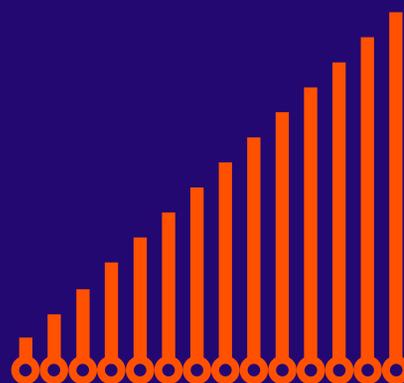
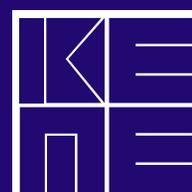


GREEK ECONOMIC OUTLOOK



- 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 Greek economy prepares for the post-pandemic era

A number of data and indicators suggest that 2022 will be a year of a significant return to normalcy for the economy.

In particular:

1. According to KEPE's econometric model (see section 1.3), the **growth rate** of the Greek economy is estimated at 8.6% for 2021 and is projected to continue in 2022 at a rate of 5.2% for the first half of the year. These forecasts are very close to the European Commission's recent forecasts: 8.5% for 2021 and 4.9% for the full year.¹ In other words, we are seeing the second highest growth rate in the euro area in 2021, and in the first quarter of the year, we will have managed to offset the losses of the pandemic in production and pick up where we left off at the beginning of 2019.
2. According to the latest European Central Bank report,² **real disposable household income** grew by 4.7% annually in the third quarter of 2021, the second highest in the euro area and six times above the European average. These figures are in line with those recently published by both ELSTAT³ and the OECD.⁴ Indeed, according to the OECD, the real income per capita of Greek households showed the second highest annual increase among its member states.
3. According to IOBE data, the **economic sentiment index** stood at 114.2 points in January, compared to 110.3 points in the previous month and 90.6 points a year ago. Also, the **business expectations index** in January 2022 in the manufacturing sector strengthened to 116.8 points, up from 109.1 in December 2021. To understand the progress, it is enough to mention that a year ago, the similar index stood at 94.9 points.⁵
4. In addition, the same report of the European Central Bank shows that in the last four years, Greece has seen the largest –among all Eurozone countries– **reduction in unemployment, so that it is no longer the country with the highest European unemployment rate**. In particular, unemployment in our country showed the largest decrease as it fell from 17.3% in 2019 to 12.7% in December, and the number of unemployed people is at its lowest rate since 2010 (see also 3.1).
5. Eurostat and ELSTAT data show that the **growth rate of investment in** the 9 months of January – September 2021, compared to the same period of the previous year, was the second highest (after Italy) in the Eurozone, 16.3%, almost four times the average of the group of countries (4.3%). In fact, Greece increased its investments in the first 9 months of 2021 by 15.6% and compared to the same period in 2019; in contrast, the Eurozone saw a decrease of 2.3%. The continued rise in investment is now being felt by the new deals signed by business firms such as Cisco, Pfizer, JPMorgan, etc. The evidence is encouraging, as investment can support healthy growth in the long term, shifting the burden from consumption, which currently dominates, to GDP. We expect new investments to further strengthen their momentum over the next three years, supported to a large extent by the financing that Greece is expected to receive from the European Recovery and Resilience Fund and the structural reforms under the National Recovery Plan, which aim to consolidate a business and investment-friendly environment.
6. In December, **private sector deposits** in banks rose by 4.3 billion euros, reaching a total of 180 billion euros, a level not recorded since September 2011.⁶ The cumulative increase in deposits over the last two years, and specifically since

1. See <https://ec.europa.eu/info/business-economy-euro/economic-performance-and-forecasts/economic-forecasts_en>.

2. <<https://sdw.ecb.europa.eu/reports.do?node=1000004869>>

3. <<https://www.statistics.gr/statistics/eco>>

4. <<https://data.oecd.org/hha/household-disposable-income.htm>>

5. <http://iobe.gr/ec_situation.asp?PD=2021>

6. <<https://www.bankofgreece.gr/>>

March 2020, has reached 35 billion euros, a record level that was achieved in conditions of the pandemic, with repeated lockdowns in the economy for several months.

7. After a year of negative returns following the outbreak of the COVID-19 pandemic in early 2020, the **Greek stock market returned to positive returns** in 2021, despite the ongoing health crisis and associated uncertainty (see also 1.5). During 2021, the Greek economy showed significant signs of recovery with a positive outlook, as reflected in key macroeconomic fundamentals. In this context, a series of **upgrades of Greece's credit rating** by international rating agencies took place, with the target of returning to investment grade approaching. Recently, the international rating agency Fitch upgraded Greece's outlook to positive, noting, inter alia, the significant progress made by Greek banks in improving their asset quality, significantly reducing the level of non-performing loans and enhancing their ability to provide credit to the real economy.
8. The **banking system is expected to normalise** and actively participate in the functioning of the economy. This is, of course, greatly helped by the fact that the **volume of problem loans has fallen significantly** over the past two years, at the fastest pace ever seen in the euro area. The ratio of non-performing loans fell to 15% at the end of September 2021 from 41% at the end of 2019 and is set to fall further to below 10% in 2022. It will continue to decline in 2023-2024 towards levels closer to the European average (2%-3%). Based on these developments, some normalisation of profitability is expected in 2022, especially for banks that have gone further in cleaning up their asset quality. The improvement will also come from lower recurring credit losses, healthy growth in fee income and reduced operating costs from ongoing restructuring programmes.
9. The outlook for **Greek tourism in 2022** appears to be very positive. According to a report by Accor, "Northern Europe Travel Trends Report", Greece is in third place in the preferences of Northern European travellers.⁷ More specifically, Greece scored 28% in the top 10 European countries and 18% in the world's top 10 destinations, "winning" the third place after Italy and Spain.

10. Finally, **Athens has** managed in recent years to make significant progress as an **international hub for remote work**, outperforming major competitors. Based on NomadList.com data, with an increase of around 194% over the last five years, Athens ranks 4th alongside Lisbon, ahead of cities such as Rome and Vienna.⁸

These positive developments and prospects do not imply that the return to normality will be easy. On the contrary. There are many challenges and problems, but they are not in themselves capable of changing the dynamic path of the economy's return to normality.

Challenges and problems

1. Inflation

The latest ELSTAT data suggested an inflation rate of 6.2%, compared to 5.1% in December 2021 (see also section 1.2).⁹ Although this level of inflation is a 25-year record, it is not surprising news. It was to be expected, after the increase in energy prices that we have seen in the previous period. More expensive energy has increased production costs and transport costs, and these in turn have increased the prices of goods. **Despite the "perfect currency storm" in January, we believe that much of the inflation is temporary, i.e., due to the supply and demand imbalances created by the pandemic crisis and the disruption of global supply chains.** As markets are restored and supply chains are reopened, this cyclical inflation will tend to gradually disappear. **A deceleration of inflation is therefore expected from the end of the current quarter onwards, which will be completed by the summer months.** There is, however, a second element of inflation that is of concern because it is structural and based on the strategic choices of the European Union (EU). This is the EU's strategic option of a 'just(?) transition', i.e., the creation of a 'clean' European renewable energy area by 2050, with a mid-point in 2030. Nobody is against a clean environment and renewable energy. On the contrary. But will this transition be smooth, without putting pressure on prices? Is it a mistake to choose natural gas as the only transitional energy source? Is a "just transition" premature? Have sufficient quantities of natural gas been secured to meet the increased demand in the transition period? Is the appropriate storage infra-

7. <<https://press.accor.com/continental-europe/accornortherneuropetravelreport/?lang=en>>

8. <<https://nomadlist.com/>>

9. <<https://www.statistics.gr/>>

structure in place? The answers to these questions will also determine the future energy price pressure on the overall price level. Here too, the deceleration is expected to be slower.

