Insights

Alpha Bank Economic Research
April 2024

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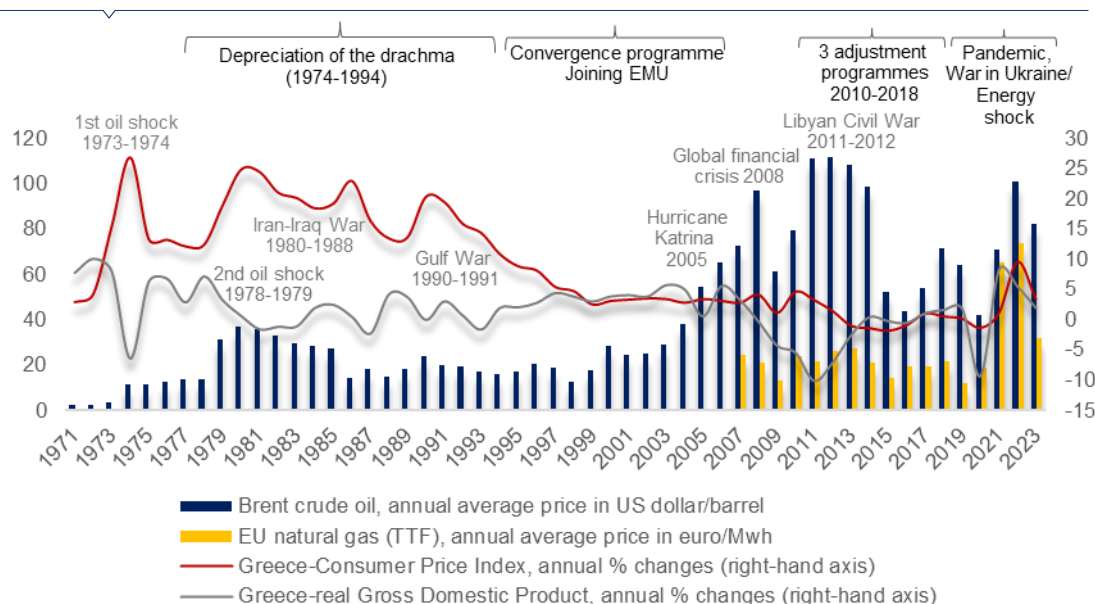fotios.mitropoulos@alpha.gr

Experiencing Energy Shocks in Greece: Inflation, Public Finances and Investment Dynamics

1. Prologue

Every energy shock has unique characteristics, but all share some commonalities. Certain episodes have been driven by specific supply factors, like the 1973 Arab Oil Boycott, while others by fears of supply cuts, such as the 1990 Iraqi invasion of Kuwait. Still, others have been caused by accelerating demand overshooting existing supply, as was the case in 2007-2008, leading to an energy commodity-price boom (McNally, 2017). It is indisputable that the crisis that dawned in mid-2021 and peaked at the outset of 2022 was a multiple energy shock, resulting from a combination of supply shortages and excess demand in the post-pandemic period, coupled with a significant escalation in geopolitical uncertainty.

In 2022, the price of Brent crude oil experienced a substantial increase, rising roughly to $100 per barrel on average. This surge surpassed the levels seen during the global financial crisis in 2008, yet remained below the prices recorded during the Libyan civil War in 2011-2012. In 2023, Brent prices deescalated, due to central banks raising interest rates and reduced demand caused by concerns about a possible economic recession. However, the most striking characteristic of that energy shock was the skyrocketing price of natural gas due to the Russian invasion of Ukraine, which put the natural gas transmission infrastructure in Europe at risk. As a result, the prices of the two commodities continued moving in tandem due to the historical linkage between them (Graph 1). This geopolitical-driven episode was comparable in magnitude to the most significant shocks of the past 50 years, yet different in several aspects.

Graph 1. Greece and energy crises: The black gold, natural gas, and the stagflation pattern

Sources: Bloomberg, Federal Reserve Bank of St. Louis (FRED), Hellenic Statistical Authority (ELSTAT), World Bank.

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This paper analyses the effects of the 2022 energy shock on the following interrelated fields in Greece: inflationary pressures and the pass-through phenomenon; public finances with a focus on public debt and trade deficit; and investment expenditure, by verifying its historical negative correlation with crude oil prices and identifying the factors underpinning its dynamics. Regarding the latter, this paper outlines the factors that may counterbalance any negative impact of the energy shock on investment activity. We focus on these three fields because, historically, they have played an important role in the country's growth dynamics and prosperity, especially after it joined the European Monetary Union.

The energy shock fuelled inflationary pressures all over Europe and Greece. High inflation, which was largely attributed to supply chain bottlenecks and an imbalance between supply and demand after the pandemic, was amplified by the War in Ukraine. The "phantom of stagflation" returned to European economy and awakened memories of a painful past in Greece. To rein in escalating inflation, two therapies were implemented: rate hikes by the European Central Bank (ECB) and an expansionary fiscal policy by the Greek Government. Although purchasing power eroded, the Greek economy recorded robust consumption and benefitted from significant growth dynamics. Furthermore, the combination of strong growth and high inflation for over two years had a positive impact on public finances. The latter, along with the fact that a major part of public debt is linked to fixed and relatively low-interest rates, reduced sovereign risk.

Based on historical experience, oil crises have a distorting effect on investment activity in Greece. However, this argument is not confirmed by the recent shock. This paper suggests that country-specific factors, including the expected footprint of the Recovery and Resilience Facility (RRF), as well as the fact that the Eastern Mediterranean offers ample opportunities for renewable energy sources, may offset the anticipated distortion.

In the long-term, the energy shock is expected to play a catalytic role in reshaping the energy map in Greece and Europe through two factors: the need for energy independence, and investments for the green energy transition. The war in Ukraine and the deteriorating geopolitical situation in the Middle East and the Red Sea have highlighted the importance of energy security for Europe's future. The need for Europe to achieve independence from Russian energy has become more pressing than ever. Hence, the transition to green energy represents not only an environmental goal, but also a foreign and defence policy objective. Currently, the European Union (EU) is importing Liquefied Natural Gas (LNG) from the USA, accounting for almost 50%[1] of its total LNG imports in 2023. To reduce reliance on Russian gas[2], it is necessary to further develop the transport network to access the energy resources of the Eastern Mediterranean. Greece plays a crucial role in LNG transportation[3] and the completion of the first floating LNG storage unit in Greece, at the port of Alexandroupolis, will lead to a significant increase in flows to the Balkans and Central Europe[4].

The rest of this paper is organised as follows: Section 2 runs through the historical oil crises and briefly compares their macroeconomic effects on the basic figures of Greek economy; Section 3 presents a comparative analysis between the second oil crisis of the 1970s and the 2022 energy shock; Section 4 documents why Greece was more resilient and more efficient in coping with the recent shock, compared to the past. Section 5 evaluates the second-round effects of the energy price shock; Section 6 provides a short overview of the impact on public finances in Greece; Section 7 verifies the impact of soaring crude oil prices on investment and finally, the epilogue concludes the paper and provides the main takeaways.

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[1] For further information, see "Where does the EU's gas come from?", European Council, February 2024.
[2] The natural gas imports from Russia to Greece accounted for 39.9% of total natural gas imports in 2021. By 2022, the share had significantly fallen to 17.3%. Eurostat, Energy trade visualisation tool (europa.eu)
[3] For further analysis, see International Energy Agency, Energy Policy Review, Greece 2023.
[4] In 2022, Greece became a net energy exporter, meeting a significant portion of Bulgaria's natural gas needs through Revithoussa (National Energy and Climate Plan, 2023).

2. What does the Greek story of oil crises teach us?

The oil crises of the 1970s were caused by two specific events in the Middle East: the Yom-Kippur War of 1973 and the Iranian Revolution of 1979. Both events led to the interruption of oil supplies from this region. The subsequent global economic downturn was preceded by the sharp run-up in oil prices and the prices of other commodities. These developments abruptly interrupted Greece's two-decade economic boom (1953-1973), known as the "Greek Growth Miracle"[5] (Alogoskoufis, 2021), which was driven by manufacturing and construction.

Before the first oil crisis (1973-1974), the Greek economy was marked by buoyant activity along with rising consumer prices and import prices. Because of the first oil shock, inflation accelerated from 3.3% in 1971 to 15.4% in 1973. In 1974, Greece experienced a sudden recession (-6.4%), accompanied by hyperinflation (26.6%) and a large deficit in the balance of payments (Psalidopoulos, 2019). The deterioration of the economic fundamentals was mainly caused by the quadrupling of oil prices, the increase in military spending due to conscription in the context of the Turkish invasion of Cyprus, and the subsequent pause in economic activity for a short period in the middle of the year. Given its heavy reliance (over 70%) on imported oil, the global oil price hikes had a significant impact on the Greek energy market (Donatos and Mergos, 1989).

The second oil shock, sparked by the Iranian Revolution (1978-1979), followed by the Iran-Iraq War (1980-1988), pushed oil prices even higher, leading to a rapid increase in inflation and significant destabilisation of the global economy. The entire industrialised world, including Greece, was hit harder than the first oil shock, as the second oil crisis exerted a much more profound and prolonged impact on the global economy (Psalidopoulos, 2019). This shock resulted in a significant slowdown of growth rates in disposable private income and private consumption, as well as in Gross Domestic Product (GDP), alongside a dramatic increase of inflation due to the persistent rise in oil prices. Most OECD[6] countries entered recession, with adverse repercussions on international trade. The Greek economy experienced a prolonged period of stagflation. Real GDP growth decreased steeply from 7.2% in 1978, to 3.3% in 1979 and 0.7% in 1980. In 1981, the economy shrank by 1.6%. Correspondingly, inflation accelerated from 12.6% in 1978, to 19.1% in 1979 and 25.0% in 1980 and 1981. Therefore, 1981, the year Greece joined the EU, its economy entered a period of recession. This was primarily because of the second oil crisis and, to a lesser extent, the electoral budget cycle. Greece was experiencing issues with its global competitiveness, which had been aggravated by the oil crises and the dependency on imported oil.

