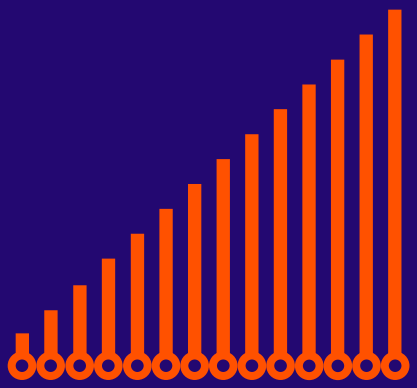
CENTRE OF PLANNING AND ECONOMIC RESEARCH

Issue 44, February 2021

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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Executive Summary

The third wave of the pandemic is testing the resilience of society and the economy

Almost a year after the appearance of the coronavirus, Greece is facing the third wave of the pandemic. The government, having made the protection of human lives a top priority, has so far dealt effectively with the third wave of the coronavirus. This is stated by the official European data that show the country in the 23rd place in losses among the EU-27 countries.[1] But the price paid is high. This is evidenced by the latest macroeconomic data that bring Greece to the top countries in the Eurozone as far as recession is concerned (section 1.3).

The crisis of pandemic in 2020 had significant impacts on the whole economy, as well as on individual markets (sections 1.4 and 1.5). Last March, restrictive measures were taken to tackle the first surge of the pandemic. One of the most important measures was the restriction of movement, which was implemented from the end of March until the beginning of May (section 4.1). After the expiry of these, the economy gradually started opening up from May. However, teleworking stayed active for the public sector until the end of the month, and afterwards, for many cases in the private sector as well. Additionally, the summer tourist traffic was significantly limited compared to other years. In November, the implementation of new measures tackling the second surge of the pandemic began. More specifically, on November 3rd, the government decided to shut down restaurants and retail stores, and on November 7th, to restrict citizens' movement. However, before that, since the end of September, primary measures, such as the implementation of 40% telework in the public sector, had been adopted to tackle the expansion of the virus.

Measures related to the limitation of movement, such as the implementation of teleworking, the closure of schools, retail stores, coffee shops and restaurants have led to the reduction of the transportation of citizens. At the same time, we should not overlook the significant reduction of tourism and travelling. Finally, the negative effect of the pandemic on the economy caused the reduction of the discretionary income of citizens, thus restricting demand. (section 3.2).

The result of all the above is an estimated recession of 9.9% for 2020

Growth will begin to appear in the second quarter of the year

According to our estimates, the growth of the Greek economy will appear in the second quarter of the year and will be of the order of 3.0% (section 1.3). But to get there, we will go through a "terrifying" first quarter with a recession of 10.4%.

The projected course of real GDP in 2020 and in the first half of 2021 and, hence, the overall economic conditions in Greece may evolve according to a more or less favourable scenario (than implied by the aforementioned projections), conditional upon a wide range of crucial and decisive factors, of which several are directly linked to the evolution of the pandemic. These factors are expected to determine, among other things, the demand and supply dynamics in Greece, the country's export performance, the investment and saving decisions of households and enterprises, the developments in employment and unemployment and, hence, income, as well as the financial conditions and the course of fiscal aggregates. But there are factors that could potentially operate in the negative direction. These are: (a) the third wave of the pandemic, which was accompanied in February 2021 by the renewed imposition of restrictive measures to protect human health, (b) the exceptionally high degree of uncertainty, owed to the inability to anticipate the evolution of the pandemic during the upcoming months at both the domestic and international levels, by restraining economic activity and, hence, affecting domestic and external demand, as well as several sectors of the economy which are more severely hit, rendering the economy even more vulnerable, and (c) the potential escalation of geopolitical tensions, by creating instability and causing additional adverse effects.

The critical third (tourist) quarter of the year

If all goes well, there will be a possibility of a peak in growth in the third (tourist) quarter of 2021, which will probably neutralize any negative developments of the

1. See <https://www.worldometers.info/coronavirus/#countries>.

first quarter. However, in order for this to happen, by June, a large number of people must have been vaccinated, not only in Greece but also elsewhere. Only then will a coronavirus immunity begin to develop. The climate will be significantly improved and tourist mobility will be normalized. Then, we will expect the return of visitors to Greece. Of course, we will not see the huge tourist numbers of 2019, i.e., 31.4 million tourists who spent around 18 billion euros. But the countdown to the dynamic increase in tourist arrivals will have begun. But ***this is where the government needs to look at things more carefully in order to correct some chronic distortions and strengthen some internationally emerging trends in Greece.*** First of all, to enrich the Greek tourist product, beyond the sun and the sea (which undoubtedly are and will remain comparative advantages) with history, traditions, culture, nature and local customs. In other words, to give the tourist who comes from abroad the opportunity to enjoy safe and healthy unique experiences that he/she will take back to his/her home country and for which he/she will become the best "ambassador" of Greece. ***The tourist of summer 2021 will not be the same as the tourist of summer 2019.*** The government must, through the NSRF and the Recovery Fund, take care of not only the basic and digital infrastructure, but also the health and safety infrastructure and give incentives for the offering of unique experiences. If it does, it will be able to reverse decades of distortions where, for example, overnight tourist and tourist revenue has been over 80% in just five regions of the country (the South Aegean, Crete, Central Macedonia, Attica and the Ionian Islands) and covered only four months, from June to September. Unfortunately, in all the previous years, the tourism strategy of Greece was fragmentary; in fact, it did not exist. It is an opportunity, in the post-coronavirus era, to formulate a new strategy based on resilience, long-term sustainability, digital transformation and synergies with local communities, in order to strengthen the local tourism supply chain.

Investments, the (necessary) element of the fourth quarter

As for the last quarter, the "baton" is expected to be taken by investments. Then, the epidemiological data will show the virus to be in significant recession, the economic climate will have improved significantly, many projects will have matured, the first funds from the Recovery Fund will have been released into the economy. Then, we would see investments take shape. To cover the lost ground of the last decade where the gross fixed capital formation –i.e., the economic index that reflects the overall course of investment– has been "stuck" at 20-25 billion euros per year, significantly lower compared to 60.5 billion euros in 2007.

Reforms are a prerequisite

Reforms are a prerequisite for investments. For example, the change of the admission conditions in the universities, the reform of the NSS, the evaluation of school teachers, the reform of public procurement law and the simplification of business licensing would allow the development of investment plans and the creation of new and well-paid jobs. Also, the changes in the labor market and in the insurance and justice systems, the reduction of labor costs, as the Pissarides report suggests, the further digitization of the State, the reduction of energy costs for industry and the size of the state through privatizations as well as the mergers of organizations that do similar things, burdening the state budget and taxpayers. At the same time, it is necessary for the government to create a ***social safety net for those*** who will be most directly affected by the impending restructuring of the economy. ***The more we postpone reforms, the more problems we accumulate. We cannot afford to wait.***

Professor PANAGIOTIS LIARGOVAS
Chairman of the Board and Scientific Director of KEPE

1. Recent (macro-)economic developments

KEPE, *Greek Economic Outlook,* issue 44, 2021, pp. 5-12

1.1. The main aggregate demand components between the first and the second lockdown

1.1.1. Introduction – Domestic and external demand

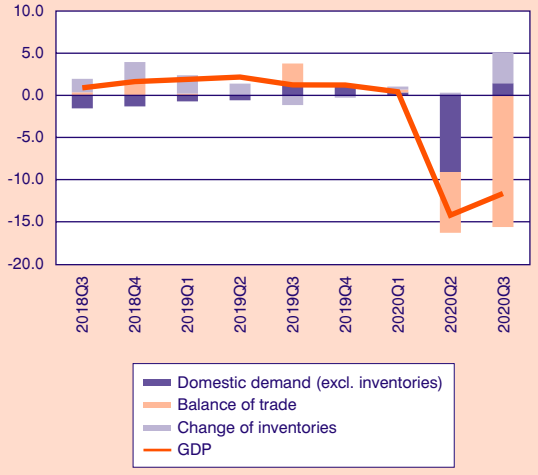
Yannis Panagopoulos

In this section, using the updated recorded macroeconomic data, we proceed to the analysis of the current developments in the Greek economy between the end of the first lockdown and the start of the second lockdown, in November 2020. The first thing we observe, based on the results of Table 1.1.1, is the continuation, in a slightly more moderate way, of the negative effects of the first lockdown due to the Covid-19 pandemic. More specifically, the recession of the economy in the third quarter of 2020, compared to the corresponding quarter of 2019, was 11.7%. At the nine-month level, we also observe a serious recession in the economy. That is, from growth of 1.77% in the first nine months of 2019, we had a recession of -8.48% in the corresponding nine months of 2020.

Turning now to the individual factors/components that contributed to this recorded GDP recession (-11.7%), we should point out primarily the large negative impact of the country's trade balance in the third-quarter of 2020. In particular, exports of goods and services showed a very high negative rate of change (-18.1%), in terms of GDP change contribution, as opposed to the slightly positive contribution of both public consumption (0.8%) and private consumption (0.7%). On the other hand, fixed capital investments made no contribution to the recession (0%). In the 'positive' contributing elements of the GDP change the negative sign, over the same period, of the imports of goods and services (-2.5%).

On the other hand, in terms of the GDP change participation, domestic demand has a positive sign (1.4%) for the third quarter of 2020. With regard to the course of the external demand sector, which mainly includes the balance of goods and services, it looks comparatively more important, but also with a strong negative sign in relation to domestic demand (with a rate of -15.6%) (see Figure 1.1.1). This external demand result could have been even worse if, as mentioned above, the country's imports had not shown a significant negative rate of

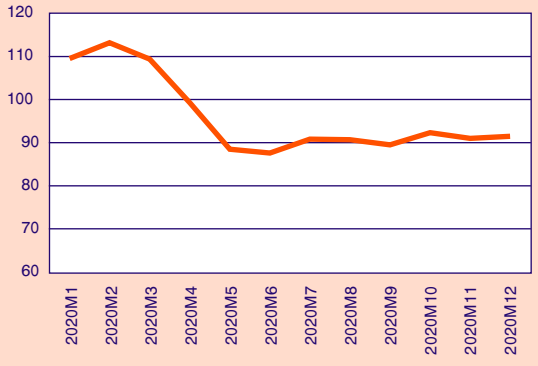
FIGURE 1.1.1
Domestic and net external demand (components)*



Source: National Accounts, ELSTAT.

* Data processing by the author.

FIGURE 1.1.2
Economic Sentiment Index (ESI)



Source: Eurostat.

TABLE 1.1.1 Basic macroeconomic figures

(%, seasonally adjusted data, volumes[1] base year=2015)

	2018Q3	2018Q4	2019Q1	2019Q2	2019Q3	2019Q4	2020Q1	2020Q2	2020Q3	1/2019-1/9/2019 2019	1/2020-1/9/2020 2020
Private consumption	1.2	0.7	1.2	0.5	1.0	1.2	0.1	-8.2	0.7	0.91	-2.47
Public consumption	-0.9	-1.3	-0.1	1.4	-0.2	-0.2	0.3	-0.5	0.8	0.33	0.18
Fixed capital investments	-2.1	-1.0	-0.8	-2.1	0.0	-0.6	-0.3	0.5	0.0	-0.98	0.03
Domestic demand*	-1.5	-1.3	-0.7	-0.6	1.4	1.2	0.3	-9.1	1.4	0.03	-2.44
Exports of goods & services	2.8	3.9	2.1	1.0	3.7	0.5	0.6	-12.2	-18.1	2.25	-9.91
Imports of goods & services	2.4	2.3	1.9	1.0	1.3	0.4	0.2	-5.0	-2.5	1.39	-2.42
GDP	0.9	1.6	1.9	2.2	1.2	1.2	0.4	-14.2	-11.7	1.77	-8.48

Source: Quarterly data of the *National Accounts* and EC Forecasting, spring 2019.

* Excluding inventories.

1. The percentage calculations of the individual macroeconomic components follow the formula: $\frac{(X_t - X_{t-1})}{X_{t-1}} \times \frac{X_{t-1}}{GDP_{t-1}}$.

growth. Finally, in the same quarter, the contribution of the change in Inventories has a positive sign (3.66%).

In a nine-month period, we also have a negative picture with some variations in the contribution of the basic macroeconomic figures in the GDP change. Exports of goods and services, due to the pandemic, are the most negative factor with the highest contribution to the recession (-9.91%), followed by private consumption (-2.47%), while fixed capital investments have almost zero contribution (0.03%) (Table 1.1.1). In the 'positive' contributions for reversing the recession, we classify the negative sign for imports of goods and services (-2.42%).

Regarding the trend of the Economic Sentiment Index (ESI), as a proxy of future demand, it is known that, like some other leading indices, it offers valuable information from both business and household perspectives concerning the economy. It is also an important indicator for the economy and can be used for the predictions relating to the future of GDP growth. As demonstrated by Figure 1.1.2 above, the ESI, from May 2020 to the end of 2020, moves steadily around 90 units. This is an indication of the uncertainty, on behalf of businesses and households, about the estimated end of the Covid-19 pandemic.

Next, a more detailed discussion follows on the contribution of the trade balance of goods and services (external sector) with respect to the GDP recession, for the third quarter of 2020.

Trade balance (goods and services)

The negative contribution of the external demand sector (exports minus imports) to the GDP recession, for the third quarter of 2020, as already mentioned above, is clearly significant (-15.6%) and mainly reflects the expected impact of the Covid-19 pandemic on international demand.

Thus, we will next present separately the trend regarding the rate of change of goods and services for both imports and exports for that period. Starting from exports, it should be emphasized that their participation in GDP change appears, for the third quarter of 2020, with a negative rate of -18.1%. In more detail, services, which also make up the relatively smallest part of exports, in billions of euros, have decreased by -18.5%, while goods, which were the largest part of exports, have shown a slight increase of 0.6% over the same period. As far as the imports of goods and services are concerned, which is more balanced as a distribution

FIGURE 1.1.3
Components of external demand*

Source: National Accounts, ELSTAT.

* Data processing by the author.

than exports, it should be reported that their participation in the change in GDP has also decreased at a negative rate of -2.5%. In more detail, imported services showed a decrease of -1.94% while, on the other hand, the decrease in imported goods was less than that of services, at -0.79%.

Finally, the contribution of the trade balance, at the GDP recession rate, is also reflected in the histograms of Figure 1.1.3, for imports and exports separately. As already discussed, we had high negative percentage rates for both external demand components (-18.1% and -2.5%, respectively, Table 1.1.1). Consequently, as shown in the corresponding histograms in Figure 1.1.3, there is a reversal of the expected histograms' shape of the two external demand components, with a positive contribution from the import component and a strongly negative contribution from exports to GDP.

1.1.2. Private consumption and investment

Konstantinos Loizos

1.1.2.1. Private consumption

Private consumption has risen along with the external trade deficit

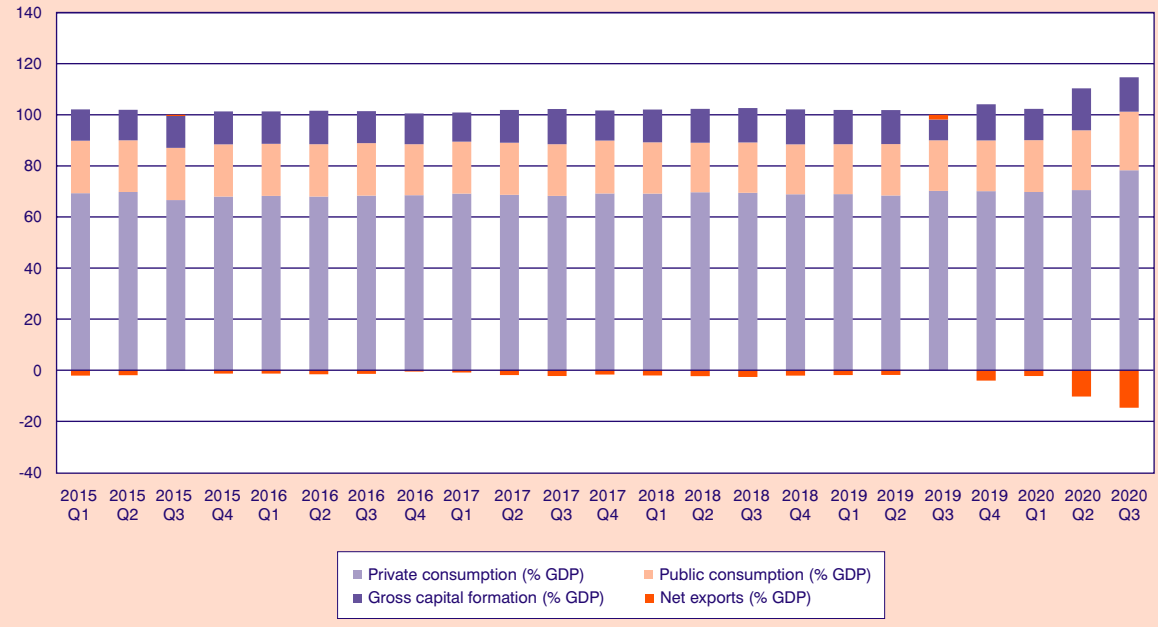
Based on quarterly seasonally adjusted *National Accounts*,[1] private consumption reached 31,611 million

1. *Quarterly National Accounts,* Press release, ELSTAT, December 4, 2020.

euros in current prices during the third quarter of 2020, higher than the 27,251 million euros in the second quarter of the same year and 31,457 in the first quarter. Equivalently, in terms of chain-linked volumes (reference year 2015), private consumption rose to 32,063 million euros in the third quarter of 2020 with respect to a lower figure of 27,805 million euros during the second quarter and 31,701 million euros in the first quarter of the same year. Hence, a rebound of private consumption expenditure took place in the third quarter, just after the fall in the second quarter, which is reflected in percentage changes as well,[2] based on seasonally adjusted chain-linked volumes. Therefore, private consumption rose at a rate of 1% in the third quarter, whilst it has fallen by -12% in the second quarter of 2020 with respect to the corresponding quarters of 2019. On the other hand, private consumption rose with an impressive 15.3% rate just after its decline by -12.3% with respect to the immediately preceding quarters (See Figure 1.1.5).

However, the rise in private consumption as a percentage of GDP was a feature that characterized all three quarters. This component of aggregate demand increased from 69.76% of GDP in the first quarter of 2020 to 70.54% in the second quarter and to 78.27% in the third quarter of the same year (Figure 1.1.4). On the other hand, public consumption, despite its growth from 20.30% in the first quarter to 23.39% of GDP in the second quarter, subsequently fell to 22.93% of GDP in the third quarter. Likewise, gross capital formation (fixed capital and changes in inventories) as a percentage of GDP fluctuated, as it exhibited an improvement between the first and the second quarter from 12.24% to 16.39%, which was followed by a decline to 13.45% in the third quarter. The most significant and clear-cut trend was the sharp deterioration in the external trade balance, from -2.30% in the first quarter of 2020 to -10.32% in the second quarter and -14.66% in the third quarter of the same year. In this way, the reversal in the trade balance which first appeared in the last quarter of 2019 and favoured imports over exports, has deepened further. This observation leads to the conclusion that the effects of the pandemic in this sensitive part of the Greek economy has been significant and lasting.

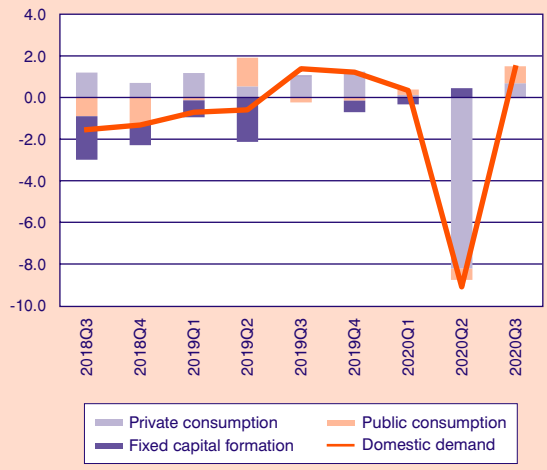
FIGURE 1.1.4
The evolution of private consumption and other components of demand as a percentage of GDP
(expenditure approach) (seasonally adjusted data in current prices)



Source: ELSTAT, data processing by the author.

2. Percentage changes were calculated using the formula $\frac{(X_t - X_{t-1})}{X_{t-1}}$.

FIGURE 1.1.5
Contribution to the GDP growth rate: Components of domestic demand

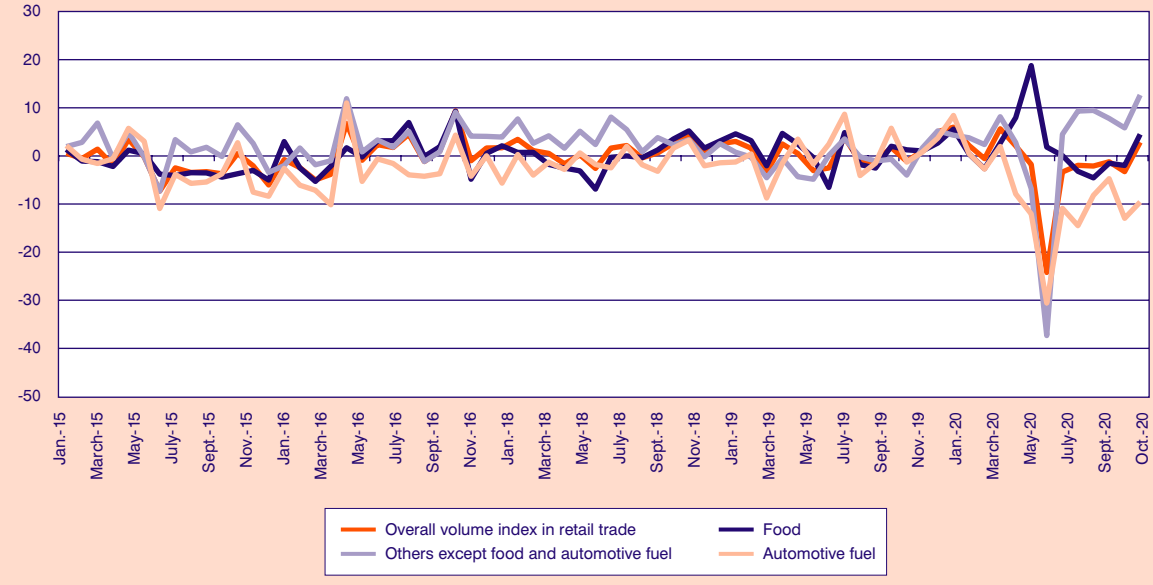


Source: National Accounts, ELSTAT, data processing by the author.

Faint recovery in retail trade in anticipation of the second wave of the Covid-19 pandemic

Figure 1.1.6 depicts the evolution of retail trade, according to the monthly data provided by ELSTAT. Apparently, in terms of the overall volume index, a decline took place that continued during the whole summer and the first month of autumn. The relevant percentage rates of change fluctuated between -1.21% and -3.27%. It was only in October that this index appeared to have recovered, presenting a positive change of 2.84%. The same pattern holds in food items, which, following their impressive rise during the first lockdown, exhibited negative rates of change between -1.53% and -4.56%, whilst in October, their rate of change turned positive and equalled to 4.49%. The situation was different for automotive fuel and other items except food and fuel. Retail trade in automotive fuel fell further, at rates between -4.72% and -14.50%, for a period covering the entire time span between June and October 2020. On the contrary, other items recorded positive rates of change, between 5.83% and 12.67%, during that period. In general, the trend that predominated the bout between the first and the second wave of the pandemic (June–October 2020) was negative for the general index (average value -1.14%), food items (-1.35%) and automotive fuel (-9.99%), but positive for other items (average value 9.02%). Therefore, the overall developments in retail trade during these months, with respect to the same interval in the previous year, were negative, with the only exception being the other items except food and automotive fuel.

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.

Pessimistic expectations in retail trade because of the pandemic

Confidence indicators published by EUROSTAT (Figure 1.1.7) imply a further fall of the relevant figures until December 2020. Indeed, despite a short-lived recovery in June 2020 in both the retail confidence indicator and the consumer confidence indicator, and the rise of the last index in October and November of the same year, the falling trend in expectations during the second half of 2020 was dominant. Such a trend clearly showed an entrenchment of negative developments concerning expectations in retail trade in anticipation of the coming pandemic waves.

1.1.2.2. Investment

Slight increase in investment during the third quarter but the contribution of buildings fell

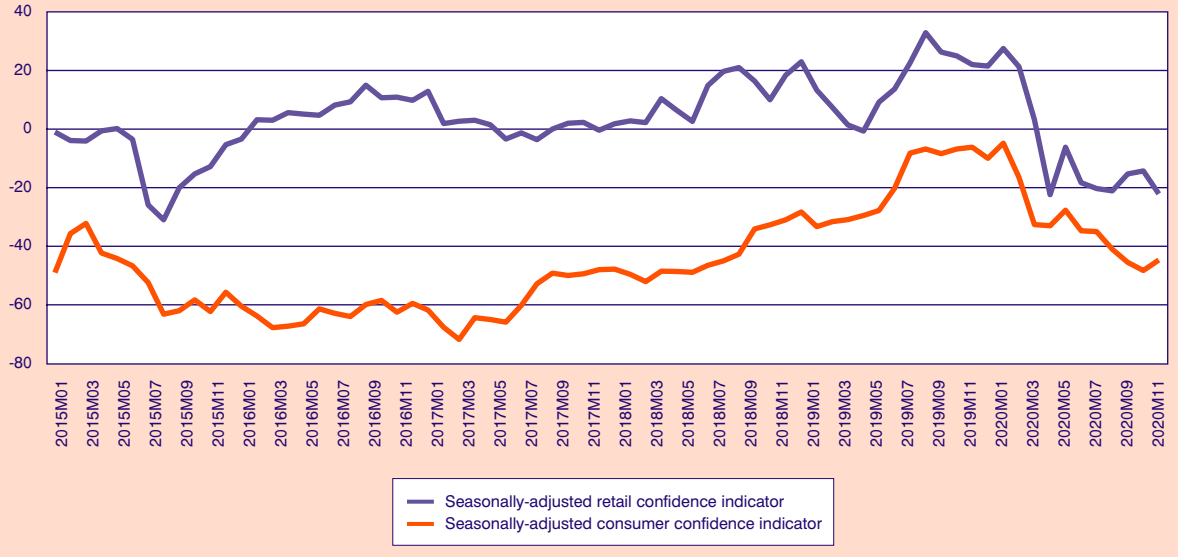
Gross fixed capital formation in current prices rose to 4,906 million euros in the third quarter of 2020, higher than the 4,527 million euros in the second quarter and 4,486 million euros in the first quarter of the same year. However, in terms of chain-linked volumes, there was a fluctuation in gross fixed capital formation, which fell slightly to 4,708 million euros in the third quarter of 2020, starting from 4,626 million euros in the first quarter, followed by 4,729 million euros in the second quarter. Such fluctuation is also evident in terms of percentage changes with respect to both the preceding quarter and the corresponding quarter of the previous year. Based on the data concerning seasonally adjusted chain-linked volumes, there was a small negative change in the third quarter of about -0.4%, following a positive one in the second quarter of about 2.2% with respect to the preceding quarter of 2020. Likewise, percentage changes with respect to the corresponding quarter of 2019 were -0.3% and 4.6%, respectively.

According to the data presented in Figure 1.1.8, gross fixed capital formation rose, and most of its components increased their contribution during the third quarter with respect to the second quarter of 2020. In particular, we observe the same positive trend in the third quarter of 2020 for machinery and transport equipment (both in total and by asset category), as opposed to dwellings and other buildings, in which the relevant trend is negative. In terms of percentage changes in aggregate categories with respect to the previous quarter, negative rates of -6.73% were recorded for buildings during the third quarter of 2020, whilst for machinery and transport equipment there was a positive rate of change of 7.83% during the same quarter.

Machinery and transport equipment took the lead from buildings

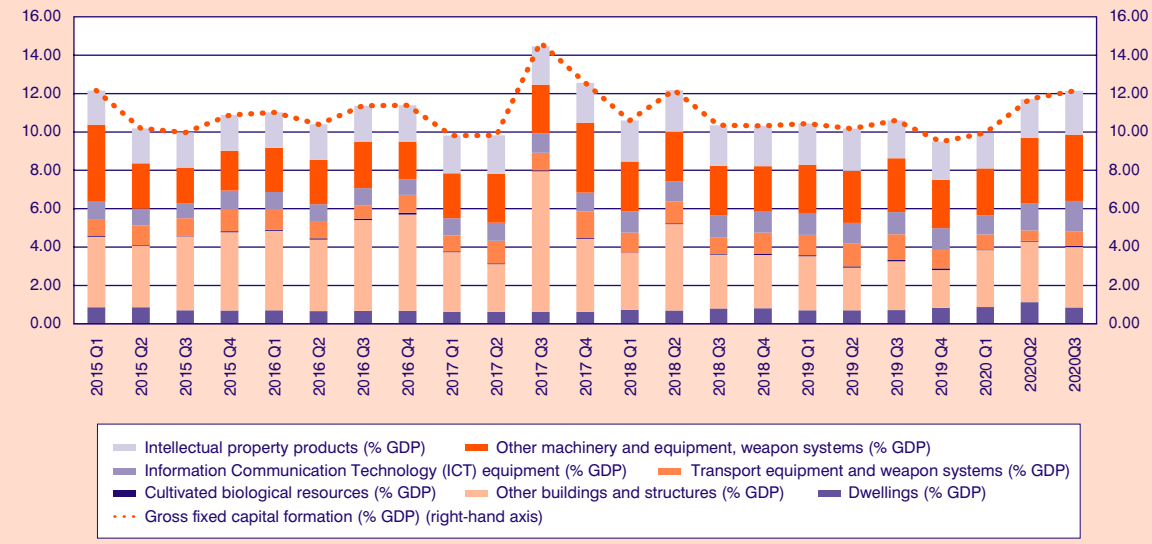
Focusing on the two main components of gross investment, there appears to be a reversal of trend con-

FIGURE 1.1.7
Confidence indicators in retail trade



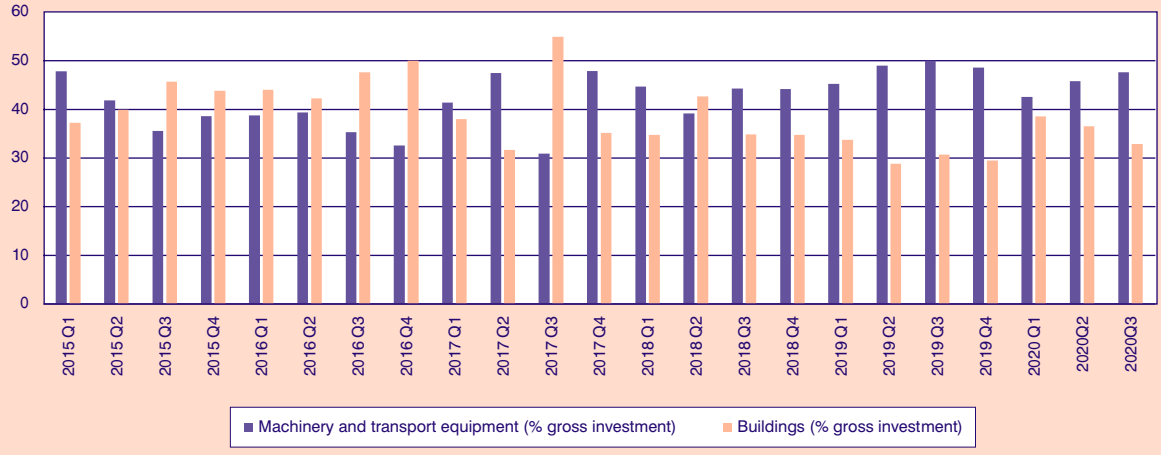
Source: EUROSTAT, data processing by the author.

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.

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



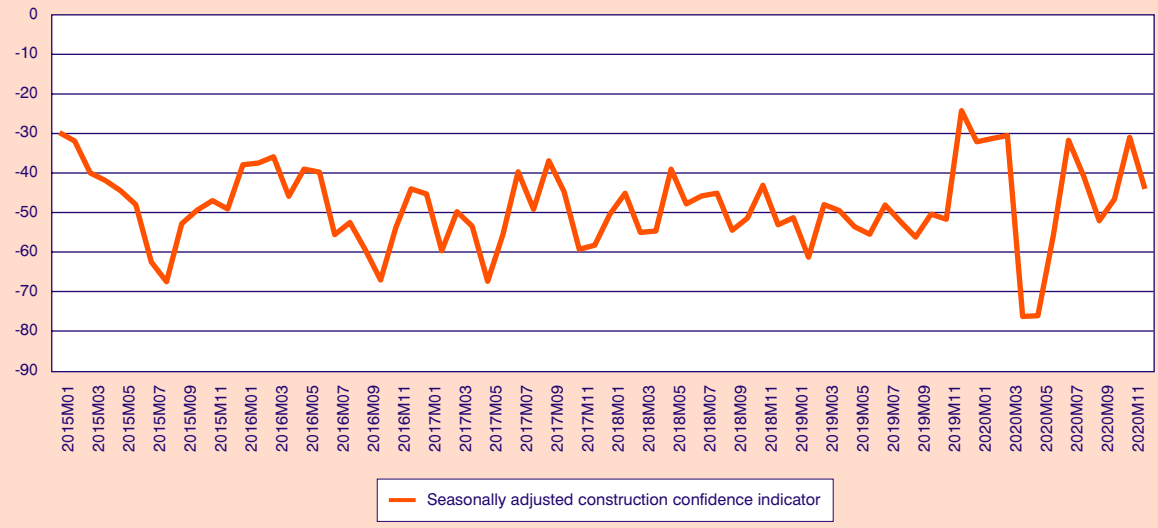
Source: ELSTAT, data processing by the author.

cerning the relative weight of buildings as opposed to machinery and transport equipment. Indeed, starting from the second quarter of 2020, the share of buildings in gross fixed capital formation fell to 36.53% (from 38.55% in the first quarter of 2020) and further to 32.87% in the third quarter of 2020. On the contrary, the share of machinery and transport equipment rose from 42.54% in the first quarter of 2020 to 45.78% in the second quarter and 47.62% in the third quarter of 2020 (Figure 1.1.9).

Expectations in the construction sector fluctuated without exhibiting any clear trend

The evolution of business expectations in the construction sector is depicted in Figure 1.1.10, without being

FIGURE 1.1.10
Construction confidence indicator



Source: EUROSTAT, data processing by the author.

able to derive a safe conclusion concerning the future of investment demand in this sector of the economy. The construction confidence indicator, after being significantly decreased in April 2020 and being kept at low levels in May, increased in June-July and October-November but fell in August and in December. Evidence of the lack of a definite trend is the fact that in September 2020, the value of that indicator (-52.1) reached about the same level it had achieved in November 2019 (-51.7), whilst in both July 2020 and November 2020, dates where the highest values of that period were recorded, it fluctuated close to -31.0.

1.1.2.3. Conclusions

The above analysis shows that the Greek economy, in the period between the first and the second wave of the Covid-19 pandemic, did not managed to gain lost ground and recover in a substantial way, as far as the various components of aggregate demand are concerned. Private consumption increased in current prices and as a percentage of GDP, but decreased in terms of chain-linked volumes. In particular, the improvement in retail trade was very weak and was followed, most of the time, by negative changes in the relevant indices, whilst expectations never really recovered. Gross investment rose slightly and machinery and transport equipment took the lead from buildings, the latter being a sector in which expectations can hardly provide any guide about its future. However, the most impressive and worrying development during the first three quarters of 2020 was the entrenchment and deepening of a reversal in the external trade balance in favour of imports and at the expense of exports. The return to a positive trade balance should be a priority of economic growth policies, along with coping with the economic impact of the pandemic. This should be the case since the external trade balance reflects more profound features of the economy concerning its competitiveness, extroversion and long-term productive orientation.

KEPE, *Greek Economic Outlook,* issue 44, 2021, pp. 13-16

1.2. The evolution of the Consumer Price Index (CPI) in Greece and in the Eurozone

Emilia Marsellou

Greece

Since April 2020, in Greece, both National and Harmonized inflation has remained in negative territory due to the COVID-19 prevention and containment measures, despite the significant economic countermeasures taken by the Government. With the arrival of autumn and the gradual spread of the second wave of the pandemic, the decline of the indices intensified. Energy (through the Transport services) has been the driver of the fall in CPI in Greece since the beginning of the crisis, as the price of oil is directly linked to the collapse of demand due to the restriction of transport and travel in general. Except for the sectors of Food and non-alcoholic beverages and, partly, Clothing and footwear, in Greece, the other sectors related to Services, Trade, Tourism and Recreation and Culture have seen their activities suspended for several months and have recorded price reductions since the outbreak of the pandemic.

The National CPI decreased in December 2020 by -2.3% annually, following decreases by -2.1% and -1.8% in November and October 2020, respectively (Table 1.2.1). The core[1] CPI in December 2020 decreased by -2.0%. Correspondingly, the HICP recorded a significant fall, by -2.4%, as did its core index (-2.5%). The average HICP for 2020 declined by -1.3%, and according to the Autumn Forecasts of the European Commission, it is estimated to increase by 0.9% in 2021 and by 1.3% in 2022.[2]

TABLE 1.2.1 Inflation in Greece (January-December 2020)

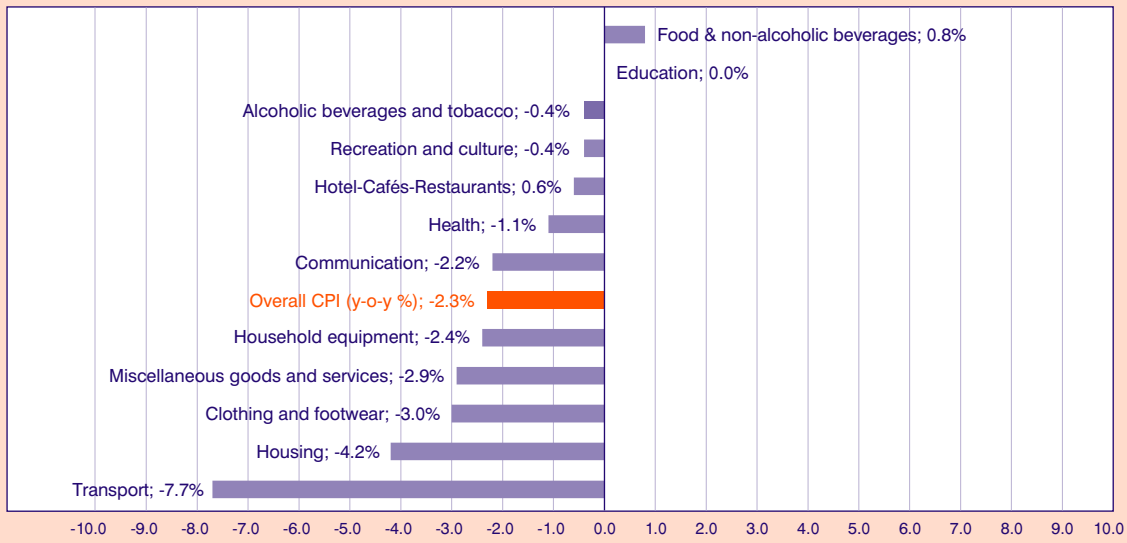
	Headline inflation (Greece)	Core inflation (Greece)	Harmonized inflation (Greece)	Core Harmonized inflation (Greece)
2020:M1	0.9	0.7	1.1	1.0
2020:M2	0.2	0.3	0.4	0.4
2020:M3	0.0	1.1	0.2	0.9
2020:M4	-1.4	-0.1	-0.9	0.0
2020:M5	-1.1	0.4	-0.7	0.3
2020:M6	-1.6	-1.4	-1.9	-2.4
2020:M7	-1.8	-1.3	-2.1	-2.2
2020:M8	-1.9	-1.4	-2.3	-2.4
2020:M9	-2.0	-1.6	-2.3	-2.6
2020:M10	-1.8	-1.4	-2.0	-2.2
2020:M11	-2.1	-1.8	-2.1	-2.3
2020:M12	-2.3	-2.0	-2.4	-2.5

Source: ELSTAT.