In the face of such a development, **views** have been expressed in the public debate **on the need for further horizontal measures** (i.e., beyond the ones already announced, like the reduction of social security contributions, the private sector solidarity contribution, the energy bill subsidy and the increase of minimum wages) such as reducing the excise duty on petrol and VAT rates in general. Despite the fact that Greece is in the top 5 European countries with the highest VAT¹⁰ rates (and this in itself is a problem), we believe that a potential VAT reduction in the current period would jeopardize the fiscal balance as Greece has committed through the budget to reduce the 2022 fiscal deficit from 9.6% of GDP, corresponding to €17.073 billion to €7.416 billion (4% of GDP) at the end of the year. The primary deficit should be reduced from 7% of GDP, or €12.345 billion, to 1.4% of GDP, or €2.68 billion. These reductions are a prerequisite for the country to join the investment grade in 2023, a tier that will boost the country's credibility and unlock portfolios of trillions of funds that currently cannot invest in Greece because they are not allowed to. **This does not mean that in the course of time and once the investment grade has been secured, the state should not review the current VAT regime.** A recent report by KEPE urges a redesign of VAT rates on goods and services so that the cost of the basket of goods and services for lower income households is shared more proportionally.¹¹ Examining the consumption profile of the three lowest deciles requires a specific approach, which needs to be regularly reassessed to ensure that income and tax policy initiatives do not exacerbate inequality and poverty. In the short term, however, we believe that the government should continue to protect vulnerable households **with targeted actions** to prevent the creation of new energy-poor households. At the same time, it should speed up the procedures for creating gas storage facilities.¹²

2. The Stability Pact negotiations and the achievement of fiscal balance

The Stability and Growth Pact is the set of rules governing the European Union's fiscal governance framework. The European Commission had announced, on the basis of the February 2020 economic governance review, the launch of a public debate on strengthening the effectiveness of the economic and budgetary surveillance framework. This public debate did not proceed due to the onset of the COVID-19 pandemic, which led to the temporary suspension of fiscal rules by triggering the general escape clause of the SGP, which is not expected to be deactivated before the end of 2022. Today, the content of the public debate has changed radically due to the pandemic, which, by radically altering the current economic environment and exacerbating divergence and heterogeneity across countries, has now added a new perspective to the whole review exercise. **The current system is characterised by complexity and the proliferation of rules, limited transparency, a lack of coherence and consistency between rules and objectives, over-reliance on unobservable indicators subject to frequent revisions, the reinforcement of pro-cyclical policies and strategies based on nominal figures, a lack of balance between fiscal sustainability and economic stabilisation in favour of the former, limited emphasis on the quality of public finances and insufficient protection of public investment.**

On the basis of the above and given the relaunch of the public consultation on economic governance in the EU, we believe that any revision of the fiscal rules must not perpetuate the weaknesses of the past.¹³ In particular, the EU fiscal framework should not incorporate inconsistent elements nor rely heavily on unobservable variables. What is crucial is that it should be based on more transparent tools that are easier to implement and more controlled by the government concerned, in order to facilitate their communication to the general public. The current fiscal framework attaches primary importance to the 3% rule for the budget deficit and the 60% rule for public debt. **These two**

10. Based on January 2022 data, only Hungary, Croatia, Denmark and Sweden have a higher VAT than Greece, and all of them are outside the Eurozone. In essence, in the euro area, Greece and Finland are in the top positions with a rate of 24%. See European Commission, "Taxes in Europe Database v3," and Richard Asquith, "2021 global VAT & GST rate changes," Avalara, Jan. 1, 2022.

11. See KEPE Report No. 82, *The impact of the social protection system on inequality and poverty in Greece and the EU*.

12. For the time being, the only LNG storage facility is the Revithoussa terminal. It has a storage capacity of 225,000 m³. We could have a second station if we had converted the depleted field in South Kavala into an underground natural gas storage facility in time. However, a decade has been lost since its construction was announced.

13. See KEPE Current Affairs Analysis 4/2021, at <<https://www.kepe.gr/index.php/el/ta-nea.html>>.

rules need to be reviewed as the economic environment has changed radically since their original conception and introduction several decades ago. For example, changing financial conditions have put the debt sustainability debate in a completely different light. **Maintaining a single debt benchmark for all Member States, which are, however, characterised by considerable heterogeneity, no longer seems to be justified and feasible in the current context, especially in the post-COVID era.** The revised SGP framework should also encourage **counter-cyclical-ity**, in the logic that dictates the creation of fiscal reserves in good times, in order to enable the economy to be supported in times of recession. In this way, it facilitates the balancing of the objectives of fiscal sustainability and economic stabilisation. It is worth noting that the importance of counter-cyclical policy was clearly highlighted during the pandemic period. Moreover, the introduction of elements of flexibility in the fiscal framework in recent years to increase the fiscal space for stabilisation is appropriate and justified. In this respect, it is sufficient to mention the recent recourse to the existing **flexibility** provisions (activation of the general escape clause) as the only feasible solution to the outbreak of the pandemic. **Flexibility must therefore remain a key component of the financial framework, while improving the ways in which it is implemented is necessary in order to enhance transparency.**

Regarding the imposition of financial sanctions in cases of non-compliance, we do not believe that a ‘penalty system’ can increase compliance with fiscal rules. On the contrary, a well-designed **reward system** can provide positive incentives for increased compliance

in Member States and overall be more credible, while enhancing the **ownership of** the governance framework by governments and the general public. In this light, we fully agree with the argument that it is time to put more emphasis on the ‘carrot’ rather than the ‘stick’ practice, as the latter does not seem to have worked. Moreover, we think it is clear that economic sanctions will be even more difficult to justify, let alone impose, in the post-COVID period.

3. Effective absorption of Recovery Fund resources and continued reforms

The effective absorption of the Recovery Fund and the NSRF will help to fill the huge investment gap of the last decades in the country. It is a necessary, but not a sufficient condition. It is reforms that are the sufficient condition for the current recovery to acquire the characteristics of sustainable growth. Greece has made significant progress in recent years in implementing structural reforms that can enhance the medium-term growth prospects of the economy. **However, there are still some important obstacles to achieving stable and strong growth.** Intensifying reforms, particularly in the **education, justice and public administration** sectors, will enhance capital productivity by making investment more efficient. A universal implementation of evaluation in the public sector, a fundamental change in the evaluation system for judges and a significant reduction in the paper and/or digital bureaucracy of the public administration are necessary.

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

1. Recent (macro-)economic developments

KEPE, *Greek Economic Outlook*, issue 47, 2022, pp. 7-15

1.1. The evolution of the demand components before the “Omicron” appearance

1.1.1. Introduction – domestic and external demand

Yannis Panagopoulos

In this section, using the existing recorded macroeconomic data, we proceed to the analysis of the current developments of the Greek economy during the pandemic. Based on the results of Table 1.1.1, we observe the continuation of the positive “climate” of the economy, from the 2nd to the 3rd quarter of 2021, in a period which is considered as a period of the pandemic’s decline. In the 3rd quarter of 2021, the growth of the economy continued, but at a slightly lower rate than that of the 2nd quarter of the same year. In detail, from 16.6% in the 2nd quarter of 2021, the economy growth of the 3rd quarter declined to 13.4%. Additionally, on a nine-month basis, we also observe the serious reversal of the growth rate of the economy. So, from a recession of 9.24% in the first nine months of 2020, we moved to a growth of 9.38% in the corresponding period of 2021.

Regarding the macroeconomic factors that contributed to the continuation of the high GDP growth in the 3rd quarter of 2021 (13.44%), on an annual basis (y-o-y), we should underline the positive rates for all of them. More specifically, the largest positive rate was recorded by exports of goods & services (48.6%) followed, in order of magnitude, by fixed capital formation (18.10%), private consumption (8.6%) and public consumption (5.7%). On the other hand, the imports of goods and services continued to move with a high positive rate during the same period (21.7%), but this has a negative contribution effect on economic growth.