The Gulf War in 1990-1991 again had an adverse, yet shorter-lived effect on the global economy and consequently on Greece. Global oil prices rose, leading to domestic inflation pressures for the following 4-5 years. From 1994 to 2001, Greece was focused on joining the European Monetary Union, striving for economic stabilisation. Fiscal consolidation became imperative to tackle inflation pressures, high public deficits, and outstanding debt. During that period, the Maastricht criteria were used as benchmarks by the Bank of Greece in its pursuit to meet the monetary and exchange rate policy targets necessary for adopting the single currency. With continued vigilance, the Bank of Greece was able to achieve disinflation progressively up to 2000, enabling the adoption of the euro in 2001.

Between 2005 and 2008, global expansion continued despite a surge in oil prices caused by Hurricane Katrina in 2005 (oil infrastructure damage). During this period, which followed the Olympic Games, Greece experienced a positive post-Olympic effect on its domestic economy, as noted by Zonzilos et al. (2015) and Kasimati and Dawson (2009). This implies that the short-term momentum of the Greek economy largely offset the negative repercussions of rising oil prices.

The global financial crisis of 2008 and the subsequent Great Recession had a pronounced negative impact on oil and gas prices. Following the global financial crisis in 2008, the Greek economy entered an unprecedented recession due to the debt crisis in 2010, which led to fiscal consolidation efforts and an

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[5] It describes a period of rapid and sustained economic growth in Greece.
[6] Organisation for Economic Co-operation and Development.

internal devaluation policy. In the subsequent years, there was a historical record hike in oil prices until 2014, primarily due to the Libyan Civil War of 2011-2012. This left the Greek economy largely unaffected. For nearly a decade, Greece suffered from depression and disinflation. Thus, the impact of soaring oil prices, and to a lesser extent, gas prices, on inflation dynamics was not significant.

3. A comparative analysis of the 1980s and 2020s: Patterns of energy shocks

The energy shock that started in mid-2021 and peaked at the beginning of 2022 can be contrasted with the two oil crises of the 1970s, which were the most intense energy crises in contemporary history. Each was marked by acute geopolitical tensions, with the first being sparked by war and the second by a revolution. As a result of these severe episodes, disruptions in the energy market led to skyrocketing energy and grain prices. The high and persistent inflationary pressures, along with the economic downturn globally, ultimately shaped the "stagflation pattern", particularly after the second oil crisis (Graph 2, left-hand side). In addition, just as today, most central banks pursued a hawkish monetary policy to curb inflation. However, the monetary tightening had spill-over effects on the economies.

Nonetheless, in the most recent shock, this "stagflation pattern" was observed only in a very limited number of countries, mainly European, and even there it was less acute (Graph 2, right-hand side). Germany, the largest energy consumer in Europe due to its heavy industry, was one of these countries. Moreover, until 2022, Germany was highly dependent on Russian natural gas. In Greece, like in most other countries, stagflation did not occur due to the coordination of monetary and fiscal policies, which acted as a safety net. Additionally idiosyncratic factors in Greece, such as the extensive structural reforms[7] implemented during the three Economic Adjustment Programmes from 2010 to 2018, rendered the economy more resilient than in the past.

Graph 2. Is there a common "stagflation pattern" between the early 1980s and the 2020s?
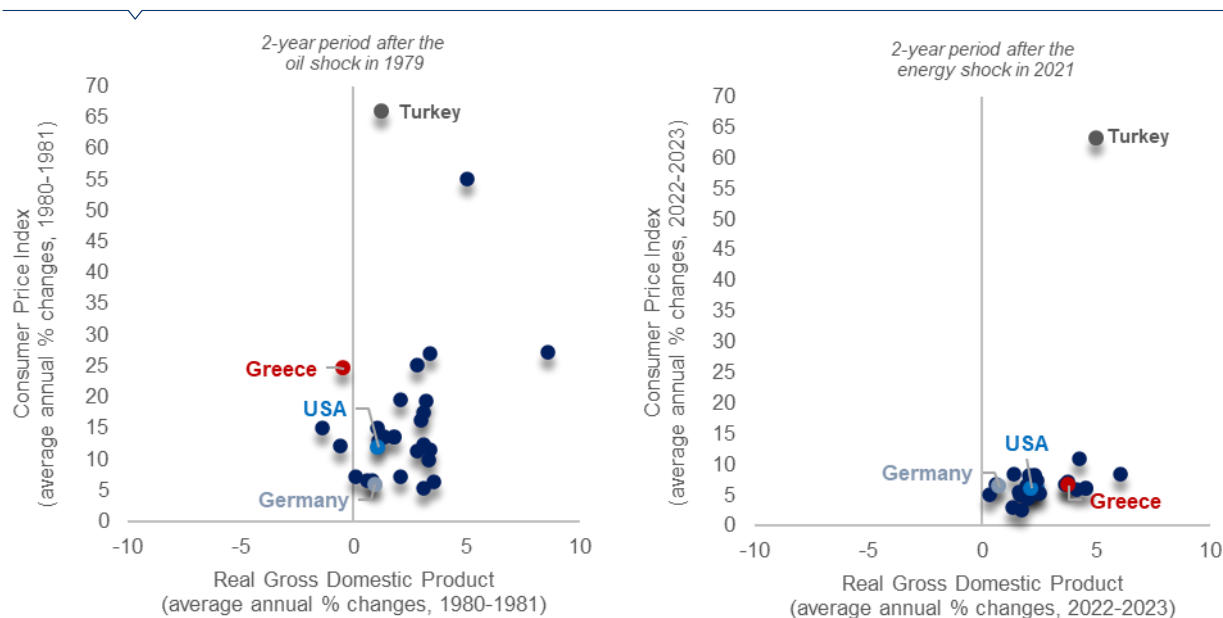
Sources: Eurostat, OECD.

Although there are similarities between the energy shock of 2022 and the oil crises of the 1970s, there are also important differences. In 1971, inflation was already entrenched at a higher level than in the contemporary period, with rates of 3.3% in Greece and 5.7% in OECD countries. In contrast, in 2021, inflation rates were 1.2% and 4.0% respectively. In 2022, the energy shock affected most fuels, including crude oil,

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[7] For further information, see European Commission (2019). Structural reforms in Greece, 2010-2018.

petroleum products, gas, and LNG, while the energy crises of the 1970s were primarily related to crude oil, due to the high dependency of the global economy on it. Globalisation has led to a more interconnected world than 50 years ago, magnifying the impact of shocks. Also, labour unions' negotiating power is weaker now (Suthaharan and Bleakley, 2022), lowering the risk of wage-price spiral. Lastly, technological breakthroughs can support faster replacement of natural resources. Digital technologies are being applied across several fields, like biofuels and hydrogen systems, electric mobility, and renewable power generation systems[8]. Wind and solar power are increasingly contributing to meeting the world's energy needs.

However, the 2022 energy shock was more complex than the previous ones due to its multifaceted nature. It was part of what is referred to as a *permacrisis*, which denotes the start of a prolonged period of global instability and uncertainty. A distinctive feature of the permacrisis is the confluence of old and new threats: the energy shock concerning various commodities (natural gas, crude oil, coal, electricity), food insecurity, the pandemic, climate change, rising poverty and geopolitical tensions over natural resources.

A study conducted by Ari et al. (2023) found that since the 1970s, over 100 inflation episodes have been recorded in 56 countries with the majority being linked to that decade. The study found that inflation was tamed within five years in only 60% of these episodes. Furthermore, it identified that most of the unresolved episodes involved "premature celebrations", where inflation initially declined but then re-accelerated. The study also highlighted three country-specific characteristics that played a significant role in controlling inflation compared to the unresolved cases: tighter monetary policy, lower nominal wage growth, and less currency depreciation.

In the following paragraphs we present three approaches to identify inflation episodes in Greece over a 50-year time span.

i) The first approach defines positive inflation episodes as periods when inflation is higher than a varying threshold level, while negative inflation episodes as periods when inflation falls below a varying threshold level. Graph 3a shows the positive inflation episodes as dark blue bars and the negative inflation episodes as red bars. The threshold level is calculated each time by taking the moving average of four quarters for Consumer Price Index (CPI) and adding 0.5 standard deviation[9] to obtain the upper threshold level, while subtracting 0.5 standard deviation to obtain the lower threshold level.

In this case, two main points can be underlined. Firstly, in three out of five positive inflation episodes (e.g., early 1970s, 1980s and 2022), a negative inflation episode follows, mainly due to base effects. Secondly, during the period of deep recession from 2012 to 2016, no negative inflation episode was recorded, as the disinflation was gradual, and the inflation rate never fell below the lower varying threshold level or exceeded the upper varying threshold level.

ii) The second approach (Ball,1994) indicates a trend of inflation (grey line in Graph 3a) as the nine-quarter moving average of inflation (CPI). A disinflation episode is a period that starts at an inflation peak and ends at a trough, with an annual rate at least two points below the peak. Based on the first two methodologies, it is observed that the positive inflation episodes coincide with the peaks. The sole exception is the inflation peak identified using the "Ball approach" in 2010, which was not identified using the first approach. It is important to note that at that point in time, the peak of the nine-quarter moving average inflation rate was approximately 1 percentage point higher than the ECB's target (below but close to 2% over the medium term).

iii) The third approach addresses the potential criticism of the first approach which covers two different currency periods: the Drachma and the Euro. We divided the total sample (50 years) into two sub-periods in Graph 3b. The first sub-period covers the years 1970-2001, during which the Drachma was used. The second sub-period covers the years 2002-2023, when the Euro was adopted. High inflation periods are defined as

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[8] World Economic Forum, 2023.
[9] The standard deviation measures the inflation variability.

those with inflation rates higher than the average CPI of each sub-period plus or minus one standard deviation. Disinflation periods are defined as those with inflation rates lower than the average CPI of each sub-period plus or minus one standard deviation. Based on this definition, we can draw the following conclusions (Graph 3b):