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

2. Note that the European Commission's Autumn Forecasts have not taken into account the negative impact of the second wave of the pandemic during the fourth quarter of 2020.

FIGURE 1.2.1
Annual changes in CPI sub-categories (December 2020)



Source: ELSTAT.

More specifically, the annual decrease of the General CPI in December 2020 by -2.3% is a combined result of the following changes in the price indices of sub-groups of goods and services. More specifically, the following reductions were recorded:

- **-7.7% in Transport.** This decrease is mainly attributed to the fall in the prices of *Fuels and lubricants* (-10.5%)[3] and *Transport services* (-11.8%)[4]. This decrease was partly offset by increases in the prices of *New motorcars* (1.8%).
- **-4.2% in the Housing sector.** This decrease is mainly due to the significant fall in the prices of *Heating oil* (-20.8%), *Natural gas* (-23.7%) and *Electricity* (-1.6%).
- **-3.0% in Clothing and footwear.** This decrease is mainly attributed to the fall in the prices of *Clothing and footwear*.
- **-2.9% in Miscellaneous goods and services.** This decrease is mainly attributed to the fall in the prices of *Other appliances and articles for personal care* (-7.4%) and *Other personal effects n.e.c.* (-3.8%).
- **-2.4% in Household equipment.** This is mainly due to the decrease in the prices of *Household textiles* (-5.9%), *Household appliances and repair* (-3.8%), *Glassware-tableware and household utensils* (-6.3%) and *Non-durable household goods* (-2.8%).
- **-2.2% in Communication,** due to the decrease, mainly, in the prices of *Telephone services (-2.4%).*
- **-1.1% in Health,** which is mainly attributed to the fall in the prices of *Pharmaceutical products* (-4.1%). This decrease is partly offset by the increase, mainly, in the prices of *Medical, dental and paramedical services* (+0.7%).
- **-0.6% in Hotel-Cafés-Restaurants.** This decrease is mainly due to the fall in the prices of *Hotels, motels, inns and similar accommodation services* (-10.2%).
- **-0.4% in Recreation and culture.** This decrease is mainly attributed to the fall in the prices of *Audiovisual and information processing equipment* (-4.4%) and *Other recreational items and equipment, gardens and pets* (-1.6%). This decrease was partly offset by the increase, mainly, in the prices of *Major durables for recreation and culture* (+4.3%).

3. In more detail: Diesel -16.7%, Gasoline -10.3%, Other fuels -6.6% and Lubricants -1.1%.

4. In more detail: Tickets for passenger transport by air -26.2%, Tickets for passenger transport by railway -12.3%, Tickets of passenger transport by road -8.8% and Tickets of combined passenger transport -12.4%.

TABLE 1.2.2 Annual changes in CPI sub-categories, January-December 2020

Groups of goods and services	Jan.	Feb.	March	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1 Food and non-alcoholic beverages	-0.1	-0.1	-0.1	1.0	1.5	3.6	1.8	1.9	2.4	1.9	1.9	0.8
2 Alcoholic goods and tobacco	0.4	-0.3	0.3	0.0	0.2	0.4	0.1	0.3	0.1	0.2	-0.3	-0.4
3 Clothing and footwear	-1.1	-0.2	12.2	0.3	3.4	-1.9	4.1	2.8	0.0	-0.5	-3.6	-3.0
4 Housing	0.2	-1.2	-2.9	-4.7	-3.9	-4.5	-4.5	-4.5	-6.0	-4.6	-4.4	-4.2
5 Household equipment	-0.5	-0.7	-1.3	-1.6	-0.8	-1.2	-0.9	-1.3	-1.0	-1.0	-2.7	-2.4
6 Health	1.6	1.5	1.5	1.4	1.4	1.5	-0.6	-1.0	-1.2	-1.2	-1.1	-1.1
7 Transport	5.2	3.4	-1.5	-6.1	-7.0	-9.1	-9.1	-8.5	-7.9	-7.2	-6.9	-7.7
8 Communication	0.9	-0.7	-1.8	-2.3	-2.2	-2.4	-1.8	-2.1	-2.4	-2.5	-2.4	-2.2
9 Recreation and culture	-1.1	-1.2	-1.4	-1.3	-0.9	-1.2	-1.1	-1.2	-1.2	-1.0	-1.0	-0.4
10 Education	0.5	0.5	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.0	0.0	0.0
11 Hotel-Cafés-Restaurants	1.0	0.6	0.6	0.5	0.2	-0.6	-0.6	-0.8	-1.0	-0.7	-0.5	-0.6
12 Miscellaneous goods and services	-0.3	-1.2	-1.0	-0.8	-0.8	-1.0	-0.8	-1.9	-1.5	-1.3	-2.7	-2.9
General Index	**0.9**	**0.2**	**0.0**	**-1.4**	**-1.1**	**-1.6**	**-1.8**	**-1.9**	**-2.0**	**-1.8**	**-2.1**	**-2.3**

Source: ELSTAT.

- **-0.4% in Alcoholic goods and tobacco.** This decrease is mainly attributed to the fall in the prices of *Wines* (-3.3%).

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

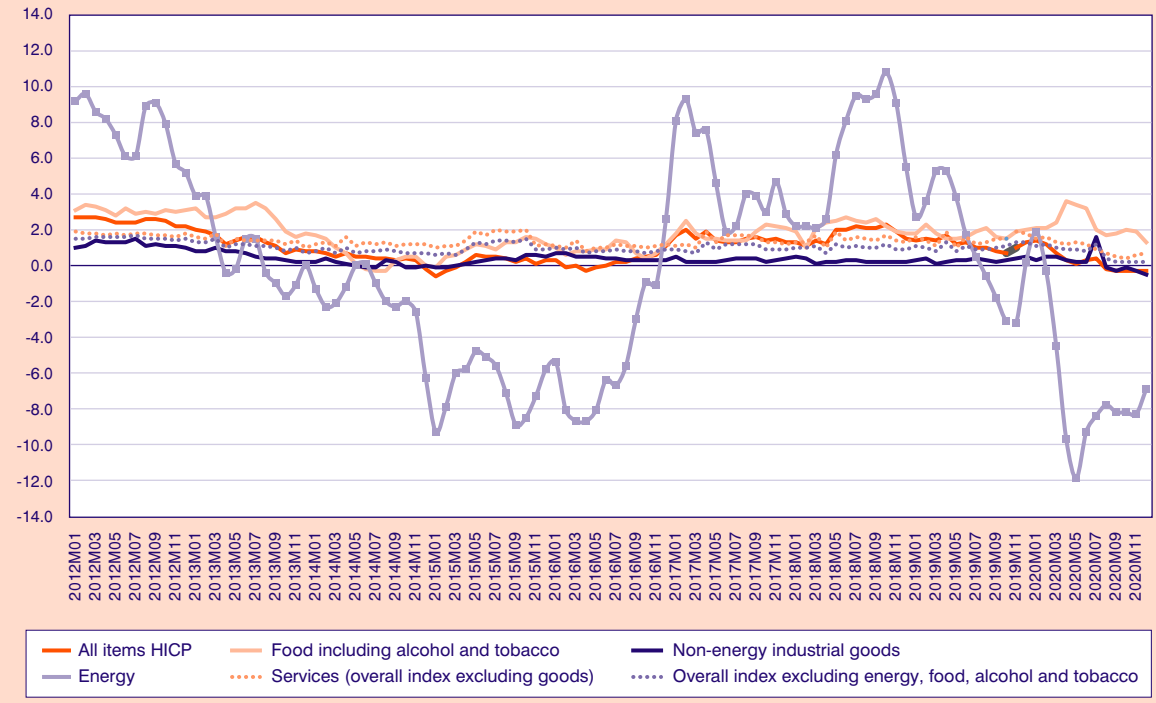
- **+0.8% in Food and non-alcoholic beverages.** This is mainly due to the increase in the prices of *bread and cereals* (1.1%), *fresh fish* (5.5%), *fresh whole milk* (2.5%), *cheese* (1.3%), *other edible oils* (13.1%), *fresh fruits* (1.6%), *fresh vegetables* (6.8%) and *preserved or processed vegetables* (3.8%). This increase is partly offset mainly by the decrease in the prices of: *pork (-2.4%), poultry (-2.3%), yoghurt (-3.4%), olive oil (-3.8), potatoes (-6.8%) and soft drinks (-5.8).*

The Euro area

Annual inflation in the euro area in December 2020 remained in negative territory for the fifth consecutive month, standing at -0.3%. The same decline was also recorded in the previous three months. The average annual inflation for 2020 is 0.3%. According to the Autumn Forecasts of the European Commission, due to the economic recovery expected in 2021 and 2022, it is estimated that inflation will reach 1.1% and 1.3%, respectively. Note, however, that these forecasts were made before the occurrence of the second outbreak of the COVID-19 pandemic, and as a result, the adverse effects of the fourth quarter of 2020 have not been incorporated in the respective estimates.

Inflation dispersion among euro area countries is quite asymmetric. Economies with relatively large manufacturing industries and low dependency on tourism have been hit relatively less than those with large service sectors and significant dependency on tourism. In December 2020, the euro area member-states with the highest inflation were Slovakia (1.6%), Austria (1.0%) and the Netherlands (0.9%). All three remained well below the 2.0% price stability target set by the European Central Bank. In contrast, the euro area member states with the lowest inflation (essentially deflation) are Greece (-2.4%), Slovenia (-1.2%) and Ireland (-1.0%). At European Union level, the member states with the highest inflation are Poland (+3.4%),

FIGURE 1.2.2
HICP in the euro area, annual change (2015=100)



Source: ELSTAT.

Hungary (+2.8%) and the Czech Republic (+2.4%), while, again, Greece, Slovenia and Ireland recorded the lowest.

Regarding the contribution of the key components of the HICP to its rate of change in December 2020 in the euro area, Services (+0.30 percentage points) had the largest positive contribution, followed by the category of Food-Alcohol-Tobacco (+0.25 percentage points), while the largest negative contribution was made by Energy (-0.68 percentage points), followed by Non-energy industrial products (-0.14 percentage points). Core inflation is marginally in positive territory (0.2%) mainly due to the non-inclusion of the Energy Price Index.

Oil prices fell dramatically in the early stages of COVID-19 mainly due to demand factors related to transport and travel restrictions but also due to supply factors. Energy prices recorded the largest decline in May (-11.9%) during the first lockdown. As transportation and travel restrictions were gradually relaxed, reductions in energy prices became more modest; in December, amid a partial lockdown due to the second wave of the pandemic, they fell by -6.9%, which is the smallest reduction in energy prices since the beginning of the crisis.

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

Factor Model Economic Forecasting Unit
Ersi Athanassiou, Theodore Tsekeris, Ekaterini Tsouma

The current section presents the updated short-term forecasts of KEPE concerning the evolution of the rate of change of real GDP in Greece for 2020 and the first two quarters of 2021,[1] based on KEPE's dynamic structural factor model.[2] The underlying time series database used to estimate the model and produce the forecasts includes 126 variables,[3] covering the main aspects of economic activity in the country on a quarterly basis and spanning the time period from January 2000 up to September 2020.

This section emphasizes the altered conjuncture due to the COVID-19 pandemic. It is noted that the forecasts incorporate data for the third quarter of 2020, a time period characterized by the lifting of a significant number of emergency measures restricting and suspending economic and social activity that had been imposed due to the pandemic. Nevertheless, the immense shock already caused, alongside the prolongation of the pandemic with some of the associated restrictions still being in force (e.g., in terms of international travel), in no case support the presumption that the Greek economy returned to 'normality' during the third quarter of 2020. As a result, forecasting the evolution of real GDP in the last quarter of 2020 and the first half of 2021 remains a complex and demanding task, due to the unprecedented ensuing uncertainty, as well as the constant alternation between periods of implementation of wide-ranging restrictive measures and periods of partial and gradual lifting of restrictions. Consequently, as was the case for the preceding period of reference, the full range of the particularly adverse effects of the induced disturbance remains unclear and is not entirely reflected in the statistical data up to September 2020, which are incorporated in the model. In addition, the accurate quantification of the effects of the compensatory measures implemented to deal with the pandemic and shield the economy, which are expected to be gradually passed through to economic aggregates in the short to medium term, is not straightforward.[4]

Based on the factor model econometric estimates presented in Table 1.3.1, the mean rate of change for the second half of 2020 is predicted at -12.8%, while the mean annual rate of change of real GDP for 2020 is forecasted at -9.9%, signaling the deep recession caused by the COVID-19 pandemic. It is noted that the estimated mean annual rate of change incorporates, on the one hand, the published (provisional) GDP data for the nine-month period January-September 2020,[5]

1. The date of the forecast is January 7, 2021.

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. Note that the implementation of the dynamic factor model does not involve the explicit estimation of any effects caused by policy measures (policy neutral model), while the model itself is not suitable for a straightforward analysis of the impact caused by huge shocks, such as the COVID-19 pandemic, which create abnormal economic conditions and lead to sudden and extreme (away from the trend-determined course) shifts in GDP. Still, the model implicitly takes into account any impact, through the incorporation of the economic variables updated to the most recent period of reference (third quarter of 2020). Recall that the forecasts are obtained on the basis of a small number of 'factors', which summarise the information provided by a large number of explanatory variables, employing the procedure of principal components, with the aim to preserve as much of the variability of the underlying economic series as possible. Hence, in the current conjuncture, any assessment of the provided forecasts should be subject to the degree to which all short-run fluctuations in real economic activity are reflected and should, further, take into account the increased heterogeneity in the dynamic response of the economic series, in combination with the occurrence of outliers. In addition, the underlying data sample, which relies on quarterly data with a hysteresis of one quarter, does not mirror the most recent swift changes on a daily or weekly basis. All the aforementioned limitations might, in the current juncture, affect the forecasting performance of the factor model employed.

5. According to the most recent ELSTAT *Quarterly National Accounts* publication, dated December 4, 2020. Note that the data for the first two quarters of 2020 have been revised.

TABLE 1.3.1 Real GDP rate of change *(%, y-o-y)*

	2020	2021	
Quarters	**2020Q4**	**2021Q1**	**2021Q2**
Quarterly rate of change	-13.98 [-14.43 , -13.52]	-10.44 [-11.40 , -9.47]	3.04 [1.56 , 4.55]
Mean rate of change, 1st half *	-	-3.70 [-4.92 , -2.46]	
Mean rate of change, 2nd half **	-12.81 [-13.04 , -12.59]	-	
Mean annual rate of change ***	-9.85 [-9.98 , -9.74]	-	

Note: Values in brackets indicate the lower and upper boundaries of the 95% confidence interval of the forecasts.

* The mean rate of change is not reported for the first half of 2020, since it does not incorporate a forecast. ** The mean rate of change for the second half of 2020 incorporates the officially available (provisional) data for the third quarter of 2020, on a seasonally adjusted basis. *** The mean annual rate of change incorporates the officially available (provisional) data for the first three quarters of 2020, on a seasonally adjusted basis.

according to which the Greek GDP contracted in the third quarter of the year by -11.7% (in terms of chain-linked volumes), compared to the respective quarter of 2019. On the other hand, the mean annual rate of change entails the prediction of a negative rate of change of -14% for the fourth quarter of 2020, as compared to the respective quarter in 2019. The short-term effects of the pandemic shock on the Greek economy are further reflected in the forecast of a -10.4% rate of change of real GDP for the first quarter of 2021, compared to the first quarter of 2020. In contrast, based on the referred estimations, the economy is expected to return to a positive growth rate of 3% in the second quarter of 2021. Nonetheless, the unfavourable forecast for the first quarter is decisive for the percentage change of real GDP in the first half of 2021, which is predicted at -3.7%.

The above-presented forecasts for 2020 and the first half of 2021 indicate the deterioration of economic conditions in the country, as a consequence of the occurrence and duration of the COVID-19 pandemic while they are in line with the recent course of data series incorporated in the model. More specifically, the respective overall assessment of the domestic economic environment is consistent with the recent developments in the major GDP components and a large number of economic variables and indicators, as implied by the corresponding observations for the third quarter of 2020 (compared to the respective quarter of 2019), on a non-seasonally and non-calendar adjusted basis.

In more detail, exports and imports of services recorded a considerable decrease, by double-digit negative rates of change, for the second consecutive period, with the most adverse development relating to services' exports. Imports of goods also declined. Unfavourable developments characterised the General Industrial Production Index and the General Turnover Index in Industry (overall, internal and external markets), as well as a number of the related sub-indices. The recorded negative rates of change were most adverse for the *energy* and *non-durable consumer goods* categories (in the latter case with the exception of the turnover index in industry for the external market). The Overall Volume Index in Retail Trade also decreased, driven by the downward course of the sub-indices in the *supermarkets*, *automotive fuel*, *food-beverages-tobacco* and *clothing-footwear* categories. In terms of all the recorded negative percentage changes, developments in transport receipts, and especially in travel receipts, were particularly unfavourable, reaching -72.1% (compared to the respective quarter of 2019) in the latter case. Falling trends further characterised the Stock Exchange, the private passenger car market (on the basis of licenses issued and the turnover index for motor trade) and the turnover in wholesale trade. The construction sector remained subject to the adverse impact of the pandemic and the related measures imposed, as evidenced by the decreasing course of the production indices in construction (general index and *production of building construction* and *production of civil engineering* sub-indices) and private building activity in terms of volume and on the basis of per-

mits issued. In addition, as expected, the major shock that hit and continues to disturb the Greek economy significantly affected expectations and assessments formed by economic agents with regard to the course of economic activity (concerning manufacturing, exports and developments in individual sectors of the economy), which deteriorated. In parallel, both the Economic Sentiment Indicator for Greece and all EU countries declined significantly.

At the same time, some of the major GDP components displayed resilience to the exceptional conditions in the third quarter of 2020, as indicated by the rise in private consumption and overall investment, including positive rates of change (as compared to the respective quarter of 2019) in almost all investment sub-categories (with the exception of the *transport equipment* category, which declined considerably). Exports of goods also increased. Some positive trends, which still did not prevail over the negative ones, were observed with reference to a number of sub-indices for certain categories of the industrial production index (*intermediate*, *capital* and *durable consumer goods*), the turnover index in industry (*capital* and *durable consumer goods* for the overall market, *intermediate*, *capital* and *durable consumer goods* for the domestic market, and *non-durable consumer goods* for the external market) and the volume index in retail trade (*department stores*, *pharmaceutical products-cosmetics*, *furniture-electrical equipment-household equipment*, *books-stationery-other goods*). Moreover, improvement was observed in terms of a number of the underlying competitiveness indicators, while spreads declined further with regard to both the preceding quarter and the respective quarter of 2019.

Great importance is attributed to developments in the domestic labour market, where for the second consecutive period and after a prolonged period characterised by increasing trends, total employment decreased in the third quarter of 2020, accompanied by a decline in the number of persons employed in the secondary and, in particular, in the primary sectors (whereas the number of persons employed in the tertiary sector marginally increased, following the decrease of the preceding period of reference). In contrast, statistical data for unemployment, on the basis of the Labour Force Survey conducted by ELSTAT, once again mirrored positive developments on an aggregate level and more strongly for the long-term and the newly unemployed in the third quarter of 2020, compared to the corresponding quarter of 2019. According to the respective survey, the impact of the pandemic on the labour market weakened during the third quarter of 2020. Nevertheless, with the unemployment rate at 16.2%, labour market conditions remained unfavourable and the functioning of the market continued to be affected by specific regulatory measures implemented regarding the operation of businesses, despite the lifting of the suspension of businesses' operation that had been applied in the past months.[6]

The projected course of real GDP in 2020 and in the first half of 2021 and, hence, the overall economic conditions in Greece may evolve according to a more or less favourable scenario (than implied by the aforementioned projections), conditional upon a wide range of crucial and decisive factors, of which several are directly linked to the evolution of the pandemic. These factors are expected to determine, among other things, the demand and supply dynamics in Greece, the country's export performance, the investment and saving decisions by households and enterprises, the developments in employment and unemployment and, hence, income, as well as the financial conditions and the course of fiscal aggregates.

Factors that could potentially operate in the positive direction include (a) the prevention of a further spreading of the pandemic and the effective implementation of the vaccination process, by achieving the restoration of unrestricted economic activity and the creation of a secure environment at the domestic and international levels, (b) the ongoing implementation of specialised compensatory economic measures by the government to support households and businesses, by limiting the adverse effects of the pandemic disturbance on key macroeconomic and labour market aggregates, as well as on the viability of enterprises, (c) the extension of the support mechanisms applied at the European level and the initiation of the Next Generation EU recovery framework, starting with the implementation of the Recovery and Resilience Facility as a key recovery instrument, by positively contributing to the recovery of the Greek economy on the basis of the provided financial support and the creation of significant positive expectations, and (d) the continuous implementation of all the necessary structural reforms and the ongoing rebalancing of major macroeconomic and fiscal aggregates, by securing a sustainable recovery process and the further enhancement of the country's credibility.

6. For the related statements, see the Press Release for the Labour Force Survey by ELSTAT, referring to the third quarter of 2020 and dated December 17, 2020.

Factors that could potentially operate in the negative direction include (a) the second wave of the pandemic, which was accompanied in November 2020 by the renewed imposition of restrictive measures –still partially in force– to protect human health, alongside the possibility of a third pandemic wave, by negatively affecting aggregate and individual economic variables, (b) the exceptionally high degree of uncertainty, owed to the inability to anticipate the evolution of the pandemic during the upcoming months at both the domestic and international levels, by restraining economic activity and, hence, affecting domestic and external demand, as well as several sectors of the economy which are more severely hit, rendering the economy even more vulnerable, and (c) the potential escalation of geopolitical tensions, by creating instability and causing additional adverse effects.

KEPE, *Greek Economic Outlook,* issue 44, 2021, pp. 21-25

1.4. The significance of the retail trade sector in the Greek economy and the impact of the pandemic

George Soklis

1.4.1. Introduction

According to the latest data of the Hellenic Statistical Authority (ELSTAT), which concern the year 2019, the retail trade sector produces about 4.6% (or about 7.3 billion euros) of the gross value added of the Greek economy and ranks 6th, in terms of this magnitude, among 63 sectors. In terms of employment, the sector ranks 2nd after the "Accommodation and food services" sector, employing approximately 10.6% (or, approximately, 484 thousand people) of the total employment in the economy. From the above, it follows that the retail trade sector undoubtedly holds an important role in the Greek economy, in terms of both production and employment.

The outbreak of the Covid-19 pandemic and the imposition of movement restraint measures caused severe damage to the country's retail trade sector. According to ELSTAT, the retail trade sector's sales in November 2020 decreased by 12.4%, compared to the same period in 2019, while the sales decreased by 5.6% in the third quarter of 2020 compared to the same period in 2019.

The purpose of this article is to examine whether this strong blow to the retail trade sector can have negative consequences for the Greek economy as a whole. Specifically, we consider the following:

- What is the contribution of retail trade to the production process of the other sectors?
- What is the relative importance of the other sectors in the production process of the retail trade sector?
- What is the spread of the blow in the retail sector, due to the pandemic, to other sectors of the economy and the evaluation of government's support measures?

For this purpose, we apply a modern approach of the "hypothetical posting method", taking into account not only the technical conditions of production, but also the social conditions of production, i.e., the process of reproduction of the labor force, and the data from the latest available Input-Output Tables of the Greek economy. The rest of the article is structured as follows: Section 1.4.2 sets out the methodological framework of our analysis. Section 1.4.3 presents the findings of the empirical application in the Greek economy. Finally, Section 1.4.4 summarizes the conclusions of our analysis.

1.4.2. Methodological approach[1]

We assume a viable and linear economy that produces n commodities through n single production processes, in which: (i) labor is homogeneous and does not enter into the reproduction of labor power, (ii) all commodities are "basic" (à la Sraffa, 1960, §6), (iii) there is no fixed capital, and (iv) the socio-technical conditions of production, i.e., the triplet **{A, a, b}**, are exogenously given, where $\mathbf{A}(\equiv[a_{ij}])$ is the $n \times n$ matrix of technical coefficients, with each element a_{ij} representing the direct requirements of commodity i necessary to produce 1 unit of commodity j as gross output, $\mathbf{a}(\equiv[a_j])$ the $n \times 1$ vector of the direct, homogeneous labor, with each element a_j representing the quantity of labor necessary to produce 1 unit of commodity j as gross output, and $\mathbf{b}(\equiv[b_i])$ the $n \times 1$ vector of real wage, with each element b_i representing the quantity of commodity i necessary to reproduce 1 unit of labor force.

Furthermore, we may define the $m \times m$, where $m = n+1$, "full" matrix (Bródy, 1970) of the economy as[2]

$$\mathbf{C} \equiv \begin{bmatrix} \mathbf{A} & \mathbf{b} \\ \mathbf{a}^{\mathrm{T}} & 0 \end{bmatrix}.$$

On the basis of the above, we may estimate the forward linkages as follows:

$$\boldsymbol{\omega}_i^{\mathrm{T}} = \mathbf{c}_i^{\mathrm{T}}\left[\mathbf{I} - \mathbf{C}_{(i)}\right]^{-1}$$

where $\mathbf{C}_{(i)}$ is the matrix derived from $\mathbf{C}$ if we replace all the elements of its i-th row with 0; $\mathbf{c}_i^{\mathrm{T}}$ is the i-th row of

1. The methodological framework of this article is analytically presented in Soklis (2021).

2. The symbol "T" represents the transpose of a vector.

the matrix $\mathbf{C}$; $\boldsymbol{\omega}_i^T \equiv [\boldsymbol{\omega}_i^1, \boldsymbol{\omega}_i^2, \ldots, \boldsymbol{\omega}_i^m]$ the vector of the total requirements of commodity *i* necessary to produce 1 unit of each commodity of the economy as gross output; and $\boldsymbol{\omega}_i^j$ the total (direct and indirect) requirements of commodity *i* necessary to produce 1 unit of commodity *j* as gross output. The elements $\boldsymbol{\omega}_i^j$ can be considered as indices of forward linkages of the sector *i* with the sector *j*, i.e., they represent the degree in which the sales of intermediate inputs of sector *i* are necessary in the production process of sector *j*, and in formal terms, they are derived in a similar way as those of the "hypothetical extraction method" (see, e.g., Dietzenbacher and van der Linden, 1997), with the difference that, in our approach, we take into account not only the technical, but also the social conditions of production, that is the process of reproduction of the labor force.

On the basis of the above, we may estimate the backward linkages as follows:

$$\mathbf{m}^j = [\mathbf{I} - \mathbf{C}^{(j)}]^{-1} \mathbf{c}^j$$

where $\mathbf{C}^{(j)}$ is the matrix derived from $\mathbf{C}$ if we replace all the elements of its *j*-th column with 0; $\mathbf{c}^j$ is *j*-th column of the matrix $\mathbf{C}$; $\mathbf{m}^j \equiv [\mathbf{m}_1^j, \mathbf{m}_2^j, \ldots, \mathbf{m}_m^j]^T$ the vector of total (direct and indirect) requirements of the various commodities necessary to produce the direct input requirements of sector *j*; and $\mathbf{m}_i^j$ the total (direct and indirect) requirements of commodity *i* necessary to produce the direct input requirements of sector *j* per unit of commodity *j*. The elements $\mathbf{m}_i^j$ can be considered as indices of backward linkages of the sector *j* with the sector *i*, i.e., they represent the degree in which *j* depends on purchases of inputs from sector *i*.[3]

1.4.3. Empirical results[4]

1.4.3.1. Forward linkages of the retail trade sector

Producing 1 unit of a commodity of any sector (excluding the retail trade sector) in the Greek economy requires, on average, 0.059 units of retail trade services. This index can be considered as quite high, given that, according to our respective estimates for the other sectors of the Greek economy, the quantities of other commodities required, on average, to produce 1 unit of a commodity of the Greek economy are about 0.026. Furthermore, in order to reproduce 1 unit of labor force, a total of about 0.288 units of retail trade services are required. This index is also very high, as, according to our respective estimates for the other sectors of the Greek economy, the quantities of other commodities required, on average, to reproduce 1 unit of labor force are about 0.133. Finally, in order to produce 1 unit of retail trade services, about 0.057 units of retail trade services are required, while the corresponding indices for the other sectors of the economy are, on average, about 0.073. From the above, it follows that the retail trade services sector is characterized by strong "forward" linkages with other sectors of the Greek economy and also with the process of labor force reproduction (household sector). This feature is an indication of the high importance of the retail trade sector in the economy as any change in the production of other sectors implies a strong change in the same direction of the activities of the retail trade sector. Table 1.4.1 presents the top ten forward linkages of the retail trade sector with the other sectors of the Greek economy.

From the findings presented in Table 1.4.1, it follows that the majority of the sectors with which the retail trade shows high "forward" linkages belong to industry. The retail trade sector also demonstrates high linkages with the main part of the primary sector, i.e., the agricultural sector ("Crop and animal production, hunting and related activities") with a linkage index of about 0.063. Finally, from the sector of services, the highest forward linkage of the retail trade sector is found to be with the public sector.

1.4.3.2. Backward linkages of the retail trade sector

According to our findings, in order to produce the inputs used by the retail trade sector per unit of output, an average of 0.033 units of commodities from the other sectors of the Greek economy (excluding the retail trade sector) are required. Furthermore, we estimate that a total of about 0.217 units of labor are required to produce the inputs of the retail sector. Table 1.4.2 shows the linkage indices of the retail trade sector with the top ten sectors with which it shows the relatively highest backward linkages.

We observe that the backward linkages of the retail trade sector with the real estate services sector are considerably high, with a linkage index of about 0.424, while the second highest linkage index is observed with the food sector, with a linkage index of

3. For an analytical investigation of this system, see Mariolis and Rodousaki (2011).

4. For the detailed empirical findings, see Soklis (2021).

TABLE 1.4.1 Sectors with high forward linkages with the retail trade sector

Sector	Linkage index
Manufacture of wood and of products of wood	0.151
Manufacture of paper and paper products	0.134
Prints and pre-recorded media	0.108
Manufacture of furniture	0.103
Manufacture of rubber products and plastics	0.093
Manufacture of textiles, clothing, leather and leather products	0.091
Public administration and defense; compulsory social security	0.087
Manufacture of motor vehicles, trailers and semi-trailers	0.083
Manufacture of computers, electronic and optical products	0.082
Manufacture of electrical equipment	0.081
Social work activities	0.081
Average	**0.059**
Retail trade	**0.057**
Labor force	**0.288**

Source: Soklis (2021).

TABLE 1.4.2 Sectors with high backward linkages with the retail trade sector

Sector	Linkage index
Real estate services	0.424
Food products	0.130
Accommodation and restaurant services	0.127
Wholesale trade services	0.114
Production of coke and oil refining products	0.084
Financial services activities	0.078
Crop and animal production, hunting and related activities	0.074
Legal and accounting activities	0.072
Mining and quarrying	0.066
Warehousing and transportation support activities	0.062
Average	**0.033**
Retail trade	**0.057**
Labor force	**0.217**

Source: Soklis (2021).

about 0.130. This finding implies that the real estate services sector is particularly important for the retail sector in providing its necessary inputs requirements, while the retail trade sector is not particularly important for the real estate services sector in terms of sales of intermediate inputs. In addition, in contrast to forward retail trade linkages, where the highest linkages are recorded with industry, the backward retail trade linkages are more balanced among the primary sector, industry, and services.

1.4.3.3. Key sectors for the retail trade sector

If we examine the sectors with which the retail trade sector has relatively high forward linkages, i.e., above the average linkage index, and the sectors with which it has relatively high backward linkages, we will notice that there are some sectors with which the retail trade sector exhibits high forward and, at the same time, high backward linkages. These sectors can be considered as the key sectors for retail trade, in the sense these sectors buy a significant amount of their intermediate inputs from the retail trade sector, and, at the same time, the retail sector buys from these sectors a significant amount of its intermediate inputs. In other words, these sectors exhibit high interdependence with the retail trade sector. According to our empirical findings, we identify 6 key sectors for retail trade, which are reported in Table 1.4.3.

We observe that the majority of the sectors with which the retail trade exhibits high interdependence belongs to industry, while the retail trade sector is also characterized by high interdependence with the main part of the primary sector, i.e., agricultural production. As far as services are concerned, the only sector with which retail trade is highly interdependent is the accommodation and restaurant services, i.e., the sector that is primarily associated with tourism activities.

1.4.4. Conclusions

The main conclusions from the investigation of the interindustry linkages of the retail trade sector of the Greek economy are summarized as follows:

C1. From the analysis of the forward linkages, it follows that the retail trade sector is characterized by strong linkages both with the other sectors of the economy and with the process of labor force reproduction.

C2. From the analysis of the backward linkages, it follows that the retail trade sector depends to a very large extent on real estate services.

C3. Combining the findings regarding both the forward and backward linkages, we may conclude that the retail trade sector demonstrates the largest interdependence with the agricultural sector and industry, while, regarding the services sector, high interdependence is found only with the tourism sector.

In conclusion, the retail trade sector is a sector of significant importance for the Greek economy (see C1) and, therefore, government support measures are necessary during the pandemic. The measure of complete suspension of rent payment, which was implemented for January, as announced by the Ministry of Finance, has been extended for the month of February. This measure is moving in the right direction due to the strong backwards linkages of the sector with real estate services (see C2). Finally, regarding the post-pandemic era, the high interdependence of

TABLE 1.4.3 Key sectors for retail trade

Sector
Crop and animal production, hunting and related activities
Food products
Manufacture of textiles, clothing, leather and leather products
Production of coke and oil refining products
Manufacture of rubber products and plastics
Accommodation and restaurant services

Source: Soklis (2021).

the retail trade sector with the tourism sector (see C3) demonstrates once again that the performance of tourism will be crucial for the overall performance of the Greek economy.[5]

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5. For the multiplier effects of tourism on the Greek economy, see Mariolis et al. (2020).

1.5. The Greek stock market on its way back to pre-coronavirus levels

Fotini Economou

1.5.1. Introduction

Even though the year 2020 started with very positive prospects, following the impressive performance of 2019, it was undoubtedly a year of unprecedented circumstances and profound negative consequences for international markets, economies and societies. The rapid spread of COVID-19 had a dramatic effect on international financial markets, with significant losses in a very short period (Zhang et al., 2020). The negative impact of the pandemic was reflected in the international stock markets, depending on the evolution of the pandemic in each country, the number of recorded cases in the country and internationally or the number of recorded deaths (see Al-Awadhi, 2020; Ashraf, 2020; Cao et al., 2020). The main feature of the period was the increased uncertainty regarding the course of the pandemic, the consequences of which continue to affect economies and societies. Under these circumstances, the domestic stock market, after a year of significant challenges, is trying to return to the levels it had before the outbreak of the pandemic.

This article presents the course of the Greek stock market for the year 2020, with emphasis on key stock market indices and data. The last section of the article summarizes and concludes.

1.5.2. The course of the stock market in 2020

As expected, the Greek stock market was significantly affected by the outbreak of the health crisis, recording strongly negative returns after COVID-19 appeared in Greece in February 2020.

Although signs of recovery followed (April-May 2020), the market soon returned to negative returns (June-July 2020). The small increase recorded in August 2020 was followed by two declining months of decline (September-October 2020), with the Greek stock market facing a mix of health, economic and geopolitical challenges. Much of the significant losses of the year were covered by the impressive rise of the stock market in November 2020 as a response to the positive developments regarding the COVID-19 vaccine. At the same time, it is worth noting that in early November 2020, Moody's upgraded the Greek economy from B1 to Ba3 with a stable outlook based on the ongoing reforms and the positive growth prospects of the Greek economy in the coming years.[1] The year ended with positive returns for December 2020, maintaining, however, negative annual returns of the main indices of the Athens Stock Exchange (ATHEX).

More specifically, according to ATHEX data (Table 1.5.1), the Athex Composite Share Price Index recorded yearly losses of -11.75%, reaching 808.99 points at the end of December 2020 from 916.67 points at the end of 2019. After a period of sharp fluctuations and significant losses from February onwards, there was an impressive increase of 29.40% in November 2020 and an increase of 9.78% in December, which, however, did not manage to reverse the negative yearly returns. The course of the FTSE/Athex Large Cap Index was similar, recording yearly losses of -15.81%, despite its significant increase during the last two months of 2020. On the other hand, the FTSE/ATHEX Mid & Small Cap Factor-Weighted Index recorded positive return of 4.99%. At the same time, three sector indices recorded significant positive annual returns in a year of high risk and uncertainty. More specifically, FTSE/Athex Utilities, FTSE/Athex Technology and FTSE/Athex Industrial Goods & Services recorded annual returns of 44.49%, 21.31% and 14.50%, respectively. The other sector indices moved downwards with the biggest losses being recorded for FTSE/ATHEX Banks and FTSE/ATHEX Energy with annual losses of -41.37% and -41.28%, respectively.