The same positive picture with respect to the nine-month period, but with relatively lower rates due to the negative contribution of the 1st quarter of 2021, appears

in Table 1.1.1. More analytically, in decreasing order of magnitude, exports of goods & services (24.7%), fixed capital formation (16.3%), private consumption (5.7%) and public consumption (5.4%) are the most important factors on the nine-month basis for 2021.

Domestic demand is also reported with a positive sign for the 3rd quarter of 2021, although smaller than that of the 2nd quarter (Figure 1.1.1). Based on the existing components, from the recorded GDP growth (using seasonally adjusted data), we observe that private consumption was the most positive factor, with a rate significantly higher than that of fixed capital formation and of public consumption, in the 3rd quarter of 2021 (6.02 versus 2.20 and 1.26, respectively).

Concerning now the relative contribution between external and domestic demand (international vs. domestic demand, respectively), during the 3rd quarter of 2021, a comparatively more important positive role of the latter in the change of GDP (8.42) emerges. Additionally, the balance of goods and services also had a positive effect as a contribution to GDP, but the change in inventories had a slightly negative effect (5.16 and -1.28, respectively) (see Figure 1.1.2).

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 1.1.3, the trend of the ESI index until August 2021 was upward, reaching 113 points (from 90.7 points at the beginning of the year). Then and up to the end of 2021, there was volatility in a zone between 110 and 113 points for the index. This volatility can be attributed to two main factors: The continuation of the Covid-19 pandemic with the appearance of “Omicron” and the existence of globally strong inflationary pressures triggered by energy prices.

Below is a more detailed discussion on the contribution of the country’s balance of goods and services to GDP, for the 3rd quarter of 2021.

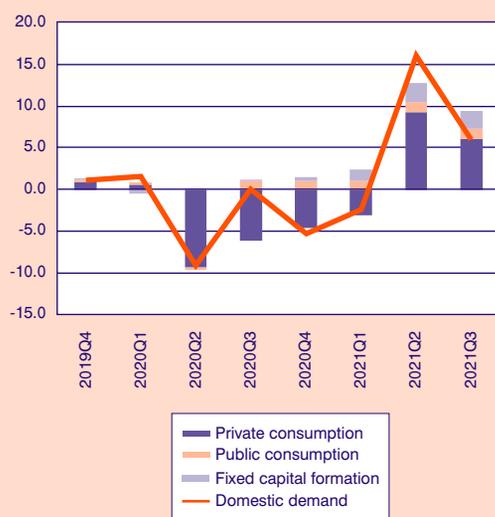
TABLE 1.1.1 Basic macroeconomic figures
 (% , seasonally adjusted data, volumes base year =2015)

	2019 Q4	2020 Q1	2020 Q2	2020 Q3	2020 Q4	2021 Q1	2021 Q2	2021 Q3	1 to 9/2020	1 to 9/2021
Private consumption	1.30	0.80	-13.50	-9.00	-6.80	-4.50	13.10	8.60	-7.23	5.73
Public consumption	1.60	1.80	-2.00	5.30	5.40	5.00	5.60	5.70	1.70	5.43
Fixed capital formation	0.10	-3.90	1.60	0.60	3.40	13.10	17.70	18.10	-0.57	16.30
Aggregate demand*	1.11	1.56	-9.07	0.03	-5.22	-2.33	14.95	5.37	-2.50	6.00
Exports of goods and services	1.30	0.50	-30.00	-34.70	-10.70	-0.80	26.30	48.60	-21.40	24.70
Goods	-2.48	2.59	-3.39	4.17	13.36	8.86	16.98	9.19	1.12	11.68
Services	4.25	-2.60	-52.38	-53.78	-35.89	-14.28	44.12	84.58	-36.26	38.14
Imports of goods and services	1.30	0.40	-14.50	-7.40	-9.90	-3.40	23.70	21.70	-7.17	14.00
Goods	-1.43	-0.94	-13.01	-2.83	-2.25	-1.77	18.10	10.07	-5.59	8.80
Services	10.25	4.59	-20.13	-20.48	-30.06	-7.49	41.23	58.11	-12.01	30.62
Δ GDP (%)	1.43	-1.03	-15.68	-11.00	-7.35	-1.90	16.61	13.44	-9.24	9.38

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

* Excluding Inventories.

FIGURE 1.1.1
Components of domestic demand*



Source: National Accounts, ELSTAT.

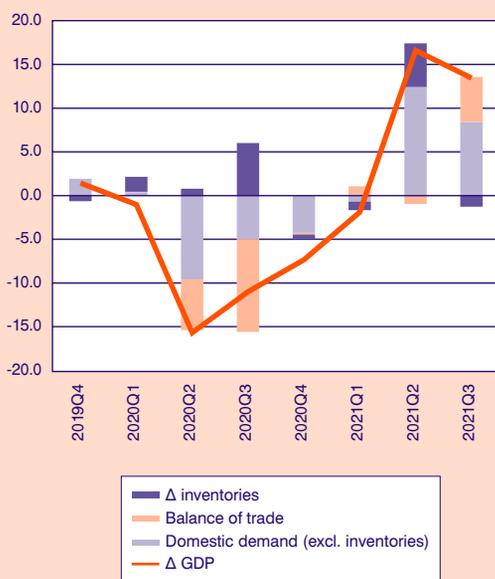
* Data processing by the author.

FIGURE 1.1.3
Economic Sentiment Index (ESI)



Source: Eurostat.

FIGURE 1.1.2
Domestic and net external demand (components)*



Source: National Accounts, ELSTAT.

* Data processing by the author.

Note: The contribution of the change in inventories for 2020Q3 has been approximately calculated by the author and is not from the official data of ELSTAT.

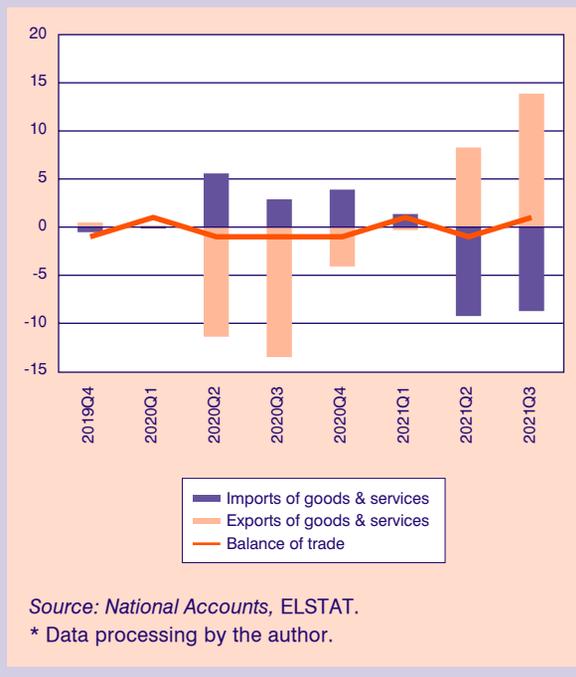
Balance of goods and services

The contribution of the external sector (exports minus imports) to GDP growth for the 3rd quarter of 2021, as already mentioned above, is generally considered as quite positive (5.16 points) and broadly reflects the improvement of the economic situation after Q1 2021.

Starting from total exports, it should be noted that they increased in the 3rd quarter of 2021 with a rate of 48.6%. More specifically, services, which constitute the relatively smallest part of exports in billions of euros, showed an excessive increase of 84.5%, while goods, which were the largest part of exports, showed a smaller increase of 9.19% over the same period. As far as imports of goods and services are concerned, in contrast to the structure of exports, they are more balanced, as a distribution, and have increased by 21.7%. More specifically, imported services showed a large increase of 58.1%, while imported goods was clearly less increased than the imported services, at 10.07%.