Graph 3a. Identifying inflation episodes
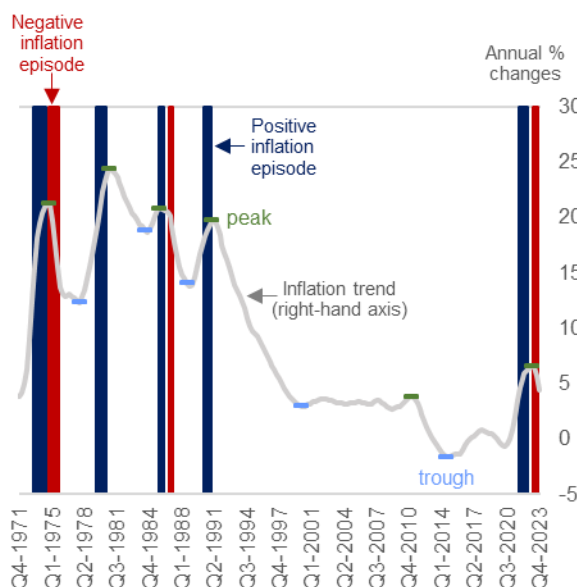
Graph 3b. Adjusting for the two currency periods
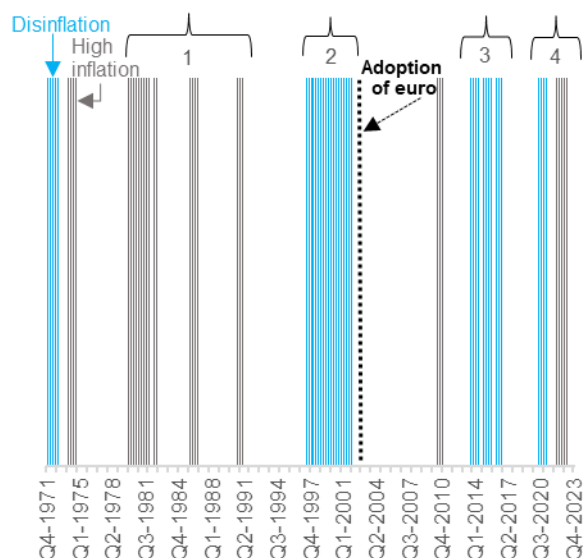
Note: Blank areas indicate no inflation episodes.
Sources: AMECO database, FRED.

1) the second oil crisis of the 1970s resulted in persistent inflation until the early 1990s, mainly due to the long-lasting wage-price spiral[10].

2) From 1997 to 2001, disinflation was mainly associated with specific economic policies aimed at meeting the Maastricht criteria and eventually adopting the euro.

3) The deflation observed between 2013 and 2016 was associated with the debt crisis and the economic adjustment programme.

4) The high inflation experienced in 2021-2022 was driven by both surging cost and demand. It was the result of the energy shock, as well as the enormous fiscal stimulus implemented during the pandemic, which led to excess aggregate demand.

4. Why is Greece more resilient now? Monetary and fiscal policy working in tandem

4.1 The fiscal profile at the dawn of the energy shock

In 2022, Greece was better prepared to face the energy crisis than it had been in the previous decade. This was due to an improved fiscal outlook, resulting from a favourable debt profile and progress in structural reforms. It is worth noting that the inflationary pressures that started in September 2021 had a downward effect on the debt-to-GDP ratio, as analysed in Section 6.

[10] See Borio et al. (2023) who take the wage-price nexus further for 14 advanced economies.

In 2022, Greece's investment environment improved significantly due to the increase in the Public Investment Programme[11] and the expectations regarding the implementation of the RRF, of which Greece is one of the major beneficiaries[12]. These developments were further boosted by the strong upward momentum in Foreign Direct Investment (FDI), which reached a new record high in 2022. Furthermore, the mild weather conditions allowed for a reduction of natural gas demand in 2022. This, combined with the moderate de-escalation of natural gas prices in the last months of that year, limited the need for further government subsidies on energy bills, creating additional fiscal space.

4.2 The merit of policy reaction functions

The preceding arguments outline the state of the Greek economy at the beginning of the energy shock. However, an equally important matter was the policy response that rendered economies, including Greece, more resilient during the energy shock. As history has taught us (Section 3), this type of economic disruption typically raises the risk of stagflation. Hence, the coordination of the policy responses was critical in achieving a balance between inflation and growth.

In 2022, following the war in Ukraine and the subsequent energy shock, Greece's GDP grew by 5.6% surpassing the OECD average (2.9%), while the inflation rate stood at 9.6%, approximately in line with the OECD average of 9.5%. In 1980, a year after the second oil crisis, the corresponding data painted an even bleaker picture: Greek economy nearly stagnated, recording GDP growth of 0.7%, almost half of the OECD average of 1.3%, while the inflation rate surged to 24.7%, significantly higher than the OECD average of 14.8%. The experience of 70s and 80s was associated with the emergence of the "stagflation pattern", while in the early 2020s, the risk of stagflation was less severe. Where does this difference lie? Today's economies, and in particular Greece, are undoubtedly, more resilient due to accumulated experience in policy response. This is valid not only in comparison to crises of the distant past, but also to recent ones, such as the sovereign debt crisis and the pandemic. The coordination of monetary and fiscal policies globally has been catalytic.

Graph 4a. Monetary policy in selected countries
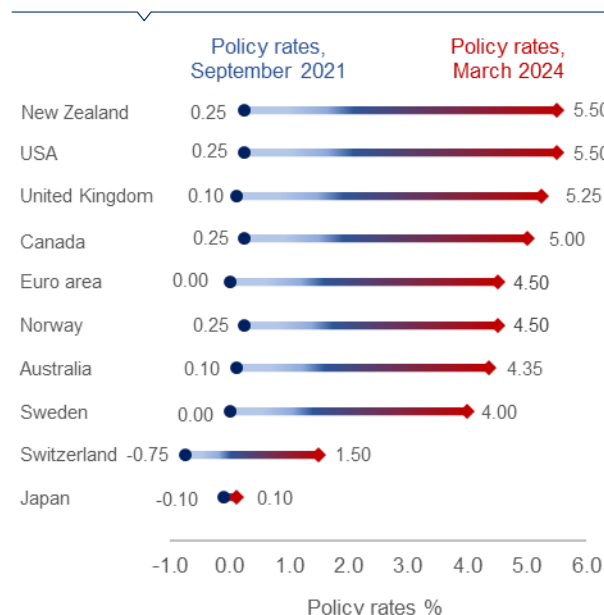
Graph 4b. Fiscal interventions for the energy shock
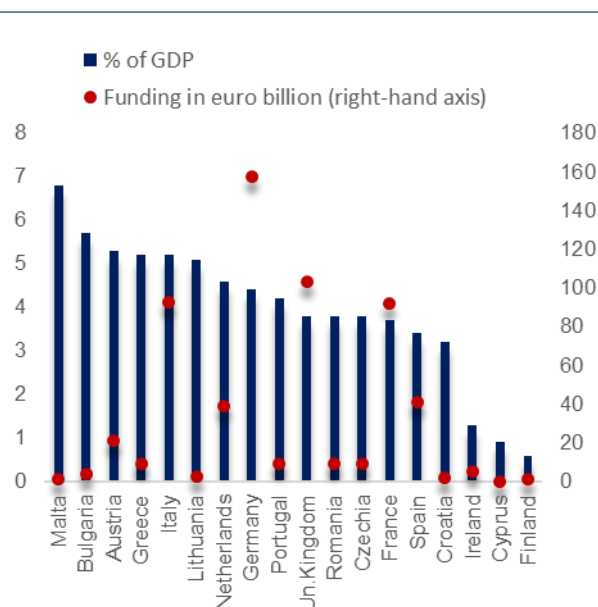
Note: ECB (EA): the interest rate on the main refinancing operations.
FED (USA): Federal funds target interest rate - upper bound.
Source: Bloomberg.

Source: Bruegel.

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[11] For further information, see Public Investment Programme, Hellenic Republic-Ministry of Economy and Finance, 2024.
[12] Greece RRF includes 103 investments and 76 reforms, utilising investment resources of Euro 35.95 billion (Euro 18.22 billion in grants and Euro 17.73 billion in loans). For further information, see www.greece20.gov.gr.

In the 1980s, the Bank of Greece pursued a specific policy of devaluing the drachma to tame galloping inflation. However, the broader spillover effects on the Greek economy were inevitable. In contrast, the role of the ECB is now centralised, more effective, and proactive, based on the experience of previous crises. Currently, monetary policy is in the limelight, with central banks playing the role of conductors.

Central banks reacted differently, with some acting promptly and others later, triggering an upward cycle of interest rates (Graph 4a). For instance, the US Federal Reserve Bank (FED), was among the first central banks to pursue a hawkish monetary policy, raising interest rates 11 times between 2022 and 2023, while the European Central Bank (ECB) raised rates 10 times. The response of the central banks to inflation pressures is crucial in shaping the disinflation strategy, especially when initial shocks fade out, but stubborn inflation remains, particularly in its core component (Amatyakul et al., 2023). In this context, the anchoring of long-term inflation expectations to ECB's inflation target is a necessary condition for maintaining price stability in the euro area (EA) and an essential tool for the ECB's policy direction towards normalisation (Neri et al., 2023).

On the fiscal front, following the outbreak of the war in Ukraine, governments in the EU, including Greece, implemented expansionary fiscal policies, and adopted measures to address the repercussions of rising energy prices on households and businesses. Graph 4b presents the funding allocated at the national level by selected EU countries over the period of soaring energy prices (September 2021 to February 2023) to shield households and businesses. To combat rising energy prices and cost of living, governments implemented various measures. Several countries, including Germany, Italy, Portugal and the Netherlands, introduced indirect measures to reduce excise duties on petrol and diesel. Greece and France, among others, opted to subsidise households for their diesel and petrol consumption directly.

This was particularly necessary for low-income households, whose disposable income was significantly reduced. Since energy is almost inelastic, these households typically respond to such exogenous shocks by reducing savings or delaying tax and loan repayments. In contrast, households with higher incomes make only minor adjustments to their spending, as they are less sensitive to energy fluctuations. To support this argument, Battistini et al., (2022) stated that the rise in energy prices had significant distributional implications, necessitating targeted fiscal policy measures.