According to ATHEX (2020) data, the course of the market was also reflected in the evolution of ATHEX market capitalization of all listed equities (Figure 1.5.1). More specifically, in December 2020 there was an increase in capitalization by 6.8%, reaching €44.98 billion from €42.11 billion at the end of November 2020. In addition, there was a decrease of -10.7% compared to the capitalization at the end of 2019, which was at €50.35 billion. Moreover, the course of the value of ATHEX transactions is of particular interest. Despite its low levels during the period August-October 2020, it significantly increased in the last two months of

1. See Moody's, "Rating Action: Moody's upgrades Greece's rating to Ba3, outlook remains stable", 6 November 2020.

Table 1.5.1 Prices and returns for selected indices of the ATHEX in 2020

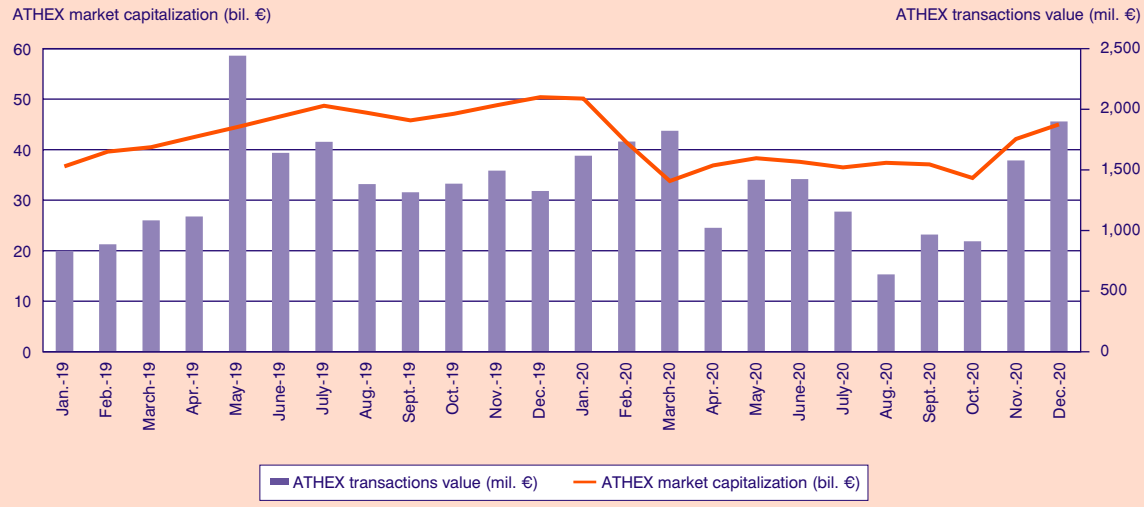
	31/12/2020	31/12/2019	Year min	Year max	Year change (%)
FTSE/ATHEX Mid & Small Cap Factor-Weighted Index	3,124.15	2,975.68	2,028.59	3,205.70	4.99%
Hellenic Mid & Small Cap Index	1,202.50	1,253.49	701.19	1,312.90	-4.07%
FTSE/Athex Mid Cap Index	1,107.38	1,195.17	659.09	1,298.86	-7.35%
Athex Composite Share Price Index	808.99	916.67	469.55	949.20	-11.75%
Athex All Share Index	187.55	215.66	122.81	223.49	-13.03%
FTSE/Athex Large Cap	1,934.64	2,298.02	1,135.79	2,371.26	-15.81%
FTSE/Athex Utilities	4,602.67	3,185.42	1,865.80	4,672.48	44.49%
FTSE/Athex Technology	1,092.34	900.44	537.98	1,092.47	21.31%
FTSE/Athex Industrial Goods & Services	2,932.95	2,561.57	1,302.84	2,940.77	14.50%
FTSE/Athex Basic Resources	6,153.83	6,458.00	2,713.19	7,435.44	-4.71%
FTSE/Athex Insurance	1,909.42	2,025.02	1,076.29	2,088.80	-5.71%
FTSE/Athex Telecommunications	3,644.51	3,925.16	2,480.07	4,027.57	-7.15%
FTSE/Athex Construction & Materials	2,761.06	3,083.14	1,403.78	3,344.96	-10.45%
FTSE/Athex Travel & Leisure	1,732.48	1,939.68	904.20	2,084.49	-10.68%
FTSE/ATHEX Real Estate	4,825.18	5,465.04	2,945.19	5,826.74	-11.71%
FTSE/Athex Health Care	443.19	504.83	377.88	508.96	-12.21%
FTSE/Athex Food & Beverage	9,885.18	11,264.09	5,768.28	13,004.12	-12.24%
FTSE/Athex Consumer Goods & Services	7,781.92	9,810.13	5,596.91	10,280.00	-20.67%
FTSE/Athex Financial Services	763.95	996.89	480.39	1,123.81	-23.37%
FTSE/Athex Retail	49.57	69.64	38.18	75.77	-28.82%
FTSE/Athex Energy	2,964.77	5,048.57	2,039.22	5,154.35	-41.28%
FTSE/Athex Banks	518.99	885.16	221.87	889.92	-41.37%

Source: Daily official list of trading activity of the ATHEX (31/12/2020 and 31/12/2019).

2020, reaching €1,899.30 million in December 2020, recording an increase of 20.4% compared to the previous month and 43.3% compared to December 2019. At the same time, according to ATHEX data (2020), foreign investors showed outflows in December 2020 that reached €11.82 million after inflows of €14.67 million in November 2020, while Greek investors recorded inflows of €12.00 million in December 2020, following outflows of €14.73 million in the previous month.[2] Note that foreign investors made 45.2% of transactions in December 2020, from 54.7% in December 2019, and Greek retail investors made 28.2% of transactions, from 18.9% in December 2019. Moreover, the participation of foreign investors in the capitalization of the ATHEX remained at levels higher than 60% in December 2020 (62.42% and 64.10% with and without the participation of the Hellenic Financial Stability Fund, respectively).

2. See Athens Exchange Group, Monthly Statistics Bulletin AxiaNumbers, Securities Market, November 2020.

FIGURE 1.5.1
ATHEX market capitalization and transactions value 2019-2020



Source: Athens Exchange Group, Monthly Statistics Bulletin AxiaNumbers, Securities Market, December 2020 and December 2019.

Finally, the Hellenic Corporate Bond Price Index[3] recorded annual loss (-1.98%), while the Hellenic Corporate Bond Index[4] recorded positive return (1.44%).[5] Moreover, the cash value of settled transactions of corporate bonds increased in December 2020, reaching €14.03 million from €12.07 million in November 2020 (+16.24%). The total cash value of settled transactions of corporate bonds for 2020 reached €189.44 million, reduced by -20.06% compared to 2019.

1.5.3. Stock market and uncertainty

During periods of high uncertainty and stock market fluctuations, significant fluctuations are also observed in the course of the KEPE GRIV implied volatility index, i.e., the so-called "fear" index. 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.

With the first confirmed cases of COVID-19 in Greece at the end of February 2020, the index increased significantly, reaching its highest value for the year (61.55%) on March 13, 2020. The effective management of the first wave of the pandemic led to significant drop in the index in the months that followed. Despite the fluctuations during the year, the price of the index at the end of 2020 was close to the levels it had at the beginning of the year, before the outbreak of the pandemic in Greece, moving below its historical average (since January 2004) for the Greek market, which is at 33.07%. More specifically, the KEPE GRIV index reached 23.97% on 31/12/2020 from 22.24% on 31/12/2019. In addition, focusing on the average daily value of the index (Figure 1.5.2), it recorded a decrease for the second consecutive month in December 2020, reaching 22.15% from 27.92% in November 2020. There is, therefore, a gradual de-escalation of the index, which reflects a decrease in investor uncertainty for the Greek market, with the average daily value of the index per month for December 2020 being at its lowest level since the outbreak of the pandemic in Greece.

1.5.4. Conclusions

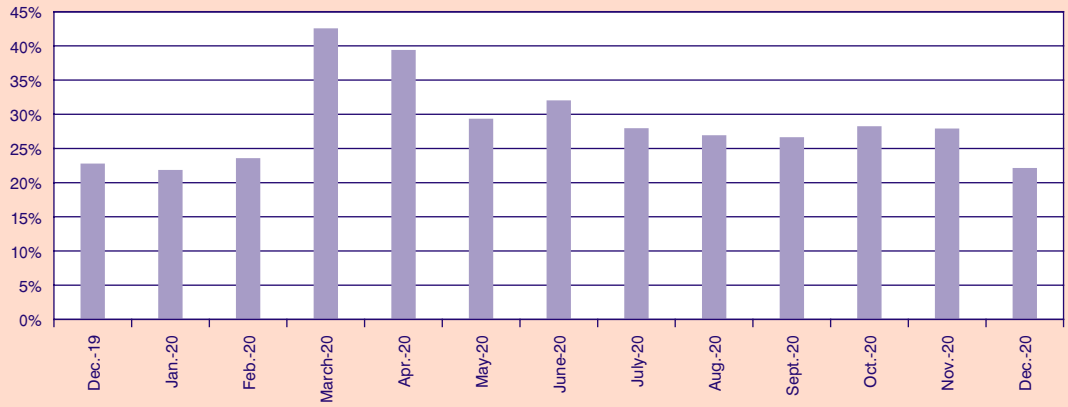
The year 2020 was undoubtedly characterised by high uncertainty and increased risk for investors. The Greek stock market recorded negative returns, greatly affected by the sharply declining trend of the banking sec-

3. Based on the net price of each bond.

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

5. Returns on 29/12/2020 according to the Daily official list of trading activity of the ATHEX of 31/12/2020.

FIGURE 1.5.2
Average daily value of the KEPE GRIV index per month from Dec. 2019 to Dec. 2020



Source: Centre of Planning and Economic Research.

tor. However, the upward trend of November-December 2020 significantly reduced the losses of the year with the utilities, technology and industrial products and services sectors recording positive annual returns. Moreover, the capitalization and the value of transactions also increased during last two months of 2020. At the same time, the gradual de-escalation of the "fear" index is a positive development for the course of investor uncertainty.

At the same time, there are positive signs coming from the government bond market with the raising of funds at low borrowing costs. Note the successful re-issuance of the 15-year bond in October 2020, with which 2 billion euros were raised at a historically low borrowing cost of 1.152%. In addition, according to Bank of Greece data, during the last three months of 2020, there was a decrease in the average monthly yields of government bonds of all maturities (from 3 to 30 years) with the yields of the three-year and the five-year bonds closing the year with a negative sign. Note that the yields on the recent issues of the Greek Government Treasury bills of 13, 26 and 52 weeks were also negative. In addition, the recent upgrade of Greece by Moody's reflects increased confidence in the growth prospects of the Greek economy, while the aim to return to investment grade remains.

In addition to the challenges posed by the pandemic and its consequent negative effects on the economy, the Greek stock market has to deal with long-standing problems (e.g., low liquidity) as well as to further promote investment confidence. The recent Law 4706/2020 on corporate governance is expected to contribute in this direction. Moreover, the Hellenic Capital Market Commission actively contributes to the modernization of the capital market operation and to the strengthening of prudential supervision. At the same time, in November 2020, a Committee of Experts of the Ministry of Finance proposed specific recommendations for the Development Strategy of the Greek Capital Market[6] with the aim to: (a) increase investment supply and demand, (b) improve market operation and institutional interventions for enhancing credibility and transparency, (c) support "green growth" through the Capital Market and (d) develop financial literacy.

The months to come remain crucial for the course of domestic and international markets with the evolution of the pandemic and the course of vaccinations remaining in the spotlight. In this context, the development of a targeted strategy for the development of the Greek capital market is crucial in order to promote economic growth.

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6. Ministry of Finance, "Recommendations of the Committee of Experts for the Strategic Development of the Greek Capital Market" [in Greek], November 2020. Available at the link: <https://www.minfin.gr/web/guest/-/protaseis-gia-te-strategike-anaptyxes-tes-ellenikes-kephalaiagoras?inheritRedirect=true>.

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1.6. Recent developments and prospects of global economic activity: Economic recovery on the back of supportive economic policy

Aristotelis Koutroulis

The Covid-19 pandemic has led to one of the greatest humanitarian and economic crises in decades. Given the special nature of the crisis, the transition of the global economy to a recovery path depends primarily on mitigating the risks that threaten public health. Equally important is the smooth adaptation of household and business behaviour to the new era. In this context, national governments are expected to keep a balance between supportive economic policy and fiscal sustainability.

1.6.1. General assessment of the recent developments and the near-term outlook of the global economy

Recent developments regarding global production

Due to the Covid-19 pandemic and the containment measures adopted worldwide, the global economy is experiencing the fourth largest global economic crisis in 150 years, with global GDP shrinking by more than 4 percentage points (see Table 1.6.1). On the demand side, all major GDP components –private consumption, investment and exports– recorded considerable losses, except public spending. Indeed, increased public spending to support individuals and businesses has taken a critical role in mitigating the adverse impact of the pandemic on aggregate demand. In terms of production, the non-tradable sector (e.g., accommodation, catering, entertainment and personal services), international tourism and passenger transportation have recorded large declines in output. On the other hand, the pandemic has had a milder impact on manufacturing, construction and other production activities that do not require physical proximity between consumers and producers (OECD, 2020).

Although the 2020 crisis was characterized by a high degree of synchronization,[1] the geographical distribution of the pandemic's economic impact was quite uneven. Countries that, due to circumstances, adopted stricter containment measures and implemented more extensive lockdowns were those that suffered higher GDP contractions (e.g., Italy, France, Spain and the United Kingdom) (OECD, 2020). For obvious reasons, the output reductions were comparatively higher in countries where the non-tradable sector and international tourism represent a disproportionately large share of total economic activity (e.g., Greece and Malta).

Regarding the chronological order of events, the highest decrease of global GDP was recorded in the second quarter of 2020 when an increasing number of infections across many countries led national authorities to impose strict restrictions on economic activity and citizen mobility. Following the dynamics of the pandemic, the easing of containment measures in the northern hemisphere during the third quarter (opening of borders, partial or total lifting of lockdowns) significantly improved the economic climate and created the conditions for economic recovery. It was a temporary improvement, however, as a second wave of the pandemic last autumn forced many national governments to reintroduce restrictive measures. Inevitably, the new lockdowns resulted in a further contraction of economic activity in the fourth quarter.

An effective control of the Covid-19 virus is expected to support economic recovery

Progress regarding the development and distribution of effective vaccines as well as improvements in detecting, tracing and isolating new cases have begun to create optimism. Nevertheless, mitigating the risks that threaten public health is unlikely to drastically change economic climate. Heightened household uncertainty, low confidence of companies, and the further prolongation of containment measures imply that it will take some time before private consumption and investment return to their pre-pandemic levels.

1. According to IMF projections, only China and a few developing economies will record positive annual GDP changes during 2020. Regarding the advanced world, all countries will experience negative growth rates except Taiwan-Province of China (IMF, 2020).

TABLE1 1.6.1 Real Gross Domestic Product[1,2]

(annual percentage changes)

	2019*				2020**				2021**				2022**			
	IMF	EC	OECD	WB	IMF	EC	OECD	WB	IMF	EC	OECD	WB	IMF	EC	OECD	WB
World economy	2.8	2.7	2.7	2.3	-3.5	-4.3	-4.2	-4.3	5.5	4.6	4.2	4	4.2	3.6	3.7	3.8
Advanced economies	1.6	1.8	:	1.6	-4.9	-5.6	:	-5.4	4.3	3.7	:	3.3	3.1	2.7	:	3.5
USA	2.2	2.3	2.2	2.2	-3.4	-4.6	-3.7	-3.6	5.1	3.7	3.2	3.5	2.5	2.5	3.5	3.3
Euro Area	1.3	1.3	1.3	1.3	-7.2	-7.8	-7.5	-7.4	4.2	4.2	3.6	3.6	3.6	3	3.3	4
Japan	0.3	0.7	0.7	0.3	-5.1	-5.5	-5.3	-5.3	3.1	2.7	2.3	2.5	2.4	0.9	1.5	2.3
United Kingdom	1.4	1.3	1.3	:	-10	-10.3	-11.2	:	4.5	3.3	4.2	:	5	2.1	4.1	:
Developing economies	3.6	3.6	:	3.6	-2.4	-3.2	:	-2.6	6.3	5.3	:	5	5	4.4	:	4.2
Brazil	1.4	1.1	1.1	1.4	-4.5	-6.1	-6	-4.5	3.6	3	2.6	3	2.6	2	2.2	2.8
Russia	1.3	1.3	:	1.3	-3.6	-4.2	:	-4	3	2	:	2.6	3.9	1.9	:	3
India	4.2	4.9	42	4.2	-8	-8.3	-9.9	-9.6	11.5	7.6	7.9	5.4	6.8	5.2	4.8	5.2
China	6	6.1	6.1	6.1	2.3	2.1	1.8	-0.9	8.1	7.3	8	7.9	5.6	5.6	4.9	5.2

Source: IMF, *World Economic Outlook, January 2021*; OECD, *OECD Economic Outlook* (Vol. 2020/2); European Commission, *European Economic Forecast, Autumn 2020*; World Bank, *Global Economic Prospects, January 2021*.

* 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.

On the back of monetary and fiscal policy support and provided that the pandemic will be contained effectively over the next quarters, global GDP is expected to expand by more than 4 percentage points in 2021(see Table 1.6.1 above). However, given the downside and upside risks that surround the near-term prospects of the global economy, deviations from the above baseline forecast cannot be ruled out. On the downside, the materialization of several risks (e.g., failure to alter the pandemic's course, prolonged voluntary social distancing by households, a premature withdrawal of policy support or financial turmoil triggered by soaring business and public sector debts) could lead to a weaker recovery than predicted under the baseline scenario. In contrast, some breakthrough in treatment for Covid-19 could boost consumer and business confidence, leading to a stronger rebound of economic activity (OECD, 2020).

Global GDP growth is expected to moderate in 2022 and fall slightly below 4% in 2022 (see Table 1.6.1). This forecast reflects the long-term effects of the pandemic on potential global GDP. Indeed, adverse developments regarding investment and employment as well as declining labour mobility and worldwide school closures have a negative impact on human and physical capital accumulation and thus undermine potential GDP growth.

1.6.2. Inflation and employment

Owing to declining demand for consumer and capital goods, low crude oil prices and zero or negative changes in wages and salaries, inflation came under downward pressure in 2020. Pressures in the opposite direction, stemming either from loose monetary policy or from declining output, were not strong enough to reverse the downward trend of inflation. As a result, inflation fell sharply in all advanced economies (see Table 1.4.2). For the very same reasons, inflation has remained low in most developing economies as well.

In the medium term, elevated uncertainty, high unemployment rates and rising precautionary savings in advanced economies are expected to keep inflationary pressures and expectations below central bank targets. Although inflation is envisioned to remain low

TABLE 1.6.2 Inflation[1]
(annual percentage changes)

	2019			2020*			2021*			2022*		
	IMF	EC	OECD	IMF	EC	OECD	IMF	EC	OECD	IMF	EC	OECD
Advanced economies	1.4	:	:	0.8	:	:	1.6	:	:	:	:	:
USA	1.8	1.3	1.5	1.5	1.1	1.2	2.8	1.6	1.2	:	1.8	1.4
Euro Area	1.2	1.2	1.2	0.4	0.3	0.3	0.9	1.1	0.7	:	1.3	1
Japan	0.5	0.5	0.5	-0.1	0.1	0.2	0.3	0.1	0.2	:	0.3	0.4
United Kingdom	1.8	1.8	1.8	0.8	0.9	0.8	1.2	2.3	0.7	:	2.9	1.5
Developing economies	5.1	:	:	5	:	:	4.7	:	:	:	:	:
Brazil	3.7	:	3.7	2.7	:	2.7	2.9	:	2.5	:	:	3.2
Russia	4.5	4.5	:	3.2	3.5	:	3.2	3.7	:	:	4	:
India	4.8	:	4.8	4.9	:	5.9	3.7	:	4.6	:	:	4.6
China	2.9	:	2.9	2.9	:	2.8	2.7	:	2.3	:	:	2.1

Source: IMF, *World Economic Outlook, October 2020*; OECD, *OECD Economic Outlook* (Vol. 2020/2); European Commission, *European Economic Forecast, Autumn 2020.*

* Projections.

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

TABLE 1.6.3 Annual unemployment rates

	2019			2020*			2021*			2022*		
	IMF	EC	OECD	IMF	EC	OECD	IMF	EC	OECD	IMF	EC	OECD
USA	3.7	3.7	3.7	8.9	7.7	8.1	7.3	6.2	6.4	:	5.4	5.6
Euro Area	7.6	7.5	7.5	8.9	8.3	8.1	9.1	9.4	9.5	:	8.9	9.1
Japan	2.4	2.3	2.4	3.3	3.1	2.8	2.8	2.9	2.9	:	2.7	2.8
United Kingdom	3.8	3.8	3.8	5.4	5	4.6	7.4	7.3	7.4	:	6.2	6.2
Brazil	11.9	:	:	13.4	:	:	14.1	:	:	:	:	:
Russia	4.6	4.6	:	5.6	6.2	:	5.2	5.8	:	:	4.8	:
China	3.6	3.6	:	3.8	:	:	3.6	:	:	:	:	:

Source: IMF, *World Economic Outlook, October 2020*; OECD, *OECD Economic Outlook* (Vol. 2020/2); European Commission, *European Economic Forecast, Autumn 2020.*

* Projections.

in most developing and emerging markets, currency devaluation episodes in some countries could exert significant upward pressure on prices.

Without the dynamic intervention of national governments in domestic labour markets, the outbreak of the pandemic would have had a catalytic effect on employment. Indeed, in several parts of the advanced world (e.g., the Eurozone and Japan) unemployment remained at 'socially acceptable' levels (see Table 1.6.3) thanks to the timely and effective intervention of national authorities (e.g., financing of companies that maintained job positions, partial or total wage subsidies, etc.). In contrast, where tradition and the institutional framework do not favor such interventions (e.g., the US), unemployment increased significantly. As for developing and emerging economies, employment support has been less vigorous due to limited fiscal space and a disproportionally large informal sector.

Labour market pressures around the world do not have a uniform impact on members of the labour force. Workers with high to medium-level qualifications who can perform their tasks via teleworking seem to have retained most of the privileges they used to enjoy before the outbreak of the pandemic. In contrast, the situation is particularly worrisome for low-skilled workers in the service sector, low-paid and uninsured workers of the informal sector, and generally, a large number of people who, despite their efforts, cannot find a decent and stable job that matches their qualifications.

According to the estimates of international organizations, several regions of the world are expected to experience elevated unemployment levels during 2021 (see Table 1.6.3). Aside from the asymmetric response of unemployment to GDP changes, these projections reflect: (a) the heightened uncertainty that prevails in the business community, (b) the fact that debt reduction during difficult times takes priority over new investments, (c) companies' preference to cover a possible increase in demand by increasing the working hours of existing staff, and (d) the exit of highly indebted firms from the market. The return of unemployment to lower levels is expected to take place gradually over a wider time horizon starting in 2022.

1.6.3. Global trade and basic commodity prices

Closed borders, sharp drops in demand and disruptions in production due to last year's health developments have brought about two drastic changes in international trade. The first, and perhaps the most important, refers to the large contraction of the total volume of international trade (goods and services) by 9.6% (see Table 1.6.4). The second change is linked to the collapse of the trade in services and the reversal, albeit temporarily, of a trend that has emerged over the last decade (i.e., the ever-increasing contribution of services to the expansion of international trade).

TABLE 1.6.4 World trade volume[1]
(annual percent changes, goods and services)

	2019*	2020*	2021**	2022**
World economy	1	-9.6	8.1	6.3
Advanced economies	1.4	-10.1	7.5	6.1
Developing economies	0.3	-8.9	9.2	6.7

Source: IMF, *World Economic Outlook Update, January 2021.*

* Estimations, ** Projections.

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

Following the collapse caused by the pandemic, international trade activity is expected to pick up in 2021 (see Table 1.6.4). However, the balance of risks surrounding international trade remains negative. Indeed, a number of adverse factors and developments –the continuing erosion of multilateralism in trade negotiations, the frequent attitude changes of national authorities towards free trade, the transition of bilateral trade relations between the UK and the EU in a less favorable trade regime, the disruptions in global value chains and the prolonged uncertainty– leave little room for optimism for the full recovery of the lost ground.

Regarding basic commodity prices, the reduction of the global oil demand by 9% in 2020 led the average annual price of crude oil to USD 41 per barrel. The fall in the international oil price would have been much sharper if the OPEC member states and the other oil-producing countries had not significantly reduced supply over the same period. In 2021, the international price of oil is expected to increase marginally before reaching USD 50 per barrel in 2022 (World Bank, 2021).

Unlike oil prices, the net change in basic metal prices in 2020 was small, as the reductions recorded in the first half of the year were offset by equal increases in the second half due to higher demand from China. Owing to a combination of increased demand for food products and production shortages, international prices of basic agricultural products followed an upward trend. These increases exerted inflationary pressures in several developing economies because of the large share of food expenditures in total household consumption expenditures. In 2021, international prices for basic metals and agricultural products are projected to rise slightly.

1.6.4. The central role of policy interventions in enhancing economic recovery

The main distinguishing feature of the 2020 crisis lies in its multidimensionality. What began as a geographically limited health crisis swiftly turned into a global pandemic, dragging the global economy into a deep recession and most countries to the brink of economic collapse and social distress. Put differently, out of the whole range of individual and collective human activities, only a few have remained unaffected by the pandemic. In this context, national governments around the world face a threefold challenge: protect public health, support their economies and preserve social cohesion.

In the first place, governments need to mitigate the risks that threaten public health. Beyond the priceless value of human life, this priority is dictated by the chronological order of events, as it was the health crisis that triggered the economic crisis, and not vice versa. In other words, if the Covid-19 pandemic is not contained, the flow of adverse effects on the economy will continue, canceling any efforts for economic recovery.

Despite the recent scientific progress and the launch of mass vaccinations in several countries, the medical community has warned that vaccines are not a panacea. The definite and irrevocable defeat of the pandemic may take some time. In this respect, social distancing and restrictions on economic activity may need to remain in place for a few more months.

According to recent public health studies, strict and universal lockdowns are more effective in limiting renewed virus outbreaks (IMF, 2020). Other studies,

which are focused on the macroeconomic impacts of the pandemic, suggest that extensive lockdowns result in larger output losses in the short run (OECD, 2020). As the two strands of the literature point to different directions, governments need to use containment measures wisely by adopting better-targeted restrictions in order to balance the associated risks.

Regarding economic policy, governments are expected to maintain the supportive role of monetary and fiscal policies. Given that monetary authorities have already exhausted much of their conventional and non-conventional tools, the burden inevitably falls on fiscal policy. To this end, a growth-enhancing fiscal policy mix –consisting of the quantitative and qualitative improvement of public infrastructure and measures that support employment and private productive investments– could play the most critical role in facilitating the transition of economies to a path of solid recovery.

At the same time, it is of paramount importance to maintain public debt sustainability. With nominal interest rates remaining close to zero, governments' double task –growth-enhancing fiscal policy and fiscal sustainability– should not be policymakers' greatest worry. Nevertheless, the situation is more complicated than it looks. Soaring public debts in otherwise strong economies along with already fragile sovereigns pose a serious threat to global financial stability. Under these circumstances, steps towards a closer coordination of national economic policies and bold decisions regarding debt restructuring of highly indebted countries seem to be as urgent as ever (OECD, 2020).

As mentioned in section 1.6.2, the pandemic has put disproportionately more pressure on the economically weaker groups of people, widening the chasm between the haves and the have-nots. And the higher the pressures, are the stronger the negative feelings of fear, anger, and frustration shared by the have-nots. So far, these feelings remain 'silent' and inside the homes of the poor. However, it is difficult to predict whether they will remain so or take the form of violent activism threatening social cohesion, and thus, an already fragile economic recovery. In this respect, governments are expected to mobilize and wisely allocate resources to their most vulnerable citizens.

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2. Fiscal developments

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State Budget, public debt, and fiscal figures perspectives

Elisavet I. Nitsi

2.1. Execution of the 2020 State Budget

The 2020 State Budget execution, according to the most recent data of the General Accounting Office,[1] on a modified cash basis, shows a significant deficit of 22,806 million euros or 14.01% of Gross Domestic Product (GPD),[2] against only 168 million euros or 0.09% of GDP in 2019, as well as the target for a deficit of 2,286 million euros or 1.4% of GDP set by the 2020 State Budget and the estimated deficit of 24,319 million euros or 14.94% of GDP according to the 2021 State Budget (Table 2.1.1). Accordingly, the primary balance is also significantly deficient, as it reached 18,195 million euros or 11.18% of GDP, against a surplus of 5,017 million or 2.74% in 2019 and a target for primary surplus of 2,215 million or 1.36% of GDP based on the 2020 State Budget, a deficit that was foreseen in the 2021 State Budget since the estimated deficit was 19,624 million euros or 12.06% (Table 2.1.1). It is more than obvious that this significant deficit in both the State Budget and the Primary State Budget Balance is due to the Covid-19 pandemic and the measures taken to address both the health crisis and the ensuing economic crisis owing to the successive lockdowns and the need to support the real economy.

In addition, net revenues of the 2020 State Budget are lower compared to the corresponding period of the previous year, as they amounted to 47,346 million euros, down by 7,733 million euros or 14%, as well as the target set by the 2020 State Budget, which projected that revenues were set to reach 54,710 million euros, a loss of 7,346 million euros or 13.4%. This reduction was foreseen in the 2021 State Budget estimates where revenues were to reach only 46,454 million euros, that is 910 million euros or 2% lower than the realized revenues. This can be attributed mainly to the pandemic, as the ensuing economic crisis caused a significant reduction in tax collection, while the increased revenues in respect to the 2021 State Budget estimates are due to revenues from the ANFAs that were not foreseen.

More specifically, net Ordinary Budget revenues of 2020 amounted to 53,036 million euros, decreased by 7,105 million euros or 11.8% of GDP compared to 2019, but only by 715 million euros or 1.3% of GDP compared to the 2020 State Budget target. It is worth noting the significant reduction in tax revenue amounted to only 43,198 million euros, much lower than all targets set. The larger reduction was from income tax collection (3,127 million euros or 18.7% compared to 2019 and 2,988 million euros or 18% from the target set in the 2020 State Budget), followed by the VAT collection (2,784 million euros or 15.6% in relation to 2019 and 3,209 million euros or 17.6% from the target set in the 2020 State Budget). To the contrary, revenues are higher against the 2021 State Budget estimates due to the increased tax collection by 417 million euros or 1% of GDP and transfers by 792 million euros or 13.8%.

On the other hand, the 2020 State Budget shows a significant increase in its expenditures, as they amounted to 70,169 million euros, increased by 14,904 million euros or 27% compared to 2019, and by 14,132 million euros or 25.2% against the 2020 State Budget, while they are less than the target set by the 2021 Budget estimates, which was projected to rise to 70,774 million euros, down by 605 million euros or 0.9%. This increase is owed to an increase in transfers by almost 11 billion euros, compared to both the 2019 outcome and the 2020 State Budget forecast, expenditures that were used to deal with the needs created by the pandemic. To the contrary, interest payments, amounting to 4,774 million euros, reduced by 451 million euros or 8.6% against the 2019 outcome, but are higher compared to both the 2020 State Budget forecast by 274

1. The State Budget Execution Bulletin, December 2020, Ministry of Finance, January 2021.

2. According to the GDP projections for 2020 from the 2021 State Budget.

TABLE 2.1.1 State Budget 2020, million euros on a modified cash basis

	2019		2020	
	Outcome[1]	Outcome[1]	Budget forecasts 2020[2]	Budget estimates 2020[3]
State Budget				
Net Revenue	**55,097**	**47,364**	**54,710**	**46,454**
Revenue	60,141	53,036	53,751	51,815
Taxes	51,415	43,198	51,415	42,781
From which:				
VAT	17,792	15,008	18,217	14,505
Excise taxes	7,125	6,427	7,213	6,463
Property taxes	2,786	2,427	2,813	2,496
Income tax	16,716	13,589	16,577	12,923
Social contributions	55	54	55	54
Transfers	4,407	6,537	3,880	5,745
Sales of goods and services	1,728	507	700	547
Other current revenue	2,527	2,731	1,713	2,663
Sales of fixed assets	10	8	332	25
Tax refunds	5,044	5,672	4,926	5,360
Expenditure	**55,265**	**70,169**	**56,037**	**70,774**
Compensation of employees	13,247	13,335	13,403	13,415
Social benefits	653	137	134	241
Transfers	28,205	38,751	27,824	38,997
Purchases of goods and services	1,458	1,618	1,145	1,802
Subsidies	224	248	89	102
Interest payments (gross basis)	5,225	4,774	4,500	4,695
Other current expenditure	50	29	71	72
Non allocated expenditure (without PIP)	0	0	1,495	362
Purchase of fixed assets	562	631	623	668
PIP				
Revenue [4]	2,857	5,542	3,679	5,466
Expenditure	5,642	10,647	6,750	10,421
State Budget Primary Balance	5,017	-18,195	2,215	-19,624
% GDP	2.74	-11.18	1.36	12.06
State Budget Balance [5,6,7,8]	-168	-22,806	-2,286	-24,319
% GDP	-0.09	-14.01	-1.40	-14.94
GDP	183,413	162,776[9]	162,76	162,776

Source: Budget Introductory Report 2020 and 2021, Ministry of Finance.
State Budget Execution, General Accounting Office, Ministry of Finance, January 2021.

Notes:
1. The data for the revenues and expenditures of the State Budget for the years 2019 and 2020 are temporary and will be finalized with the ratification of the Revenue and Expenditure Report of the State for the fiscal years 2019 and 2020.

TABLE 2.1.1 (continued)

2. Budget estimates, as depicted in the 2020 Budget Introductory Report.
3. Budget estimates, as depicted in the 2021 Budget Introductory Report.
4. Public Investment Budget revenues are included in lines “Transfers” and “Other current revenues”.
5. + surplus, - deficit.
6. Outcome includes the settlement program of previous years’ arrears and pending pension applications.
7. Data is presented according to the new economic classification (Presidential Decree 54/2018).
8. The State Budget balance includes 7 million euros of expenditure and 10 million euros of expenditure, which were not accounted for at the time of publication of the bulletin.
9. The GDP estimate for 2020 as reflected in the estimates of the Introductory Report of the 2021 Budget.

million euros or 6.1%, and the 2021 State Budget estimate by 79 million euros or 1.7%.

The Public Investment Program (PIP) shows a significant increase in both revenue and expenditure, as it is an important tool for dealing with the pandemic. Revenues amount to 5,542 million euros, increased by 2,685 million euros or 94% compared to the 2019 outcome, and 1,863 million euros or 50.6% against the target set in the 2020 State Budget. Respectively, expenditure, amounting to 10,647 million euros, increased by 5,005 million euros or 88.7% compared to 2019, and 3,897 million euros or 57.7% by the target set in the 2020 State Budget. This increase in both revenue and expenditure was clearly projected from the corresponding estimate of the 2021 State Budget.

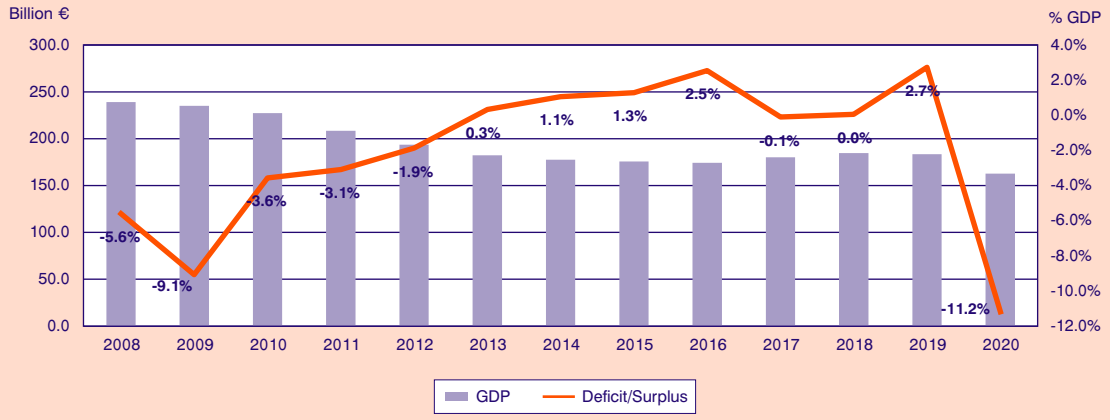
Overall, the 2020 State Budget, on a cash basis, shows significant deviations from the targets set in both expenditure and revenue. These discrepancies are not surprising as, since March 2020, the Covid-19 pandemic has affected the State Budgets of all states around the world. Thus, the Greek government was called to take initiatives to deal primarily with the health crisis, shielding the national health system to improve hospital structures by creating ICU beds, increasing medical supplies, and recruiting health care personnel. Subsequently, the health crisis created a significant economic crisis, with successive lockdowns, which led to the closure of many economic activities, the need to put the employment contracts of a significant number of employees on temporary suspension and the significant drop in household income as well as the GDP.

More specifically, the government proceeded in 2020 with interventions with a total cash cost of 18,198 million euros or 11.18% of GDP, from which 4,920 million euros or 3% of GDP were related to the revenue side. The most important interventions were the reduction of the advance payment of income tax of natural and legal persons to freelancers and companies affected by the Covid-19 pandemic, amounting to 1,600 million euros or 0.98% of GDP, followed by the coverage of social security contributions on the nominal salary of employees whose employment contracts were temporarily suspended, at 838 million euros or 0.51% of GDP, and the suspension of VAT payments to companies, the self-employed and freelancers, amounting to 744 million euros or 0.46% of GDP. In terms of expenditure, as expected, the interventions are higher, reaching 10,730 million euros or 6.59% of GDP, with the repayable advance measure reaching 5,368 million euros or 3.3%, i.e., about half of these interventions, followed by the special purpose compensation of 534 euros on a monthly basis for employees whose employment contracts were suspended, for 1,624 million euros or 1% of GDP, and for the self-employed, small business owners and freelancers affected by the pandemic, at 495 million euros or 0.3% of GDP, as well as the extension of the regular unemployment benefit by two months, amounting to 770 million euros or 0.47% of GDP. Finally, liquidity interventions amounting to 2,548 million euros or 1.57% of GDP have been carried out.