Additionally, as shown by the corresponding histograms of Figure 1.1.4, after the 1st quarter of 2021, there is a reversal of the picture of the two components with the positive (as usual) contribution of the export component and the corresponding negative contribution of the import component to GDP, for both quarters that followed (2021Q2 & Q3). As a result of the return of this “normality” for exports and imports, referring to their role in GDP, we also observed the

FIGURE 1.1.4
Components of external demand*



progressive improvement of net exports, with a small negative contribution to the GDP growth in 2021Q2 (-0.91), accompanied by a strong positive contribution in 2021Q3 (5.16).

Next, a detailed presentation on private consumption and investment is presented.

1.1.2. Private consumption and investment

Konstantinos Loizos

1.1.2.1. Private consumption

Rising trend in private consumption during the first three quarters of 2021

According to the quarterly seasonally adjusted *National Accounts*,¹ the private consumption of households and NPISH² increased to 30,891 million euros in current prices during the third quarter of 2021, from 30,524 million euros in the second quarter and 29,878 million euros in the first quarter of the same year. Moreover, in terms of chain-linked volumes (ref-

erence year 2015), private consumption increased to 31,207 million euros in the third quarter of 2021 with respect to 30,877 million euros in the second quarter of the same year and 30,328 million euros in the first quarter of 2021. Additionally, percentage changes³ with respect to the previous quarter, based on seasonally adjusted chain-linked volumes, remained positive in the first three quarters of 2021, despite a falling trend since; from 2.4% in the first quarter of 2021, it decreased to 1.8% in the second quarter and to 1.1% in the third quarter of the same year. However, the evolution of percentage changes with respect to the corresponding quarter of the previous year showed a rising trend; namely, from -4.5% in the first quarter of 2021, it increased to 13.1% in the second quarter and maintained its high and positive value in the third quarter of 2021 at the level of 8.6%. The end of the second lockdown during the spring of 2021 and the revival of economic activity in the following summer contributed to this positive development.

However, private consumption as a percentage of GDP showed a falling trend, declining during the third quarter of 2021 to 66.48% of GDP with respect to 67.44% in the second quarter and 68.45% in the first quarter of 2021, as is evident by Figure 1.1.5. Likewise, public consumption as percentage of GDP decreased from 21.89% in the first quarter of 2021 to 21.46% of GDP in the second quarter and 21.28% in the third quarter of 2021. Contrary to the above, we observe a significant increase in gross capital formation (fixed capital and changes in inventories) as a percentage of GDP; from 12.81% of GDP in the first quarter of 2021, it increased to 21.49% in the second quarter, only to fall again to 20.09% of GDP in the third quarter of 2021. However, net exports as a percentage of GDP showed consistently negative figures (-3.14% in the first quarter of 2021, -10.39% of GDP in the second quarter and -7.85% in the third quarter of 2021). Consequently, private consumption exhibited a rising trend in both nominal and real terms during the first three quarters of 2021; however, as a percentage of GDP, it fell in favour of gross investment. At the same time, public consumption declined and the external trade balance fluctuated as a percentage of GDP. It seems that the deficit in the external trade balance as a percentage of GDP, especially during the second quarter of 2021, corre-

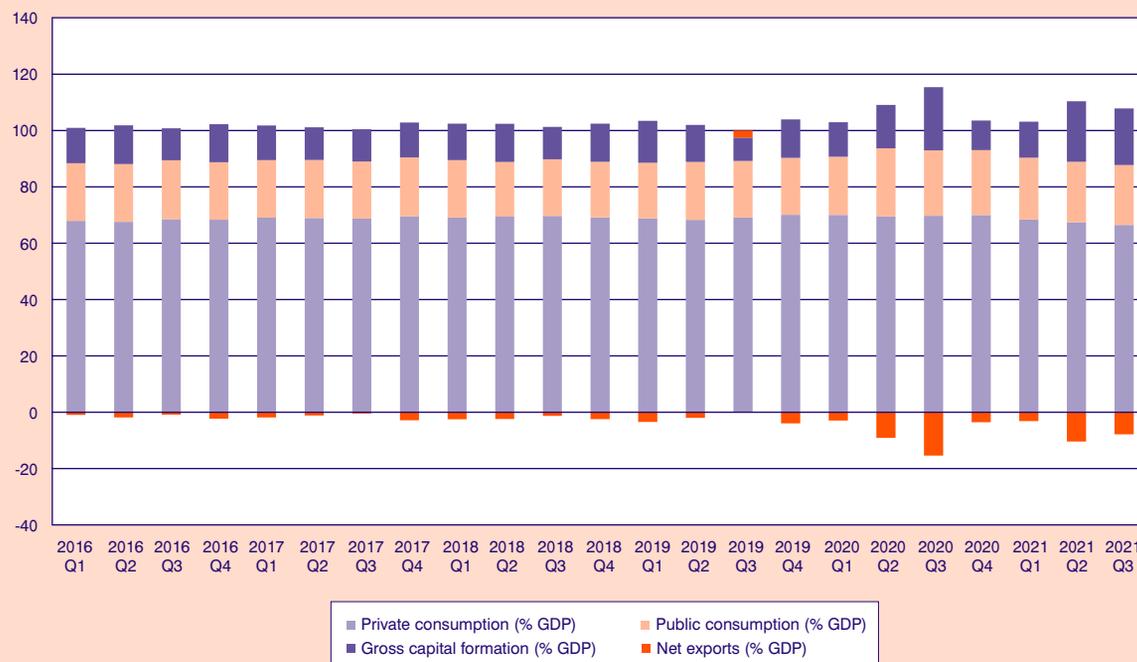
1. *Quarterly National Accounts*, Press release, ELSTAT, December 6, 2021.

2. Non-profit institutions serving households.

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

FIGURE 1.1.5

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.

sponds mainly to domestic investment expenditure rather than to domestic expenditure in consumer goods.⁴

Significant positive signs coming from retail trade, especially during the second quarter of 2021

The evolution in retail trade in terms of percentage changes with respect to the corresponding month of the previous year, according to monthly data provided by ELSTAT, is presented in Figure 1.1.6. The percentage change in the overall index was on average negative in the first quarter of 2021 (-1.73%), but positive during the two subsequent quarters, with average values of 22.75% in the second quarter and 9.12% in the third quarter of 2021. A similar trend is observed in food items, with percentage changes of -0.63%, 8.65% and 6.81% on average for the first, second and third quarters of 2021, correspondingly. On the contrary, in automotive fuel, a negative average percentage change

in the first quarter (-13.47%) is followed by a significant positive one in the second quarter (10%), and, eventually, a marginally negative average percentage change in the third quarter of -0.29%. However, other items except food and automotive fuel showed impressive positive percentage changes (7.43% on average in the first quarter, 40.37% in the second quarter and 14.63% on average in the third quarter of 2021). This data confirms a strong rising trend in retail trade in the second quarter of 2021 with respect to the corresponding quarter of 2020. The slight downward correction of this rising trend in the third quarter was not able to reverse its positive impact in the context of less strict measures against the pandemic during the summer of 2021.