Graph 5. Fiscal costs of household support measures in 2022 and 2023
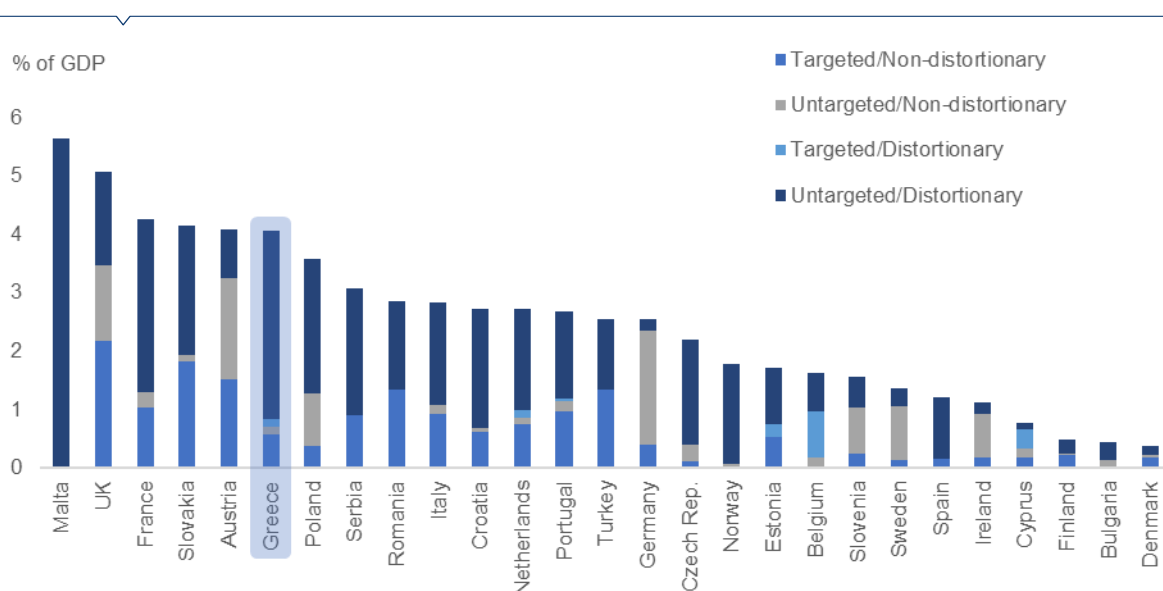
Source: International Monetary Fund.

Supportive measures for households in EU countries were broadly divided into two categories: targeted measures to support low-income households and vulnerable social groups, and untargeted price-

suppression policies for households and cost-containment measures for firms[13]. In EU member states, the total fiscal cost of measures to support households in 2022 and 2023 ranged from less than 1% to 6% of GDP. Greece implemented fiscal interventions to mitigate the implications of high energy prices on households, amounting to more than 4% of GDP (Graph 5). However, most of these measures (80%) were untargeted[14], as they were price-suppression policies, such as energy bill discounts.

During periods of high inflation, monetary and fiscal policies may conflict[15], requiring closer cooperation between central banks and fiscal authorities to maintain macroeconomic stability[16]. Under conflict, public debt continues to pile up, feeding inflation, while the central banks increase policy rates to tame in inflation, burdening further the cost of debt servicing. To prevent an economic recession, under such conditions, governments can reduce or maintain their level of spending to decrease demand, while the central banks can increase policy rates to achieve the same goal. Bearing this in mind, the ECB must aim to achieve price stability in the medium and long term, while Greece should ensure debt sustainability and adjust its policies in line with the ECB's inflation objectives.

5. Second-round effects of the energy price shock

5.1 The chronicle of shocks

Since the beginning of the pandemic, Europe has experienced a series of shocks that have resulted in high levels of inflation. The significant rise in headline inflation between 2021 and 2023 can be attributed to both demand and supply factors. Firstly, the fiscal expansion during the pandemic, combined with the full reopening of the economy, stimulated aggregate demand for goods and services, leading to demand-driven inflationary pressures. Secondly, there was an imbalance between the sharp increase in demand after the pandemic and the resulting shortfall in supply, which caused bottlenecks in global supply chains. This supply chain congestion led to an increase in commodity prices. Thirdly, the war in Ukraine further intensified the increase in commodity prices due to fears of energy supply disruptions and rising energy prices, increasing production costs, which were passed onto other goods and services. In Greece, energy prices rose by an average of 41% in 2022 (Graph 6a), while food prices increased at a lower rate of 12% (Graph 6b). In 2023, food prices continued to rise by 11.7%, while energy prices fell sharply (-13.4%).

In 2022, inflation differences among euro area countries reached record levels (Graph 7). This suggests that the diffusion of the common shock -related to the surge in energy and food prices- was asymmetrical due to differences in energy intensity[17] and the structure of the economies (Coutinho and Licchetta, 2023). Several studies have demonstrated that common factors have a significant impact on inflation across countries (Forbes, 2019; Cascaldi-Garcia et al., 2023). Moreover, Binici et al. (2022) found that the relative importance of domestic factors in explaining inflation in the euro area has increased since the pandemic. In Box 1, the estimated country-specific responses to the energy shock (systematic part of inflation) mirror the important role of energy prices in leading to inflation shocks.

[13] For a detailed analysis on this categorisation, see Arregui et al. (2022).

[14] Measures can be categorised as either targeted or untargeted. Targeted measures aim to support only vulnerable households, while untargeted measures are delivered to all users. Price-suppressing measures include cuts to VAT rates on energy products, caps on household prices and discounted tariffs for limited energy consumption. Almost all countries have implemented at least one measure that distorts prices, such as capping retail energy prices, reducing VAT rates or other energy-specific taxes, or reducing fees, charges, and carbon taxes.

[15] See Kronick and Petersen (2022). For further analysis, see the book "A Monetary and Fiscal History of the United States, 1961-2022" by Alan Blinder (2022), published by Princeton University Press.

[16] For further analysis, see Corsetti (2023).

[17] According to the European Commission, energy intensity is a measure of an economy's energy efficiency and shows how much energy is required to produce a unit of GDP. For instance, if an economy becomes more energy-efficient and its GDP remains constant, then the ratio for this indicator should fall. It is expressed in kilograms of oil equivalent per Euro 1,000 of GDP.

Graph 6a. The shock in energy prices

Annual % changes

- - - - - Euro area
- - - - - Greece
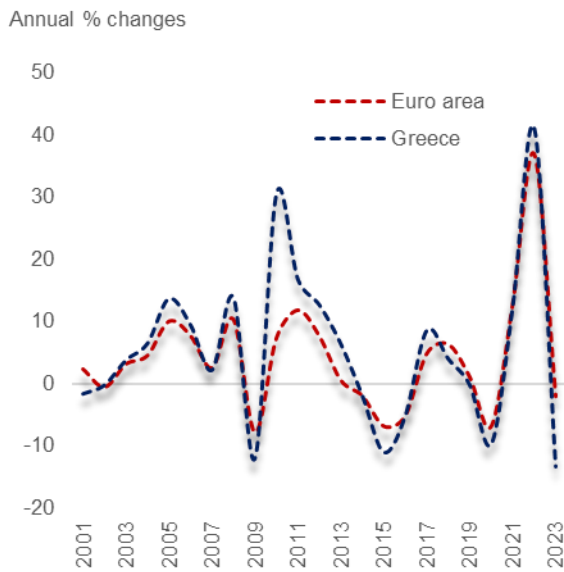
Graph 6b. The shock in food prices

Annual % changes

Euro area
Greece
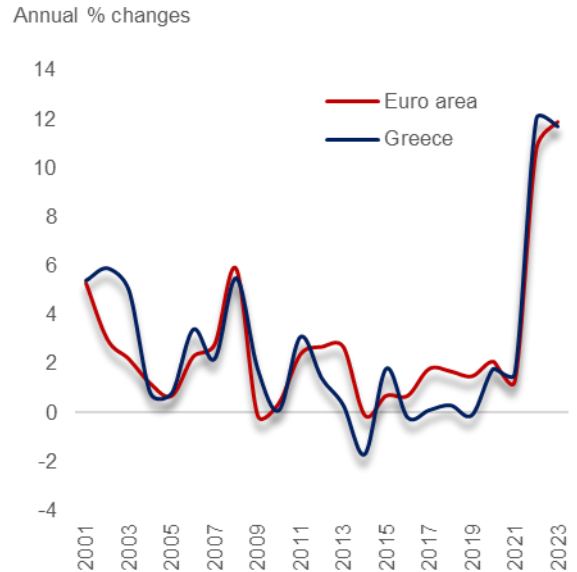
Note: The energy and food prices are based on the Harmonised Index of Consumer Prices (HICP).
Source: Eurostat.

Regarding the recent surge in inflation, Coutinho and Licchetta (2023) have observed the following. Firstly, countries where the services sector accounts for a lower proportion of Gross Value Added, experienced a greater inflation shock. This is because the services sector is less volatile and exposed to international competition than the manufacturing sector. As a result, it is affected, to a smaller degree, by global shocks. Secondly, countries with higher weights of energy and food in the HICP basket recorded a larger increase in inflation, indicating that second-round effects are likely to develop mainly via the wage-consumption channel.