However, it should be noted, that the economic crisis caused by the Covid-19 pandemic has led to a very significant reduction in GDP and a huge budget deficit. Graph 2.1.1 presents the evolution of the primary deficit/surplus in the period 2008-2020, accompanied by the evolution of GDP. The period ranges from 2008, before the debt crisis of the Greek economy, until the latest data. The graph shows that in 2020, the estimate for GDP is at the lowest observed in the whole period under consideration, while the primary balance deficit reached 11.2% of GDP, two percentage points of GDP more than the 2009 deficit that led the country into the consolidation program.

However, although the country is in a particularly difficult situation in its macroeconomic figures, the crisis is not only Greek; it’s global. In addition, Greece is

GRAPH 2.1.1
Gross Domestic Product (GDP) and State Budget Primary Deficit/Surplus 2008-2020 (in % of GDP and billion €)



Source: Budget Introductory Report, several issues.
State Budget Execution, General Accounting Office, Ministry of Finance, January 2021.

Note: 2020 is an estimation from the State Budget of 2021.

considered one of the least affected countries, with low numbers of identified cases and deaths from the pandemic. Moreover, the abolition of the budget surplus constraint by the European Union, the positive reviews for the Greek economy under European supervision, as well as the agreed assistance from the Recovery and Resilience Mechanism to deal with the pandemic, make these deficits manageable and reversible in the period immediately after the pandemic crisis is over.

2.2. The evolution of Greek public debt, third quarter 2020

According to the latest data available from the General Accounting Office,[3] for the third quarter of 2020, the Central Government's debt amounted to 364,864.58 million euros, an increase of approximately 2 billion euros (0.5%) compared to the previous quarter, 8.8 billion (2.5%) in relation to end of the year 2019 and 11 billion (3.1%) compared to the corresponding quarter of 2019. In addition, cash deposits showed an increase of 260 million (1.4%) compared to the previous quarter, while they are less by 3.3 billion (14.4%) compared to the end of 2019 and just 703 million euros (3.5%) in relation to the corresponding quarter in 2019. The observed debt increase can be attributed mainly to the increase in borrowing used to finance the increased budget expenditures so as to finance all measures needed to support the health system and the economy due to the pandemic and the ensuing economic crisis.

The composition of central government debt in the third quarter of 2020 is presented in Table 2.2.1. Based on the type of interest rate, fixed versus floating, the central government debt, on a percentage basis, amounted to 96.6% and 3.4%, respectively. The change in the composition of debt in favor of floating rates continues, although at a diminishing rate, given that it has reached 96.6% compared to the previous quarter (96.6% and 3.4%), but mainly in regard to the corresponding quarter of 2019 (93.8% and 6.2%, respectively). An analogous change is observed in favor of the non-tradable to tradable debt, which stood at 21.2% and 78.8%, respectively, over the period considered. Finally, the composition of Central Government debt by currency remained essentially unchanged compared with the previous quarter, 98.9% in euro currency, and shows little variation compared to the same quarter of 2019 (98.2% in euro). In addition, as far as the guarantees provided by the Greek government are concerned, they are particularly high in the last quarter, as they include the "Hercules" scheme, that is, guarantees to deal with Covid-19 and guarantees to banks.

The distribution of debt, based on the residual maturity in the third quarter of 2020, is reflected in Table 2.2.2. Short-term Greek government securities (with

3. Public Debt Bulletin, November 2020, General Accounting Office, Ministry of Finance.

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

Period	2019 (C΄ quar.)	2019 (D΄ quar.)	2020 (B΄ quar).	2020 (C΄ quar.)
Outstanding Central Government Debt	**353,850.25**	**356,014.92**	**362,871.42**	**364,864.58**
Debt by type of interest rate				
Fixed rate[2]	331,911.53	336,790.11	350,170.92	352,459.18
Floating rate[2,3]	21,938.72	19,224.81	12,700.50	12,405.40
Debt by way of trading				
Tradable	71,477.75	64,663.70	74,388.64	77,716.16
Non-Tradable	282,372.50	287,660.06	288,482.78	287,513.29
Debt by currency				
Eurozone	347,480.95	352,098.76	358,879.83	360,851.07
Non-Eurozone currencies	6,369.30	3,916.16	3,991.59	4,013.51
Cash Deposits of the H.R.[4]	**20,230.80**	**22,818.80**	**19,267.30**	**19,527.80**
Debt guaranteed by the Central Government	**10,428.58**	**9,972.02**	**9,862.58**	**14,330.54**

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

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. 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 31/3/2020 and 30/6/2020.

* Estimates.

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

Period	2019 (C΄ quar.)	2019 (D΄ quar.)	2020 (B΄ quar.)	2020 (C΄ quar.)
Total volume	**353,549.40**	**356,014.92**	**362,871.42**	**364,864.58**
Short-term (up to 1 year)	42,982.30	44,329.63	45,868.77	46,992.01
Medium-term (1 to 5 years)	36,382.90	36,244.63	39,938.88	39,314.45
Long-term (more than 5 years)	274,485.10	275,441.25	277,063.77	278,558.12

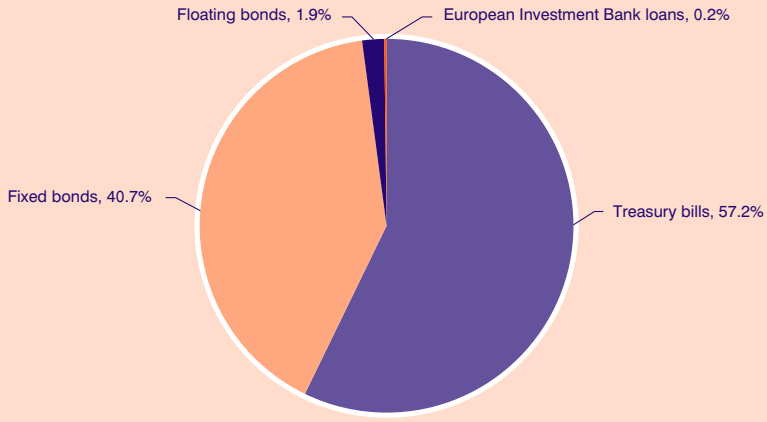
Source: Public Debt Bulletin, General Accounting Office, Ministry of Finance.

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

maturity less than one year) represent 12.6% of the total, compared to 11% from the medium-term notes (with maturities of one to five years), and 76.4% from long-term issues (maturity after five years) of 13.4%, 11.3% and 75.4%, respectively, which was the last quarter of 2019. Compared to the same quarter of 2019, a decrease in the share of short-term securities can be observed and a corresponding increase in the medium-term securities.

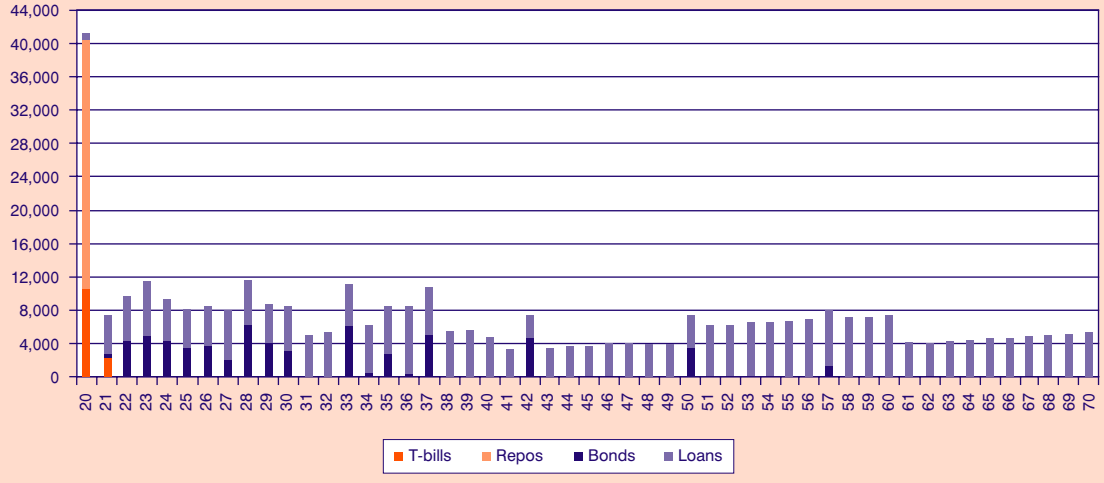
The average residual maturity of the total Central Government debt stood at 19.90 years, slightly reduced from that of 20.84 years in the corresponding quarter of 2019. It should be noted that the average residual maturity of the total Central Government debt has tripled since the country's entry into the support mechanism, which amounted to 7.65 years in the second quarter of 2010. Furthermore, regarding the new borrowing of the Greek government during the reporting period, the

GRAPH 2.2.1
Composition of borrowing for the third quarter of 2020



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

GRAPH 2.2.2
Redemption schedule of Budgetary Central Government debt on 30/9/2020 (amounts in million euros)



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

Notes: Securities maturities are smoothed with debt repurchases and management operations.
Including extension of EFSF loans agreed at the Eurogroup of 22-6-2018.

weighted average maturity rose to 3.30 years, with a significant decrease from the level of 19.78 years at which it had formed in 2019.

The new borrowing for the third quarter of 2020 decomposes to 57.2% of Treasury Bills, 40.7% of fixed bonds, 1.9% of floating bonds, while only 0.2% comes from European Investment Bank loans (Graph 2.2.1 above).

Graph 2.2.2 above 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 following year (2021), the dispersion of the burden of redemption of public debt has now leveled, with few exceptions, at less than 10 billion euros per year until 2070.

In conclusion, although the debt has increased slightly in the last quarter, this cannot be seen as a cause for concern, as the financing needs of the Greek economy were particularly high due to the measures taken to deal with the pandemic.

2.3. Fiscal figures perspectives

The evolution of the country's fiscal figures in 2021 follow that of 2020, as it is affected by the course of the health and economic crises. In the 2021 State Budget, there are already foreseen interventions of a total cash cost of 7,323 million euros related to interventions that will stimulate the economy, such as the reduction of the social security contributions of employees and the suspension of the Special Solidarity Contribution for the private sector, amounting to 816 and 767 million euros, respectively, on the revenue side, and the repayable grants to small and very small enterprises through local governments, amounting to 800 million euros on the expenditure side, as well as 3 billion euros in not allocated expenditure to address the financial consequences of the pandemic. However, the pandemic seems to last longer and be more intense than expected, as the new mutations have worsened the situation and the third wave is expected to be more severe, resulting in interventions that have already been announced for 2021, such as the special purpose compensation. amounting to 534 euros on a monthly basis, both to employees whose employment contracts have been temporarily suspended and to the self-employed, small business owners and freelancers affected by the pandemic, the repayable advance, etc. New interventions that have already been announced or will soon occur, are expected to exceed 3 billion euros that are not allocated and, therefore, will lead to the need for a revision to the 2021 State Budget.

In addition, Greece has to deal with issues related to national defense and security as well as immigration, which require interventions that burden the State Budget. The budgetary cost of armaments programs for 2021 amounts to 2,519 million euros, while the expenditures for migration flows reach 564 million euros.

The level of recession will also be an important element. For 2020, the GDP estimate from the 2021 Budget introductory report is only 162,776 million euros, while for 2021, the forecast for GDP is to reach 171,934 million euros. Thus, the recession for 2020 is expected to reach 10.5% at stable prices, a level that is particularly high and difficult to reverse. In addition, the increase in borrowing combined with the decline in GDP has boosted public debt as a percentage of GDP and is expected to rise to 227.8%, an indicator that makes the country's position difficult.

For 2021, the State Budget forecasts show a recovery of the Greek economy of 4.8% in constant prices and the debt as a percentage of GDP at 218.8%. However, these forecasts are based on the economic data of November 2020. Since then, conditions have changed and there are already discrepancies, as mentioned above. The latest forecasts of the European Commission give an estimate of the recovery of the Greek economy of 3.5% for 2021 and 5% for 2022. This indicates that it will take more years for the Greek economy to return to the pre-pandemic condition.

The recovery of the Greek economy depends on the evolution of the pandemic and, mainly, the course of vaccinations both in Greece and abroad, which will allow the gradual easing of restrictive measures and the return to normalcy. Thus, economic activity, such as retail, catering, etc., will gradually open, which will lead to an increase in private consumption, the improvement of consumer confidence and, most importantly, the opening of the country to tourism, which is one of the most important sources of income.

Finally, it should be noted that it is particularly important that the financial tools of the Recovery and Resilience Mechanism, analyzed in the previous issue, be used for investment projects and reforms that are developmental and create jobs, in order to improve the productivity and efficiency of the Greek economy and its shift to more modern development models. Thus, economic activity will increase, resulting in a faster exit from the economic crisis, while the multiplier effect on the country's GDP will lead to greater economic growth and the improvement of the country's fiscal position.

3. Human resources and social policies

KEPE, *Greek Economic Outlook,* issue 44, 2021, pp. 44-49

3.1. Recent developments in key labour market variables

Ioannis Cholezas

3.1.1. Employment

The Labour Force Survey by ELSTAT indicates that the number of employed individuals aged 15-64 decreased in the third quarter of 2020 (2020Q3), compared to the third quarter of 2019, by 55.7[1] thousand people (1.4%). Approximately 68% of the reduction is due to the decrease in the number of employed men (37.8 thousand) and 74% to the decrease in the number of employed youth aged 15-29[2] (40.7 thousand) (Table 3.1.1).

The change in the number of employed individuals was not uniform across education groups. In particular, the number of the employed with low and medium education decreased, but the number of the employed with high education increased (Table 3.1.2). The employed with a Master and/or a Ph.D. degree exhibited the biggest increase (14.9%), followed by employed technical vocational education graduates and university graduates. On the contrary, employed individuals with a primary education at most exhibited the biggest decrease (15.4%).

Citizenship is another factor which seems to be responsible for different employment outcomes (Table 3.1.2). The total number of employed foreigners decreased strongly over the past year, by 21.8% (or 55.4 thousand jobs). The decrease was more pronounced amongst employed male foreigners, whose number decreased by 26.3%, followed by a decrease of 15.4% for employed female foreigners. On the other hand, the number of employed natives increased irrespective of gender.

TABLE 3.1.1 Key variables of the labour market by gender and age group, population aged 15-64, 2020Q3

	Employed (in > '000)	Annual change* (in > '000)	Unemployed (in > '000)	Annual change* (in > '000)	Unemployment %
Total (15-64)	3,826.7	-55.7	747.1	-21.3	16.3
Men (15-64)	2,201.5	-37.8	334.8	-4.1	13.2
Women (15-64)	1,652.2	-18.0	412.4	-17.3	20.2
Youth (15-29)	484.9	-40.7	200.2	8.7	29.2
Mature (30-64)	3,341.8	-15.0	546.9	-30.0	14.1

Source: Labour Force Survey, ELSTAT.

* The annual change refers to period 2019Q3-2020Q3.

1. The number of employed individuals aged 15-74 decreased by 45.1 thousand or 1.1%. Note that the changes discussed next, by level of education, citizenship, region and sector of economic activity, involve this age group.

2. More detailed analysis reveals that the number of employed men aged 25-29 decreased by 26 thousand or 12.2%, which is the biggest proportional decrease amongst all age-gender groups.

TABLE 3.1.2 Key parameters of the labour market by education and citizenship, population aged 15-74, 2020Q3

	Employed (in > '000)	Annual change* (in > '000)	Unemployed (in > '000)	Annual change* (in > '000)	Unemployment %
Master and/or Ph.D.	278.4	36.1	31.5	4.2	10.2
University	780.6	16.3	121.6	14.3	13.5
Higher Technical Vocational	842.1	19.8	165.4	-3.1	*16.4*
Upper secondary	1,357.2	-36.1	293.9	0.1	*17.8*
Lower secondary	332.8	-20.1	71.5	-5.9	*17.7*
Primary at most	335.7	-61.1	72.7	-30.0	*17.3*
Natives	3,727.8	10.4	690.7	-14.3	15.6
Males	2,158.3	7.4	314.0	1.2	12.7
Females	1,569.5	3.0	376.7	-15.5	*19.6*
Foreigners	199.1	-55.4	65.7	-6.3	24.8
Males	110.1	-39.3	26.8	-5.4	*19.4*
Females	88.9	-16.2	38.9	-0.9	*30.4*

Source: Labour Force Survey, ELSTAT.

* The annual change refers to period 2019Q3-2020Q3.

Unemployment rate figures in italics represent rates over the country average, which is 16.2% for individuals aged 15-74.

Moreover, the number of employed individuals increased in six out of thirteen administrative regions. The biggest increase is recorded in West Macedonia (2.1%), while new jobs were also created in Attica (10.8 thousand). On the other hand, the biggest losses in jobs were reported in Crete (10%), where 26.7 thousand jobs were lost, the Ionian Islands (7.3%) and East Macedonia and Thrace (6.9%).

The biggest loss, on an annual basis for 2020Q3, is reported in *Agriculture, forestry and fishing* where 44.9 thousand jobs were lost, representing 10% of total industry employment. Part of the loss is probably due to the decline in tourist flows throughout 2020. In any case, this is the main driver of job losses in *Accommodation and food services activities* where 33.2 thousand jobs were lost or 7.7% of jobs in the industry. On the contrary, *Human health and social work activities* and *Wholesale and retail trade, repair of motor vehicles and motorcycles* contributed 29.6 thousand and 21.3 thousand jobs, respectively. Overall, the number of employed individuals decreased in 12 out of 21 industries.

The impact of the health crisis on the labour market and employment, specifically, does not involve only the number of the employed, but extends to hours of employment too. Absence from work, for example, decreased in the third quarter of 2020, indicating that normality may be slowly returning, although as a phenomenon, it is still more common compared to the third quarter of 2019 (8.6% vs. 6.9%). Work from home, a relatively new concept for Greece, also decreased (9.3%) compared to the second quarter of the year, but is still higher than the respective quarter in 2019 (5.1%). Both usual weekly hours of work and the share of those looking for a job, but are not available to start working immediately, suggest that the situation is returning to normal, since both figures converged to 2019Q3 (38.4 hours per week and 0.5%, respectively, in 2020Q3).

There are differences across industries with respect to the level of the indices, but the sign and size of the change are usually similar to those for the whole economy. However, there are exceptions. *Financial and insurance activities*, for example, exhibits the biggest share of people working from home (22.8%) and re-

ported a small increase in that share compared to the second quarter of 2020 when, economy-wide, the index marginally declined.

Despite uncertainty and adverse effects on employment, the labour cost index[3] increased in the first three quarters of 2020, irrespective of the type of index used. For instance, without any correction for other variables, the index shows an increase of 1.6% (0.5%), 5.3% (1.5%) and 2.4% (2.2%) in the first, second and third quarters of 2020 (2019), respectively, compared to the corresponding quarters in 2019 (2018). The interesting part is that the increase is faster than the previous year. Even if the index is adjusted for working days or seasonality, it still increases in most cases with a rate bigger than the previous year. Hence, it is difficult to doubt the increase in the labour cost. However, the index is still far lower than the 2008 level, reflecting large decreases in wages.

The analysis so far seems to suggest that the impact of the health crisis on the labour market is asymmetrical, affecting employed men slightly more and affecting youth aged 15-29, individuals with primary education at most and foreigners, especially men significantly more. On the other hand, Crete, the Ionian Islands, and East Macedonia and Thrace suffer more from the pandemic in terms of employment. This is possibly due to the uneven impact of the pandemic had on *Agriculture, forestry and fishing* and *Accommodation and food services activities.*

3.1.2. Unemployment

The Labour Force Survey data for the third quarter of 2020 show that the number of the unemployed decreased on an annual basis for both men (1.2%) and women (4%), but it increased for youth (4.5%). As a result, in 2020Q3, the unemployment rate for people aged 15-64 was 16.3%, i.e., lower than the second quarter of the year by 0.5 percentage points and lower than 2019Q3 by 0.3 percentage points. The unemployment rate for men stood at 13.2%, but approximately one in five women could not get a job (Table 3.1.1). Youth continued to face increased difficulties: one in three people aged 15-29 had trouble finding a job. Compared to the third quarter of 2019, the unemployment rate marginally increased for men (0.1 percentage points), decreased for women (0.5 percentage points) and increased for youth aged 15-29 (2.5 percentage points).

The unemployment rate is not the same across graduates from different levels of education. Specifically, individuals with more education face lower unemployment rates; upper secondary education graduates face the highest unemployment rate (17.8%). In the third quarter of 2020, the unemployment rate for Master and/or Ph.D. holders stood at 10.2%, and for university graduates it stood at 13.5% (Table 3.1.2). However, the employment prospects of the latter worsened faster than any other education group over the past year; the unemployment rate increased by 1.2 percentage points and the number of the unemployed increased by 14.3 thousand people, despite measures to support employment. On the other hand, those who have completed primary education at most exhibited a sizeable reduction of the unemployment rate (3.2 percentage points equal to 30 thousand fewer unemployed).

Employment prospects also depend on citizenship. In particular, the unemployment rate has increased for foreigners since 2019Q3, by 2.8 percentage points, to 24.8% in 2020Q3 (Table 3.1.2). On the contrary, the unemployment rate for natives decreased by 0.3 percentage points to 15.6%. The evolution of unemployment by gender is similar. However, foreign women face much worse employment prospects compared to native women, much worse than foreign men compared to native men.

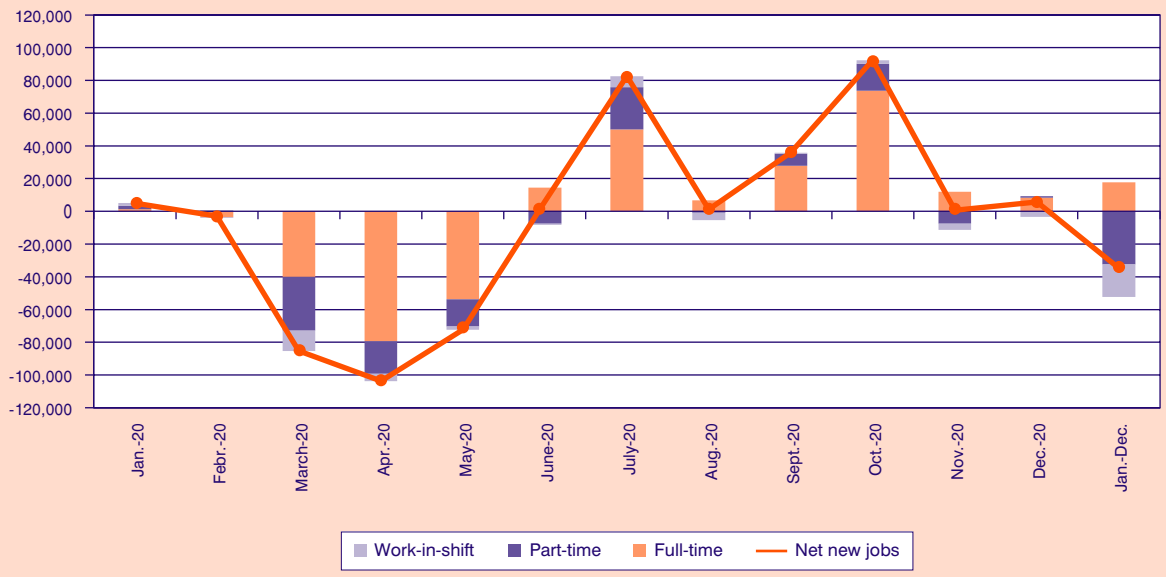
Last but not least, the unemployment rate differs across administrative regions. The unemployment rate decreased in five out of thirteen regions. Attica is included in these regions since it exhibited the third largest decrease, equal to 2.4 percentage points; the unemployment rate stood at 14.1%. On the other hand, Epirus exhibited the largest increase, by 3.9 percentage points, and became the region with the third biggest unemployment rate (20%) in 2020Q3, behind West Greece (22.2%) and West Macedonia (20.7%).

3.1.3. Paid employment

The data published in ERGANI's reports reveal that paid employment fared worse in 2020 than it did in 2019. Measures implemented to support employment against the impact of the health crisis kept the number of layoffs small, but they failed to boost employment. Therefore, throughout 2020, approximately 93,003 net jobs of paid employment were created, i.e., 36,641 fewer compared to 2019. Looking back in time, the perfor-

3. See ELSTAT's Press Releases titled *Labour Cost Index: C' quarter of 2020* published on December 11, 2020 and *Labour Cost Index: A' quarter of 2020* published on June 23, 2020.

GRAPH 3.1.1
Annual change in hires and new jobs of paid employment by month and type of contract (2019-2020)



Source: Labour Market Diagnosis Mechanism, NILHR <https://lmd.eiead.gr/Ροές-Μισθωτής-Απασχόλησης/>.

mance of the labour market in 2020 is the worst since 2013 as far as paid employment is concerned, when there was a negative balance of employment flows.[4]

It is interesting that the reduction in the number of employees was not the same across different types of job contracts, although the ranking did not change (Graph 3.1.1). In other words, the majority of new jobs in 2020 were, again, full-time jobs (78.3%), while part-time jobs followed (21.6%). However, the relative size changed significantly. There is an evident sharp drop in new work-in-shift jobs that reached 99.6%. New part-time jobs also decreased by 61.8%. On the other hand, new full-time jobs increased by 32%, reaching 72,853. Hence, it seems rather safe to note a relative strengthening of full-time employment versus flexible types of employment during the pandemic. However, this was caused by the collapse of flexible job hires due to the heavy blow suffered by industries which offer such jobs, like tourism.

These findings seem to be consistent with the data from the Labour Force Survey for the third quarter of 2020, which show a reduction in the number of the part-time employed by 11% on a yearly basis (although the data do not refer strictly to paid employment) and a reduction in the share of the part-time employed by one percentage point. The reduction in the number of part-time employed is the largest in the past few years and should probably be attributed to the decrease in the number of the employed in industries that prefer this type of job contract.

The evolution of paid employment was led by its components (Graph 3.1.2). In particular, there was a big gap in hires in 2020 compared to 2019, probably as a reaction to poor economic prospects and uncertainty regarding the demand for goods and services that prevailed in March, April and May. Moreover, there have been fewer hires since August. Throughout the year, the gap grew to 28%. Similarly, there were fewer layoffs, including quits and expirations of temporary job contracts, due to the measures implemented by the government to support employment. Although the gap is not as big as in hires, there were significantly fewer layoffs in April and May. On the contrary, the decrease in layoffs was bigger than the decrease in hires in September and October, while during the last two months of the year, the decrease in both hires and layoffs was similar to those in 2019.

To summarise, it could be argued that in the first wave of the coronavirus in the spring of 2020, the labour market exhibited a bigger gap in hires compared to

4. See Table II in ERGANI's Report of November 2020, titled *Paid Employment Flows in the Private Sector in a Coronavirus Environment*.

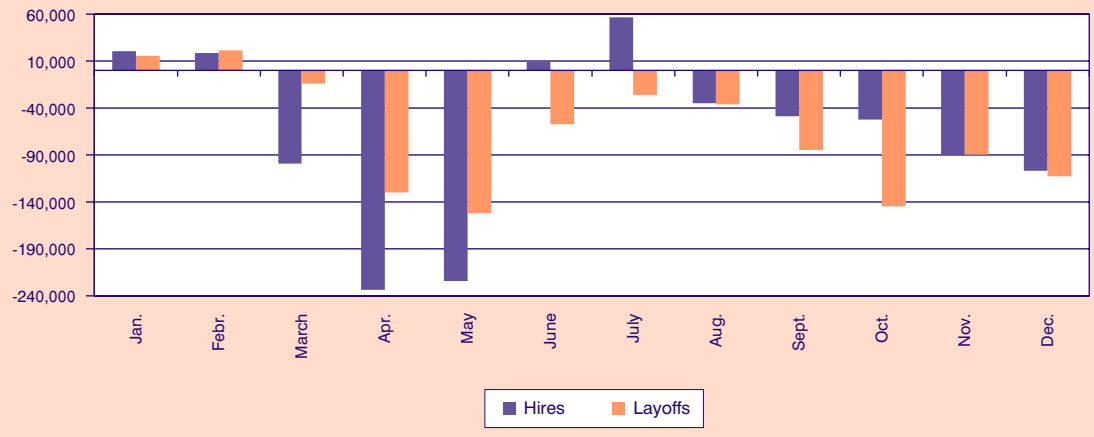
2019. On the other hand, in the second wave, the labour market exhibited a relatively bigger decrease in layoffs, although marginally bigger in November and December, perhaps due to seasonal hires being aborted or because the strengthening of measures in the fall to support employment naturally discouraged layoffs.

3.1.4. The impact of COVID-19 on employment income

The impact of the restrictions imposed to avoid the spread of the coronavirus is evident on employment income irrespective of the type of employment. Eurostat used simulations[5] to estimate the reduction in median employment income for all member states of the EU27 in the first six months of 2020, compared to the respective period in 2019.[6] There are three different causes for the reported reduction. The first is the loss of one's job due to layoff or failure to renew a temporary contract because of the decrease in economic activity. The second is a temporary loss of one's job, i.e., the suspension of a job contract. The third cause of employment income reduction is the decrease in working hours, which leads to lower overall pay from work. Given that the results involve estimates and rely on a relatively new methodology, it would be wise to interpret the findings with caution.

The reduction in the median employment income in Greece is estimated to be close to 7.7% on a yearly basis (2019-2020) until the second quarter of 2020, and it is the second biggest reduction among EU27 member states.[7] The estimated average reduction across the EU27 is 4.8%. The smallest reductions are reported in Hungary, Denmark and Latvia and range between 1% and 2%, while only Croatia has experienced a reduction in median employment income larger than Greece and slightly above 10%. The biggest part of the reduction in Greece and the EU27 is attributed to the absence from work due to the temporary suspension of a job contract, while unemployment has the weakest effect, probably due to the support measures for employment introduced and the extension of the unemployment benefit. In Croatia, the contribution of reduced working hours is unusually big and seems to be responsible for a great part of employment income reduction. At the European level, the industry *Accommodation and food service activities* seems to be most affected by the suspension of job contracts. Given how important

GRAPH 3.1.2
Annual change in hires and layoffs of paid employees in the private sector by month (2019-2020)



Source: ERGANI's December Report on paid employment flows in the private sector.

5. The estimation procedure is known as nowcasting and it involves using models to estimate the impact of specific changes in economic variables on other designated economic variables.

6. See <https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Impact_of_COVID-19_on_employment_income_-_advanced_estimates&stable=1#A_sharp_decrease_in_the_median_employment_income>.

7. The information is renewed regularly. The data were collected on January 5, 2020 and may change until the publication of the present analysis.

tourism is for Greece and the country's dependence on it, a similar result should be expected.

The loss of employment income is bigger for people who are employed under temporary job contracts, which are more frequently youth and women, probably because the industries that suffered more from restrictions use temporary contracts extensively. Therefore, while employment income loss among men is lower than 6%, it is more than 8% among women. This is not the case for many other European countries. For example, in Belgium, Croatia, France and other countries, the income loss is bigger among men. It is possible that these differences can be explained by the heterogeneous impact the restrictions due to the pandemic had on industries and the gender composition of their personnel. On the other hand, the case of youth (aged 15-24) is rather homogeneous across the EU; they face a much larger reduction in employment income due to job loss (i.e., unemployment) compared to more mature employed individuals (aged 25-64). It is worth noting that employment income losses due to layoffs are far smaller in Greece compared to other European countries; Greece ranks fourth behind Austria, Germany and the Netherlands (countries ranked from smaller to bigger losses). Given the support measures introduced, it is likely that the income losses amongst youth in Greece were caused primarily by the expiration of temporary job contracts that were not renewed or the postponement of seasonal job contracts due to the decrease in demand, e.g., for tourism services.

The income losses at national and European levels are estimated to be greater for those who find themselves at the bottom end of the employment income distribution, i.e., they receive lower wages. Hence, they could have been better protected by the adverse effects of the health crisis. The income loss for low-paid employed individuals is the second largest in Greece, marginally exceeding 12%, when at the European level, the respective reduction is lower than 8%. The other two groups, i.e., with medium and high employment income, face annual losses near 7%. At this point, Greece is different from other member states, which report unequal losses for each group. For example, in Italy (Spain), the loss of employment income for medium-income groups reached 7% (6%), while for high income groups, it is below 4% (2%). This means that a different policy mix could potentially better protect low income groups in Greece and across Europe. It is also likely that the heterogeneous impact across income groups is due to the industry of employment and the type of job contract signed, since the data suggest that the impact from losing one's job, thus the transition to unemployment, is much stronger among the low-employment income group. Typically, approximately 70% of those who lost their job in Greece belong to the low-employment income group.

The measures implemented to compensate for losses in employment income seem to have contributed to the relief of those hurt. The measures taken into consideration in this exercise include only income replenishment, not the rest, like the refundable deposit, rent reduction, etc. Therefore, it would be safe to assume that the estimated results represent a minimum effect. At the European level, the interventions managed to contain the loss in employment income due to COVID-19 by half; from around 4% to approximately 2%. In Greece the income loss nearly halved from 7% to a little more than 4% due to the employment support measures. However, contrary to the overall loss discussed earlier, support measures seem to have benefited more the low-income group of employed (the income loss was cut by more than 8%) and less the high-income group of employed (the income loss was cut by almost 1%), exhibiting an inversely proportional effect with respect to the size of the employment income.

As the economy is expected to return to its normal level of activity over the next few months, following the vaccine, the mass inoculations and the decrease in uncertainty about public health, the next big wager for the labour market is to smoothly and gradually revoke the support measures for businesses and employment. The whole process should take place at the right pace and follow the bouncing back of the economic activity. This is the only way to avoid the shutting down of firms and the increase in unemployment this would cause, if support measures were revoked sooner than necessary.

KEPE, *Greek Economic Outlook,* issue 44, 2021, pp. 50-53

3.2. How the inequality of earnings changed after the introduction of the new minimum wage in Greece

Vlassis Missos

3.2.1. Introduction

Based on original micro-data statistical processing of the 2018 and 2019 Surveys on Income and Living Conditions (SILC) for Greece,[1] the article presents some key findings on labor earnings inequality. Its primary purpose is to report on the changes in the level of earnings inequality that followed the introduction of a new statutory minimum wage back in February 2019. Furthermore, it seeks to investigate the extent to which the income distribution of labor earnings and the rate of poverty of employees changed.

The annual sample surveys of SILC are conducted under the supervision of the Hellenic Statistical Authority (ELSTAT). The wide range of variables included in the surveys is related to household income as well as to the impact of the social protection system on poverty and inequality. In general, the main part of the SILC sample surveys is associated with the level of income that was earned during the previous year. For example, the survey of 2019 refers to the household income of 2018. However, some of its variables refer to the current income earned by the employees, such as the variable "gross monthly earnings for employees", which refers to the pre-tax income from working received by the respondents during the same month the interview was conducted. This exception provides the opportunity to compare between the two sample observations of individual monthly earnings from work between 2018 and 2019, i.e., before and after the new minimum wage was legislated in Greece.[2]

Yet, it should be noted that in what follows, no measurement or estimation of the magnitude or the effect of the minimum wage on inequality is provided. This would require the inclusion of additional variables, such as the level of employment and/or GDP, and would require conducting a different type of methodology. The 11% increase in the minimum wage, which took place in February 2019, is only taken as a time reference which, however, according to the findings of the SILC surveys, does not seem to have contributed towards increasing the level of inequality among employees. The main aim of the present article is to obtain additional information regarding the degree of earnings inequality as it appears before and after the introduction of the new minimum wage.

3.2.2. Results

The ratio p90/p10 is the ratio of the upper bound value of the ninth decile (i.e., the 10% of employees with highest income) to that of the first. In other words, this simple descriptive measure of inequality examines the distance between the income associated with each of these extreme income-groups. In the same manner, p90/p50 is the ratio of the median income to the upper bound value of the first decile and p75/p25 is defined as the ratio comparing the upper bound values from respective points of the distribution.

As shown in Table 3.1.1, between 2018 and 2019, the p90/p10 ratio reduced by 4.2%, while the p90/p50 remained stable. The distance between the remote val-

TABLE 3.2.1 Inequality indicators of employees, 2018 and 2019, Greece

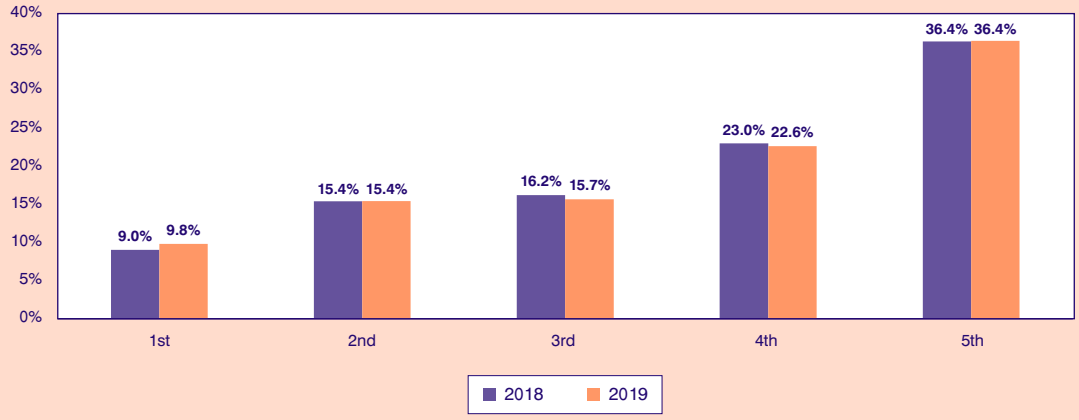
	2018	2019	% change
p90/p10	3.40	3.26	-4.2%
p90/p50	1.8	1.8	0.0%
p75/p25	1.849	1.79	-3.2%
Gini	27.71	27.25	-1.6%
Std. Dev.	694.03	676.38	-2.5%

Source: SILC, ELSTAT.

1. See Missos V. (2019), "Income inequality indices in the European Union (EU15)", *Greek Economic Outlook*, issue 39, part A, pp. 38-41.

2. According to the micro-data 2019 Survey on Living Conditions Income, household interviews were conducted in May and June, i.e., at least three months after the minimum wage was revised. Therefore, the data is assumed to embody the effects of the new minimum wage.

FIGURE 3.2.1
Percentage shares of income by quintile, 2018 and 2019, Greece



Source: SILC, ELSTAT.

ues is estimated to have decreased after the increase of the minimum wage, while the February 2019 revision does not seem to be associated with any significant change in the relative position between the maximum value and that which is calculated from the upper bound value of the fifth decile. On the other hand, the difference between the 75th and 25th percentile (p75/p25) appears to have reduced by 3.2%.