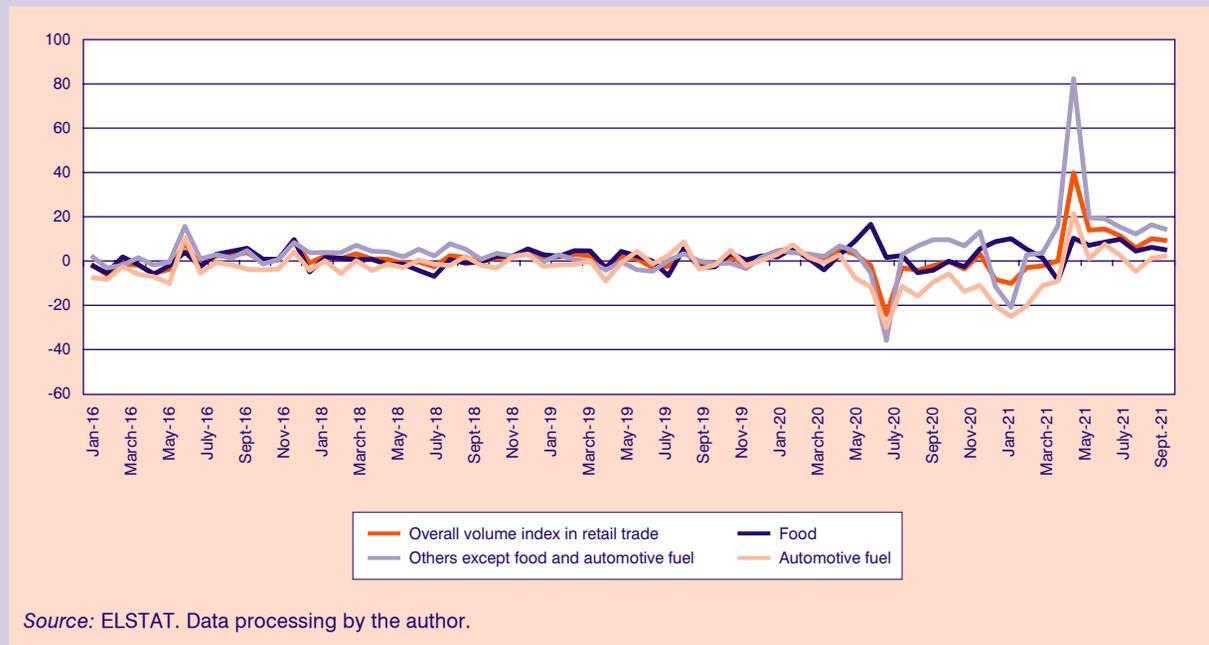
Continued rise in the retail confidence indicator despite consumer caution

Confidence indicators published by EUROSTAT (Figure 1.1.7) show a clear differentiation between the two

4. According to the “absorption approach”, the external trade balance equals to the difference between domestic product and domestic absorption or $X - M = Y - A$ where $A = C + I + G$. A negative external trade balance implies a domestic absorption (i.e., domestic expenditure) higher than a domestic product.

FIGURE 1.1.6

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

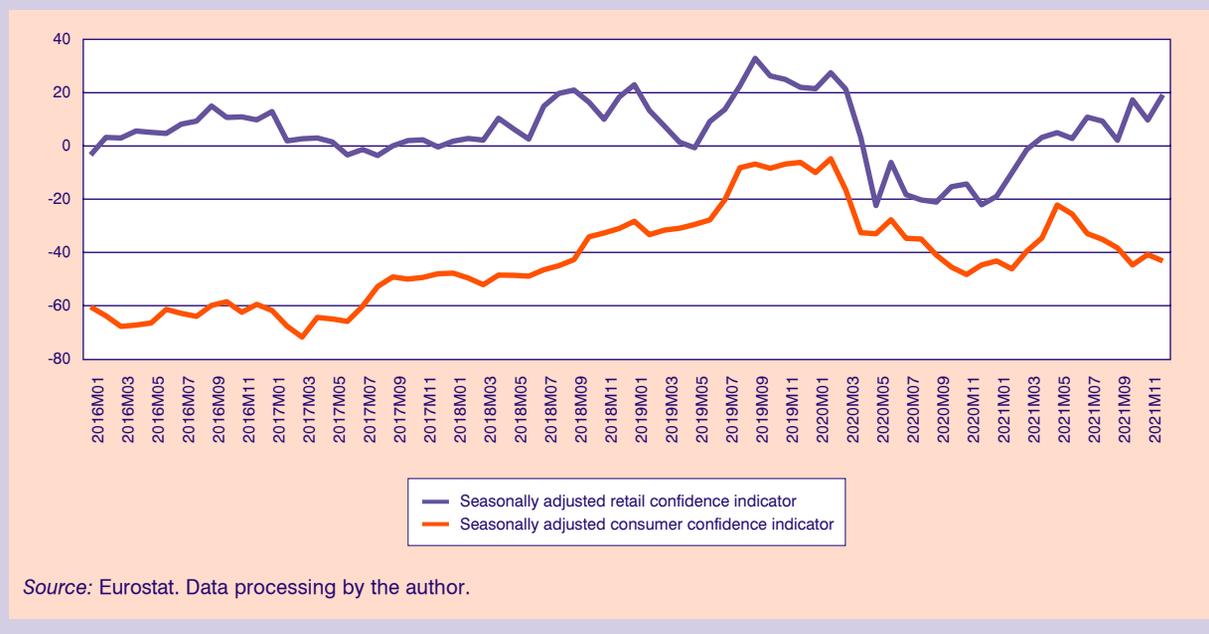


measures under consideration. The confidence indicator in retail trade exhibits a rising trend during the year of 2021 with some fluctuations that do not affect significantly its increasing tendency until the end of the year. On the contrary, the consumer confidence indicator, though it rises from the beginning of the year until May

2021, follows a reverse falling course until December 2021. Despite the above, as noted in the previous issue of the *Greek Economic Outlook*, this caution or pessimism of consumers does not seem to have an impact on expectations in retail trade and their overall rising trend.

FIGURE 1.1.7

Confidence indicators in retail trade



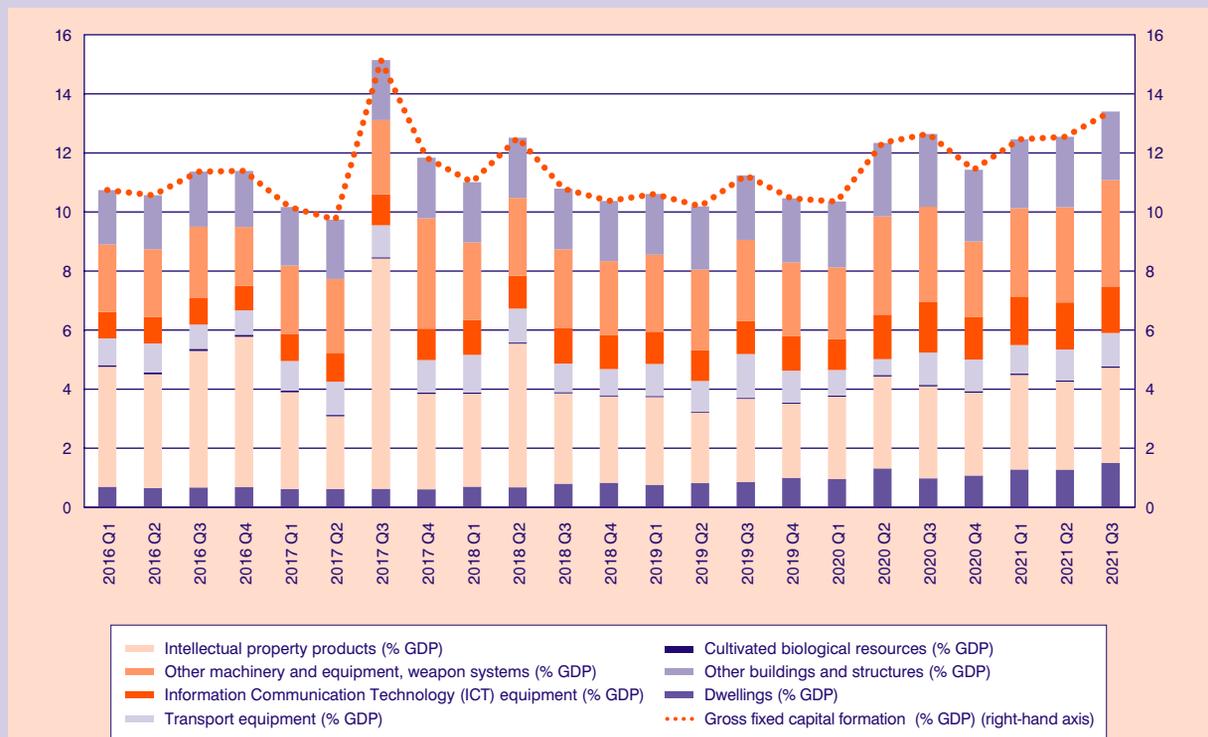
1.1.2.2. Investment

Overall rising trend in investment expenditure with an emphasis on machinery and weapon systems

Gross fixed capital formation rose to 6,227 million euros in current prices in the third quarter of 2021, from 5,678 million euros in the second quarter of the same year and 5,439 million euros in the first quarter. Likewise, in terms of chain-linked volumes, there is an increase in gross fixed capital formation from 5,398 million euros in the first quarter of 2021 to 5,651 million euros in the second quarter and 5,869 million euros in the third quarter of that year. This rising trend is also reflected in percentage changes both with respect to the previous quarter and with respect to the corresponding quarter in the previous year. In the first case, the percentage changes for the first three quarters are, respectively, 5.9%, 4.7% and 3.9%, whilst in the second case, they are 13.1%, 17.7% and 18.1%, respectively, according to the seasonally adjusted chain-linked volumes.

