.1	54.1	28.2	43.3
1.00 (1 adults)	**47.9**	84.4	52.2	46.3	36.1	41.1	45.9	38.7	34.5	34.8	30.2
3.30	**47.5**	48.0	66.4	-	-	-	100.0	-	-	-	-
3.00	**43.5**	85.7	54.1	65.2	47.1	0.0	54.1	36.6	14.3	-	0.0
2.30	**42.7**	80.8	77.2	60.0	62.2	31.7	25.6	17.5	23.2	18.6	26.3
2.40	**41.4**	0.0	75.8	65.2	39.4	54.4	29.4	-	-	-	100.0
2.50	**40.2**	81.0	79.1	46.3	34.1	28.1	38.5	29.9	33.2	19.0	21.6
3.10	**36.4**	-	77.1	100.0	-	100.0	-	-	-	-	-
2.00 (3 adults)	**35.2**	80.3	68.0	38.4	35.2	34.7	30.6	19.6	26.0	15.2	21.5
1.50 (2 adults)	**29.8**	80.1	55.2	38.7	35.5	25.0	22.5	22.7	20.2	14.7	16.3
3.40, 3.60 – 4.20	**0.0**	-	-	-	-	-	-	-	-	-	-

Source: Author's estimates.

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