The value of the broadly used *Gini* inequality index is estimated to have fallen by 1.6%. At the same time, the standard deviation (Std. Dev.) shows that in 2019, the sum of the distances of the values from each point of the income distribution to the respective average were less than those estimated in 2018 –that is, before the revision of the minimum wage takes place.

In addition, Figure 3.2.1 depicts the percentage share of the wage income earners, by dividing the population into five groups. As it is obvious, the first quintile –i.e., the first 20% of employees– is estimated to have increased its share by 0.8 percentage points. This change is distributed between the third and the fourth income quintiles, which suggests that the new minimum wage might have had a relatively beneficial effect on the low-wage income points of the distribution. Furthermore, the data show that between 2018 and 2019, the average wage of the first quintile increased by 5.4%, while in the other parts of the distribution, the respective percentage changes were very small.

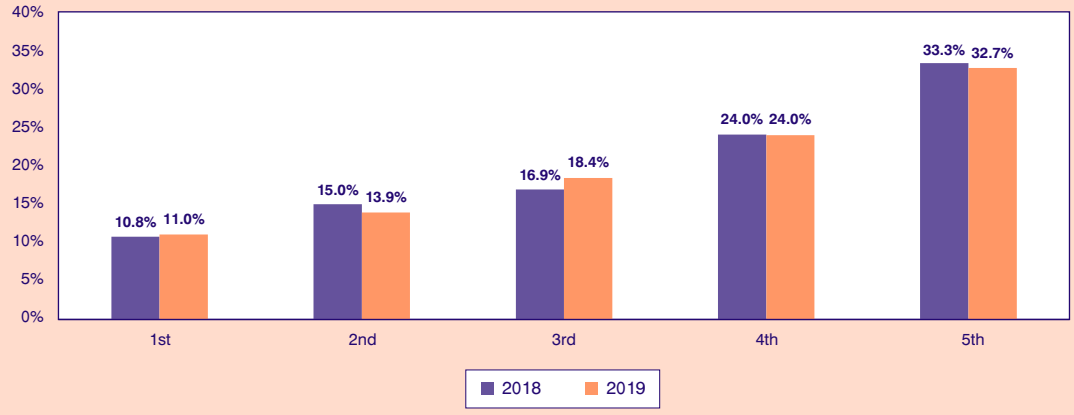
At this point, it should be noted that the above analysis concerns the total number of employees included in the SILC surveys of 2018 and 2019. Therefore, the descriptive analysis of the effect on inequality from the increase of the minimum wage in February 2019 urges us to separate this sample between full-time and part-time workers. Regarding full-time employees, the data in Table 3.2.2 draws a relatively similar picture with that of Table 3.2.1. More specifically, after the minimum wage increase, the p90/p10 ratio decreased by 3.6%, the p90/p50 decreased by 0.9% and the p75/p25 remained stable. Moreover, the data suggest that the distance between the extreme deciles has narrowed, albeit less than in the former case of the total number of employees. In addition, the *Gini* index has also decreased by 1.2% and the overall distances of the values from the average, as expressed by the standard deviation, have also reduced by 2.6%. Consequently, the increase in the minimum wage for

TABLE 3.2.2 Inequality indicators of full-time employees, 2018 and 2019, Greece

	2018	2019	% change
p90/p10	2.87	2.77	-3.6%
p90/p50	1.74	1.72	-0.9%
p75/p25	1.75	1.75	0.0%
Gini	25.17	24.87	-1.2%
Std. Dev.	691.00	673.31	-2.6%

Source: SILC, ELSTAT.

FIGURE 3.2.2
Percentage shares of income of full-time employees, by quintile, 2018 and 2019, Greece



Source: SILC, ELSTAT.

full-time workers seems to have had an effect in such a way that the inequality between them is significantly reduced at the edges and slightly reduced between the upper edge and the points in the middle of the distribution.

Figure 3.2.2 shows the percentage shares of income of full-time employees, having divided their population into quintiles. Between 2018 and 2019, the employees of the lowest quintile marginally improved their relative position –from 10.8% to 11% of total income. In addition, the relative position of the employees of the second quintile decreased by 1.1 percentage points, while the increase of the employees of the third quintile is more noticeable, as it increased by 1.5 percentage points. On the other hand, the relative position of the employees belonging to the fourth quintile remained stable and that of the fifth decreased slightly – from 33.3% to 32.7%. Apart from the nominal increase in the average earnings of the first quintile by 2.5% and the decrease in the second quintile by 1.7% recorded in the surveys, the remaining quintiles marginally reduced.

As far as part-time employees are concerned, the results are quite different. For a more complete understanding of the results, it should be emphasized that this group of employees constitutes a relatively small fraction of the total sample of SILC employees. It is worth noting that according to the Labor Force Survey of 2019, the population of part-time employees in Greece amounted to 9.2% of the total number of employees. Consequently, the effect of their wage differentiation on the total number of employees is taken to be limited.

Table 3.2.3 shows the inequality indices for part-time employees for 2018 and 2019. As it is obvious, the annual change in the distance between the extreme deciles, captured by the p90/p10 index, is particularly important, as it is reduced by 8.8%. The corresponding distances between the other points of the distribution, reflected in the values of p90/p50 and p75/p25, are minor. The *Gini* index is also estimated to have reduced by 3%, while the standard deviation increased. The latter indicates an increase between the distances of the observed wages of the part-time employees and the average.

Finally, Table 3.2.4 shows the poverty rate of the above categories of employees for 2018 and 2019.

TABLE 3.2.3 Inequality indicators of part-time employees, 2018 and 2019, Greece

	2018	2019	% change
p90/p10	2.76	2.52	-8.8%
p90/p50	1.53	1.52	-0.7%
p75/p25	1.60	1.60	0.0%
Gini	21.42	20.79	-3.0%
Std. Dev.	185.12	194.65	5.1%

Source: SILC, ELSTAT.

TABLE 3.2.4 Employee poverty rate, 2018 and 2019, Greece

	2018	2019
Poverty rate	8.92%	8.58%
Poverty rate of full-time workers	7.20%	7.07%
Poverty rate of part-time workers	25.27%	23.95%

Source: SILC, ELSTAT.

In essence, this measure reflects the percentage of employees living in households which –according to the official income criteria of Eurostat– are considered poor. In other words, the percentage does not refer to the individual income of the employees from paid work, but characterizes the overall disposable income of the household to which they belong. Thus, in the years under consideration, in relation to the total number of employees, the poverty rate has decreased from 8.92% to 8.58%. Respectively, the poverty rates in all categories of employees are reduced.

3.2.3. Conclusion

This article presents some key findings from the analysis of the micro-data of the Surveys of Income and Living Conditions (SILC) 2018 and 2019 for Greece. To conclude, the introduction of the new minimum wage in February 2019 seems to have acted in a way that allowed earnings inequality –whether of full-time or part-time employees– to be reduced. The final outcome is primarily affected by the reduction of the differences between the extreme values and, to a lesser degree, by the change in values which are recorded closer to the central points of the distribution. Of particular interest is the mitigation of income of the extreme deciles of part-time employees. Finally, the relative poverty rate of employees has decreased, although the change was marginal.

4. Reforms-Economic development

KEPE, *Greek Economic Outlook,* issue 44, 2021, pp. 54-60

4.1. The effects of the pandemic on the liquid transportation fuels market in 2020 and its prospects

Vassilis Lychnaras

4.1.1. Introduction

Many significant developments occurred during 2020, dramatically affecting the economy and the markets. The conditions under the health crisis, as well as other market parameters, had a strong impact on the oil market as well. The adoption of restrictive measures to deal with the surges of the pandemic directly affected the retail markets, labour market, tourism, etc. As a result, the transportation people and goods were limited, and the discretionary income of citizens decreased. Because of this, the transportation fuels market has come under considerable pressure. At the same time, because of the small size of the Greek market and the dependency of the country on oil imports, Greece acts as a price recipient and, therefore, any international market developments, in terms of prices and/or policies, have a direct impact on the domestic fuel market, affecting sale prices and demand. Finally, we should not ignore the fact that the new conditions under the pandemic crisis, as well as the recent adoption of ambitious new environmental objectives at national and European levels, seem to create new consumer standards that also affect the market of conventional fuels. Taking into account the above, this article aims at recording and analysing the recent developments of the transport fuels market in 2020, reporting the effects of the pandemic and presenting the market prospects for 2021.

4.1.2. Special characteristics of the market in 2020

The crisis of the pandemic in 2020 had significant impacts on the whole economy, but also on individual markets. In March, restrictive measures were taken to tackle the first surge of the pandemic. One of the most important measures was the restriction of transportation that was implemented from the end of March until the beginning of May. After the expiry of these, the economy gradually started opening up from May. However, teleworking stayed active for the public sector until the end of the month, and afterwards, for many cases in the private sector as well. Additionally, the summer tourist traffic was significantly limited compared to other years. In November, the implementation of new measures to tackle the second surge of the pandemic began. More specifically, on November 3rd, the government decided to shut down restaurants and retail stores and, on November 7th, to restrict citizens' movement. However, before that, since the end of September, primary measures, such as the implementation of 40% telework in the public sector, were adopted to tackle the spread of the virus.

Measures related to the limitation of movement, such as the implementation of teleworking and the closure of schools, retail stores, coffee shops and restaurants, have led to the reduction of the transportation of citizens. At the same time, we should not overlook the significant reduction of tourism and travelling. Finally, the negative effect of the pandemic on the economy caused a reduction in the discretionary income of citizens, thus restricting demand. As expected, the above parameters also had a major impact on fuel demand. In particular, the effects on the fuels market were not limited to the two periods of severe measures, but are also obvious throughout the whole year. However, we should note that the closure of shops has not only constrained citizens' movements, but has also resulted in the increase of e-commerce and the use of courier services. This had a positive effect on fuel demand, and especially automotive diesel, as analysed in the following sections.

At the same time, another key parameter of 2020 was the significant fall in the international oil price, especially during the first months of the year. This had a great impact on domestic fuel prices. More specifically, the price dispute between Saudi Arabia and Russia, in combination with the effects from the pandemic, led to a downward trend in the international price of Brent oil, starting from January 2020 and escalating during

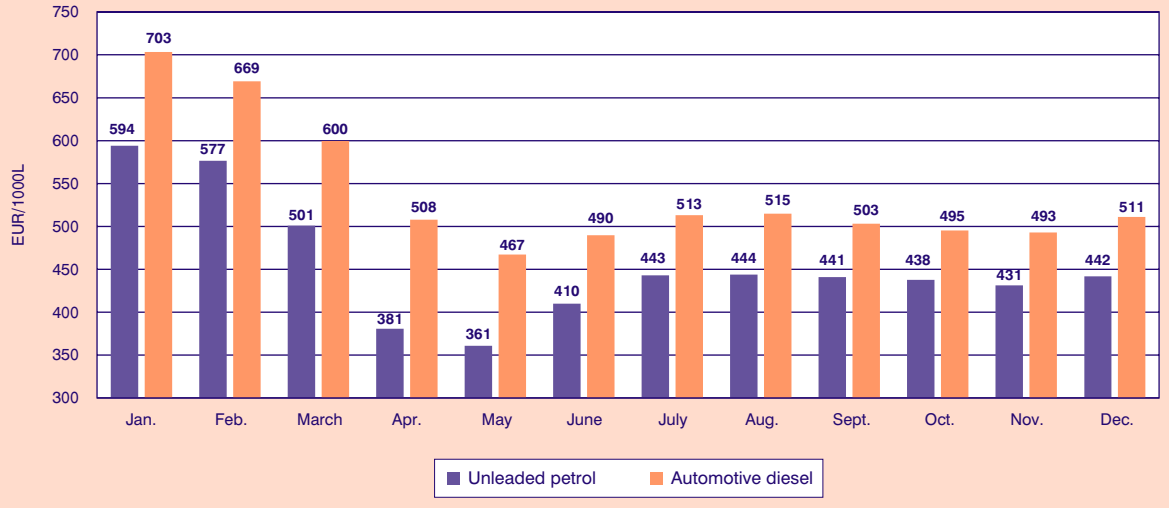
March and April. Thus, while the average price of Brent oil was above $65/barrel at the beginning of the year, by the end of April, it was just above $20/barrel. In May, with the beginning of the opening of the markets, the average price of Brent oil began to recover and, during the period June-August 2020, ranged to about $40/barrel. By the end of August, the price reached $45/barrel. However, between September and October, the fear of another surge of the pandemic led again to a downward trend, and eventually, at the end of October, the price was below $38/barrel. Nevertheless, since the beginning of November, the international price of Brent oil started again to recover. It is possible that factors such as the expectation for the COVID-19 vaccine and the state's economic aid policies contributed to this outcome. As a result, at the end of the year, the average price exceeded $50/barrel. At the same time, the agreement between OPEC members and Russia to control supply has contributed to the restraint of the prices.

4.1.3. Development of transportation fuel prices in 2020

A key characteristic of the transportation fuels market in our country is the high tax share on the final prices. The main taxes implemented on fuels are excise duty and VAT. More specifically, the excise duty for unleaded petrol is **700 Euro/1,000 litres** and for automotive diesel is EUR **410 Euro/1,000 litres**, while the VAT rate is 24%. This section records the monthly evolution of the price of the above two fuel types and analyses the effect of taxation on the final price.

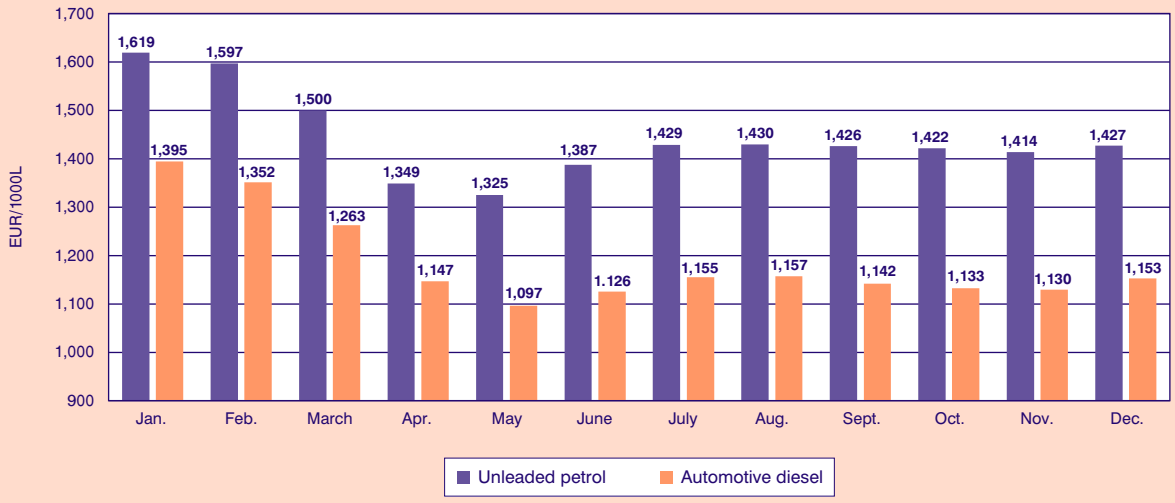
As expected, the changes in international oil price had a direct impact on the domestic prices of transportation fuels. Figures 4.1.1 and 4.1.2 record the average monthly prices of unleaded petrol and automotive diesel before and after taxes, respectively. The prices before taxes reduced significantly in the first five months of 2020, following the downward trend of international prices. More specifically, the price of unleaded petrol decreased by 39% over this period, and the price of automotive diesel decreased by 34%. Afterwards, during June and July, the prices of fuels increased and remained almost stable until the end of the year. Regarding the prices after taxes, the trend was similar, whereas the fall during the beginning of the year was milder. More specifically, the final price of unleaded petrol decreased by 18% over this period, and the price of automotive diesel decreased by 21%. The difference in the percentage changes of the prices before and after taxes is mainly due to the fact that the excise duty is a fixed tax; therefore, as the price before taxes decreases, the value of the excise duty remains stable, and its share in the final price increases. Additionally, the implementation of the VAT escalates the effect of the excise duty. For 2020, the average annual price before taxes of unleaded petrol was **455 Euro/1,000 litres** and the average

FIGURE 4.1.1
Monthly average price *before taxes* of unleaded petrol and automotive diesel in 2020



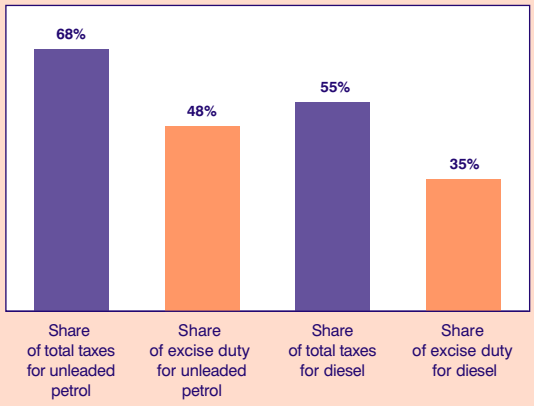
Source: Own processing of data from the European Commission, Energy, Market Observatory & Statistics, Oil bulletin <http://ec.europa.eu/energy/observatory/oil/bulletin_en.htm>.

FIGURE 4.1.2
Monthly average price *after taxes* of unleaded petrol and automotive diesel in 2020



Source: Own processing of data from the European Commission, Energy, Market Observatory & Statistics, Oil bulletin <http://ec.europa.eu/energy/observatory/oil/bulletin_en.htm>.

FIGURE 4.1.3
Share of taxes in the average final prices of unleaded petrol and automotive diesel in 2020



Source: Own processing of data from the European Commission, Energy, Market Observatory & Statistics, Oil bulletin <http://ec.europa.eu/energy/observatory/oil/bulletin_en.htm>.

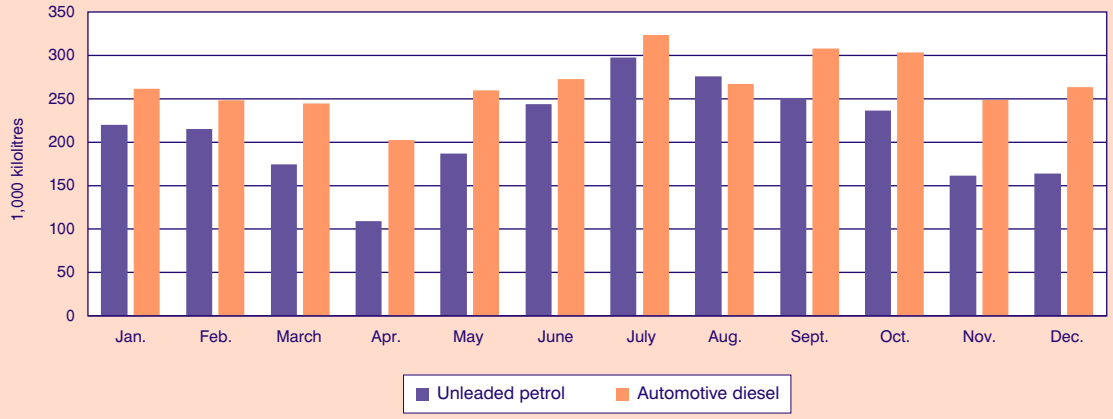
final price was **1,444 Euro/1,000 litres**. Respectively, the annual average price before taxes of automotive diesel was **539 Euro/1,000 litres** and the average final price was **1,187 Euro/1,000 litres**.

The above figures show the difference between the prices before and after taxes, due to the high rate of fuel taxation. This difference is higher in the case of unleaded petrol, compared to automotive diesel, because of the higher excise duty. Additionally, VAT, as a percentage tax that is implemented after the excise duty, increases the total effect of taxation on the final price. Another result of the difference between the excise duty rates of the two types of fuels is that even if the price of unleaded petrol before taxes is lower than that of automotive diesel, this relationship is reversed in terms of final prices. On this basis, Figure 4.1.3 presents, on an annual basis, the share of excise duty and the share of total taxes in the average final prices of the two types of liquid transportation fuels. As seen, in 2020, the taxation of unleaded petrol reached almost 70% of the final price, while the respective figure for automotive diesel was 55%. We should note that these figures increased in 2020 because of the decrease of the prices before taxes.

4.1.4. Development of transportation fuel consumption in 2020

This section presents the development of the consumption of unleaded petrol and automotive diesel on a monthly basis. The analysis is based on the only available data, provided by the Independent Authority for Public Revenue (IAPR) and the General Accounting Office of the Ministry of Finance. More specifically, the data used are related to the monthly quantities of liquid fuels that have been processed via the customs clearance procedure. Therefore, in some cases, there

FIGURE 4.1.4
Monthly consumption of transportation fuels in 2020



Source: Own processing of data from the Independent Authority for Public Revenue (IAPR) and the General Accounting Office of the Ministry of Finance.

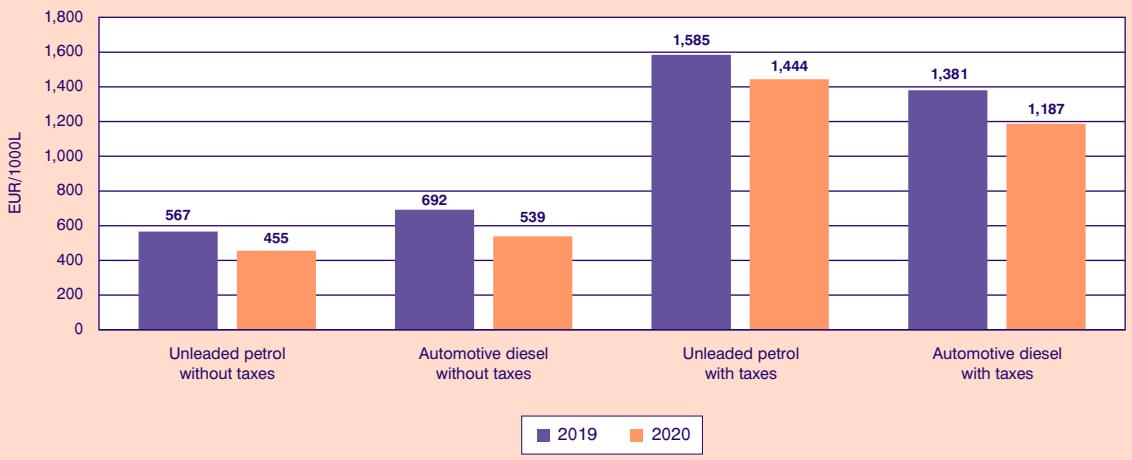
might be a short lag (of 15 days maximum) between these data and the final sales of the fuels to customers. Figure 4.1.4 presents the monthly consumption of the two types of fuels in comparison. We notice that the consumption of automotive diesel is a little bit higher than that of unleaded petrol. However, a few years ago, in Greece, the consumption of unleaded petrol was much higher than the consumption of automotive diesel.

As recorded in this figure, the consumption of transportation fuels decreased during the periods when restrictive measures were implemented to tackle the pandemic surges. In particular, during the first surge of the pandemic, the fall of fuel consumption was much stronger. In fact, during April, the minimum monthly consumption of 2020 was recorded. However, the fall in consumption of unleaded petrol, during this period, was greater than that of diesel. Because of the fact that during the implementation of the restrictive measures, e-commerce and courier services have strengthened, the decrease of the consumption of automotive diesel was not so intense. On the other hand, it appears that the significant fall of the prices in the first months of the year was not enough to boost demand, whereas the restrictive measures had a much stronger effect. However, it would be interesting to note that in April and May, the fall of the sale prices led to a significant increase in heating oil demand. This had a positive contribution to the Greek fuel market. Regarding the implementation of the restrictive measures to tackle the second surge of the pandemic, starting from November, they also had significant negative effects on fuel consumption, especially unleaded petrol. However, the transportation of citizens during this second period was not limited to the same extent as the first period, and, for this reason, the impact on consumption was not so intense.

4.1.5. Comparing 2019 and 2020

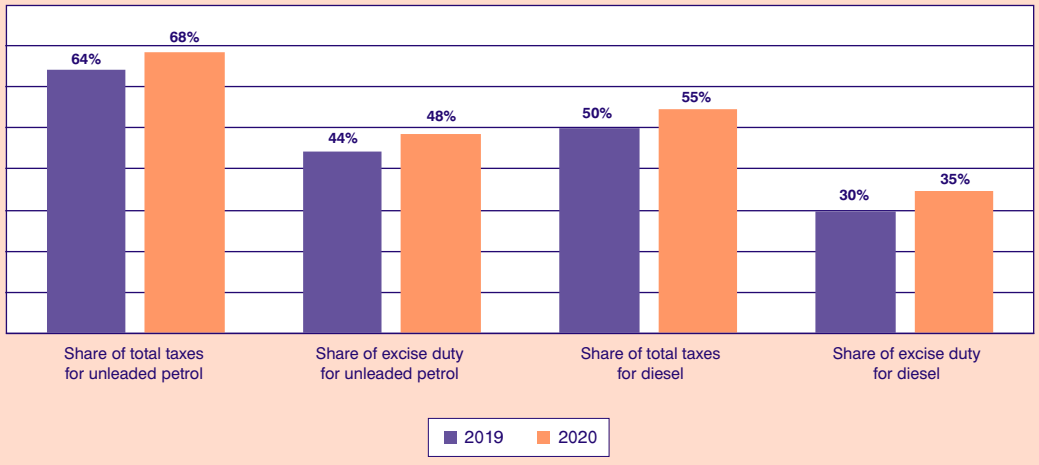
Because of the special conditions of 2020, it is interesting to compare the developments of transportation fuel, in terms of prices and consumption, in 2020 and 2019. As already mentioned, the notable decrease of the international oil price at the beginning of the year has led to a fall of the domestic transport fuel prices. As shown in Figure 4.1.5, the average annual price before taxes of unleaded petrol in 2020 decreased by 20% compared to the price of 2019. Respectively, the price before taxes of automotive diesel decreased by 22%. Regarding the final prices after taxes, the change was lower, because of the effect of the fixed taxes. More specifically, the average final price of unleaded petrol in 2020 decreased by 9% compared to the average price of 2019, and the final price of automotive diesel decreased by 14%. The lower fall of the final price of automotive diesel, compared to the price of unleaded petrol is due to the lower rate of the excise duty. Additionally, because of this price fall, the share of taxes in the final price increased, as shown in Figure 4.1.6. The total share of taxation in the final price of unleaded petrol increased from 64% in 2019 to 68% in 2020, and in the final price of automotive diesel from 44% to 48%. With regard to the excise duty, its share increased from 50% to 55% in the final price of unleaded petrol and from 30% to 35% in the final price of automotive diesel.

FIGURE 4.1.5
Annual average price, before and after taxes, for unleaded petrol and automotive diesel in 2019 and 2020



Source: Own processing of data from the European Commission, Energy, Market Observatory & Statistics, Oil bulletin <http://ec.europa.eu/energy/observatory/oil/bulletin_en.htm>.

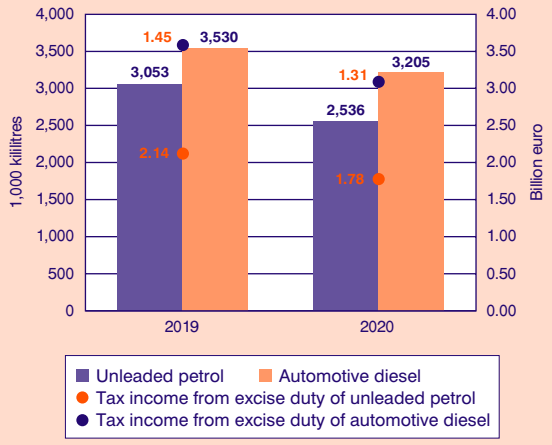
FIGURE 4.1.6
Percentage share of taxes in the average annual final price of unleaded petrol and automotive diesel for 2019 and 2020



Source: Own processing of data from the European Commission, Energy, Market Observatory & Statistics; Oil bulletin <http://ec.europa.eu/energy/observatory/oil/bulletin_en.htm>.

As mentioned, the implementation of the restrictive measures during 2020 had an impact on the consumption of transportation fuels. More specifically, the total annual consumption of unleaded petrol decreased by 16.9%, from 3,053 thousand kilolitres in 2019 to 2,536 thousand kilolitres in 2020. Similarly, the total annual consumption of automotive diesel decreased by 9.2%, from 3,530 thousand kilolitres in 2019 to 3,205 thousand kilolitres in 2020. As expected, the state revenues from excise duty were also reduced respectively. In particular, the revenues for the excise duty of unleaded petrol decreased by 362 million euro, from 2,14 billion euro in 2019 to 1.78 billion euro in 2020. Additionally, the revenues from excise duty of automotive diesel decreased by 133 million

FIGURE 4.1.7
Annual consumption of liquid transportation fuels and revenues from excise duties, comparison between 2019 and 2020



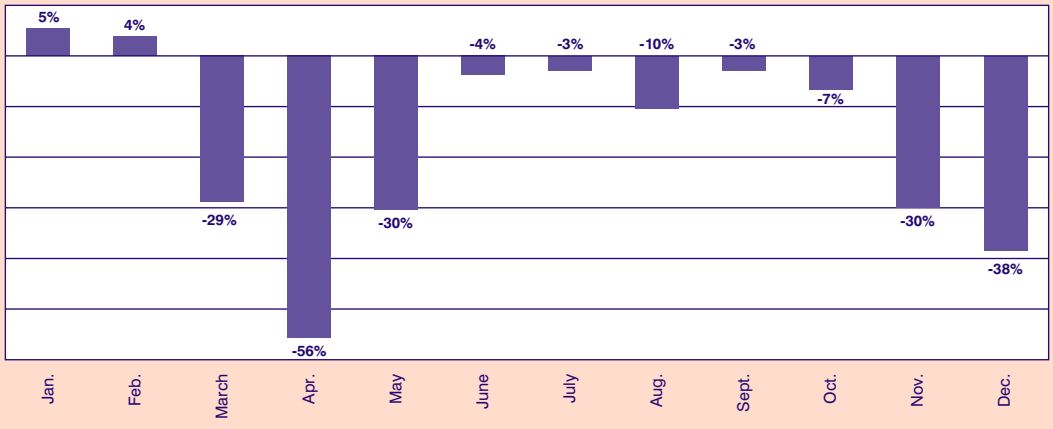
Source: Own processing of data from the Independent Authority for Public Revenue (IAPR) and the General Accounting Office of the Ministry of Finance.

euro, from 1,45 billion euro in 2019 to 1.31 billion euro in 2020. Therefore, an overall decrease of 495 million euro in state tax revenues was recorded for excise duty alone. Figure 4.1.7 presents the above figures.

However, it is more interesting to compare the difference in consumption in 2020 and 2019 on a monthly basis, in order to track down the impact of the restrictive measures. Figures 4.1.8 and 4.1.9 present the percentage change in monthly consumption for unleaded petrol and automotive diesel, respectively. Regarding unleaded petrol, only in the first two months of 2020 was there a slight increase of consumption compared to the corresponding months of 2019. Throughout the rest of the year, consumption was lower. During the two periods where severe restrictions for transportation were active, a notable decrease of consumption took place. Thus, during the first period, i.e., between March and May 2020, there is an important fall in consumption, especially in April when the maximum decrease of 56% was recorded. Also, during the second period of November-December, a significant decrease in the consumption of unleaded petrol was indicated.

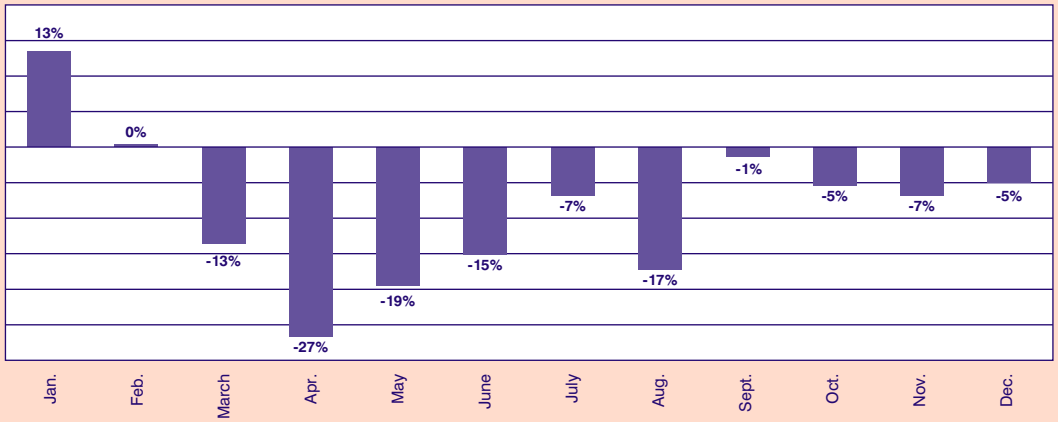
Similarly, regarding automotive diesel, monthly consumption increased by 13% in January 2020, compared to the corresponding month of 2019, and remained stable in February. Throughout the remaining months, consumption was lower compared to 2019. However, this decrease is lower than that of unleaded petrol, as analysed above. During the first surge of the pandemic, the implemented restrictive measures led to an significant decrease of the consumption of automotive diesel. Again, the maximum decrease of 27% was recorded in April. However, the implementation of the restrictive measures during the second surge had a much lower effect on the consumption of automotive diesel. Additionally, the significant decrease in consumption recorded in September, when no severe restrictive measures were active, is a matter of great interest. Probably, this was caused due to the uncertainty over the estimate of the second outbreak of the pandemic.

FIGURE 4.1.8
Percentage change of the monthly consumption of unleaded petrol between 2019-2020



Source: Own processing of data from the Independent Authority for Public Revenue (IAPR) and the General Accounting Office of the Ministry of Finance.

FIGURE 4.1.9
Percentage change of the monthly consumption of automotive diesel between 2019-2020



Source: Own processing of data from the Independent Authority for Public Revenue (IAPR) and the General Accounting Office of the Ministry of Finance.

4.1.6. Summary, conclusions and forecasts for 2021

As analysed, the specific conditions of 2020 had a significant impact on the transportation fuels market in our country. The restrictive measures that were implemented to tackle the pandemic surges led to the reduction of the consumption of unleaded petrol and automotive diesel. This impact was more intense during the first pandemic surge from March to May. The fall of fuel prices in the beginning of the year was not enough to invert this trend in consumption. Additionally, the health crisis had a much stronger effect on unleaded petrol compared to automotive diesel. However, during the second pandemic surge in November and December, the effects on fuel consumption were milder, especially for automotive diesel. Nevertheless, this analysis covers the period until the end of 2020. The health crisis continues and the effect on the markets and the economy seems to last. According to primary signs of 2021, the consumption of transportation fuels is reduced in January and this trend is expected to last, at least for the first quarter of the year. Finally, it should be noted that since the beginning of 2021, a Green Fee of **30 Euro/1,000 litres** has been implemented on the price of automotive diesel. According to the average automotive diesel price of December 2020, this charge is expected to increase the final price by 2.6%. Since, today, the fuel price ranges at a relatively low level, this additional charge might not have a significant impact on demand at this time.

Regarding the international price of Brent oil, it appears to have recovered to some extent, as prices have been moving upwards since the end of 2020. The forthcoming control of the pandemic and the opening of the economy will contribute to the increase of the international demand for oil. At the same time, the agreement between OPEC members and Russia to control supply, and, hence, the prices, remains active. According to the forecasts of international market agents, the international Brent oil price will start to rise during the second semester of 2021. Nevertheless, apart from the direct effects of the pandemic and the restrictive measures, the long-term impacts will be much more important. It is believed that the forthcoming growth after the health crisis will be towards a new, different economy. Specific parameters such as the expansion of teleworking, the limitation of transportation, the achievement of green objectives, the decarbonisation of the economy, the electrification of transportation and the strengthening of the electric vehicle market will contribute to the reduction of demand for conventional fuels.

KEPE, *Greek Economic Outlook,* issue 44, 2021, pp. 61-64

4.2. The digital competitiveness of the Greek Economy

Athanasios Chymis

4.2.1. Introduction

The year 2020 was particularly difficult because of the COVID-19 pandemic, which has brought many economies to their knees. For many countries, 2020 marked the worst recession since World War II. Of course, the impacts of COVID-19 go well beyond the economic sphere and affect all aspects of life, particularly socially and psychologically. One of the key issues raised by the pandemic is that of digital reform as a means of addressing the new reality of lockdowns and social distancing. Digital reform was already a major priority for many governments in the pre-COVID-19 era (IMD, 2020). The pandemic, however, gave a new impetus and put digital reform at the top of the reform agenda of almost all countries (European Commission, 2020).

There are several indicators that evaluate the digital competitiveness of countries. Two of them, compiled and published by internationally recognized organizations, are considered the most relevant and are unanimously accepted for country comparisons. One is the World Digital Competitiveness Index published by International Management Development (IMD) and the other is the Digital Economy and Society Index (DESI) compiled by the European Commission.

4.2.2. The IMD World Digital Competitiveness Index

International Management Development is mostly known for the annual competitiveness yearbook. However, for the last four years, IMD has been publishing the world digital competitiveness index. This is because digital transformation has been recognized as a significant tool for businesses as well as states to adapt to the new era of the fourth industrial revolution. The index measures 63 countries and captures their capabilities and degree of preparedness to adopt digital technologies, which can help countries in their economic and social transformation. The index is composed of three factors: a) Knowledge, which captures the intangible infrastructure necessary for technology exploration and innovation, b) Technology, which measures the development of digital technologies and c) Future readiness, which estimates the level of preparedness of an economy to take up its digital transformation (IMD, 2020).

Each of the three factors is composed of three subfactors. This makes nine subfactors in total, which, in turn, are calculated based on 52 criteria. Not every subfactor is composed of the same number of criteria. However, all nine have the same weight in calculating the final index. Two-thirds of the 52 criteria are based on hard data (e.g., internet bandwidth speed), whereas the remaining one-third is based on questionnaire responses administered to executives (e.g., agility of companies). The Federation of Industries of Greece (SBE) and the Foundation for Economic and Industrial Research (IOBE) are responsible for the distribution of questionnaires and the collection of responses in Greece. It should be noted that questionnaires were distributed during the first wave of the pandemic in 2020. Moreover, data used for the construction of the index refer to 2019. Even though the questionnaire and hard data do not capture the COVID-19 period, the index is particularly interesting due to the importance of the digital transformation in making economies and societies resilient in the post-COVID-19 era.

The first factor of the index, Knowledge, is composed of three subfactors: a) Talent, b) Training and education and c) Scientific concentration. The criteria used to calculate Talent include educational assessment PISA-math, international experience, foreign highly skilled personnel, management of cities, digital/technological skills, and net flow of international students. Training and education are calculated based on the following criteria: Employee training, total public expenditure on education, higher education achievement, pupil-teacher ratio (tertiary education), graduates in sciences, and women with degrees. Scientific concentration is measured by the following criteria: total expenditure on R&D, total R&D personnel per capita, female researchers, R&D productivity by publication, scientific and technological employment, high-tech patent grants, robots in education and R&D.