The evolution of the contribution of investment in GDP (Figure 1.1.8) was positive in the first three quarters of 2021 with respect to the previous quarter in each case. The corresponding percentage changes were 9% for the first quarter and 0.68% and 6.82% for the two following quarters of 2021. Concerning its components, machinery and transport equipment as a percentage of GDP assumed positive values during the entire period under consideration (10.53% in the first quarter, 4.59% in the second quarter and 7.52% in the third quarter of 2021). These consistently positive percentage changes characterize the evolution of machinery and weapon systems more than they describe the developments in transport equipment and ICT. On the contrary, we observe fluctuations in percentage changes concerning buildings as a percentage of GDP since a positive figure of 15.47% in the first quarter is succeeded by a negative one of -5.02% in the second quarter and a positive one of 11.14% in the third quarter of 2021. The same pattern is followed by the components of buildings, i.e., dwellings and other buildings and structures.

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

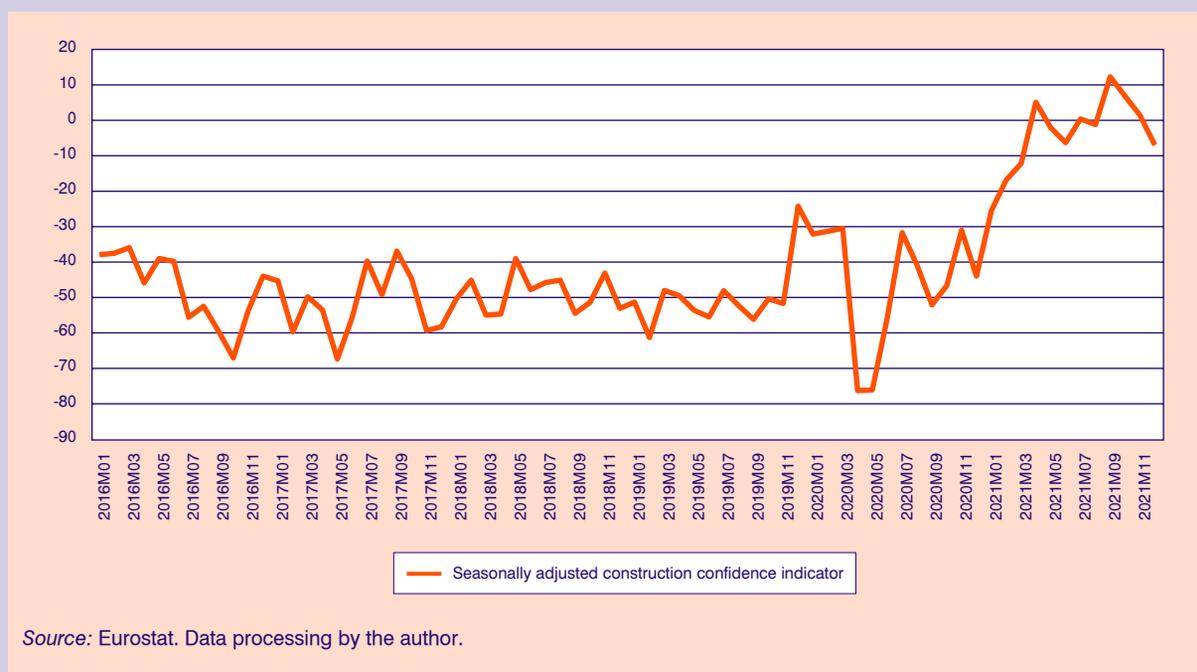


Recovery of buildings despite the predominance of machinery and transport equipment

Concerning the two main components of gross investment, machinery as a percentage of gross fixed capital formation predominates over buildings. The share of ma-

chinery and transport equipment in total gross fixed capital formation reached the level of 46% on average during the first three quarters of 2021, as opposed to about 35% for buildings. However, the share of the latter in gross investment recovered by 15.54% in the third quarter of 2021 with respect to the corresponding quarter of 2020.

FIGURE 1.1.10
Construction confidence indicator



Optimism in the midst of uncertainty concerning expectations in the construction sector

The evolution of business expectations in the construction sector is depicted in Figure 1.1.10 above. The construction confidence indicator marked an upward trend from January until April 2021 and thereafter fluctuated, though at high levels compared to its historical performance. However, the falling trend of this indicator as of September 2021 casts doubts as to whether the recorded optimism will continue in the future or the indicator will return to lower values. Hence, at present, there is optimism along with a continuous uncertainty about the future course of the construction confidence indicator.

1.1.2.3. Conclusion

The above analysis showed that the Greek economy's performance during the period after the second lockdown and before the effective impact of the "omicron" mutation of the Covid-19 virus was overall positive concerning the main components of private demand, along with a relative stability in public consumption and a fluctuation in the external trade balance. The positive trend in gross investment should be stressed in addition to the significant recovery in retail trade, especially in the second quarter of 2021. Moreover, we observe relatively increased levels of confidence in both retail trade and construction, despite their fluctuations and in spite of consumer caution. The above compose a positive picture for the Greek economy just after the second lockdown, along with some reservations, as those are reflected in fluctuating expectations during the second half of 2021.

1.2. Developments in inflation in Greece and the euro area

Emilia Marsellou

Introduction

The global economy continues to recover from the COVID-19-induced recession in 2020 as a result of the containment measures that suspended economic and social activity. Already in the second quarter of 2021, both developed countries and developing and emerging economies are moving to positive growth rates, gradually restoring market balances. However, the emergence of the Omicron variant of the coronavirus and the possibility of a new outbreak of the pandemic, which may require new restrictive measures, creates uncertainty about the evolution of inflation and its impact on the dynamics of economic recovery.

Regarding the euro area and our country, the most important driver of inflationary pressures is the rapid increase in energy prices, directly affecting the Housing and Transport sectors. This increase is mainly due to sharp positive base effects, after the multi-month downward trend in energy prices during 2020, as developed economies recovered almost simultaneously, creating excess demand. This simultaneous economic recovery has led to wider imbalances due to bottlenecks in the international supply chain, resulting in significant delays in freight transport and sharp increases in transport costs. As regards the pandemic crisis,¹ inflationary pressures are expected to be temporary and gradually normalized, provided that a new variant of the coronavirus does not cause another outbreak of the pandemic and a halt in economic and social activity. That might prolong inflationary pressures and raise uncertainties about the course of long-term inflation.

Greece

According to the latest statistical data released by Eurostat, the average annual rate of change of the Harmonized Index of Consumer Prices (HICP) for 2021 in Greece amounted to +0.6%, the lowest in the euro area (and the European Union), followed by Malta (+0.7%) and Portugal (+0.9%). The corresponding index for the core² HICP remained in negative territory at -1.1% (see Figure 1.2.1). In the euro area, the corresponding indicators for 2021 were 2.6% and 1.5%.