Graph 7. Consumer prices inflation differentials in the euro area and Greece

Annual % changes of HICP

min max   Euro area   Greece
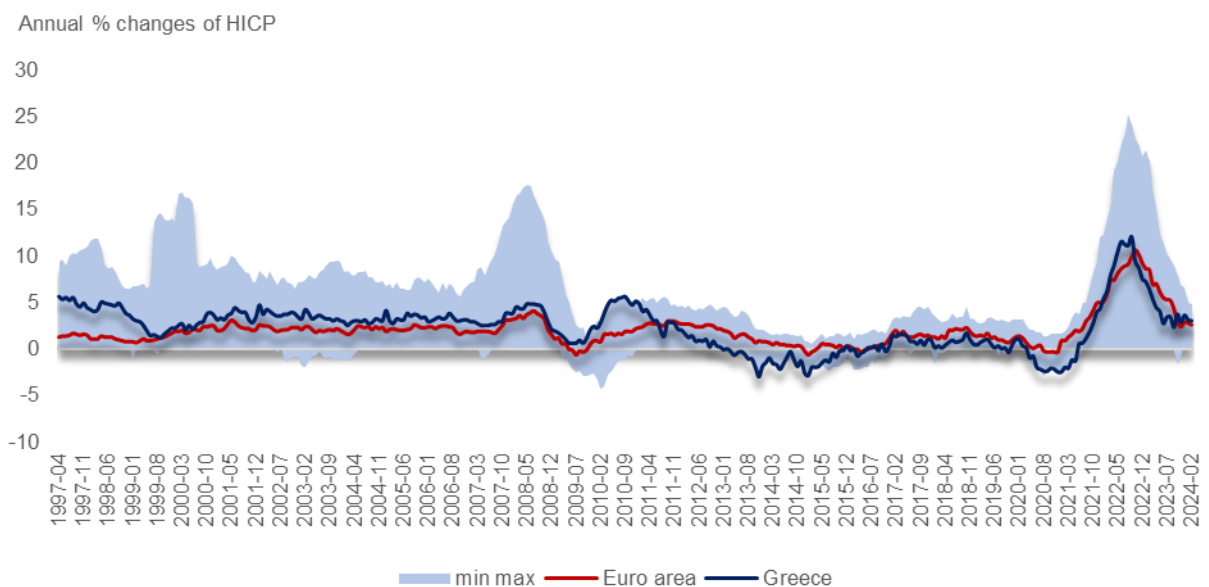
Note: HIPC is the Harmonised Index of Consumer Prices.
Source: Eurostat.

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Box 1: The impact of the common shock on the inflation of selected economies

This Box analyses the drivers of inflation, distinguishing between the systematic and unsystematic part of inflation. The former is common across euro area countries, while the latter is country-specific. The sample comprises quarterly data from 1997 to 2023 for eleven euro area countries. To conduct the analysis, we employ an equation similar to the one for sovereign risk (Saunders, A. and Cornett, M.M., 2008):

$$X_i = a_i + b_i\bar{X} + e_i \quad (1)$$

where:

X_i = the headline inflation (Harmonised Index of Consumer Prices) of each country

$\bar{X}$ = the energy inflation (Harmonised Index of Consumer Prices) of the euro area

e_i = other factors impacting X_i for any given country

Then, expressing the equation (1) in variance terms, we have:

$$VAR\,(X_i) = b_i^2 VAR(\bar{X}) + VAR\,(e_i) \quad (2)$$

The total part of headline inflation ($VAR\,(X_i)$) can be divided into a systematic part ($b_i^2 VAR(\bar{X})$) and an unsystematic part ($VAR\,(e_i)$). If the unsystematic part is greater than the systematic part, this suggests that country-specific characteristics contribute more to inflationary pressures. In Greece, the volatility of euro area energy inflation can explain 40% of the increase in headline inflation during the period 1997-2023, while country-specific factors account for the remaining 60%. These country-specific factors are mainly related to differences in national energy markets (whether free or regulated), price-setting adjustments, taxes and levies, local developments of profit margins, product market regulations and labour market regulations. The unsystematic component of inflation varies across the selected countries, ranging from 21% in Belgium to 62% in Ireland.

5.2 Inflation persistence: Examining the role of consumer expectations

Before discussing the second-round effects of the energy shock in Greece, we will briefly examine consumers' inflation expectations. This is important because they play an important role in collective bargaining and wage agreements, and therefore act as a warning indicator for persistent inflation (Shiu-Sheng, 2023). Anchoring inflation expectations is significant as it is linked to the risk of a wage-price spiral and the pass-through phenomenon (Bolt et al., 2022). This can lead to a prolonged period of persistent inflation, which is not in line with the central banks' inflation target (Visco, 2023). In other words, consumers' expectations of future prices can lead to second-round effects that need to be counterbalanced by tighter monetary policy.

Concerning the pass-through phenomenon in Greece, it can be argued that the energy shock spread to other goods and services, resulting in core inflation remaining at a relatively high level throughout 2022 and 2023, as shown in Graph 8a. Core inflation, which excludes volatile food and energy prices, is typically slower-moving than the headline measure and indicates the persistence of inflation over the medium term. The difference between headline and core inflation can be attributed to two factors. Firstly, the delayed pass-through of supply-related input cost shocks into core prices (Bańbura et al., 2023). Secondly, the increasing importance of domestically driven inflation factors, such as wage growth and profit margins (Makhlouf, 2023). In support to the first factor, Coutinho and Licchetta (2023) argue that the relatively long pass-through is related to the staggered nature of supply contracts and the gradual adjustment of price setting in the euro

area. For instance, fixed-price contracts delay the transmission from wholesale to retail prices, resulting in a slower pass-through in member states with a high share of such contracts.

Graph 8b illustrates the fluctuations in consumers' inflation expectations in Greece, compared to the euro area in recent years. A boom in expectations was observed in mid-2021. Since late 2022 and until the second half of 2023 the consumers' inflation expectations followed a downward trend, while remaining quite volatile. This trend was largely driven by the fall in energy prices. Since September 2023, a mild uptick in the consumers' expectations was recorded due to the floods in Thessaly, which affected food prices. Furthermore, the rising geopolitical tensions in the Middle East and Red Sea increased the uncertainty and affected transportation cost. Bearing this in mind, it appears that a pass-through into consumer prices may occur to some extent. However, it is unclear whether this will trigger a wage-price spiral.

Graph 8a. Headline inflation (CPI) versus core inflation
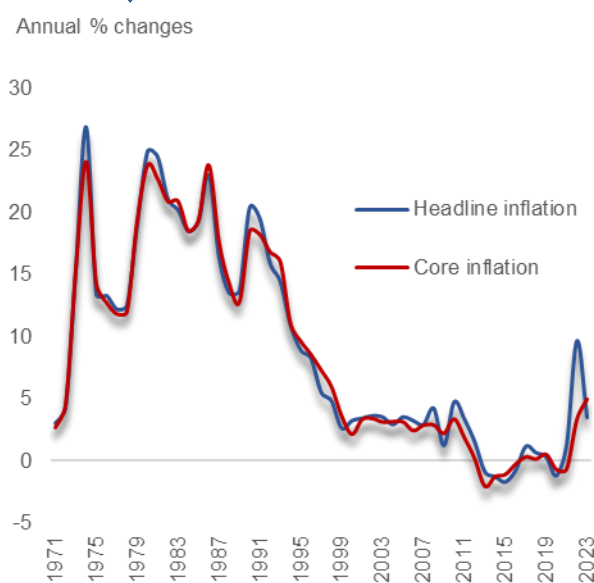
Graph 8b. The inflation expectations of consumers

Sources: ELSTAT, Eurostat, OECD.
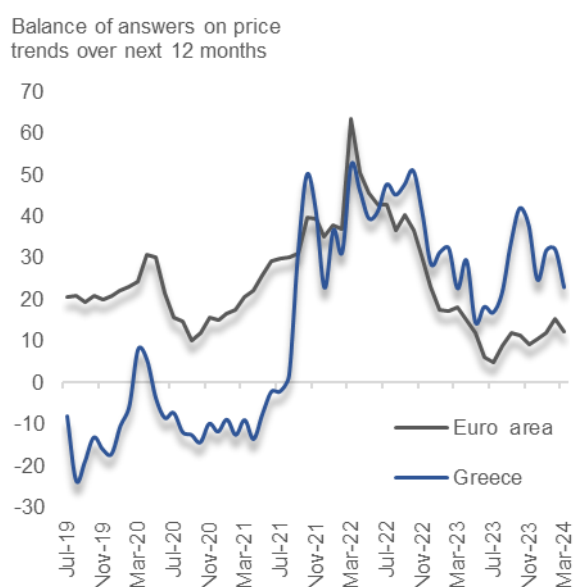
Source: Eurostat, consumer surveys, seasonally adjusted data.

5.3 The wage-price spiral, income policy and profits

One of the most significant second-round effects of the energy shock was the interaction between inflation and wage growth. This was a particular concern for the ECB in an inflationary environment, as prices were remarkably above the target of 2%. Wage agreements are typically a factor contributing to inflation pressures, as wages represent a large proportion of companies' costs. If wages rise significantly, companies are often forced to raise prices further, especially if they are unable to absorb the cost increase in their profit margins. At the same time, employees aim to be compensated for their loss of purchasing power through higher nominal wages. It is important to note that income policy plays a critical role in the wage-price spiral. To support this argument, a comparison between the policies pursued by the Greek Government in the 1980s and today would be insightful.

During the 1980s, following the second oil crisis, there were wage increases, not fully aligned with the relatively weak productivity growth. Additionally, Automatic Wage Indexation was introduced to adjust nominal wages to inflationary pressures (Alogoskoufis, 2021). Over that period, the Greek Government implemented an income policy for all employees in the economy. The aim was to protect disposable incomes and pensions, while stimulating the economy. However, AWI was deemed counterproductive for employees (Matsaganis and Theodoropoulou, 2022) leading to persistent high inflation and was abolished in the 1990s.

This lends support to the argument that a higher level of centralised trade union bargaining power to recover lost income is associated with a higher wage-price spiral.

In contrast to the 1980s, many countries have now increased their minimum wage levels to protect the most vulnerable employees and the poorest households from rising prices. This targeted measure is considered less likely to fuel inflation. Graph 9 depicts the national gross minimum wages per month of European countries, categorised into three groups, with Greece positioned in the second group. From 2019 to 2023, Greece implemented three minimum wage hikes of 20%, cumulatively[18]. The primary objective was to mitigate the impact of surging prices on low-income households and, partly, to compensate for the loss of household income during the period of the Memoranda of Understanding. Even though the nominal increase in minimum wages is expected to influence wage growth (Koester and Wittekopf, 2022), it is not considered to pose a high risk on further fuelling inflation pressures (Cazes and Garner, 2023).

Apart from the minimum wage policy, nominal wages are not automatically linked to inflation. In Greece, the estimated average nominal wage increases in 2022 were significantly below inflation, and in 2023 they were adjusted slightly higher than the inflation level. As a result, real wages did not pose a source of risk for the wage-price spiral.