The second factor of the index, Technology, is broken down into the following subfactors: a) Regulatory framework, b) Capital and c) Technological framework. The criteria that compose Regulatory framework are starting a business, enforcing contracts, immigration laws, the development and application of technology, scientific research legislation, and intellectual proper-

ty rights. Capital is calculated based on such criteria as IT and media stock market capitalization, funding for technological development, banking and financial services, country credit rating, venture capital, and investment in telecommunications. Technological framework includes the following criteria: communications technology mobile broadband subscribers, wireless broadband, internet users, internet bandwidth speed, and high-tech exports.

The third factor of the index, Future readiness, includes the following subfactors: Adaptive attitudes, Business agility and IT integration. The criteria that measure Adaptive attitudes are e-participation internet retailing, tablet possession, smartphone possession, and attitudes toward globalization. Business agility is captured by opportunities and threats, world robot distribution, agility of companies, use of big data and analytics, knowledge transfer, and entrepreneurial fear of failure. Finally, IT integration is measured by the following criteria: e-government, public-private partnerships, cyber security, and software piracy.

Table 4.2.1 presents the evolution of Greece's ranking in the 9 sub-factors according to the IMD Digital Competitiveness Index. As the report emphasizes, Greece showed a significant improvement in the 2020 ranking, rising 7 places. However, it lags behind most EU economies, being only ahead of Hungary (47th), Romania (49th), Slovakia (50th) and Croatia (52nd). Table 4.2.2 depicts the ranking of Greece in selected criteria according to the latest version of the Index. The first 5 are the criteria in which the country has the best performance (above 20th place), while the remaining 13 are the criteria in which the Greek economy presents serious weaknesses (below 50th place) and should improve. The capacity for digital reform is significantly affected by factors that do not appear, at first sight, directly related to it, such as starting a business, enforcing contracts, country credit rating, etc.

4.2.3. The European Commission Digital Economy and Society Index (DESI)

The DESI index was first published in 2014 and covers 28 EU member states, including the United Kingdom, given that the last reports' (2020) data refer to 2019. As the report points out, although data refer to the pre-COVID-19 year, the pandemic demonstrated the importance of digital transformation of the economies

TABLE 4.2.1 Evolution of the rank of the Greek economy according to the IMD World Digital Competitiveness ranking (total number of countries: 63)

Factor ranking/Year	2016	2017	2018	2019	2020
Total ranking	**45**	**47**	**53**	**53**	**46**
Knowledge	*46*	*51*	*51*	*53*	*48*
Talent	47	47	50	53	50
Training and Education	51	55	58	60	56
Scientific concentration	34	33	37	34	36
Technology	*52*	*52*	*51*	*54*	*43*
Regulatory framework	51	49	47	52	41
Capital	55	58	54	52	49
Technological framework	49	49	48	49	46
Future readiness	*36*	*47*	*46*	*53*	*46*
Adaptive attitudes	33	41	50	41	44
Business agility	40	53	49	60	55
IT integration	43	48	47	50	45

Source: IMD World Digital Competitiveness Ranking 2020.

TABLE 4.2.2 Greek economy rankings on selected IMD World Digital Competitiveness criteria 2020

Criterion	Ranking*	Criterion	Ranking*
Graduates in sciences	10	Employee training	56
Starting a business	6	Enforcing contracts	59
Immigration laws	15	Communications technology	50
Investment in Telecommunications	11	Banking and financial services	60
IT & media stock market capitalization	11	Country credit rating	57
Knowledge transfer	53	Agility of companies	57
Funding for technological development	50	Pupil-teacher ratio (tertiary education)	57
Internet bandwidth speed	51	Foreign highly skilled personnel	58
Use of big data and analytics	57	Software piracy	52

Source: IMD World Digital Competitiveness Ranking 2020.

* Total 63 countries.

TABLE 4.2.3 Greece's score and rank according to DESI

	DESI			Connectivity			Human capital		
	Greece		EU-28	Greece		EU-28	Greece		EU-28
	rank	score	score	rank	score	score	rank	score	score
2020	**27**	**37.3**	**52.6**	28	33.4	50.1	25	34.8	49.3
2019	**27**	**35.1**	**49.4**	28	29.5	44.7	25	32.7	47.9
2018	**28**	**32.3**	**46.5**	28	26.0	39.9	25	31.9	47.6

	Use of internet services			Integration of digital technologies			Digital public services		
	Greece		EU-28	Greece		EU-28	Greece		EU-28
	rank	score	score	rank	score	score	rank	score	score
2020	25	46.1	58.0	24	28.2	41.4	27	51.5	72.0
2019	25	43.3	55.0	22	30.2	39.8	27	46.4	67.0
2018	25	39.3	51.8	23	28.6	37.8	27	41.2	61.8

Source: Digital Economy and Society Index (DESI) 2020 Greece.

and societies of the member states. The next edition of the index will reflect the impact of COVID-19 on the digital reform the member states will have achieved (European Commission, 2020).

The index consists of 5 parameters: a) Connectivity, b) Human capital, c) Use of internet services, d) Integration of digital technology and e) Digital public services. Each parameter is calculated based on criteria.

Indicatively, Connectivity includes 8 criteria regarding the penetration and speed of broadband communications, 4G coverage, 5G readiness, etc. Human capital includes 6 criteria related to the digital skills of the population, as well as the number of ICT specialists and graduates. Use of internet services includes 11 criteria regarding the number of internet users, video calls, social networks, online courses, banking services and online sales. Integration of digital technology includes 7 criteria at the enterprise level, such as electronic information sharing, big data, cloud computing, SME's selling online, etc. Finally, Digital public services includes 5 criteria such as e-government users, prefilled forms, online services, open data and digital public services for businesses.

It should be noted that the 5 parameters have different weights in the calculation of the total index. Specifically, Connectivity and Human capital weigh 25%, Integration of digital technology 20%, while Use of internet services as well as Digital public services weigh 15%. Table 4.2.3 above, shows the evolution of Greece's ranking among the EU-28 during the last three editions of the index. By comparison, the average score of the EU-28 is given. According to the ranking and scoring in Table 4.2.3, it becomes clear that while Greece is improving its performance in most parameters of the DESI index (deterioration is observed in the Integration of digital technology in 2020), the rate of improvement is not enough to raise its ranking among the EU-28. This means that the other countries are improving their performance at least as fast as Greece.

4.2.4. Concluding remarks

According to DESI, the Greek economy is ranked 27th, leaving behind only Bulgaria. The difference between the DESI and IMD ranking, which brings Greece ahead of four countries (Hungary, Slovakia, Romania and Croatia) is obviously due to the different criteria as well as the different approach of each index, but also the significant differences in the methods used. The IMD uses a lot of subjective data based on experts' responses to questionnaires, while DESI –in addition to quantitative data– takes into account the policies of each country in relation to best practices.

As this column has repeatedly emphasized, a basic ingredient of competitiveness is comparison. Although improving the performance of an economy is a necessary condition for increasing competitiveness, it is not sufficient. The rate of improvement should exceed that of other countries in order to achieve some convergence, namely, a higher ranking of the Greek economy either at the European level (DESI) or globally (IMD). The COVID-19 pandemic seems to have activated the Greek state in the right direction of digital transformation. But it has also activated all other countries within th e EU-28 as well as globally. The coming editions of DESI and IMD will show whether the Greek economy will be able to "run" its digital transformation faster than the other economies, thus covering the lost ground, improving its ranking and achieving convergence with the most developed economies in the world.

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4.3. Positive perception of the self-reported health status of the population: a comparative analysis of Health Interview Surveys 2009, 2014, 2019

Roxani Karagiannis

4.3.1. Introduction

The Health Survey offers comprehensive data on the health status of the population and health-related topics based on answers by respondents of a representative sample of the population. The survey covers the following topics: health status (self-perceived health, chronic diseases, limitation in activities, mental health, etc.), health determinants (smoking and alcohol consumption, body weight, physical activity, dietary habits), health care (use of different types of health-care services including hospitalization, consultation, prevention, use of medicines and unmet needs for health care) and background variables on demographic and socio-economic status such as sex, age, etc.[1] The Health Survey in Greece is fully in line with the relevant European Health Interview Survey (EHIS).

The survey was conducted by the Hellenic Statistical Authority for the first time in Greece in 2009, on a sample of 6,325 private households across Greece.[2] In each sample household, one randomly selected person aged 15 and over was surveyed. The survey is conducted every five years according to Regulation (EC) 1338/2008 of the European Parliament concerning statistics on public health and occupational health and safety. The 2014 and 2019 Health Surveys were conducted on a sample of 8,223[3] and 8,125 private households, respectively, and an equal number of their members.[4]

The article provides a comparative review of the self-perceived health status of the population in Greece and their determinant factors using data from the National Health Interview Surveys 2009 (ELSTAT, 2011), 2014 (ELSTAT, 2016) and 2019 (ELSTAT, 2020). The health-related behavior of the population is determined by social, economic, cultural and environmental factors. An unhealthy diet, physical inactivity, obesity, smoking and the harmful use of alcohol are among the most important factors associated with non-communicable chronic diseases, increased morbidity and mortality.

4.3.2. Self-reported health status of the population

In 2019, 79.4% of the population aged 15 and over in Greece perceived their health as very good or good, 15% as fair and 5.6% as bad or very bad (Figure 4.3.1). In 2019, an increase of 6.2% is observed in the share of the population who perceived their health as very good or good and a decrease of 17.6% and 20% in the share of the population who perceived their health as fair and as bad or very bad, respectively, compared to 2014. Comparing the results of the 2014 Health Survey, which was conducted in the midst of the economic crisis, with the 2009 Health Survey, a small decrease (0.7%) is observed in the share of the population who reported very good or good health, a decrease (28.6%) for those who reported bad or very bad health and an increase (22.2%) for those who perceived their health as fair.

In 2019, 81.9% of men aged 15 and over rated their health as very good or good compared with 77.1% of women. The Health Surveys of 2014 and 2009 show similar trends. The largest gender health gap (more than 8 percentage points) was recorded in the 2014 Health Survey, reduced to 5 percentage points in 2019. Conversely, when focusing on the population aged 15 and over who rated their health as fair and as bad or very bad, the shares of women were generally higher than those for men. In 2019, 16.9% of women and 13% of men regarded their health as fair and 6% of women and 5.1% of men as bad or very bad.

Among the four great geographical regions (NUTS 1) of Greece, the share of the population aged 15 and

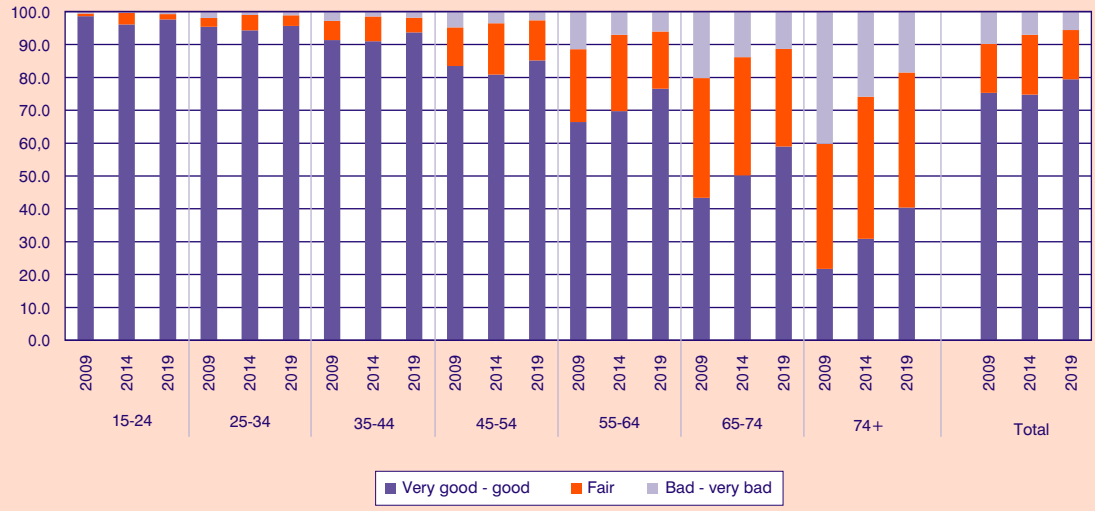
1. More detailed information on EHIS is available at: <https://ec.europa.eu/eurostat/statistics-explained/index.php?title=European_health_interview_survey_-_methodology#Main_features>.

2. ELSTAT (2011), Press Release Health Survey: 2009. Hellenic Statistical Authority, Athens.

3. ELSTAT (2016), Press Release Health Survey: 2014. Hellenic Statistical Authority, Athens.

4. ELSTAT (2020), Press Release Health Survey: 2019. Hellenic Statistical Authority, Athens.

FIGURE 4.3.1
Self-reported health status of the population aged 15 and over (%), by age group, 2009, 2014, 2019



Source: ELSTAT, 2020.

over who perceived their health as very good or good was equal to 78.2% in Northern Greece, 78.3% in the Aegean Islands and Crete, 79.3% in Central Greece and 80% in Attica. The wider region of Attica recorded the highest share of the population in all three surveys. The share of the population who perceived their health as very good or good increased by 5 percentage points in Northern Greece, Central Greece and Attica and by 2.5 percentage points in the Aegean Islands and Crete compared to the 2014 Health Survey.

Self-perceived health also has a distinct age pattern as fewer people tended to rate their health as being very good or good in higher age groups (aged 55 and over) than in lower age groups (15-54 years old), while the share of the population reporting bad or very bad health increased with age. In 2019, 40.4% of the population aged 75 and over, 59% in the age group 65-74 and 76.6% in the age group 55-64 rated their health as very good or good. On the other side, the share of the population who perceived their health as very good or good ranged from 97.6% in the age group 15-24 to 85.2% in the age group 45-54. The share of the population aged 65 and over who recorded bad or very bad health reduced by 18% in the age group 65-74 and 28% in the age group 75 and over.

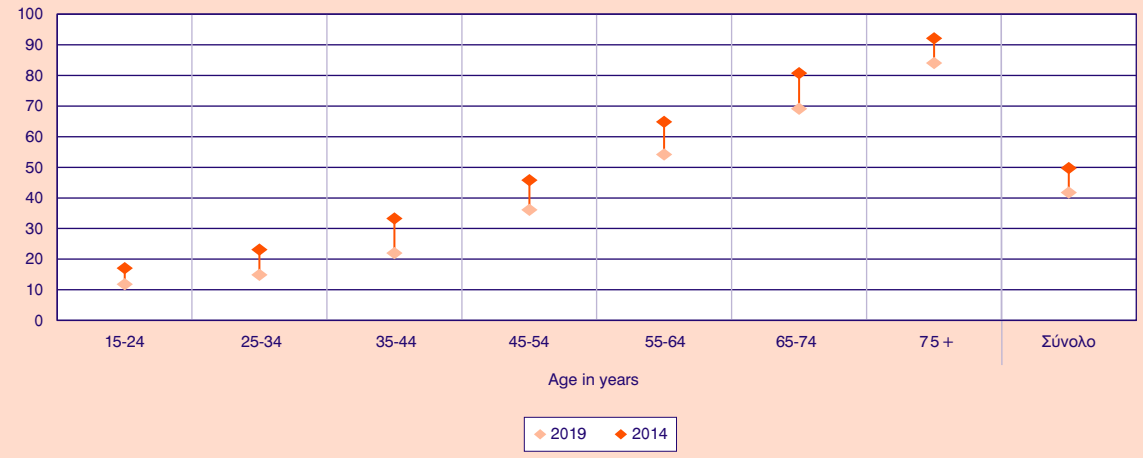
In 2019, 41.7% of the population aged 15 and over reported having a **chronic illness or health problem**.[5] The share of the population suffering from a chronic illness or health problem increased by 10 percentage points in 2014 compared to 2009. In 2019, this proportion decreased by 8 percentage points compared to the 2014 Health Survey. Similar to self-perceived health, women reported a chronic illness or health problem more often (46.7%) than men (36.3%). A major factor in the prevalence of chronic illnesses or health problems was age: while 11.8% of the population aged 15-24 reported a chronic health problem in 2019, the share of the population rose to 69.1% in the age group 65-74 and to 84% among people aged 75 and over (Figure 4.3.2).

The Global Activity Limitation Indicator (GALI) is a dimension of health/disability that captures long-standing limitations in performing normal activities due to physical, mental or psychological problems, for 6 months or more.[6] In 2019, 6.8% of the population aged 15 and over reported severe long-standing limitations (for six months or more) due to health problems and 6.4% reported some long-standing limitations. This proportion decreased by 34% and 67%, respectively, compared to the 2014 Health Survey. In 2014, the share of the population who reported severe or some long-stand-

5. Chronic illnesses or health problems are defined as illnesses or health problems which have lasted, or are expected to last, for 6 months or more, with or without medication.

6. The GALI indicator refers to what extent the respondent has limited activities due only to health problems and not due to economic or other reasons.

FIGURE 4.3.2
Population aged 15 and over (%) with a chronic illness or health problem, by age group, 2014, 2019



Source: ELSTAT, 2020.

ing limitations increased by 15.7% and 39.6%, respectively, compared to the 2009 Health Survey. Self-reported long-standing limitations also have a distinct age pattern as people in higher age groups (aged 65 and over) tended to report severe long-standing limitations more than those in lower age groups.

4.3.3. Prevalence of diseases

Table 4.3.1 presents the share of the population aged 15 and over suffering from leading chronic diseases, in descending order.[7] In 2019, 19.6% of the population aged 15 and over suffered from hypertension. This proportion decreased by 6.2% compared to the 2014 survey (20.9%). A high blood cholesterol level was reported by 15.8% of the population, increased by 2.6% compared to the 2014 survey results (15.4%). Diabetes mellitus was reported by 8% of the population, decreased by 13% compared to 2014 (9.2%). Chronic back defects were reported by 12.5% of the population, chronic neck defects by 6.3% and arthrosis by 5.4%, diseases indicating long-standing disabilities. The share of the population reporting chronic diseases such as high blood cholesterol level, hypertension, diabetes mellitus, back defects, arthrosis and ischemic heart diseases were higher in the age group 55 and over. For the population aged 15-54, allergic asthma was the leading chronic disease.

4.3.4. Mental health

The survey included questions related to the prevalence and severity of mental and behavioral disorders during the last 2 weeks before the day the survey was conducted. Anxiety disorders (stress, panic attacks) were reported by 5.6% of the population aged 15 and over, depression by 3.8% and dementia or Alzheimer's disease by 1.2% (Table 4.3.1). The share of the population suffering from chronic depression decreased by 19.2% compared to the 2014 Health Survey (4.7%). The incidence of depression ranged from 2.3% in the age group 25-34 to 5.9% in the age group 75 and over. Looking across the age groups from youngest to oldest, the share of the population reporting anxiety disorders increased with age, with the population aged 75 and over recording the highest portion (6.5%). The share of the population who had mental and behavioral disorders was higher for women than for men. On the basis of the answers given to the equation "thoughts concerning that it would be better not to live or harm myself", 0.7% of the population aged 15 and over answered clearly "yes", decreased by 78% compared to the 2014 Health Survey (3.3%).

4.3.5. Health determinants

Health determinants such as smoking, alcohol consumption, nutrition and physical activity could influ-

7. The Health Survey records data on the prevalence of several chronic diseases during the last 12 months before the day the survey is conducted.

TABLE 4.3.1 Prevalence of chronic diseases in the population aged 15 and over (%), by age group, 2019

Chronic diseases	Age groups							
	15-24	25-34	35-44	45-54	55-64	65-74	75+	Total
Hypertension	0.5	0.5	2.1	10.1	23.7	47.2	57.3	19.6
High blood cholesterol	0.7	2.7	7.7	13.2	24.4	31.5	29.9	15.8
Low back disorders	0.4	3.8	7.5	11.7	14.3	21.7	27.7	12.5
Thyroid diseases	3.7	4.0	8.5	9.9	15.3	14.8	9.2	9.6
Diabetes mellitus	0.1	0.6	1.7	4.6	11.4	16.7	22.1	8.0
Allergies	6.3	8.6	5.4	6.7	7.4	6.4	4.9	6.5
Neck disorders	0.5	3.6	5.0	6.8	7.0	9.4	11.3	6.3
Arthrosis (rheumatoid arthritis excluded)	0.2	1.3	1.6	3.4	5.8	10.4	16.0	5.4
Digestive disorders (duodenal ulcer, colitis)	0.5	1.3	3.1	4.5	4.2	5.3	7.0	3.8
Asthma (allergic asthma included)	1.9	2.5	2.7	2.8	2.6	4.5	6.5	3.3
Myocardial infarction	0.0	0.2	0.3	0.6	4.1	6.9	9.5	3.0
Anxiety disorders (stress, panic attacks)	2.3	3.2	5.8	6.7	6.5	7.0	6.5	5.6
Depression	0.4	2.3	2.1	3.7	5.5	6.4	5.9	3.8
Dementia or Alzheimer's disease	0.2	0.8	0.1	0.2	0.3	0.9	6.5	1.2

Source: ELSTAT, 2020.

ence –positively or negatively– the health status of the population.

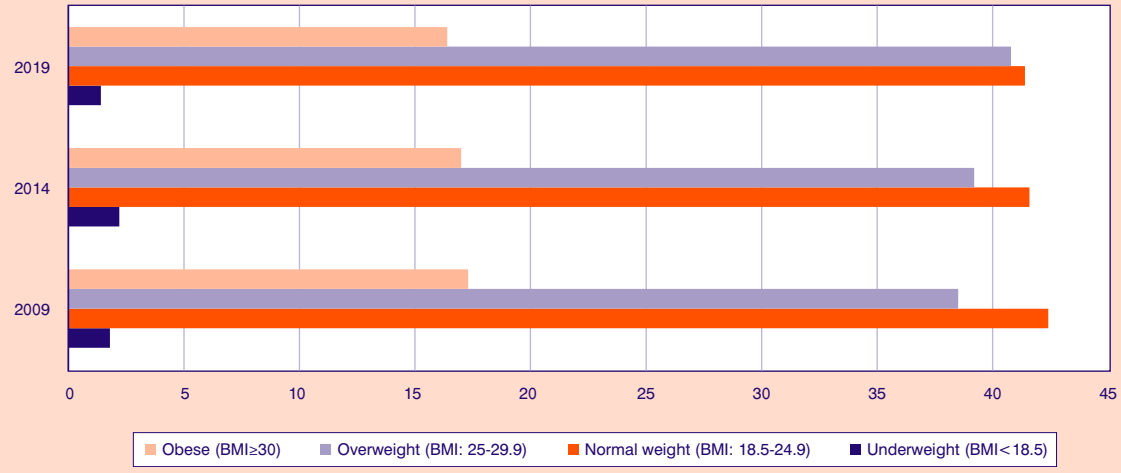
Obesity and overweight are high risk factors for numerous chronic diseases, such as hypertension, high blood cholesterol level, diabetes mellitus, ischemic heart diseases and specific types of cancer. Furthermore, overweight can cause psychological problems in young people, such as reduced self-esteem, depression and eating disorders. Overweight and obesity can reduce life expectancy by approximately three years. Evidence from the study of Caussy et al. (2020)[8] suggest that obesity increases the risk of developing severe COVID-19 symptoms.

The **Body Mass Index** (BMI) is considered to be the most important indicator to measure the obesity of the population. Among the total population aged 15 and over, 41.4% were of a normal weight, 40.8% were overweight, 16.4% were obese and 1.4% were underweight in 2019 (Figure 4.3.3). If we compare the 2014 and 2009 Health Surveys, we can observe that the share of the overweight population aged 15 and over increased by 4% and 1.8%, respectively, the share of the obese population decreased by 3.5% and 1.7%, respectively, while the share of the population with a normal weight remained stable.

The survey results show differences depending on the age and the gender of the population. In 2019, 49.2% of men aged 15 and over were overweight. By contrast, 48.3% of the women had a normal weight. The Health Surveys of 2014 and 2009 present similar trends. The highest proportion of overweight men was recorded in the age group 75 and over and obese men in the age group 55-64, men aged 15-34 had a normal weight. The highest share of obese men and women were found in the age group 65-74. There was a marked increase in the proportion of the population who were overweight or obese as they became older. Young women aged 15-24 who reported a normal weight recorded the highest percentage (77.2%), a rate that decreased significantly (by 50%) in the age group 55 and over. It is notable that 1 out of 4 men and 1 out of 5 women aged 15-24 were overweight or obese.

Physical activity and exercise are related to obesity and to the risk of morbidity and mortality. Walking or cycling for at least 10 minutes in order to get to and from work, school, or shopping, as well as leisure-time physical activities that persons engage in for at least 10 minutes continuously throughout a typical week are correlated with the prevention of many health problems, such as diabetes mellitus, high blood pressure and heart diseases. In 2019, 41.5% of the population aged 15 and over walked daily for at least 10 minutes continuously to get to and from places;

FIGURE 4.3.3
Body Mass Index (BMI) of the population aged 15 and over (%), 2009, 2014, 2019

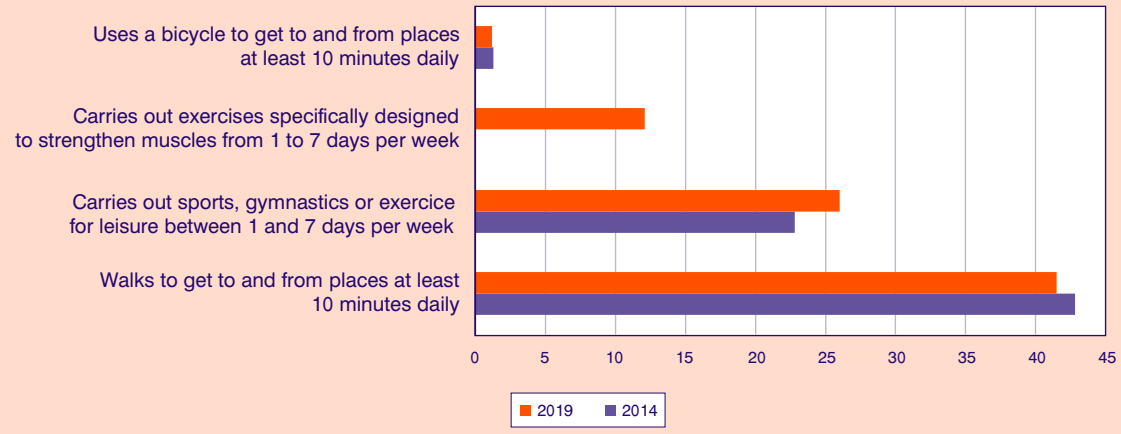


Source: ELSTAT, 2020.

8. OECD/European Union (2020). Obesity among adults, in *Health at a Glance: Europe 2020: State of Health in the EU Cycle*. OECD Publishing, Paris.

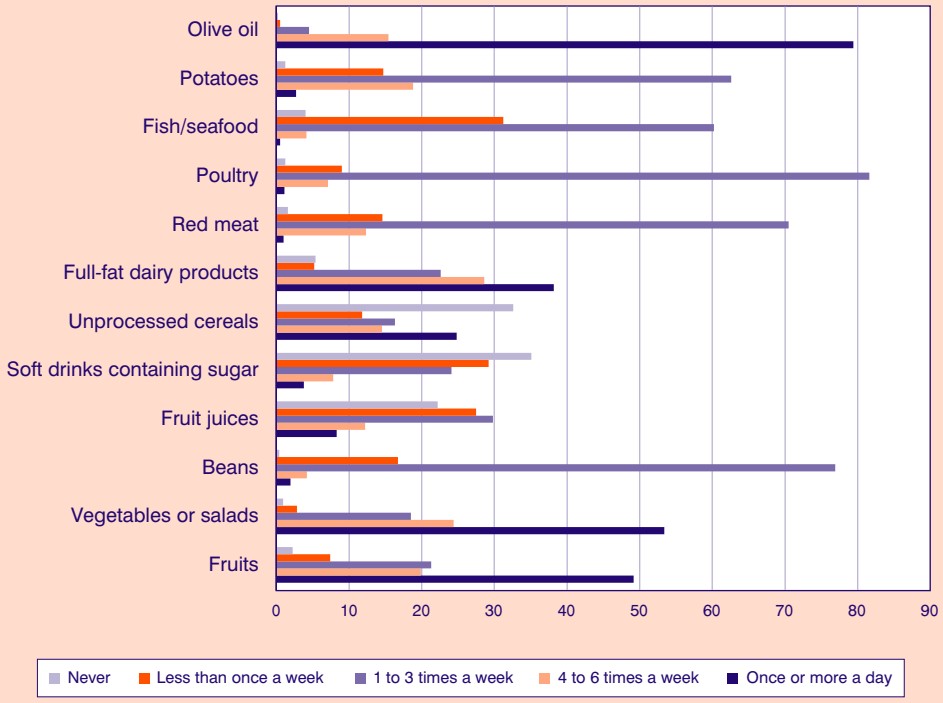
26% carried out sports, gymnastics or exercise for leisure between 1 to 7 days a week; 12.1% carried out exercises specifically designed to strengthen muscles and 12% used a bicycle daily for at least 10 minutes to get to and from places (Figure 4.3.4). The share of the population who carried out sports or exercise between 1 to 7 days a week increased by 14% compared to the 2014 Health Survey.

FIGURE 4.3.4
Physical activity and exercise of the population aged 15 and over (%), 2014 ,2019



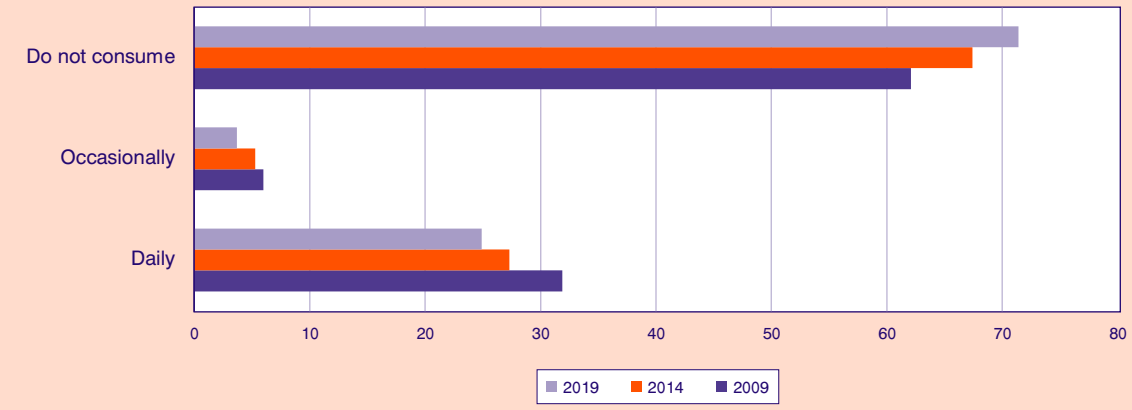
Source: ELSTAT, 2020.

FIGURE 4.3.5
Dietary habits of the population aged 15 and over (%), 2019, frequency of consumption



Source: ELSTAT, 2020.

FIGURE 4.3.6
Consumption of tobacco and related products of the population aged 15 and over (%), 2009, 2014, 2019



Source: ELSTAT, 2020.

Figure 4.3.5 above presents the consumption frequency of **fruits, vegetables, olive oil and other foods** that contribute to healthy aging. The majority of the population aged 15 and over recorded that they consume (a) 1 or more times a day fruits (49.2%), vegetables or salads (53.4%), full-fat dairy products (38.2%) and olive oil (79.4%); (b) 1 to 3 times a week beans (76.9%), fruit juices (29.8%), red meat (70.5%), poultry (81.6%), fish/seafood (60.2%) and potatoes (62.6%); and (c) that they have never consumed soft drinks containing sugar (35.1%) and unprocessed cereals (32.6%). The Mediterranean Diet Pyramid includes the daily consumption of unprocessed cereals and their products, fruits and vegetables, olive oil and low-fat dairy products, the weekly consumption of beans, fish and poultry and the monthly consumption of red meat.

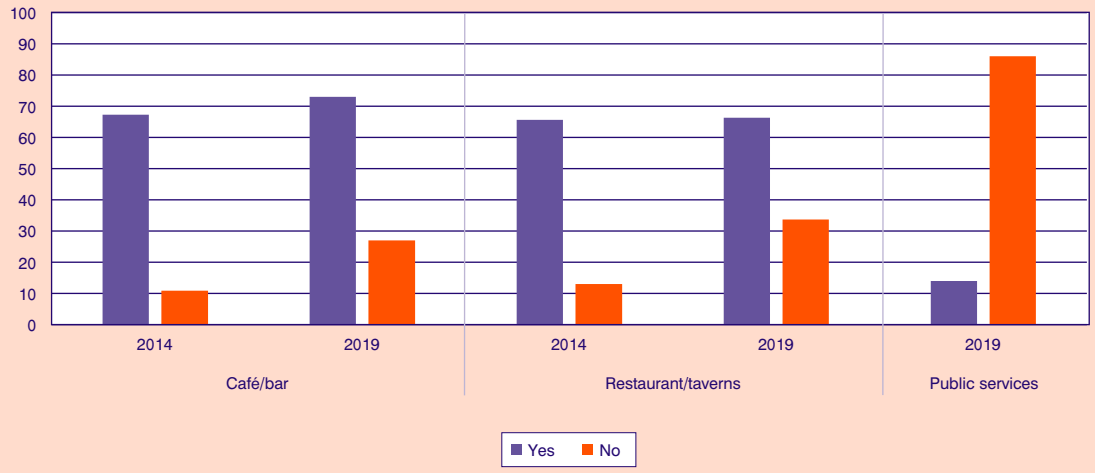
Tobacco consumption is the largest avoidable behavioral risk factor to health and the most significant cause of premature death, accounting for 700,000 deaths per year. Around half of smokers die prematurely, 14 years earlier on average.[9] Tobacco consumption has both short- and long-term health consequences for the population. It is an important factor responsible for circulatory diseases, cancer and long-term lung diseases. Therefore, policies are being developed to reduce the consumption of tobacco and related products, along with rules on banning its use in indoor public places and workplaces, in order to reduce passive smoke as well.

In 2019, 24.9% of the population aged 15 and over smoked tobacco or related products daily, 3.7% occasionally and 71.4% did not smoke at all (Figure 4.3.6). The share of the population who smoked every day or occasionally decreased compared to the 2014 and 2009 surveys. Men consumed tobacco or related products more often (daily: 31.3%, occasionally: 4.7%) compared with women (daily: 19%, occasionally: 2.8%). One out of 3 persons in the age group 35-64 smoked tobacco or related products daily. One out of 5 persons in the age group 65-74 and 1 out of 10 aged 75 and over smoked occasionally. In the age group 15-24, 14.4% of the population smoked tobacco daily and 2.6% occasionally. Both the number of young people who smoked every day and those who smoked occasionally decreased by 50% compared to 2009.

Figure 4.3.7 presents the frequency of the exposure to passive tobacco in indoor public places, such as bars/cafés, restaurants, and public services during the 6 months before the day the survey was conducted. These findings offer an indication of the extent to which existing anti-smoking rules are implemented. Seven out of 10 persons aged 15 and over (above 66%) who visited an indoor café/bar, restaurant or tavern, realized that other people around them smoked, while only 14% of the population realized that other people around them smoked in public services.

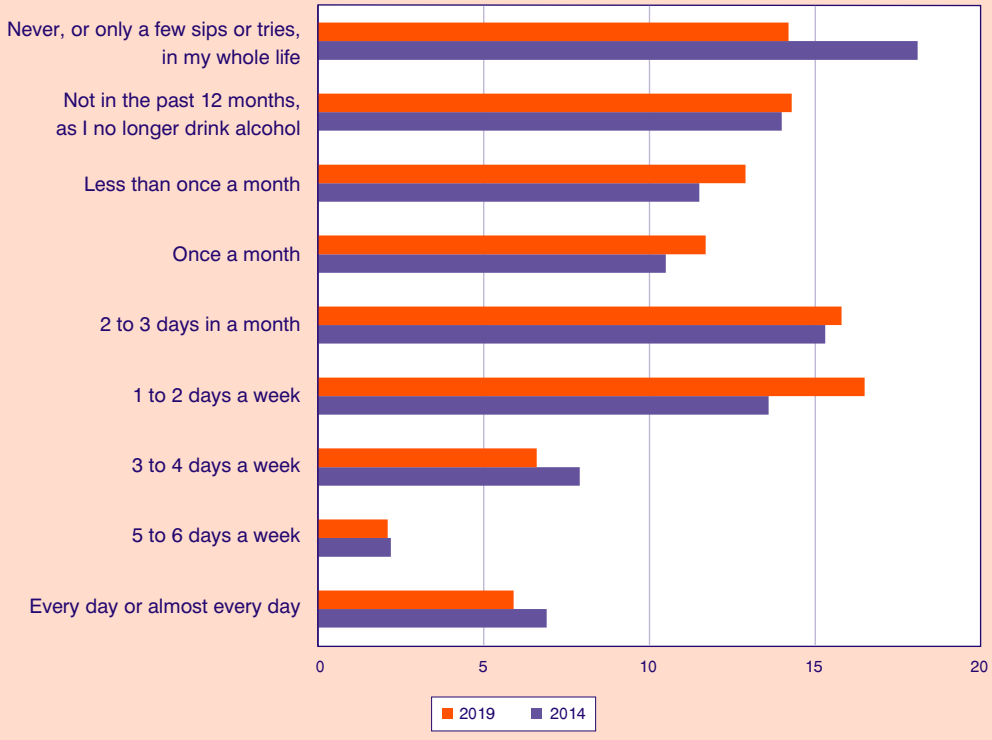
9. OECD/European Union (2020), Smoking among adults, in *Health at a Glance: Europe 2020: State of Health in the EU Cycle*. OECD Publishing, Paris.

FIGURE 4.3.7
Exposure to passive tobacco in indoor public places for the population aged 15 and over (%), 2014, 2019



Source: ELSTAT, 2020.

FIGURE 4.3.8
Alcohol consumption of the population aged 15 and over (%), 2014, 2019



Source: ELSTAT, 2020.