More specifically, in December 2021, according to the statistical data of ELSTAT, headline inflation based on the National CPI stood at 5.1% compared to 4.8% in November (see Table 1.2.1). Inflation based on the Harmonized CPI (HICP) recorded a similar course and stood at 4.4% in December compared to 4.0% in November. Core inflation, which is in positive territory for the fourth consecutive month, rose to 1.0% compared to 0.7% in November. Respectively, core inflation based on HICP reached 1.1% in December compared to 0.7% in November. Housing (with 2.6 percentage points), Transport (with 1.3 percentage points) and Food and non-alcoholic beverages (with 1.0 percentage point) had the largest contribution to the annual percentage increase of the CPI this month.

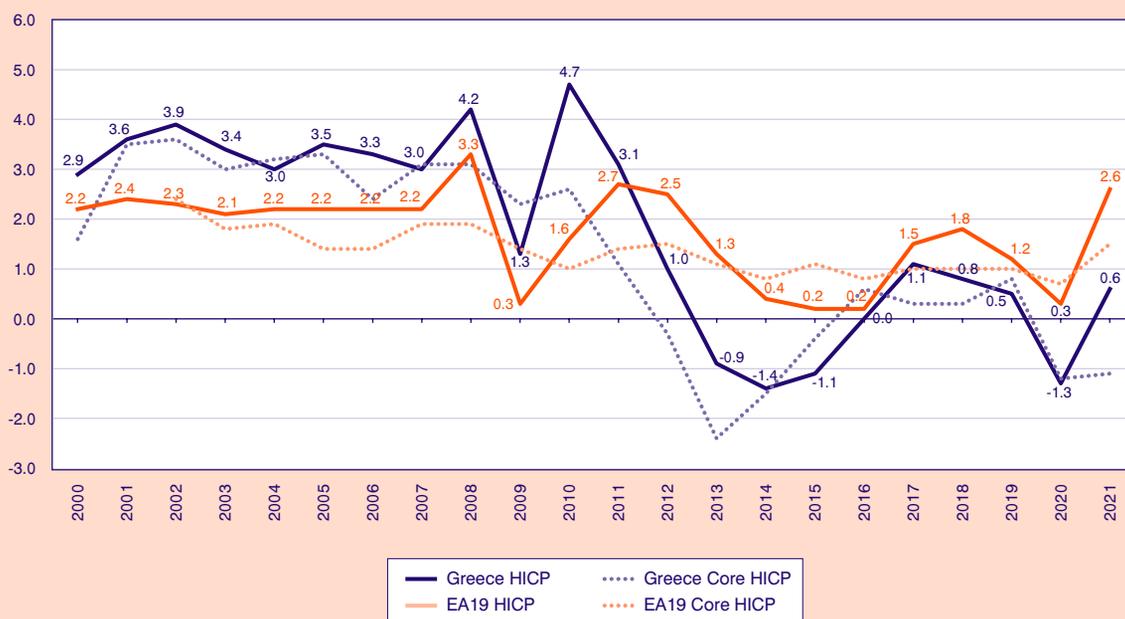
More specifically, the annual increase of the General CPI in December 2021 by 5.1% is a combined result of the following changes in the price indices of sub-groups of goods and services. More specifically, increases were recorded as follows:

- **+4.3% in the group Food and non-alcoholic beverages.** This increase is mainly attributed to the rise in the prices of bread (4.9%), other bakery products (2.9%), pasta products and couscous (7.6%), beef (4.2%), lamb and goat (19.7%), poultry (6.6%), other meat preparations (6.6%), fresh fish (6.7%), cheese (5.5%), olive oil (17.0%), other edible oils (17.1%), fresh fruit (5.5%), fresh vegetables (5.5%), preserved or processed vegetables (1.6%), potatoes (14.2%), chocolates-chocolate products (4.0%), food n.e.c. (3.4%) and coffee (3.4%). This

1. In the sense that the prices of energy products are also influenced by other factors such as changes in Europe's energy strategy (European Green Agreement) and other geopolitical developments.

2. 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.

FIGURE 1.2.1
Annual average rate of change of HICP for Greece and the euro area, 2000-2021 (annual data)



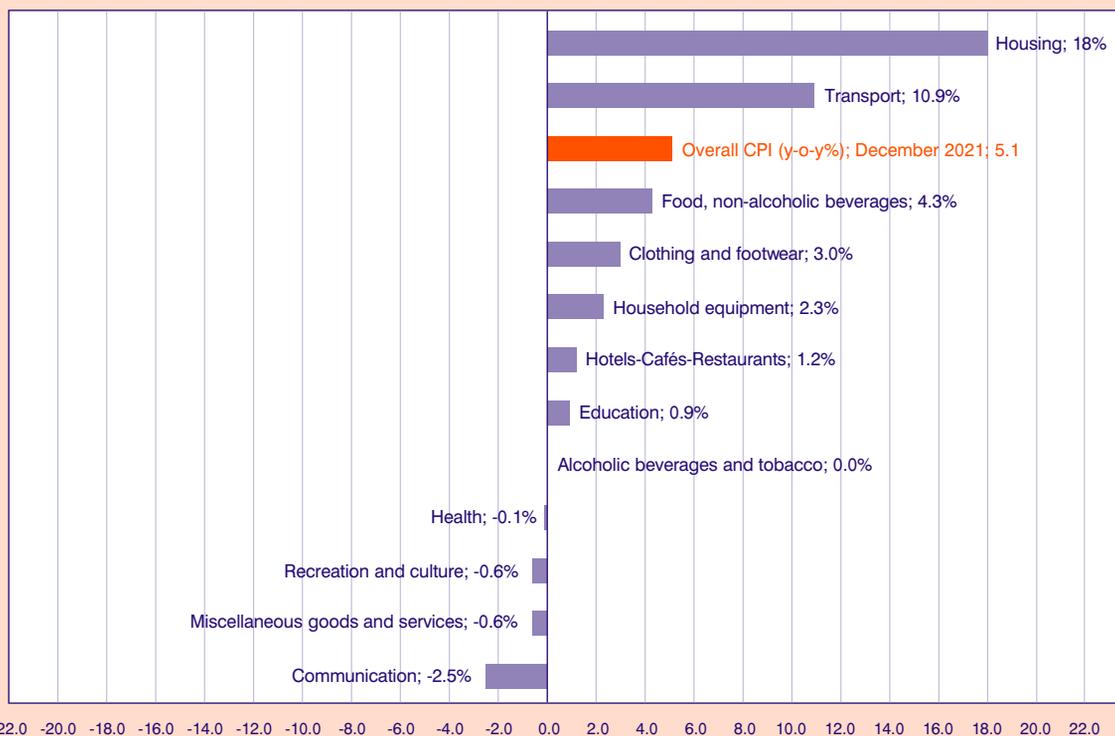
Source: Eurostat.

TABLE 1.2.1 Inflation in Greece (%)

	Headline inflation (Greece)	Core inflation (Greece)	Harmonized inflation (Greece)	Core Harmonized inflation (Greece)
2020:M12	-2.3	-2.0	-2.0	-2.2
2021:M1	-2.0	-1.3	-2.1	-2.3
2021:M2	-1.3	-1.0	-2.4	-2.5
2021:M3	-1.6	-2.8	-2.0	-3.2
2021:M4	-0.3	-1.6	-1.1	-2.3
2021:M5	0.1	-1.7	-1.2	-3.0
2021:M6	1.0	-0.5	0.6	-0.7
2021:M7	1.4	-0.5	0.7	-1.1
2021:M8	1.9	-0.3	1.2	-0.7
2021:M9	2.2	0.1	1.9	0.2
2021:M10	3.4	0.2	2.8	0.4
2021:M11	4.8	0.7	4.0	0.7
2021:M12	5.1	1.0	4.4	1.1

Source: ELSTAT.