Another important difference between the present and the past is the implementation of structural reforms between 2010 and 2018. These reforms have moderated the wage-price mechanism. They aimed to increase labour market flexibility, reduce the unemployment rate and improve the country's cost competitiveness. The reforms included the liberalisation of professions and economic activities, changes to the collective bargaining and minimum wage setting framework and measures to address undeclared and precarious work.

Graph 9. Minimum wages per month in European countries
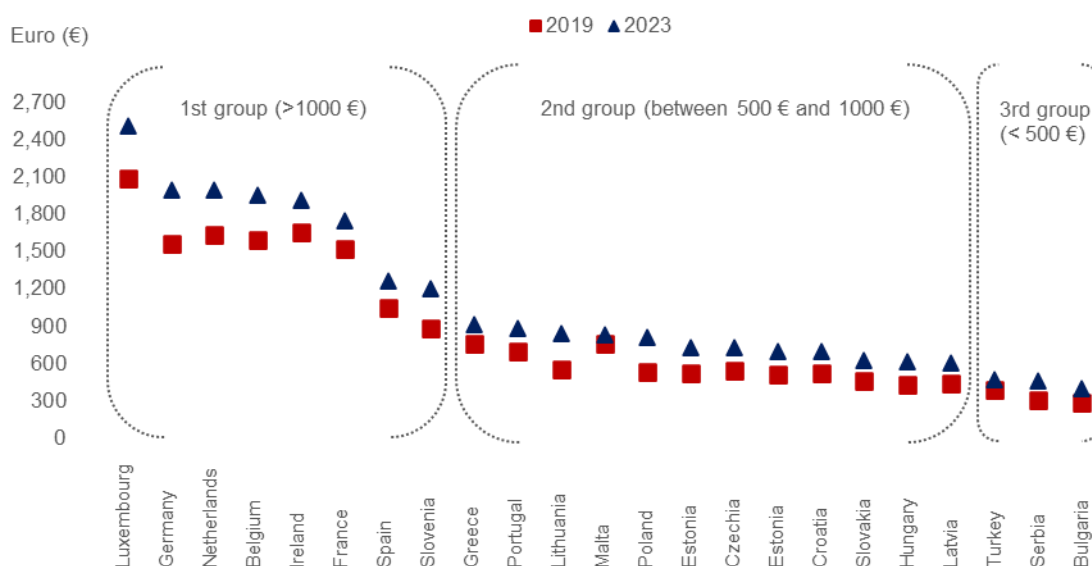
Source: Eurostat.

Graph 10a illustrates that in Greece, wage inflation[19] was lower than price inflation in 2022. The wage and salary index increased by 5.5%, while inflation soared by 9.6%, the highest in the past twenty years, resulting in a 4.1% erosion in real wages. However, in 2023, the Index increased by 5.9%, which was above the inflation rate of 3.5%, meaning that part of the loss in real wages was restored. The prudent adjustment of labour costs in response to inflationary pressures allowed Greek businesses to cope with the energy shock.
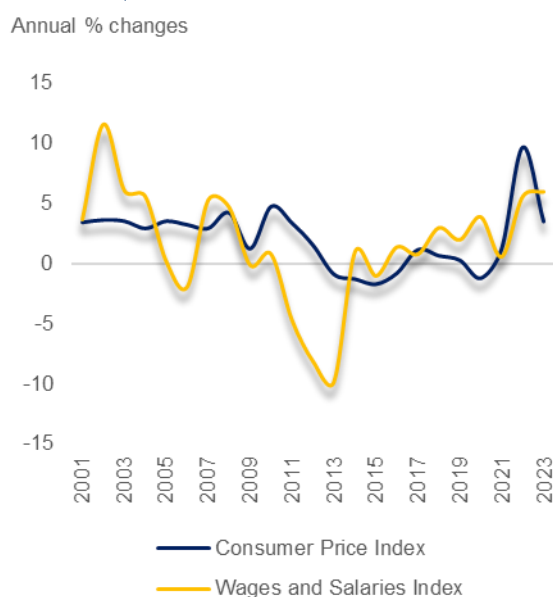
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[18] In Greece, the national gross minimum wage in 2023, stood at Euro 910 per month, based on 12 payments per year. In April 2024, the Greek Government increased further the national gross minimum wage.
[19] as measured by the rate of change of the wages and salaries index.

The nexus between wages and prices suggests that the likelihood of an adverse wage-price spiral is limited in Greece, as nominal wage increases are less likely to lead to a renewed price impulse.

Graph 10b depicts the phases of the wage-price spiral in Greece from the first quarter of 2019 to the fourth quarter of 2023. In 2019, wages increased by an average of 1.8%, surpassing inflation (0.3%). Following the outbreak of the pandemic, wages continued to increase at a higher rate than in the pre-pandemic period, due to fiscal support for households and businesses. From mid-2021 and for almost a year, surging inflation exceeded wage increases. During the second and third quarter of 2022, the interaction between wages and prices was dominant, mainly due to the pass-through phenomenon. However, inflation pressures faded out in 2023, as a result of energy price disinflation, while nominal wages were prudently adjusted upwards.

Graph 10a. Is this a case of a wage-price spiral? Graph 10b. The phases of the wage-price spiral

Sources: ELSTAT, Eurostat.
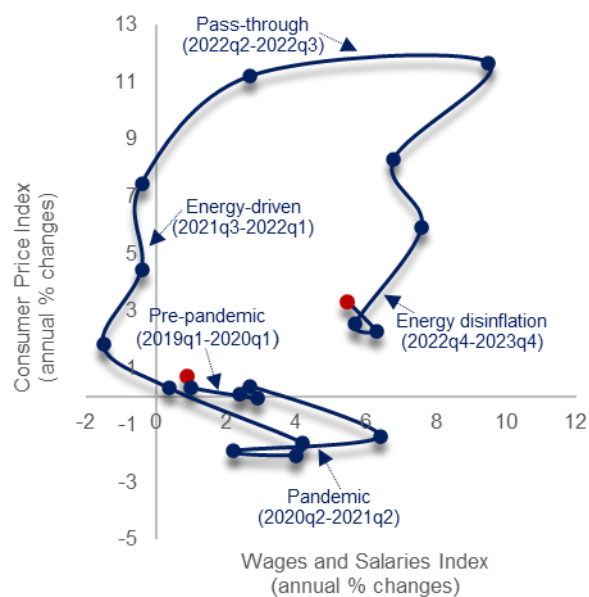
Hence, it can be concluded that implementing prudent income policies today can mitigate the negative effects of high inflation. Additionally, according to historical evidence (Alvarez et al, 2022), nominal wage growth is expected to remain slightly elevated, even as inflation decreases, which could help to recover some of the lost purchasing power. Furthermore, the expected recovery of real wage growth alone would not signal the start of a wage-price spiral. The process of wage adjustment may continue for the next two to three years. After the wage catch-up phase, once the equilibrium level of real wages has been reached, we can expect nominal wages to increase at the rate that corresponds to the sum of labour productivity growth and the inflation target.

Some authors have suggested that corporate profiteering may have contributed to the recent wave inflation in Europe and globally (Hansen et al., 2023, Donovan, 2023, Arce et al., 2023). However, in Greece, the recent aggregate data indicates that the contribution of operating surplus and mixed income to inflation has rapidly decreased in 2023 and is projected to ease further in the next years[20]. Based on the GDP deflator decomposition, Graph 11 presents the contribution of operating surplus and mixed income, labour costs and taxes on production and imports (less subsidies) to domestic inflation in Greece.

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[20] European Commission (2023a), European Economic Forecast.

In this context, Colonna et al. (2023) and Bijnens et al. (2023) argue that most studies, which indicated that corporate profits rose faster than wages and therefore contributed to the persistent inflation, were based on aggregate data (the ratio of gross operating surplus to value added), which can lead to a misleading conclusion. Bijnens et al. (2023) take the analysis about the nexus between business profits and inflation further, evaluating price increases in 2022 in Belgium, using a firm-level database and not aggregate data. Their study shows that the primary cause of inflation pressures were higher input prices. This led to initial import price spikes that gradually spread to all sectors. Their study also found that the profits of large firms seemed to have a mitigating effect on price hikes, as the firms delayed adjusting their prices after a cost shock.

Graph 11. The GDP deflator decomposition

Source: Eurostat.

6. The energy shock on public finances: The effect on the debt-to-GDP ratio and the trade deficit

Until 1980, Greece's public debt was relatively low, at 22.5% of GDP. However, during the 1980s the country's debt-to-GDP ratio started to rise, reaching 73.2% in the 1990s and following an upward trend thereafter. Greece's accession to the European Economic Community in 1981 came at a time when the country's international competitiveness was weak, a situation that further worsened by the oil crises of 1970s. During that period, the country entered a cycle of devaluation and inflation, ultimately leading to hyperinflation. The ease of access to international borrowing resulted in excessive foreign borrowing and external debt (Alogoskoufis, 2021). It is important to mention that domestic inflation did not contribute to the compression of the debt-to-GDP ratio, as the debt service (public and private) was mainly denominated in foreign currency. Hence, the combination of a weak drachma and high nominal interest rates did not support efficient debt management.