Alcohol consumption was one of the main causes of death in Europe, after tobacco and high blood pressure, and it was associated with 7.6% and 4% of deaths for men and women, respectively. High alcohol consumption is associated with increased risk of heart disease and stroke, liver cirrhosis, certain cancers and foetal alcohol disorders, but even moderate alcohol consumption increases the long-term risk of developing such diseases. Alcohol also contributes to morbidity and mortality through accidents and injuries, violence, homicide and suicide.[10]

In 2019, 5.9% of the population aged 15 and over reported having an alcoholic drink every day or almost every day, compared to 16.5% of those who reported having an alcoholic drink 1 to 2 days in a week, 15.8% reported 2 to 3 times in a month and 11.7% once a month (Figure 4.3.8 above). In contrast, 28.5% of the population have not consumed alcohol at all or have never had or no longer had an alcoholic drink of any kind. The share of the population who consumed alcoholic drinks occasionally increased compared with those who had daily consumption or had no alcohol at all, compared to the 2014 Health Survey. Daily consumption of alcoholic drinks is reported by 10% of men, a portion higher than of women (2.2%). Regarding the various age groups, (a) 1 out of 5 persons in the age group 15-24 consumed alcoholic drinks 1 to 2 days a week, (b) 1 out of 5 persons in the age group 25-54 consumed alcohol 1 to 2 days a week or 2 to 3 days a month and (c) 3 out of 10 persons aged 65 and over did not consume any alcohol at all. With regard to the consumption of 6 or more alcoholic drinks on one occasion, 21.5% of the population aged 15 and over reported that they consumed 6 or more drinks on one occasion during the 12 months before the survey was conducted. Of these, 44% had to drive afterwards, with the risk of causing an accident or injury to themselves or other people.

4.3.6. Health care activities

The survey provides information relating to hospital discharges of in-patients and day-care patients, consultations of medical professionals such as doctors, dentists, etc., preventive services, notably vaccination against influenza and cancer screenings and self-reported use of medicines, for the population aged 15 and over (Table 4.3.2). During the 12 months prior to the 2019 Health Survey, 8.4% and 10.5% of the population aged 15 and over were hospitalized for 1 or more days as in-patients or as day-care patients, respectively, in public or private hospitals in Greece or/and abroad. The results of the 2014 Health Survey show a 13.4% and 25.5% fall in both cases, respectively.

In 2019, 50% of the population aged 15 and over visited or consulted a dentist, 57.9% a general practitioner or pathologist and 46.8% a specialist medical practitioner or a surgeon during the 12 months prior the survey.

In 2019, 43.5% and 20.2% of the population aged 15 and over used prescribed and non-prescribed medicines, respectively, during the 2 weeks prior to the survey. The share of the population having used prescribed medicines decreased by 8.2% and 2.9% compared to 2014 and 2009 surveys, respectively. The share of the population having used non-prescribed medicines decreased by 26.5% and increased by 11.8% compared to 2014 and 2009 survey, respectively.

Figure 4.3.9 presents the frequency distribution of the population aged 15 and over who used medicines by age group. The population in age group 15-44 seems to use non-prescribed medicines more often, mainly herbal preparations, vitamins or food supplements. In contrast, the population aged 45 and over used prescribed medicines more often. In broad terms, the proportion using prescribed medicines (greater than 80%) increased with age (65 and over).

The survey provides information about preventive services, mainly vaccination against influenza, breast and cervical cancer screenings and prostate check ups (Table 4.3.2). In 2019, 24.2% of the population aged 15 and over vaccinated against influenza. This proportion decreased by 16.6% compared to 2014.

In 2019, the share of women who had had their most recent X-ray breast examination (31.2%) within the 12 months prior to the survey increased by 10.6% compared to 2014, while the share of women who had never had an X-ray breast examination decreased by 13.8%. Likewise, the share of women who had been screened for cervical cancer (41.3%) increased by 5% compared to 2014, while the share of women who had never had a cervical cancer screening decreased by 21.5%. The share of men (41.3%) who had had a clinical or other examination for the prostate (blood PSA test, biopsy) increased compared to 2014.

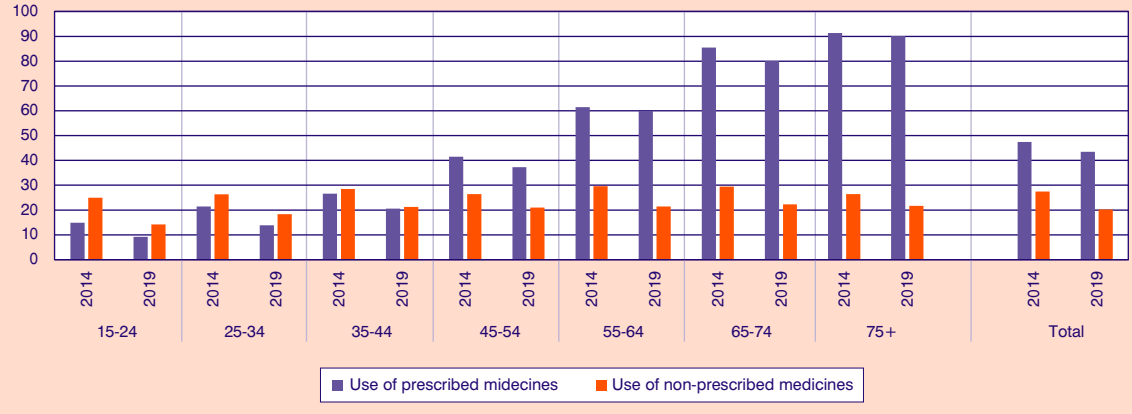
10. OECD/European Union (2020), Alcohol consumption among adults, in *Health at a Glance: Europe 2020: State of Health in the EU Cycle*. OECD Publishing, Paris.

TABLE 4.3.2 Frequency distribution of the population aged 15 and over who used health care activities, 2009, 2014, 2019

	2009	2014	2019
In-patient hospital care			
In-patient - hospital discharges	10.00	9.70	8.40
Day-care patient - hospital discharges	11.00	14.10	10.50
Out-patient care			
Consulted a dentist during the last 12 months	52.20	47.40	50.00
Visited or consulted a general practitioner/pathologist during the last 12 months	57.40	58.80	57.90
Visited or consulted a specialist medical practitioner or a surgeon during the last 12 months	45.20	46.50	46.80
Preventive services			
Immunized against influenza during the 12 months prior to the survey	n.a.	29.00	24.20
Has never immunized against influenza	n.a.	58.90	64.30
Women who had an X-ray breast examination during the last 12 months	n.a.	28.20	31.20
Women who have never had an X-ray breast examination	n.a.	38.40	33.10
Women who had a cervical cancer screening during the last 12 months	n.a.	39.30	41.30
Women who have never had a cervical cancer screening	n.a.	21.30	16.70
Men who had a clinical or other examination for the prostate	n.a.	32.30	41.30
Use of medicines			
Used prescribed medicines during the 2 weeks prior to the survey	48.80	47.40	43.50
Used non-prescribed medicines during the 2 weeks prior to the survey	24.60	27.50	20.20

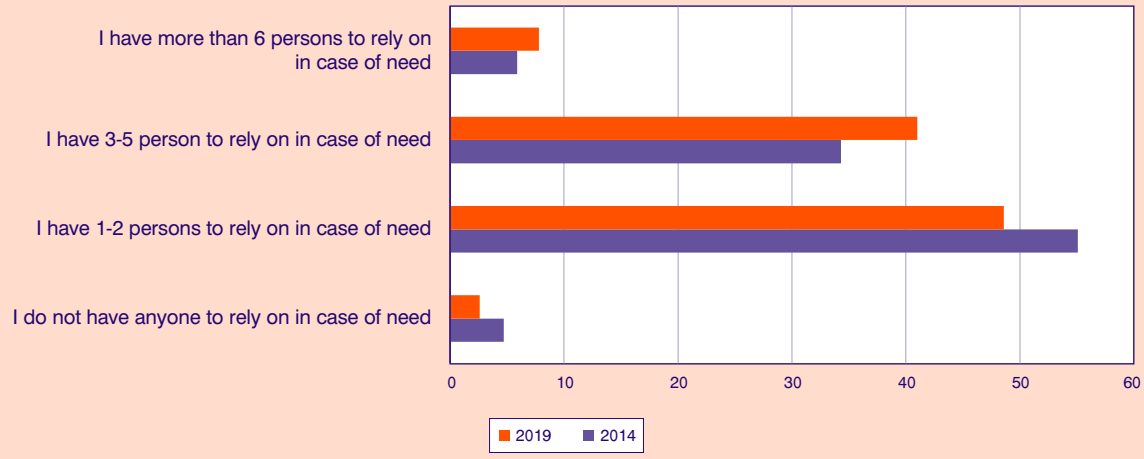
Source: ELSTAT, 2020. n.a.=not available.

FIGURE 4.3.9
Use of medicines in the population aged 15 and over (%), by age group, 2014, 2019



Source: ELSTAT, 2020.

FIGURE 4.3.10
Share of the population aged 15 and over (%) having someone to rely on in case of need, 2014, 2019



Source: ELSTAT, 2020.

4.3.7. Social support and assistance

The survey provides information about social support and the respondents' overall assessment of the extent and ease of getting support from their social environment in difficult life situations. In 2019, 48.6% of the population aged 15 and over said that they had 1 to 2 persons to rely on when they needed advice or economic assistance (Figure 4.3.10), while 2.6% of the population had no one to rely on. This proportion decreased by 44.6% compared to 2014.

4.3.8. Concluding remarks

In 2019 Health Survey about 4 out of 5 people aged 15 and over perceived their health as very good or good. In 2019, more people perceived their health as very good or good, fewer people reported having a long-standing illness or health problems or physical and sensory limitations, while the frequency of suicidal ideation decreased substantially compared to the 2014 and 2009 Health Surveys.

The negative perception of health status increased with age, as did the gender health gap. Self-perceived health has a distinct age pattern as fewer people tended to rate their health as being very good or good in higher age groups than in lower age groups, a trend recorded for both men and women. The population aged 65 and over reported long-standing limitations in normal activities due to health problems, chronic and mental disorders more often than younger age groups. Thus, older people used more prescribed medicines than younger people, who used non-prescribed medicines more often. The younger age groups consume tobacco and alcoholic drinks occasionally, but more often relative to older people.

Men were more likely to rate their health better than women in 2019. Nevertheless, a larger share of men than women drank alcohol and smoked, and even though they played sports more regularly, a larger share were still overweight or obese. The share of men and women that had preventive services increased compared to 2014. Despite this, men were less likely to report long-standing illness or health problems than women.

The survey may underestimate to some degree the proportion of the population who reported functional and activity limitations or suffered from chronic illness. All of the indicators presented in this article are derived from self-reported data, so they are affected by the respondents' subjective perception as well as by their social and cultural background. Furthermore, the survey does not cover the institutionalized population (people living in health and social care institutions), whose health status is likely to be worse than that of the population living in private households.

KEPE, *Greek Economic Outlook,* issue 44, 2021, pp. 76-82

4.4. Agricultural income: concepts and developments

Ioanna Reziti

4.4.1. Introduction

Article 39 of the Treaty of Rome, the wording of which has been transposed into the Treaty on the Functioning of the European Union,[1] states that one of the objectives of the CAP (Common Agricultural Policy) is to ensure a fair standard of living for the agricultural population, especially with the increase in the individual income of agricultural workers. This initial objective was restated in Agenda 2000 by the European Council as follows: Ensuring a fair income for farmers. The 2013 reform also focused on agricultural income, in line with the goal of sustainable food production, thus helping to ensure a fair standard of living for farmers.[2] The future CAP (2021-2027) focuses on nine general objectives, among which is the support of sustainable agricultural income (European Commission, 2018).

4.4.2. Statistical framework for income in the agricultural sector

Assessing farmers' incomes is a key element of EU agricultural policy, aiming to ensure a fair standard of living for the rural community, thus helping farmers cope with the risks posed by their business. For the measurement of income, the Commission is based on two main statistical tools (statistical sources): first, the Economic Accounts of Agriculture (EAA), a key tool for analyzing the macroeconomic situation of a country's agricultural sector as well as for comparing countries, and, second, the Farm Accountancy Data Network (FADN), a micro-economic tool whose target is to evaluate the income and business activities of commercial agricultural holdings.

In the EAA, we have defined the following measures: Production minus intermediate consumption, minus the consumption of fixed capital is the Net Value Added (NVA). The NVA minus workers' compensation, minus other taxes on production, plus other subsidies on production, minus the interest paid, minus the rent paid is the Net Entrepreneurial Income.

Based on these measures, three indicators emerge:

Indicator A: Index of real income of factors in agriculture per annual work unit (AWU). This is calculated by taking the NVA at basic prices shown in the production account and adjusting it by adding "other production subsidies" (containing direct payments), subtracting "other taxes on production", and dividing by the labor input and expressing a deflated and in index form. The NVA in this form is referred to as the factor cost. It measures the remuneration of all factors of production (land, labor, capital) used.

Indicator B: Index of real net agricultural entrepreneurial income per unpaid annual work unit. This is suitable for countries where agriculture is almost entirely organized on non-corporate farms (family holdings). It counts the compensation for paid family work, owned land and equity capital.

Indicator C: Net entrepreneurial income of agriculture. This is given in absolute terms, but can also be expressed as an index. It is important that it is not calculated per unit of unpaid work and thus is suitable for uses involving countries where production from corporate holdings is an important part of the total.

It is clear that the approach taken to each of the indicators is essentially an attempt to measure the renumerations of the factors of production. Indicator A is far from the personal income of the agricultural community (unless there is no borrowing, no land rent, no employment and no other source of income for the household). While entrepreneurial income generally coincides with what can be considered as profit, it relates only to that which comes from agricultural activity and excludes that which may come from other activities that continue within the agricultural enterprise (OECD, 2015).

The above aggregate indicators cannot, by definition, describe developments in subgroups (economic size and specializations of holdings). Such an analysis must be carried out using the data at the level of holdings from FADN.

At the microeconomic level, the two main sources of information on agricultural incomes are agricultural accounting surveys and rural household budget surveys.

1. Official Journal of the European Union C326/26, 10.20.12.

2. See the preamble of Commission Regulation (EC) No1308/17.12.2013.

This article will describe the approach of the concept of agricultural income based on FADN.

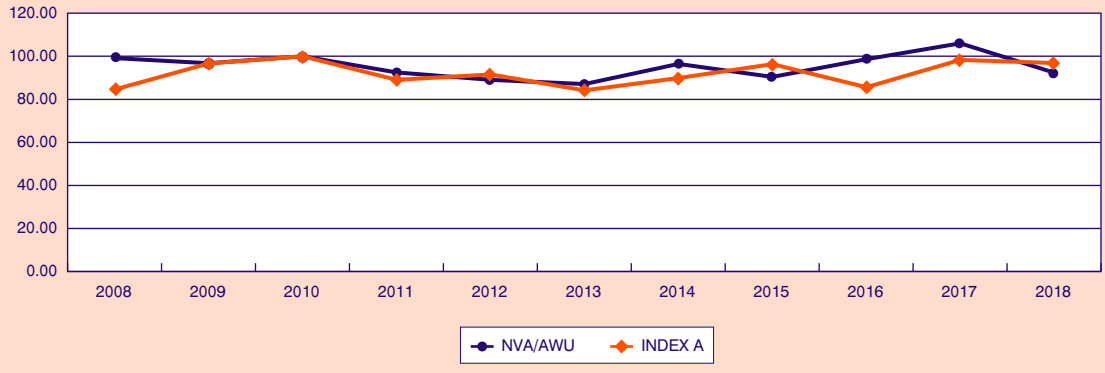
At the EU level, surveys of agricultural accounts in all member states are focused on the coordination of the Directorate-General for Agriculture and Rural Development (DG AGRI) as an accountancy data network (FADN). It was founded in 1965 with the specific aim of obtaining data that allow for income changes in the various categories of farms that need to be properly monitored.

FADN's rationale was based on the policy that "...the development of a common agricultural policy requires the availability of objective and relevant information on income in the various categories of agricultural holdings and the business operation of holdings falling into categories requiring special attention at the Community level" (EEC Regulation 79/65). Therefore, FADN is not a survey, but a fusion of national surveys conducted by member states.

At EU level, FADN collects data on agricultural activities and provides two main measurements of income: a measure of the NVA of the farm expressed by type of holding or per AWU (i.e., the total value of production minus the intermediate consumption and depreciation plus subsidies and taxes) and Net Agricultural Income (NAI) or Family Farm Income (FFI) (i.e., the NVA of the holding minus wages, rents and interest paid).

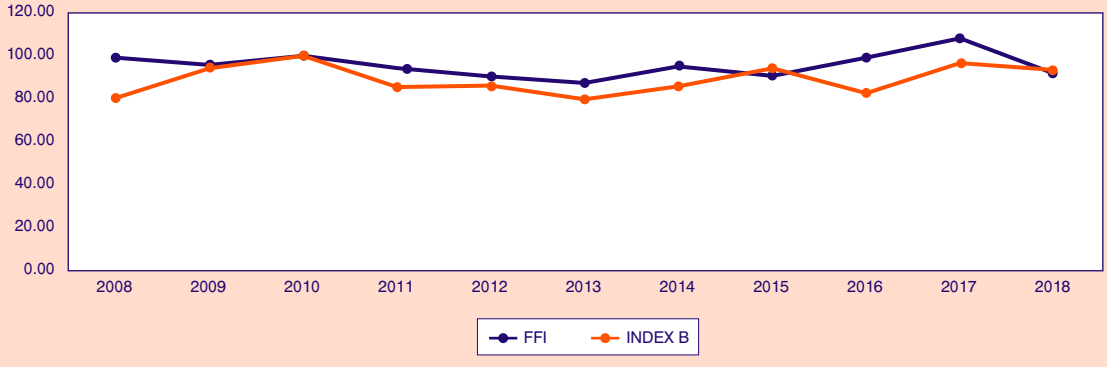
FFI is often expressed per AWU of unpaid (family) work, including farming, in order to reflect the various amounts of family work used. It is a very useful measure because, firstly, it represents what would generally be accepted as income from agriculture and, secondly, excluding the employed workforce, it covers

FIGURE 4.4.1
Comparison of NVA/AWU versus Index A (2010=100)



Source: Eurostat and FADN.

FIGURE 4.4.2
Comparison of FFI versus Index B (2010=100)



Source: Eurostat and FADN.

only those affected by the CAP, a practice that mainly targets farmers and their families.

FFI is theoretically close to the entrepreneurial income of the EAA and, when expressed per unit of family work, is close to indicator B.

Below, we will compare the income indicators from the two different data sources for Greece, and this will be done between the income[3] indicators we mentioned:

- FADN: NVA/AWU compared to Index A (EAA);
- FADN: Family Farm Income (FFI) of unpaid labor compared to Index B (EAA).

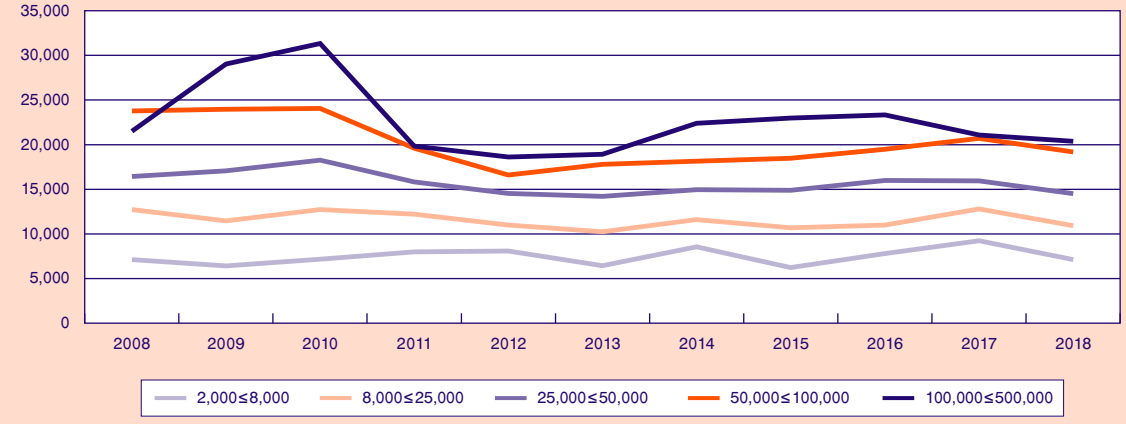
From the comparisons of Figures 4.4.1 and 4.4.2, we observe that the two series follow the same trend in the period 2009-2013, making both major reductions due to the economic crisis. In Figure 4.4.1, NVA/AWU and index A decreased by 10% and 13%, respectively, and in Figure 4.4.2, FFI and index B decreased by 9% and 15%, respectively. After 2014, the series show opposite trends: indices A and B increased by 8% and 9%, respectively, while NVA/AWU and FFI decreased by 4% and 3%, respectively. In the decade 2009-2018, indices A and B increased by 14% and 16%, respectively, while NVA/AWU and FFI decreased by 7%. In conclusion, the two statistical sources that measure agricultural income give different results in terms of annual changes. However, it is common in the empirical applications that refer to the whole agricultural sector of a country to use the indicators from the EAA, while, as we will present below, in holdings level and economic size, they use the FADN database. FFI is the preferred income concept because it corresponds more to the concept of profit from agriculture that is available to support the living standards of farmers (OECD, 2015).

4.4.3. Size of agricultural holdings

When examining the economic size of the holdings, it is important to keep in mind that the scope of observations of FADN does not cover holdings under 2,000 euros of standard output. Having this in mind, it is clear, however, that there is a strong relationship between the size of farms and the level of income generated (OECD, 2015). This is evident in Figures 4.4.3 and 4.4.4, which illustrate that both NVA/AWU and FFI increase according to size, with large farms (€100,000 ≤ €500,000) having the highest income level. Also, large farms, as we will examine below, show greater income variability because they are highly dependent on hired labor.

During the period 2009-2018, both indicators showed reductions in all categories of holdings except very small holdings (2,000 € ≤8,000 €), where there was an increase of NVA/AWU and FFI by 11% and 5%, respectively. A larger decrease (38%) is presented in the FFI of large holdings (100,000 € ≤500,000 €) and

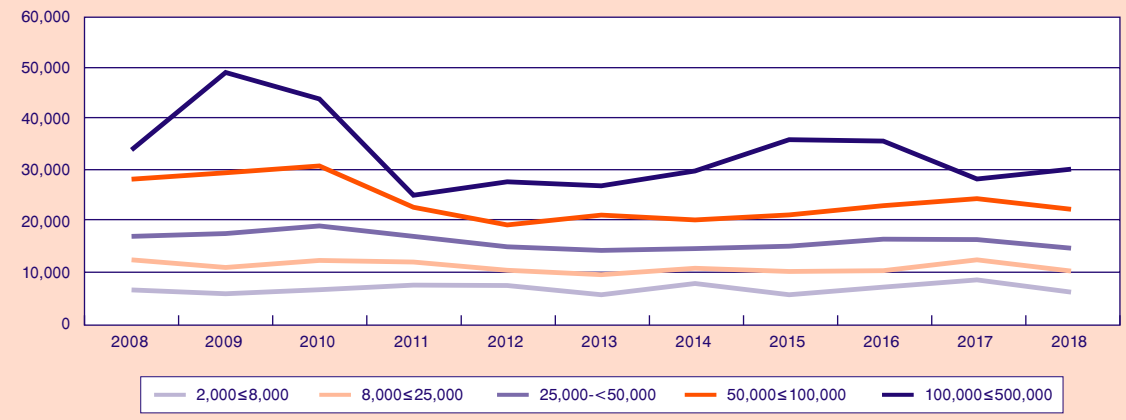
FIGURE 4.4.3
Evolution of NVA/AWU per size classes, 2008-2018



Source: FADN.

3. In the EAA, the income indicators are expressed in real terms, while in FADN, these are expressed in nominal terms. For comparison, we have converted the FADN data into real terms using the consumer price index.

FIGURE 4.4.4
Evolution of FFI per size class, 2008-2018



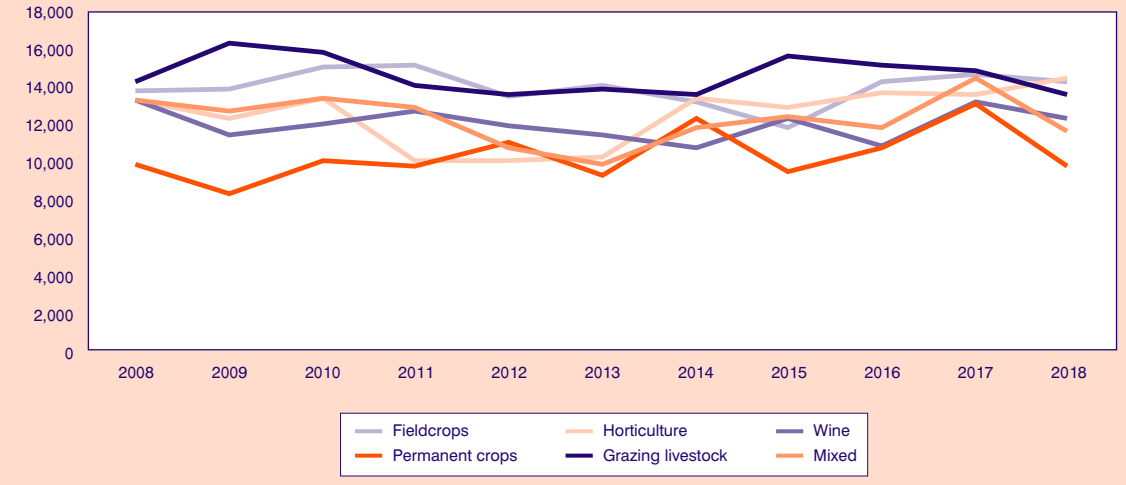
Source: FADN.

a respective decrease (30%) in NVA/AWU. In the period 2009-2013, all holdings show reductions in both income indices, with the largest one being in large farms. From 2014 onwards, there was a decrease in FFI in very small and medium/small farms by 21% and 5%, respectively, while the medium/large farms increased FFI by 10%.

4.4.4. Types of agricultural holdings

Figures 4.4.5 and 4.4.6 show the NVA/AWU and FFI, respectively, by crop type using the FADN classification (T8).[4] Based on both income indicators, grazing livestock have the highest income with an average of €15,000, and permanent crops the lowest, with

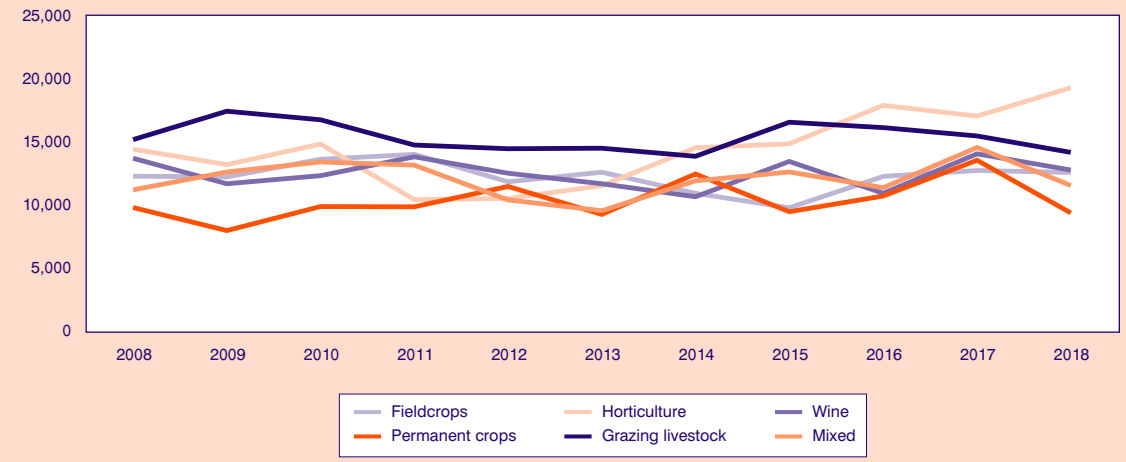
FIGURE 4.4.5
Evolution of NVA/AWU per type of holdings 2008-2018



Source: FADN.

4. The classification of European Regulation 1242/2008 includes eight general categories of holdings: 1. Fieldcrops (cereals, oilseeds, protein, rice, tobacco, cotton), 2. Horticulture, 3. Wine, 4. Other permanent crops (olive growing, fruit trees, citrus), 5. Milk, 6. Grazing livestock (cattle, goats), 7. Granivores (pigs and poultry) 8. Mixed crops.

FIGURE 4.4.6
Evolution of FFI per type of holdings 2008-2018



Source: FADN.

an average of €10,000. During the examined period, both income indicators showed large reductions in mixed farms and grazing livestock with 19% and 8% in FFI, respectively, and with 17% and 8% in NVA/AWU. However, horticulture showed the largest increase of FFI, by 46%, and 18% in NVA/AWU. During the period 2009-2013, only fieldcrops and permanent crops showed an increase in both indicators. According to FFI, after 2014, the permanent and mixed crops showed a decrease in income by 25% and 3%, respectively, while all the remaining crops had a large increase in income, such as horticulture 33%, wine 20% and fieldcrops 15%.

4.4.5. Agricultural income volatility

Agricultural incomes are volatile due to fluctuating yields and input and output prices. Yield variability is mainly related to weather, pests and diseases, while commodity prices are set internationally, based on annual global production, changes in demand and stocks, and other market factors, which are hardly affected by individual farmers' decisions.

Income volatility is higher in some agricultural sectors than in others. One reason for this may be the dependence of the farm on certain specific inputs, such as compound feedingstuffs for granivores and energy for horticulture. Fluctuations in the prices of these inputs result in large changes in the income of these sectors rather than others, such as granivores and fieldcrops. Apart from this, differences in income volatility between farms are also caused by income margins. In general, the most specialized large farms have a smaller margin than the traditional family farms. Such farms with a high percentage of labor (horticulture, granivores) have greater variability than the smaller ones (Vrolijk et. al., 2009).

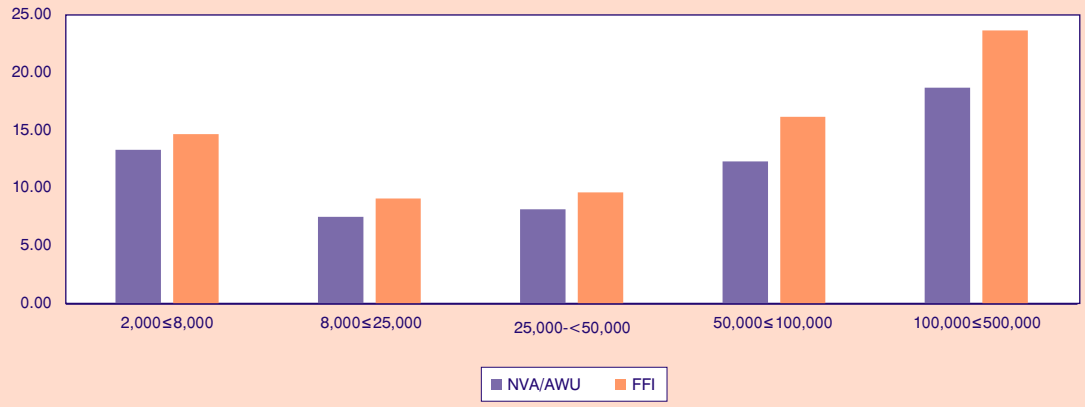
To measure the volatility of income in Greek holdings, we use the Coefficient of Variation (CV),[5] where the higher the CV, the greater the relative variation from year to year. The analysis is performed for size classes (Figure 4.4.7) and by type of holdings (Figure 4.4.8). In general, there is not a high degree of variability in either case, with a maximum value of CV: 0.20. In Figure 4.4.7, higher income volatility is observed for large holdings and less for medium/small holdings, according to Vrolijk et. al. (2009). However, the categories of medium-sized holdings show the same volatility.

Regarding the type of crops, high income variability is observed in horticulture due to seasonality and perishability, while fieldcrops have less volatility in crop production.

Also grazing animals holdings have the lowest income instability due to support from the CAP through the coupled aid.

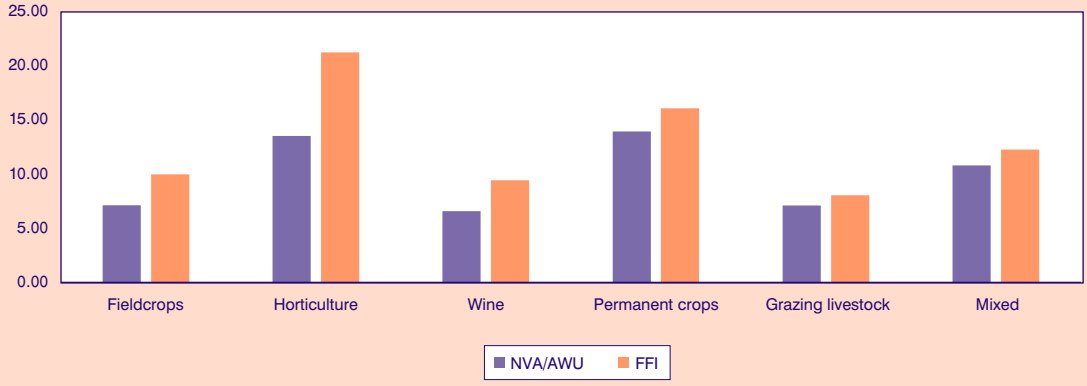
5. It is defined as the standard deviation to the mean.

FIGURE 4.4.7
Coefficient of variation per size class



Source: FADN.

FIGURE 4.4.8
Coefficient of variation per type of holdings



Source: FADN.

4.4.6. Conclusions

The main statistical sources available for the valuation of incomes in the agricultural sector are the EAA (indicators A and B) and the FADN (NVA/AWU and FFI). EAAs are the main source for analyzing the macroeconomic situation of a country's agricultural sector and the change in income. The FADN is an important source at the microeconomic level, which aims to assess the incomes and economic activities of agricultural holdings. In the above analysis, we examined the evolution of agricultural income in Greece during the period 2008-2018, according to the two approaches of calculating income, (NVA/AWU and index A) and (FFI and index B), where they provided opposite results in terms of annual fluctuations of income. Therefore, we conclude that at the country level, the two sources are not comparable; we prefer the use of EAA and, especially, index A. However, over time, indicators A and B move in a similar way. The analysis suggests that there is a strong correlation between FADN-based income and the economic size of farms. Very small farms have the lowest income, and this increases with the size of the farms. Also, the income differs between the different types of farms, with horticulture having the highest income and permanent and mixed crops having the lowest. Income volatility is high mainly in horticulture, permanent crops and mixed farms. There is a steady income for grazing livestock due to their dependence on the CAP through direct payments. For eligible farm-

ers, direct payments[6] contribute to stability by ensuring a stable source of income, while other CAP measures strengthen the stabilization of agricultural incomes, such as diversification and risk management tools.[7]

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6. Commission Regulation EC(1307/2013).

7. Commission Regulation EC(1305/2013).

KEPE, *Greek Economic Outlook,* issue 44, 2021, pp. 83-97

Sports tourism: A form of sustainable tourism development in Greece

Nikolaos G. Vagionis*

Abstract

In this article, we attempt a brief review of the definitions and theories of various facets of the tourism phenomenon and the ways to integrate these in the context of development theories that emphasize on sustainability. The second part highlights many forms of sports tourism as alternatives to mass tourism and as compatible with the principles of sustainable development. In the third part, a more specific reference is made to the variants, the potential, the development so far and the capacities of various specific forms of sports tourism in Greece, depending on the intensity of the infrastructure they require. The aim is to show that these do promote sustainability, reduced seasonality, decentralization and balanced geographical and fairer social development, and to emphasize that they deserve to be strengthened.

Keywords: *Sports tourism, sustainable development, alternative tourism, cycling, mountaineering, running.*

JEL classification*: L83, Z32, Z38*

1. Theoretical framework for tourism and development

The definitions of tourism are a popular topic of scientific approaches from different perspectives of both social and humanitarian studies, since tourism, its evolution and the development based on it touch multiple aspects of the economic and social life of modern people. First of all, we will explore some definitions of the tourism phenomenon rather indicatively –because the subject of sports tourism is much more specific– to determine the course of the scientific conception and delimitation of tourism in the recent past.

Tourism in various forms has been encountered since ancient times, either in the form of sports tourism to watch or participate in Games, such as the Olympics, but also the lesser known 'Herea', held in Olympia in times before the first Olympic Games, the 'Isthmia', the 'Nemea', the 'Pythia' in Delphi, etc. An important cultural tourism movement was noted for attending or participating in theatrical or music festivals, such as the ceremonies of the small and great 'Dionysians' and the 'Lenaeans' in Athens, but also in the Asclepieion of Epidaurus, in Delphi, and in all cities where there were large theaters (over 30 in Greece), with events that had a wider interregional impact. These forms had, to some extent, the dimension of religious tourism as well as the lesser-known 'Panathinea', hosting sports meetings in Athens in the midst of wider religious and cultural events, while at the same time there was purely religious/pilgrimage tourism to hundreds of temples throughout Greek-speaking antiquity, to name only the ancient 'Kaviria' in Samothrace and the better known, but still undeciphered, 'Eleusinian Mysteries'.

From this wealth, only a few nuggets of tourism remained during the constant wars and darkness of the middle ages. Varvaresos (2000) notes that only the forms of tourism due to religious events were left, as well as the early university tourism. Studies on early university education in Europe (Rait 1969) and around the world, note that the basic subjects taught in medieval universities concerned almost exclusively the nobles (Pryds 2000) and were, as would be expected, theology, law and medicine, as noted in the monumental work of the English philosopher Rashdall (1895).

Modern tourism, for many, began in 1845 when the first travel agency was founded by Thomas Cook in Leices-

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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.

ter (Williamson 1998). The process was not as spectacular as some claim, as it took 20 years to establish the agency on Fleet Street in London in 1865, and then it was taken over by his son. The company came to dominate the planet and set up branches in 68 countries around the world, until its collapse in September 2019 (Time 2019).

In order to explain the phenomenon of tourism, Lagos (2016) cites an important collection of approaches based on psychological theories such as Maslow's hierarchical motivations (1954), where tourism is classified as the highest level of "self-realization", as well as many other theories, such as of Plog (Lagos 2016 p.148 and Cruz-Milán 2017), where the psychograph of the American tourist is studied, or Ittlesson for the environmental interpretation of the experiential visit (Lagos 2016, p.151). Also an interesting description of tourism is made by Zacharatos in a special volume of XEE (Zacharatos 2010).