Graph 12a illustrates the debt-to-GDP ratio, which rose by 26.4% in 2020 compared to 2019, reaching a record high level (207%). This increase was caused by primary fiscal deficits, resulting from the expansionary fiscal policy implemented during the pandemic. The rapid decline in economic activity further increased the debt-to-GDP ratio. However, from 2021 onwards, certain favourable factors impacted positively the Greek

debt. The simplified formula below describes how the debt-to-GDP ratio changes over time and can help us to identify the factors that contributed to its decline.
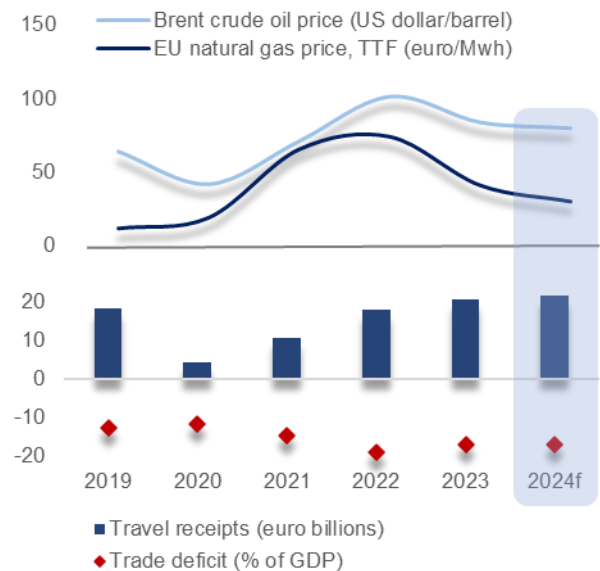
*Change in debt-to-GDP ratio = primary balance-to-GDP ratio + (nominal interest rate- inflation rate- real GDP growth) * debt-to-GDP ratio of the previous year[21]*

Graph 12a. Contributions to gross public debt

Graph 12b. The impact on the trade deficit
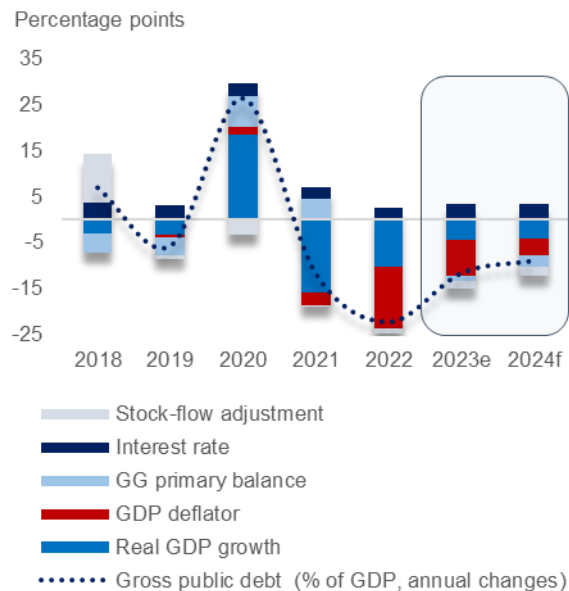
Note: 2023 is estimation and 2024 is forecast.
Source: AMECO database.

Note: 2024 is forecast.
Sources: Bank of Greece, ELSTAT, European Commission.

- *Inflation.* The Greek debt is now denominated in the common currency and not in foreign currency, as it was the case in the 1980s[22]. Consequently, the inflationary shock in 2022 and 2023 had a significant and persistent eroding effect on the debt-to-nominal GDP ratio[23].

- *Real GDP growth.* The robust economic recovery since 2021 has led to a substantial increase in GDP. As a result, between 2020 and 2023, the debt-to-GDP ratio[24] decreased, as the GDP growth rate exceeded the interest rate paid on government debt. In specific, the public debt-to-GDP ratio decreased significantly by 46.1 percentage points, which was the largest reduction among EU countries.

- *Nominal interest rate.* The monetary tightening and high interest rates do not have significant increasing impact on the cost of borrowing. This is because the largest part of the Greek public debt is linked to fixed and relatively low interest rates, with a long average maturity.[25] It is worth noting that gross financing needs for the next few years will be around 11% of GDP, which is lower than Italy's and Spain's[26].

- *Primary balance.* The strong economic activity and private consumption led to a primary surplus in 2022. This was primarily due to the outperformance of value-added tax revenues.

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[21] For a detailed analysis see Eichengreen and Panizza (2022).
[22] If the debt is denominated in foreign currency, inflation -in a flexible exchange rate regime- usually leads to currency depreciation and thus to higher repayments in domestic currency.
[23] Garcia-Macia (2023) demonstrated that inflation surprises can temporarily reduce primary deficits and have a sustained effect on the debt-to-GDP ratio.
[24] The gross public debt-to-GDP in 2023 is estimation. AMECO database, European Commission.
[25] Hellenic Republic, Public Debt Management Agency, 2024.
[26] European Commission (2023b). Debt Sustainability Monitor, Institutional Papers, No. 199.

The impact of the energy shock on the trade deficit is also a significant concern. In 2021-2022, the rise in energy prices led to the widening of the trade deficit (Graph 12b). This is due to Greece's status as a net importer of petroleum products and natural gas, with relatively inelastic demand. The remarkable performance of travel receipts partially finances the trade deficit. In 2024 and 2025, Greece is expected to record a higher growth rate than the European average. This may lead to a further widening of the trade deficit due to increased demand for consumer goods, as well as increased imports of machinery and equipment related to investment projects of the RRF and the green and digital transformation.

7. The impact of soaring energy prices on investment and the role of safety nets

Several studies have investigated the impact of a rise in oil prices on investment. In Box 2, we examine the behaviour of investment in Greece in response to oil price volatility, among other variables. The results confirm a negative relationship between investment and oil prices, with the negative shock lasting up to five years (Graph 13). Furthermore, our analysis confirms the positive impact of real GDP and gross fixed capital formation (constant prices) of the previous year in attracting new investment.

Graph 13. Response of investment to shocks (impulses) in oil prices, GDP and investment in Greece
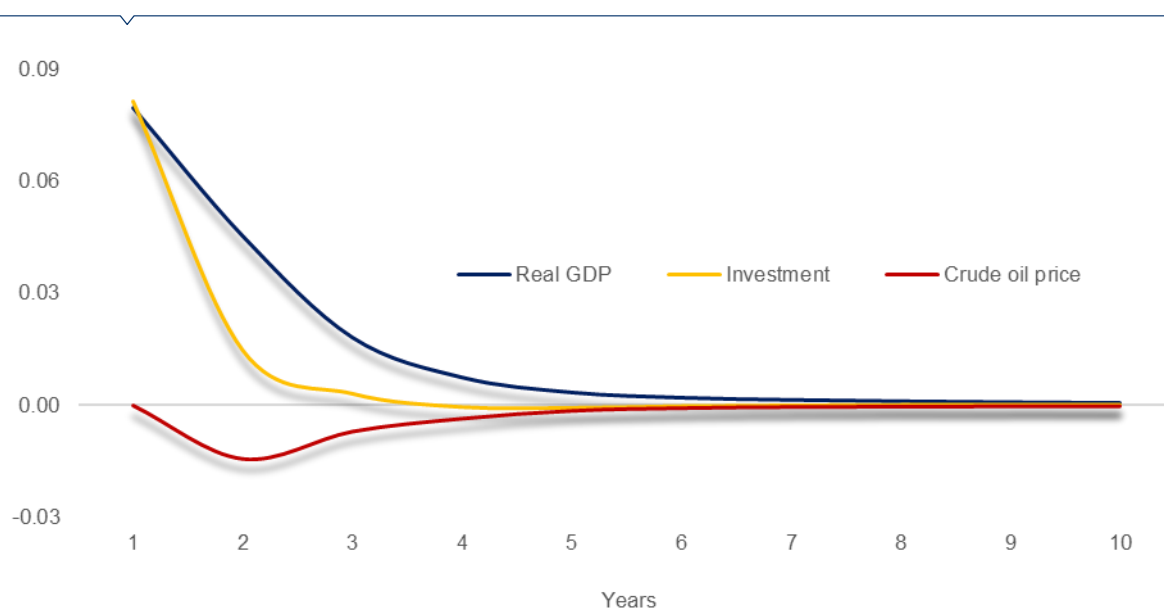
Despite initial delays that put various investment projects on hold after the energy shock, we anticipate that the country's growth mix will shift towards a more investment-driven model in the coming years. Foreign Direct Investment (FDI) will play a crucial role in this shift, as it generates additional investment. Historically, FDI in Greece has been primarily associated with the real estate sector, including housing and the acquisition of existing businesses to exploit dominant positions in certain domestic product markets. However, this type of investment has a lower multiplier effect, resulting in lower exports for the host country than profit repatriation for the foreign country. Moreover, this type of investment does not significantly enhance the level of technology in the economy.

Greece has achieved significant growth in investment over the past two years, covering part of the gap inherited from the previous long-lasting crisis, which amounted to around Euro 95 billion (current prices) for the period 2010-2021 (Adamopoulou et al., 2023). Another research paper (Hua et al., 2022) measures the investment gap from 1.6 to 8 percent of GDP in 2019.

The timely implementation of the National Recovery and Resilience Plan, in combination with other European funds and private investments, is critical for achieving this goal. The grants for energy transition actions for

the period 2023-2027 total over Euro 8 billion. This includes Euro 4 billion from the RRF, Euro 800 million from Repower EU, Euro 1.6 billion from European funds, and Euro 2 billion from the Islands Decarbonisation Fund[27]. These investments are expected to have a significant multiplier effect, contributing to the improvement of Greece's output potential. They can also help to bridge the technological gap caused by the lack of investment over the past decade.

Recent geopolitical tensions have had a determinant footprint on the energy market, leading to the reshaping of the energy map in the Southeast Mediterranean. Greece aims to establish a strategic position in the transit and exploitation of available resources, including natural gas via the East Med pipeline. This pipeline transfers gas from Israel to Europe through Greece and Cyprus. Furthermore, there are several multi-terminal electricity interconnections that connect the national electricity grids between countries. One such interconnection is EuroAsia, which connects Israel and Europe. Another iconic investment is the Greece-Egypt electrical interconnection, which aims to link the two countries.

Graph 14. Net power generation per energy product
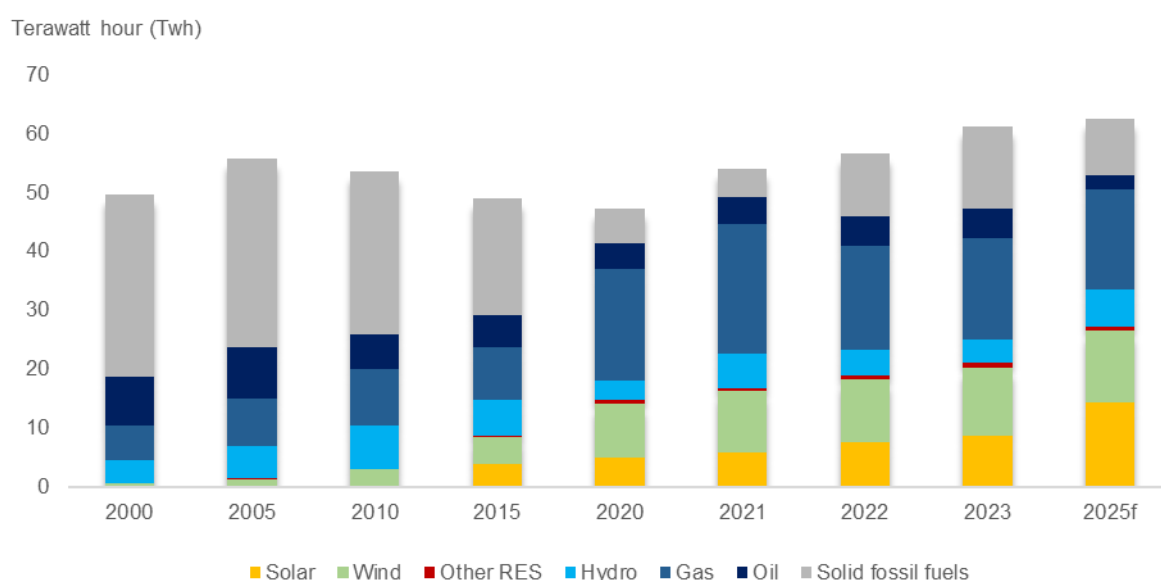
Note: 2025 is forecast.
Source: Hellenic Republic-Ministry of the Environment and Energy, National Energy and Climate Plan, presentation (January 2023).

Lastly, Greece has undertaken several flagship investments to enhance its energy security and independence. In this context, the country has increased its capacity for photovoltaics (solar PV) and onshore/offshore wind power. In addition, the country has invested in hydrogen, which can act as a catalyst for the decarbonisation of fossil fuels in industry and transportation. It has also constructed LNG terminals and developed renewable fuels of non-biological origin.

In 2023, Greece had the highest share of solar power in its electricity mix among European Union countries.[28] The new energy composition shown in Graph 14, will reinforce the country's comparative advantage, leading to lower electricity prices, thus benefiting consumers and businesses. Over the last two years, there has been a rapid increase in electricity production from natural gas, solar photovoltaics, and wind, which has decreased the carbon intensity of production. The Greek Government focuses on diminishing greenhouse gas emissions by increasing electricity generation from renewable sources, particularly solar and wind power.

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[27] Statement of the Deputy Minister of Environment and Energy of Greece at the 27th Annual Economist Government Roundtable, 24-26 October 2023.
[28] European Electricity Review 2024, "Europe's electricity transition takes crucial strides forward", EMBER.

Box 2: The nexus between oil price volatility and investment: The case of Greece

This section examines the relationship between oil prices and private investment measured by Gross Fixed Capital Formation (GFCF) in Greece, using annual data from 1960 to 2023. The objective is to determine whether oil prices are the primary catalyst for investment growth in the short-term. Previous studies have focused on the long-term impact of oil prices on investment. Cheng et al. (2019) found that heightened oil price volatility typically leads to a reduction in real GDP and investment. Zhu and Singh (2018) investigated the relationship between oil price volatility and strategic investment by oil companies. Furthermore, Cao et al. (2020) observed that rising oil prices reduce business investment activity.

To model the investment dynamics in Greece, we use a Vector Autoregression Model (VAR) that expresses investment in terms of log differences. Our model specification includes the following explanatory variables: i) the log difference of real GDP with one period lag ($t-1$), ii), the first difference of debt-to-GDP ratio with one period lag ($t-1$), iii), the inflation rate with one period lag ($t-1$), iv), the private sector's credit growth with one period lag ($t-1$), vi), the log difference of Economic Sentiment Indicator (ESI) with one period lag ($t-1$), vii) and the first difference of Brent crude oil price with one period lag ($t-1$). To meet the stationarity condition, all variables are transformed into first differences or log differences.

The real GDP, GFCF, debt-to-GDP ratio and Economic Sentiment Indicator data were obtained from Eurostat/European Commission databases. Consumer Price Index and Brent crude oil prices were sourced from the FRED database, while the credit growth was retrieved from the Bank of Greece database.

To analyse investment behaviour in response to shocks, we estimated the VAR model and conducted impulse response functions (IRFs). Graph 14 depicts the negative relationship between investment and crude oil prices. Specifically, an increase in oil prices (an oil price shock of one standard deviation) results in a sudden decrease in investment. This is likely because higher oil prices increase the cost of production for companies, leading to lower profitability and reduced investment. It is expected that this negative impact of oil price increase on investment will last up to five periods (years) before becoming insignificant. This suggests that the impact of the oil price shock on private investment will persist for some time. We also found that a shock in both real GDP and GFCF has an important positive impact on attracting investment, with the effect of real GDP being more persistent. It is important to note that this analysis only captures the short-term impact of an oil price shock on private investment, as it peaks in the second year and wanes gradually afterwards. In the longer term, the relationship between these two variables may change due to factors, such as technological advancements or shifts in consumer preferences.

8. Epilogue

History repeats itself, highlighting the persistent and urgent issues that must be addressed, such as resources scarcity, geopolitical tensions over their security, and adverse economic repercussions. However, the circumstances affecting these recurring historical patterns may differ (Nash, 1981). When comparing the second oil crisis of the 1970s with the recent energy shock, it is evident that the "stagflation pattern" that prevailed in the past has not been observed recently in most countries. This is mainly due to the global coordination of monetary and fiscal policies. Also, both shocks were caused by large-scale supply disruptions after wars, which led to price spikes. Bearing these facts in mind, the following conclusions can be drawn.

In the past, particularly after the second oil crisis, the Greek Government pursued expansionary fiscal and monetary policies. This led to fiscal destabilisation and high inflation due to the monetary financing of the deficits. However, today, Greek authorities implement a more disciplined fiscal policy, in line with the European fiscal goals outlined in the European Union Treaties. Greece maintains a prudent fiscal policy, while simultaneously supporting the economy in response to the recent energy shock, without jeopardising fiscal stability. In addition, the economy's resilience against external shocks has been enhanced by the structural reforms implemented between 2010 and 2018. Furthermore, monetary policy is centralised,

meaning that Greek authorities cannot act independently. The recent energy shock in Greece and globally emphasised the high importance of coordinating monetary and fiscal policies for addressing new challenges more effectively. Since these policies are controlled by separate authorities, togetherness was an imperative. Undoubtedly, Greece benefited from this coordination. Synchronisation between European monetary policy and Greece's fiscal policy is the optimal path to achieve even higher economic prosperity.

Another important takeaway is that income policies have become more sophisticated with better and more prompt measures, including support measures for low-income households and vulnerable social groups (e.g., minimum wage increases), as well as for businesses. Additionally, the Automatic Wage Indexation in 1980s has been abolished, as it was deemed counterproductive and, today, labour unions adopt prudent wage bargaining policies, resulting in a smoother adjustment process between inflation and wages. During the 1970s and 1980s, in Greece, nominal wage increases exceeded labour productivity growth, on average, during a recession, resulting in persistent high inflation. Nowadays, factors like labour productivity are taken systematically into account. In contrast to the central monetary authority in the past, the ECB is now more vigilant regarding situations where employees seek to adjust their wage claims to compensate for real income losses caused by higher prices, as well as when companies adjust prices upwards. Data from the last twenty years for Greece show that no wage-price spirals, defined as a constant acceleration of prices and wages for a long period, have been observed. Moreover, an increase in nominal wages should not always be interpreted as a sign of an imminent wage-price spiral. Historical evidence suggests that nominal wage growth can slightly increase for some time, while inflation de-escalates from high levels.

An additional finding is the effect of inflationary pressures on public finances, primarily on public debt. During the 1980s and after its entry in the European Economic Community, Greece entered a period of currency devaluation and high inflation, resulting in excessive foreign borrowing and high external debt. Domestic inflation did not contribute to the compression of the debt-to-GDP ratio, as the debt service was denominated, mainly, in foreign currency. In the context of the common currency, however, inflationary pressures have had the opposite effect on public debt due to the increasing nominal GDP and the fixed, lower interest rates linked to public debt.

Recent literature and the quantitative analysis in Box 2 suggest that energy shocks, typically, have a distorting impact on investment activity in Greece, because of the negative relationship between these two factors. However, other positive factors, such as Foreign Direct Investment and capital inflows from the Recovery and Resilience Facility, play a crucial role in offsetting the negative impact on investment growth in Greece.

Lastly, the energy shock that dawned in mid-2021 and peaked at the outset of 2022 is poised to be a historic turning point in the 21st century, leading towards a greener and more reliable energy system. Greece is at the epicentre of the changing energy landscape in Europe. The fact that the Greek shipping industry is a key player in the transportation of LNG, supports this claim. Furthermore, it is estimated that by the end of the decade, the railway network will connect the ports of Alexandroupoli, Thessaloniki, and Kavala with major ports in the Black Sea, bypassing the Bosporus straits. Additionally, the Trans Adriatic Pipeline (TAP) provides another source of natural gas for Europe, transporting it from Azerbaijan to Italy via Turkey, Greece, and Albania. The extension of the TAP pipeline holds the potential to transform Greece into an energy hub for Southeastern Europe, as European countries cannot continue to depend on inexpensive Russian gas for sustained growth. Key energy projects, such as the Gas Interconnector Greece-Bulgaria, the Greece-Egypt electrical interconnection and the Burgas-Alexandroupoli pipeline are pivotal. Alexandroupoli has evolved into an unmatched energy hub. The extraction of natural gas from the Eastern Mediterranean may strengthen the European Union's energy supplies in the future. It is now clear that production methods play a significant role in achieving energy security. Generating energy from renewable sources has become more critical than relying on natural gas and crude oil. The war between Russia and Ukraine has transformed Europe's energy landscape, resulting in impressive increases in key investments, such as battery energy storage systems.

Despite the fact that Greece is a minor energy consumer globally, its strategic location makes it an ideal corridor for transporting gas and green electricity to the rest of Southeastern Europe, provided that a wide range of key investments take place on time. Greece's abundance of natural and renewable resources

strengthens its comparative advantage, making it a major energy gateway for Southeastern Europe. The country has powerful levers, and as the green transformation speeds up, its role as an energy hub can be pivotal.

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