According to the United Nations definition (UN 1993), the classification of international visitors is based on the motivation of visitors (those who move to a paid profession or are in transit or are refugees are not considered tourists) and on the length of stay, which distinguishes those who spend at least one night in the visited country (tourists) from those who do not spend the night (day visitors).

Next, we have to delimit tourism within the framework of "Economic growth", i.e., the take-off of the economy from the industrial to the (hyper)-consumer society and the (hyper)-profitable capitalist development at a national level (Rostow 1960 and Cornwal 2018), as well as "Development", which is understood as the increase of the efficiency of an economy coupled with the rise of social welfare and prosperity, which is increasingly based on the second rather than the first part of the definition in line with the current wording of the OECD target. "*We work as partners with governments and private actors in developing countries to create a sustainable world where every person has the opportunity to live a healthy and productive life*." (OECD 2021). There is a wide bibliography that focuses on the conditions of "Sustainable" development.

It should be noted here that tourism as a socio-economic phenomenon belongs to the service sector, not to industrial production, and has an important dimension and contribution to economic growth in terms of contribution to the national product besides the role of global tour operators and hotel chains. However, in recent years, with the development of the "digital society", in the midst of economic crises and the ongoing health crisis, the form that seems to prove more resilient is the form of sustainable tourism development.

Sustainable tourism development is tourism expansion designed to promote balanced regional and local economic development, as well as the well-being of citizens, social equality and justice, employment growth, advocacy for local entrepreneurship, skills development and the protection of the environment of each tourism-receiving region. On these same principles, "responsible tourism" in terms of consumption, along with a high level of tourist satisfaction, (UNWTO 2005)[1] is theoretically based. The United Nations World Tourism Organization today proposes, amidst the Covid-19 pandemic, precisely the choice of restoring tourism (UNWTO 2021)[2] through the principles of "responsible tourism".

2. Sports tourism and sustainable development

Tourism, as it has been widely described, includes many forms, such as mass tourism, which mainly focuses on holiday tourism, summer or winter depending on the region, but also includes an alternative, broad group, called "Thematic tourism" (Vagionis and Leontidou 2020). Thematic tourism is an alternative strategy of approaching the offer of a tourist product, specialized for special groups of the market, with possibilities for better penetration of marketing, but also better offers of services.

Thematic tourism, in the context of sustainable tourism development, can include forms of activities and practices aimed at attracting the visitor/tourist whose interaction with the natural environment and/or with the human factor of the host regions, municipalities and communities, promotes the development of tourism that strengthens these places economically and socially, contributing to the creation of jobs and the well-being of citizens, as well as protecting the environment and the special cultural heritage of these destinations.

So the essence of thematic tourism, with an emphasis on sustainable development, is the creation of a wide and constantly expanding field of action for the development and enrichment of the tourism product, which

1. *"Sustainable tourism should also maintain a high level of tourist satisfaction and ensure a meaningful experience to the tourists, raising their awareness about sustainability issues and promoting sustainable tourism practices amongst them".*

2. *"Tourism must come back and it presents us with a choice: to return to business as usual (or worse, take backwards steps in progress), or to use sustainability as a core driver of our return. Responsible tourism must lead the way to help tourism companies build back better".*

is better oriented to the local human and natural environment, having as its main goal the optimal use of local environmental resources, the respect for the socio-cultural authenticity of local communities, as well as the effort to ensure sustainable, long-term economic activities and to provide socio-economic benefits to both tourism service providers, host societies and tourists.

A wider category of such forms is rural tourism, with milder forms like agritourism, ecotourism, zero carbon, birdwatching, photographic/filmographic, wine tourism/tasting, and others. A more dynamic category is the one of sports tourism. This includes a variety of sports that suit all types of natural terrain, such as mountains, plains, forests, rivers, seas, asphalt, dirt roads, trails, rocks and every other natural characteristic, with specifications that we will see in the next section.

According to the empirical analysis, the sports activities related to tourism include:

2.1. The arrival of tourists/visitors for active participation in sporting events, individually or as a team, but also their stay to prepare for a sport

This case concerns both individual athletes and groups of athletes, who travel in preparation for or to participate in sports, and the accompanying missions by doctors, technicians and agents, journalists, etc., who often extend their stay at the venue before the actual sports event for acclimatization, or even after it.

A classic example is the participation of thousands of international athletes/tourists in the "Authentic Marathon" of Athens, which is promoted by the authorities as the flagship of sports tourism of the country[3] (SEGAS 2021).

This case concerns, in addition to the dozens of world-famous marathons on the planet (Boston, London, New York, Berlin, Tokyo, etc.), many sports, such as the international classic athletics events, as well as football or basketball teams such as world football. It also concerns great cycling events like the Tour de France, the Giro d' Italia, or the Vuelta à Espana, or international tennis tournaments such as the Roland Garros. In such events, especially when there is national interest, there is wide media coverage (see national basketball team in earlier times, or tennis and Tsitsipas nowadays, etc.).

It should be noted that both preparation and participation in events are parts of tourism, regardless of whether or not the athlete or team's fee is included, or the fee for participation in the event. The eventual remuneration and/or prizes come from the organizing authority of the race/tournament and/or by sponsors, who are not legally identical with the host country.

2.2. Watching a sport as a spectator of a sporting event or a supporter of a team

From the Pan-European Athletics Championship of 1982 at the newly built Olympic Stadium in Athens, with the Gold Medal of Anna Verouli in javelin throwing and the relative delirium of spectators and the media then and for many years after, to the 2004 Olympics with the Gold Medal of Sofia Bekatorou in Sailing and the Silver of Nikos Kaklamanakis in Windsurfing, which remain unforgettable to this day, and other subsequent major events, until the Gold Medal of Katerina Stefanidi and the Silver of Nikole Kyriakopoulou in the pole vault in 2018 and the respective fireworks from the media, to the very recent victories of Stefanos Tsitsipas, the contribution of sports to tourism becomes evident and is very important, without expanding to football or basketball teams, etc.

2.3. Visiting sites and places tied with history and cultural heritage, the sport culture or a sporting legend

The honor of having Olympia, the birthplace of the Olympic Games, in our country, along with many other ancient stadiums, is a unique and world-class, first-class tourist resource. But the Museum for the History of the Olympic Games and the Museum of the Modern Olympic Games in Olympia, though precious, are too old and too small, respectively. A new museum is being prepared at the Olympic Venue in Athens. Thus, we cannot yet boast of an Olympic Museum like the one in Lausanne, which has a global appeal. Currently, in a side area of 'Callimarmaron' Stadium in Athens, the names of the Greek Olympian Winners are engraved and fading on neglected columns (without even mentioning their sport). This provides a sad contrast with the Museum of Archeology and Anthropology of the University of Pennsylvania where 794 registered Olympian Winners of the Greek world are displayed worldwide (Penn Museum 2021). What an emotion to learn from the Americans about the glorious runner Leonidas of Rhodes, with 12 Olympic victories in running in 4 Olympics, as well as the unparalleled Hipposthenes

3. *"Every 2nd Sunday of November, Athens becomes one of the largest, if not the largest, in size, prestige, social participation, state support and media acceptance sporting, cultural and tourist event of the year: the Athens Marathon. The Authentic (AMA) ".*

of Sparta, who won 6 Olympic victories in wrestling in 6 Olympics from 632 to 608 BC!

2.4. Tourism with the aim of improving health, fitness and well-being through sports activity

In this case, visitors/tourists combine their personal holidays with their favourite sports. In this case, many organizations such as travel agencies, hotels, local clubs, and even local governments organize sports programs, sports camps, and open sporting events, which enrich and integrate with varying degrees of success into the local tourism product. These programs are supported by organization and logistics, animation teams, hotel coaches/trainers and take place in existing private infrastructure (gyms, spas, courts, swimming pools, marina, water sports center, etc.), or in theme parks, or in public sports infrastructure. It is worth mentioning, for example, the extensive sports tourism program and the golf or triathlon competitions at the Costa Navarino Resort in the Peloponnese. At the same time, in addition to accommodation or specialized tourist offices, there are many companies renting sports equipment, which, without organizing, simply support sports activities.

The events and programs of sports activities, which are addressed to visitors/tourists and enrich the tourist product, vary in degree of difficulty as well as impact, i.e., intra-business, local or international. They may include, but are not limited to, hiking, mountaineering, climbing, sports or touring horseback riding, running, archery, sailing, windsurfing, surfing, mountain and water skiing, ice skating, road or mountain biking, scuba diving, golf, etc. They also include “adrenaline” or “increased-risk” sports (extreme sports) such as river rafting, with inflatable boats, bungee jumping, paragliding, cliff diving, skydiving, etc.

3. Sports tourism: potential, development and possibilities

3.1. Infrastructure-intensive sports tourism: skiing - golf - water sports

There are forms of sports tourism that are very important in supporting the tourism competitiveness of the country and fighting the intense seasonality. They require high investment to be competitive. These forms have been extensively discussed, on a scientific, administrative and business level, and have complex legal and urban dimensions. Three representative cases follow.

3.1.1. Ski resorts

Skiing is perhaps the most popular and typical type of sports tourism. In Greece, skiing is popular among leisure sportsmen and professional athletes alike. The ski resorts in the mountains of Greece have been operating for many years –the oldest organized ski resort being the one in Seli, operating since 1934.

Today, the ski resorts of the country constitute a particularly remarkable network, especially in relation to the population and the area of our country. The network of Greek ski resorts consists of 22 centers (Snowreport.gr 2021, Xionodromika.gr 2021) and is noteworthy for being geographically dispersed in almost all regions of the country. It is a network consisting of a total of over 100 lifts and over 200 ski runs (Table 1), which could integrate more effectively into the international profile of the country’s tourism product, thus reducing summer seasonality and contributing to the attraction of 12-month international tourism.

However, the ski resorts continue to be affected by problems of economic viability due to reduced operating days and reduced investment interest; the latter is allegedly due to the protective provisions of the natural environment that limit construction high in the mountains. The state regulates the operation of ski resorts (EOT 2003). A possible consequence of deregulation in the allowed land uses would create a particularly increased synergy for ecological disaster, given global warming and the expansion of wind turbine parks in the mountains of the country.

Apart from the ecological side, any deregulation would also have socio-economic consequences, since the villages that are close to the ski resorts enjoy very good tourist infrastructure in terms of accommodation, catering and operation of their local market. If permits are given for hotels and shopping malls on the peaks, next to the ski resorts, they will stream most of the revenues solely to the contractor business group and will gradually ossify the villages, together with the vulnerable communities of each area.

3.1.2. Golf

Another important tourist infrastructure of the country are golf courses, which have further development possibilities. The first one was the Golf of Glyfada (today “Konstantinos Karamanlis”), which opened its gates in 1962 and has been operating continuously since then. It was designed by Donald Harradine and in 1979, after a major upgrade, hosted the World Cup.[4]

4. The Americans Hale Irwin and John Mahaffey boasted victory.

TABLE 1 Ski centers in Greece, 2021

Ski center	Venue	Prefecture
Parnasos	Kellaria	Viotia
	Fterolaka	Viotia
	Gerontovrachos	Viotia
Seli	Seli	Imathia
	Chryso Elafi	Imathia
Metsovo	Politsies	Ioannina
	Karakoli	Ioannina
	Anilio-Zygos	Ioannina
Karpenisi	Velouchi	Evrytania
Lailias	Lailias	Serres
Falakro	Falakro	Drama
Elatochori	Elatochori	Pieria
Olympus	Vrysopoules	Larissa
Vernon	Vitsi	Kastoria
Kalavryta	Helmos	Achaia
Vermion	3-5 Pigadia	Imathia
Vasilitsa	Smixi	Grevena
Voras	Kaimaktsalan	Pella
Pisoderi	Pisoderi	Florina
Pertouli	Pertouli	Trikala
Pilion	Agriolefkes	Magnisia
Menalon	Ostrakina	Arcadia
Total	**22**	

However, golf in Greece did not become part of the country's tourism product until recently. Today, Greece has seven 18-hole courses: two in Costa Navarino, and one each in Crete, Rhodes, Corfu, Porto Carras and Glyfada. Another is under construction in Porto Heli.

The demand for golf courses for games and, even more so, as an activity in the field of sports tourism is strongly increasing. The integration of golf into the tourist product is a given and the international interconnection of the centers is good. But the potential of our country is still far below our tourism competitors. In comparison, Bulgaria has 6 golf courses and Turkey 15, while in the arc of Croatia, Slovenia, Slovakia and the Czech Republic, there are over 200 golf courses (Top100golfcourses.com 2021).

3.1.3. Sea/Water Sports

Sea and water sports are clearly dependent on infrastructure, since apart from perhaps swimming in the open sea, everything else needs supportive infrastructure on the coast, in the form of tourist ports, sports piers, support and storage facilities. Tourist ports (marinas) are necessary for the development of the tourist product of our country. In fact, the demand for mooring yachts is strong and growing over time, despite fluctuations in economic prosperity and often adverse tax regulations. The availability of marinas and mooring places in Greece is dramatically lower than expected in relation to the coastline or the population, or tourist traffic and demand. Data in Table 2 underline that the relevant

TABLE 2 Pleasure boats and marinas in Greece and other European countries 2018, 2020

Country	Population* 2020	Pleasure boats in marinas	Marinas 2018	Nr. of pleasure boats / 1,000 inhabitants
Finland	5,506,029	731,000	1,750	**133**
Sweden	10,380,245	753,000	1,000	**73**
Croatia	4,058,165	105,000	123	**26**
Netherlands	17,557,781	280,000	1,200	**16**
France	67,407,000	752,935	376	**11**
U.K.	66,796,807	463,019	500	**7**
Italy	59,353,935	400,000	105	**7**
Portugal	10,295,909	55,000	28	**5**
Germany	83,190,556	441,530	2,647	**5**
Greece	10,718,565	17,655	28	**2**
Poland	38,268,000	51,170	290	**1**

Source: Icomia, Greek Marinas Association, 2018. <https://greek-marinas.gr/en/gma-study>

* Populations: Annual national estimates, 2020.

TABLE 3 Nautical sports clubs in Greece, 2021

Nautical sports Regions	Number of clubs
Region of Athens	42
Aegean Islands	32
Southern Greece	21
Northern Greece	17
Region of Evoikos	17
Western Greece and Ionian islands	16
Central Greece	15
Total	**160**

Source: Greek Sailing Federation. Compilation by the author.

yacht tourism is under-served. The reasons are varied and mainly concern the ownership status and the status of users and exploiters of these coastal infrastructures (Vagionis, Kasimati & Kafouros 2011), which is gradually being liberated from a strict state embrace[5].

However, in the narrow context of this article, which aims to stress the potential of sports tourism, we will highlight the "soft" infrastructure of the existence of 160 Nautical Clubs registered in the Hellenic Sailing Federation. The registered groups (EIO 2021) are based in all regions of the country (Table 3) and constitute a significant wealth of social capital.

These clubs are based on a variety of coastal facilities, ranging from privately owned or exclusive ports, to simple piers, to bona fide accommodation in tourist ports, or even to legally disputed or abusive facilities. And while this is the case, sailing and water sports have given us plenty of Olympic Medals.[6] The vast majority of sailing clubs are open to possible cooperation with tourism structures, hotels or offices that would like to integrate the know-how and infrastructure of the clubs

5. There is a multiplicity of studies and articles regarding the marinas, thus on this subject we shall remain brief.

6. From the medals of Eskitzoglou, Zaimis and Prince Constantine at the Rome Olympics in 1960, to Hadjipavlis in 1972 in Munich, Boudouris, Gavrilis, Rapanakis in 1980 in Moscow, Kaklamanakis in 1996 in Atlanta, Bekatorou and Tsoulfa and again of Kaklamanakis in Athens in 2004, until again of Bekatorou, Papadopoulou, and Kravarioti in 2008 in Beijing.

into the international tourism product of the country, in the form of sailing schools and other possibilities, with mutual beneficial agreements, for the benefit of the country's tourism as a whole.

3.2. Sports tourism with small infrastructure needs: mountaineering - cycling - open running

In this section, we will present the possibility of enriching the tourist product with existing capital of tourist activity in the country with no requirement of heavy infrastructure. This has a significant development and impact in Greece as well as also internationally, but is not used adequately in terms of its inclusion in the international tourism product of Greece, at least compared to other countries. This has the potential to play a much more important role in reducing seasonality, spatially balanced and sustainable tourism development.

3.2.1. Mountaineering

Greece is promoted as a country of seaside resorts and the whole tourist structure has been mainly built on this doctrine. But our country is a very mountainous country, with hundreds of beautiful mountains and kilometers of mountain trails, which may often be marked in a primitive or vague or wrong way, while others are destroyed by lack of maintenance, and few of those are actually included in tourist itineraries. Their promotion is vital, especially for the turn of visitors to these activities and the consequent mitigation of summer seasonal tourism (Vagionis and Leontidou 2020).

Maps and guides

There are several mountaineering writers or companies that deal with the mapping of the mountain paths of the country, such as N. Nezis,[7] A. Kalogirou,[8] Topoguide/Anadigit,[9] Anavasi,[10] Anevenontas[11], etc., who with their own efforts try to highlight the wonderful natural environment of Greece to professional climbers and the general public. Today, the technological revolution, with cartographic applications and portable GPS as standalone devices or in mobile phones, gives a completely new dynamic and helps to integrate mountaineering into the national tourism product.

Mountain refuges

In order to get a taste of the potential of mountaineering and hiking we can refer to the potential of the mountain refuges of Greece. These constitute a rich network in all regions, without exception, available to the hiker, regardless of nationality. Therefore, these could become an excellent tourist infrastructure that is now hardly integrated into the tourism product and has a huge growth potential. The network of refuges consists of various types of shelters: small shelters, called "emergency shelters" that are unmanned; large refuges that are open about six months a year (e.g., May - October), with staff and some services; and, finally, a few that operate throughout the year.

The mountain refuges belong by and large to the local mountaineering associations, which we will refer to immediately afterwards. These are either open or can be visited after consulting the relevant club or the administrator. The shelters in each case are infrastructures that are controlled by the state, in the sense that EOT (The Greek National Tourism Organisation) and the Hellenic Federation of Mountaineering and Climbing have issued specific regulations for their operation (EOOA 2021a).

The first mountain refuges were built before World War II and are all jewels of mountain architecture. The refuge Spilios Agapitos (or "Zolota") was first founded on Mount Olympus in 1930 and then shelters were built on Mount Parnassos and Panachaiko in 1931, in Hel-

7. Nikos Nezis is the 'patriarch' of Greek mountaineering. For years, he was the general secretary of the Hellenic Mountaineering - Climbing Federation and a pioneering author of the mountains of Greece, the history of EOS, EOOA, etc. His book *The Greek Mountains* published in 1979, delimited the mountainous geography of Greece. It continued with books, *The Mountains of Attica* (1983), *Olympus* (1986), *Bibliographic Guide to the Geography, Nature and Monuments of Greece* (2002), *Toponyms of Attica* (2013) and others. The culmination of his work was the three-volume *The Greek Mountains* (2010), an encyclopedia of the mountain geography of Greece (1,180 pages) which presents, in detail, 860 Greek mountains, accompanied by maps. The Academy of Athens, recognizing his work, honored him in 2011. More details www.eooa.gr (accessed Jan. 2021).

8. Antonis Ch. Kalogirou is the most prolific Greek writer of hiking guides nowadays. He has published over 45 books with descriptions and travelogues for many known and unknown parts of Greece. Among them: Mani (2005), Zagori (2005), Olympus (2009), Parnitha (2009), Erymanthos (2011), Hydra (2012), Pateras (2013), Aegina (2014), Sikinos (2015), Nafplio (2016), Vytina (2017, 2018), Hellenic Lighthouses (2019), Mainalo (2020), etc. For more details see: <https://www.pezoporia.gr/pez/ekdos.asp?cat=viv&vid=164> (accessed Jan. 2021).

9. See: <http://www.topoguide.gr/anadigit/anadigit_manifest.php>.

10. See: <https://anavasi.gr/index.php?route=information/information&information_id=11>.

11. See: <https://anevenontas.gr/category/editions/books/>.

TABLE 4 Mountain refuges in Greece, 2021

Region		Mountains and number of refuges					
Macedonia	51	Olympus 10	Pieria 5	Vermio 4	Varnous 3	Pageo 2	other 25
Sterea Ellada	28	Dirfys 5	Parnassos 3	Vardousia 3	Iti 2	Giona 2	other 13
Thessalia	24	Agrafa 7	Pilion 6	Olympus 5	Kissavos 2	Othrys 2	other 2
Peloponnisos	13	Ziria 3	Taygetos 3	Panachaiko 2	Parnonas 2	Menalon 1	other 2
Ipiros	13	Valia Calda 3	Joumerka 3	Tymfi 3	Smolikas 2	Mitsikeli 1	Mavrovouni 1
Kriti	13	Lefka Ori 7	Psiloritis 5	Dikti 1			
Attiki	12	Parnitha 7	Imittos 2	Gerania 2	Kitheronas 1		
Thraki	9	Rodopi 4	Pageo 2	Menikio 2	Saos 1		
Voreio Aegeo	2	Chios, Pellineo 1	Chios, Amani 1				
Total	**165**						

Πηγή: Topoguide <http://www.topoguide.gr/greece/mountain_refuges.php>.

mos and Oiti in 1932, in Ziria in 1933, in Parnitha (Bafi) in 1937, in Mitsikeli in 1937, in Olympus (Stavros) and in Chortiatis in 1938, in Paggaio and Kissavos in 1939. There are at least 165 shelters on the mountains in Greece, and in Table 4 above, an attempt is made to present them. The wealth and the possibilities of a better integration in the international tourist profile of the country are obvious, as is their underexploitation.

Mountaineering and hiking clubs

In the 20th century, mountaineering clubs flourished as the sports culture and the love for mountaineering began to develop. At the same time, the difficulty of transportation, the poor road network, the cost of the trips and the lack of private cars contributed to the development of the clubs. EOS Athens was first founded in 1928. Hiking and mountaineering clubs and associations have remained active until today for a number of reasons, despite the prevelance of private cars and the culture of individualism. Some key points are that mountaineering is often dangerous to do on one's own, that people do not know exactly where to go, that many times the route is not circular or back and forth, but a crossing, and there is no way back. Also, clubs are favoured for the smaller cost of organized excursions and the social connections they offer, especially to those who live in large cities. Depending on their activity, the associations belong mainly to two federations: the ΟΦΟΕΣΕ (Federation of Nature-loving Mountaineering Excursion Clubs of Greece) and the EOAA (Hellenic Federation of Mountaineering and Climbing). The former includes clubs with a more intense tourist orientation.

There are at least 152 mountaineering clubs in Greece (Pezoporia.gr 2021 and EOOA 2021b), established in all regions of the country. They are presented in Table 5. It is obvious that these clubs represent huge social capital that, to a large extent, remains out of the international tourist itineraries and sports tourism programmes.

TABLE 5 Mountaineering/trekking clubs in Greece, 2021

Region	Number of clubs
Macedonia	41
Attiki	40
Sterea Ellada	19
Peloponnisos	17
Thessalia	14
Kriti	9
Aegean Islands	5
Ipiros	4
Thraki	3
Total	**152**

Source: Pezoporia.gr <https://www.pezoporia.gr/pez/syllpra.asp?cat=pos&toggle=1>.

3.2.2. Cycling

Cycling clubs, cycling brevets, tour operators

The competitive cycling clubs in Greece (those that belong to the Greek Cycling Federation and compete in the Championships) are rather rigid structures and cannot play an important role in sports tourism. In contrast to the above, in the last decade, several dozen cycling clubs have been founded and operate, with both an athletic and a cyclotourist character, having an open orientation to wider parts of society. They have shown fast development in recent years and notably in all geographical regions of the country. Through the various social networking platforms,[12] such clubs concentrate and group cyclists in cycling 'rounds' 'tours', 'events' or 'strolls' in urban, mountain, and coastal routes, around archaeological sites, or simply in beautiful suburban routes in their respective areas.

In parallel, some of these clubs[13] organize and manage longer and more organized cycling routes, called cycling "brevets". Brevets are non-racing cycling events, from 200 km to 1,000 km, open to every cyclist, regardless of their level. The Audax Club Parisien (ACP), with representatives in over 55 countries, officially certifies these events. In order for a cyclist to participate in a brevet, a disclaimer must be signed

12. Such clubs are the "Cyclists of the Square" (Ποδηλάτες της Πλατείας) <https://www.facebook.com/ptpns/>, the "Friends' Cyclostrolls" (Ποδηλατοβόλτες Φίλων) <https://www.facebook.com/PodilatovoltesFilon.PoFi/posts/1858091467689958>, the "Saints" (Άγιοι) <https://www.podilates.gr/content/oi-agioi>, the "Sioux" (Σιού) <https://www.facebook.com/indians.sioux.mtb.gr/> and many more.

13. The more well known of them are: The "Ble Cycling Club", organising 5 brevets; "PEPA" – (ΠΕΠΑ) organizing 4 brevets; the "BioRacer", 5 brevets; while fewer brevets are organized by other clubs such as the GrCycling Club, the Greek Randonneurs and other smaller clubs, but also enterprises like "Aphrodite Lingerie", "GoSport", "ActionBike Club", "Geo-Bicycling", or entities like municipal sports clubs, etc.

and a brevet registration number, which is international and for life, must be obtained. Otherwise, the cyclist must drive respecting the traffic signs, wear a helmet, have lights, etc. and follow the whole route cycling, self-sufficient, without being transported, towed, etc., at a certain time, which is considered sufficient and usually corresponds to a speed of 15 km/h. The ACP has recorded all the brevets, worldwide, from their inception in 1921 until today, amounting to thousands. September 11, 2021 will mark the 100th anniversary of these events.

This form of cycling was chosen as a representative possibility for the development of sports tourism, since cycling in Greece is favored for the mild climate all year round as well as the reduced traffic on the country roads. The wonderful landscapes of the country (and every place) are ideally highlighted by cycling, since the speeds are low enough for the cyclist to enjoy the landscape with all the senses, but is also much faster than hiking, to cover significant distances in one day.

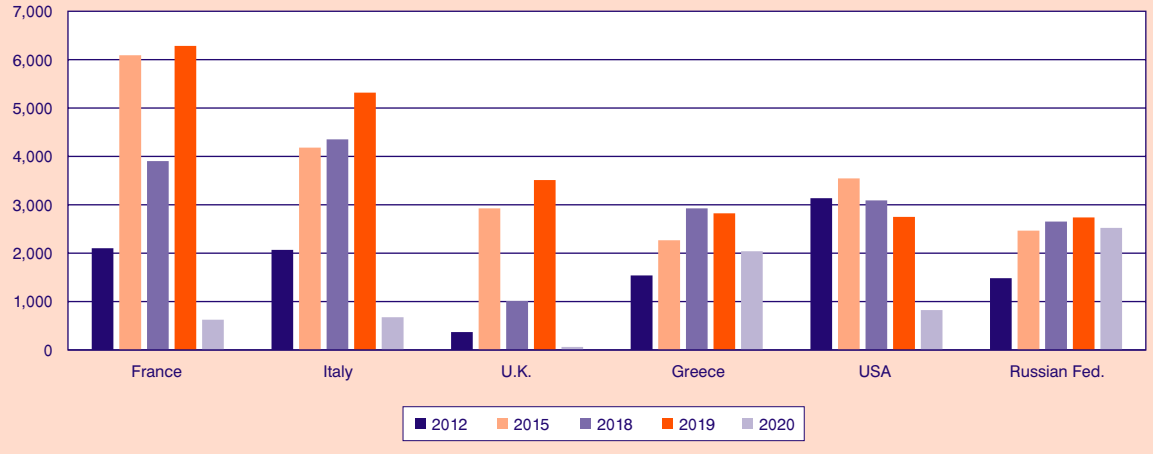
The social capital formed through cycling events in Greece is quite young, about 15 years old, especially in relation to bicycle-developed European and other countries. However, it advanced quickly and today it is very high, with a rich program of events almost every week (Brevets.gr 2021) since –due to the favorable factors mentioned– Greece competes with much larger and developed countries. In Greece, the number of registered cyclists is today around 5,000 while in the last decade 2 to 3 thousand people participated every year in such events (Figure 1).

Based on the excellent organization of the ACP, the aggregate and comparative data of 2020, the year of the pandemic, are available, in addition to previous years. Table 6 gives the relevant figures for 25 countries. Observing the fluctuation in participations, with emphasis on the data for 2020, we can see, and utilize in different ways, the effect of the pandemic and the resilience of different countries in this kind of activity, as in Figure 1. Also, Table 6 shows in detail how the 8th place of Greece in the hierarchy of 2019, becomes 5th internationally in 2020, emphasizing the resilience of the relevant social capital.

The crucial element is that the vast majority of participants are Greek cyclists. This, strange as it may seem, changed slightly in 2020, when we saw in brevets some European cyclists who managed to "escape" from their "locked" countries. This alone, perhaps a statistically insignificant fact, is of great qualitative importance. It shows the possible impact, if not the dynamics, that the integration of cycling sports tourism organizations could have on the advertised tourist product of Greece.

In Greece, the only non-competitive national cycling event is perhaps the cycling "Spartakiada",[14] which is a cycling event from Athens to Sparta that has been organized on the first Saturday of October for 31 years

FIGURE 1
Participants in cycling brevets 200km



Source: Audax Club Parisien <http://www.audax-club-parisien.com/download/2020>.

14. No relation with the Roman slave Spartacus or the athletics events in the former socialist countries.

TABLE 6 Participants in cycling brevets 200 km, in selected countries, 2012-2020 (ranking 2019)

Rank	Years	2012	2015	2018	2019	2020
	Country	200 km	200 km	200 km	200 km	200 km
1	Thailand	-	4,755	9,322	7,392	5,326
2	Japan	2,878	4,124	6,293	6,447	3,963
3	France	2,105	6,091	3,908	6,286	628
4	Italy	2,072	4,186	4,352	5,319	678
5	India	436	1,567	4,092	4,312	2,225
6	Un. Kingdom	370	2,929	1012	3,515	64
7	Brazil	1,845	4,164	3,563	2,917	1,628
8	Greece	1,542	2,266	2,927	2,824	2,041
9	USA	3,138	3,550	3,092	2,754	827
10	Russian Fed.	1,483	2,465	2,655	2,742	2,527
11	Spain	887	1,285	1,581	2,292	1,069
12	China	9	111	708	1,879	274
13	Germany	644	1,062	1,197	1,813	266
14	S. Korea	129	957	1,941	1,795	1,065
15	Australia	2,522	2,060	1,216	1,476	712
17	Ukraine	328	553	1,064	1,247	1,449
18	Philippines	67	571	1,379	1,188	746
19	Belgium	382	569	1,077	1,119	694
20	Romania	-	121	993	1,022	545
21	Ireland	233	600	677	646	0
22	Netherlands	125	222	623	824	736
23	Canada	610	728	616	733	361
24	Sweden	265	484	649	566	418
25	Taiwan	1,025	1,025	546	401	496

Source: Audax Club Parisien <http://www.audax-club-parisien.com/download/2020>.

by PEPA (PEPA 2021a, b). The organization has a very small international impact since every year there are 10-15 foreign cyclists from a meagre total of 300-350 participants in recent years, and quite fewer in earlier times. The difficulties in organizing, in communication, in international relations and the lack of state support are obvious, especially when the event is compared to similar events such as Paris-Brest-Paris (PBP 2021) with 5,311 cyclists, of which 778 are over 60 years of age, 2,296 are French and 3,015 (57%) are international. Even closer to us, in Italy, the Maratona del Dolomiti[15] (MdD 2019) in 2019 saw some 9,038 cyclists participate and 8,849 finish, of whom 926 were women. There were 4,572 Italians, and 4,466

15. A strange coincidence, the Italians borrowed the Greek term Marathon/Maratona, while the Greeks borrowed the Spartakiad-a-e term for their respective cycling events.

international visitors, i.e. 50%, with 1,099 cyclists from Germany, 987 from England, 723 from Netherlands, 3 from Turkey and 2 from Greece. With their companions and friends, they flooded the wonderful mountain villages in the Dolomites, which look like Zagori in Greece. And if, as the English say "where there is a will, there is a way", this may be enough to convince the tourism policy organizers here that sports tourism is lacking in Greece and is the future!

Efforts for the internationalization of Greece as a cycling tourist destination have started and have shown some good efforts in Crete. In the most touristically developed and extrovert area of the country, there are, for cycling alone, a number of tourist/sports businesses and events.[16] We will refer here, as a good example, to the specialized tour operator, Cretan Sports Cycling (2021). Aimed at international cyclists, their friends and families, it organizes "cycling holidays" with cycling tours throughout the season, with names such as Lasithi Plateau, Wine Roads etc., which have a tourist appeal. The top event is the internationally acknowledged "tourist race" the "Tour of Crete", following the standards of international cycling tours, with 6 daily stages of 70 to 90 demanding kilometers, with sponsors and advertising, addressed to experienced cyclists of all levels, pre-registered in good time before the event. It is a success, while this year will be the 5th event and is scheduled for May 9-14, 2021. It is an example to be imitated in other regions of the country, and if it multiplies in size, it will be able to compete with the Maratona del Dolomiti, but in the Cretan mountains.

As we have seen, cycling has very good prospects for the development of sports tourism in Greece. However, the organizational and administrative difficulties for a continuous and sustainable development beyond the stage of the "incubator" must be overcome with the cooperation of institutions, a point that must be understood both in Crete and in the other regions that are still far behind.

3.2.3. Running events

The primordial human sports activity, the road race, has been for centuries a factor of culture, the cessation of wars and the strengthening of friendship of peoples. In the context of the intense and timeless cultural dimension of road races, and especially the open races, outside the narrow confines of "professional" athletes, they have been and remain an important resource of culture and international tourist attraction, under conditions of proper utilization and promotion.

With an argument similar to that of cycling, but also because the possible examples of road events is practically infinite –we have already mentioned earlier the international marathon– we will limit ourselves to the open road events in Greece, and we will note in advance, but also in the end, that it is a social capital and at the same time a very important resource that is completely untapped, with the exception of the Marathon. The 100+ events of open road racing, all over the country, have enjoyed a particularly growing dynamic in recent years, in Europe and around the world, due to a shift towards a healthier and more athletic lifestyle.

More specifically, road races in public places have names such as "popular" or "open" races, or health roads, or special purpose roads, e.g., for collecting money from sponsors, or for ecological claims, etc. and can be conducted in special facilities such as parks or stadiums, or –more often– on a public road, or on suburban, coastal, lakeside, mountain, or even purely mountaineering routes, such as the internationally acknowledged "Marathon of Olympus" (44km), which is scheduled on 26.6.2021 for its 17th run (Olympus Marathon 2021). Similarly known is the marathon on the mountain Eros (38.5 km) of Hydra island (Hydrastrail.gr 2021), which is scheduled for April 10, 2021, and other such events often referred to as "feats" because of their difficulty. These two and a few others have an international impact, which could be made even greater with appropriate publicishing by those responsible for the country's tourism promotion, as well as by the Greek tour operators.

In particular, there are races of 5 km, 10 km, half marathons (21 km) and marathons (42.2 km) on public roads. There are also mountain roads of varying distances and degrees of difficulty, depending on the slope and landscaping, such as the aforementioned and other smaller ones, such as the very popular "Efklis" (8.5 and 15 km) on the Southern Slope of Hymettus. Their number is surprising, as is their geographical distribution throughout the country. For example, for 2018 in Attica, 69 races were organized, while in the whole country, there were 286 open races on public roads and mountains, for distances of 5 and 10 km, half marathons and marathons (Table 7).

This huge potential is largely untapped for tourism, while these roads, e.g., the 19 roads in the Cyclades, but also in all the beautiful areas of the country, could

16. Such businesses are <http://www.cretanadventures.gr/gr/drast-podilasia.html>, <https://cyclingcreta.gr/cycling-training-camp/>, <https://www.crete-cycling.com/home.html>, <https://wp.bikingcrete.com>, and others.

TABLE 7 Open running events 2018. On public roads and mountain trails. 5km, 10km, half-marathons, marathons

Region	Total	Place and number of events					
Argosaronikos	4	Aegina (2)	Hydra (1)	Spetses (1)			
Dodecanissos	2	Rhodes (2)					
Ipiros	14	Arta (4)	Thesprotia (1)	Ioannina (8)	Preveza (1)		
Thessalia	27	Karditsa (1)	Larissa (16)	Magnisia (5)	Sporades (2)	Trikala (3)	
Thraki	3	Evros (2)	Rodopi (1)				
Ionian Islands	6	Kerkyra (4)	Kefalonia (1)	Kythira (1)			
Kriti	13	Iraklio (6)	Rethymno (4)	Chania (3)			
Kyklades	19	Ios (3)	Andros(2), Antiparos(2)	Kimolos(2), Sifnos(2)	Amorgos(1), Syros(1), Tinos(1)	Folegandros(1), Kythnos(1)	Donusa(1), Naxos(1), Santorini(1)
Macedonia	59	Thessaloniki (15)	Pieria (10)	Grevena(5), Drama(5), Kavala(5), Kozani(5)	Imathia(4), Pella(4)	Serres (3)	Kastoria(1), Kilkis(1), Chalkidiki(1)
Aegean Islands	2	Samos (1)	Chios (1)				
Peloponnisos	41	Argolida (10)	Arkadia (8)	Achaia (6)	Korinthia (5)	Messinia (4)	Ilia (4), Lakonia (4)
Sterea Ellada	95	Attiki (69)	Aitoloakarnania (5)	Fthiotida (8)	Viotia (5)	Evia (4)	Evritania(2), Fokida(2)
Total	**286**	**open running events**					

Source: Research and compilation by the author.

be international events of sports tourism and the spearhead of Greek hospitality.

4. Conclusions

The above theoretical and empirical approach documents the important role of sports tourism as a support for sustainable mild tourism development, which is the first goal of this article. The article highlights tourism development with respect to the environment as well as cultural values, such as humanitarian ideals, noble rivalry, love and care for the human body, in the context of the ancient Greek "healthy mind in a healthy body".

Especially for Greece, as it was elaborated in the article, it appears that with sports tourism and an approach "from below" by local communities, cities, islands and the hinterland, realistic and sustainable benefits can arise primarily in local societies and less to international tour operators and globalized travel companies. As we noted in the analysis, sports tourism comes from the distant historical past and at the same time is the future.

The purpose of the article will be considered successful if it achieves not only to receive attention but also to trigger actions by local and central actors in the direction of integrating sports tourism in the main priorities of our country's tourism planning for a viable, environmentally sustainable, geographically balanced and socially equitable development.

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