FIGURE 1.2.2
Annual % changes in National CPI sub-categories (December 2021)



Source: ELSTAT.

increase was partly offset by the decrease, mainly, in the prices of pork (-1.5%), dried, salted or smoked meat (-3.5%), fresh whole milk (-1.4%) and jams-marmalades-honey (-2.8%).

- **+3.0% in the group Clothing and footwear.** This increase is mainly attributed to the increase in the prices of clothing and footwear.
- **+18.0% in the group Housing.** This increase is mainly attributed to the increase in the prices of rentals for dwellings (0.5%), electricity (45.0%), natural gas (135.7%) and heating oil (34.1%).
- **+2.3% in the group Household equipment.** This increase is mainly attributed to the increase in the prices of furniture and furnishings (3.8%), glassware, tableware and utensils of domestic use (7.8%), non-durable household articles (1.0%) and domestic services (5.7%).
- **+10.9% in the group Transport.** This increase is mainly attributed to the increase in the prices of new motorcars (7.7%), second hand motorcars

(11.5%), fuels and lubricants (21.7%) and tickets for passenger transport by air (19.6%).

- **+0.9% in the group Education.** This is due to the increase, mainly, in the prices of fees of secondary education (1.4%).
- **+1.2% in the group Hotels-Cafés-Restaurants.** This increase is attributed to the increase, mainly, in the prices of restaurants-confectioneries-café (1.1%) and hotels-motels-inns (7.3%).

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

- **-0.1% in the group Health.** This is due to the decrease, mainly, in the prices of pharmaceutical products (-1.1%), which was partly offset by the increase, mainly, in the prices of dental services (1.1%).
- **-2.5% in the group Communication.** This decrease is attributed mainly to the fall in the prices of telephone services (-2.5%).

TABLE 1.2.2 Annual % changes in National CPI sub-categories, January-December 2021

Groups of goods and services	Jan	Feb	March	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
1 Food and non-alcoholic beverages	-0,4	-0,5	-0,3	-1,2	-0,2	0,4	1,7	3,0	3,1	3,0	3,5	4,3
2 Alcoholic goods and tobacco	-0,4	0,1	-0,5	-0,1	-0,3	-0,2	0,0	-0,4	-0,1	0,0	-0,1	0,0
3 Clothing and footwear	-3,5	-0,1	-16,9	-1,1	-5,0	0,5	-1,4	-2,6	-0,5	0,4	3,9	3,0
4 Housing	-3,4	-1,9	0,1	1,9	3,2	4,0	4,2	4,4	4,7	11,7	17,7	18,0
5 Household equipment	-2,2	-2,2	-1,7	-1,2	-1,4	-0,8	-0,7	-0,5	0,6	0,8	2,3	2,3
6 Health	-1,2	-1,1	-1,1	-1,0	-1,3	-1,3	-0,8	-0,5	0,1	0,0	-0,1	-0,1
7 Transport	-5,7	-4,3	-0,8	2,3	4,6	6,7	5,8	6,7	7,8	9,2	9,3	10,9
8 Communication	-2,1	-1,8	-1,6	-1,4	-1,7	-1,8	-2,7	-2,6	-2,5	-2,5	-2,7	-2,5
9 Recreation and culture	-0,6	-0,3	-0,3	-1,0	-0,8	-1,0	-0,8	-0,7	-0,4	-0,4	-0,3	-0,6
10 Education	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,9	0,9	0,9	0,9
11 Hotels-Cafés-Restaurants	-0,6	-0,4	-0,5	-0,9	-1,6	-0,8	-0,3	0,2	0,5	0,9	1,3	1,2
12 Miscellaneous goods and services	-2,4	-1,7	-1,4	-2,4	-1,8	-2,1	-1,2	-1,1	-0,8	-1,3	-0,7	-0,6
General Index	-2,0	-1,3	-1,6	-0,3	0,1	1,0	1,4	1,9	2,2	3,4	4,8	5,1

Source: ELSTAT.

- **-0.6% in the group Recreation and culture.** This decrease that is attributed mainly to the fall in the prices of audiovisual and information processing equipment (-2.1%) and major durables for outdoor recreation (-3.2%) was partly offset by the increase, mainly, in the prices of small recreational items-flowers-pets (1.3%).
- **-0.6% in the group Miscellaneous goods and services.** This is due to the decrease, mainly, in the prices of other appliances and articles for personal care (-0.8%) and motor vehicle insurance (-1.9%).

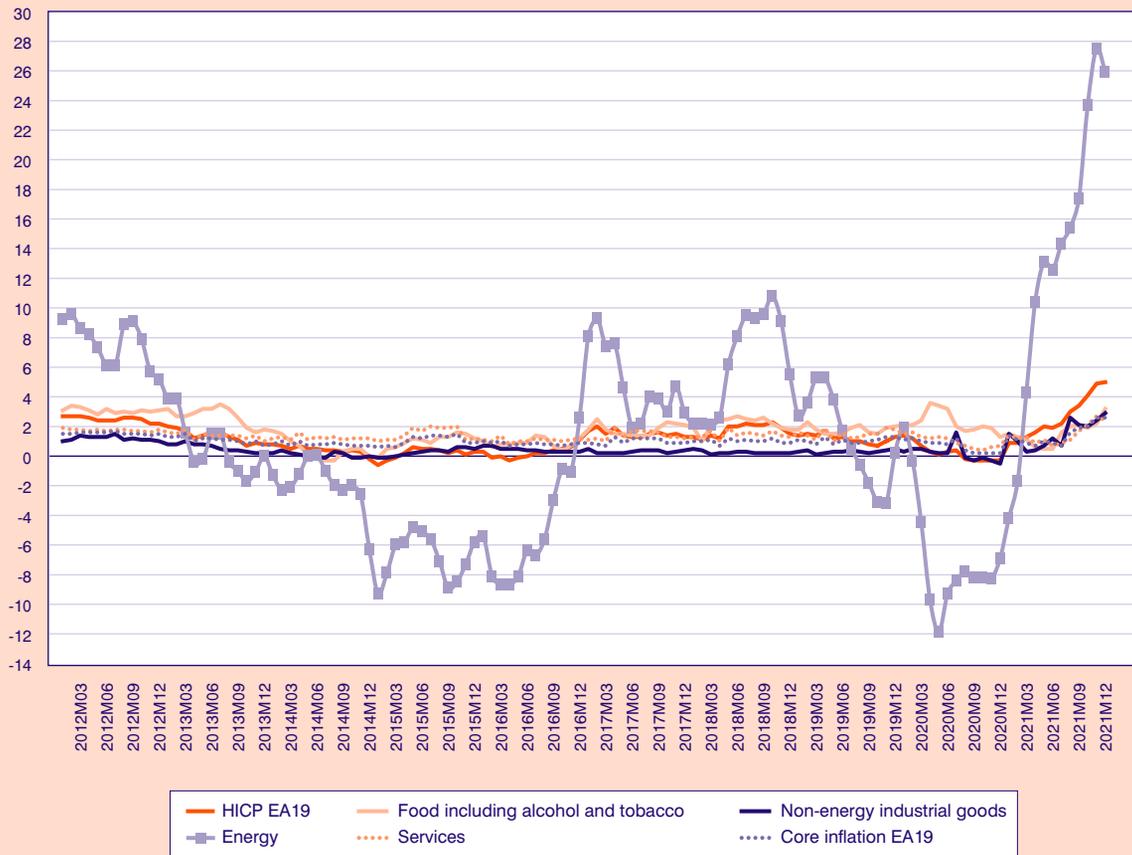
The euro area

The euro area annual inflation rate (based on HICP) was 5.0% in December 2021, slightly higher than the 4.9% in November (in the European Union, inflation

reached 5.3% versus 5.2% in November, respectively). Among the member countries of the euro area, the highest inflation was recorded in Estonia (12.0%), Lithuania (10.7%) and Latvia (7.9%), while the lowest inflation was in Malta (2.6%), Portugal (2.8%) and Finland (3.2%). Among the countries of the European Union, the highest inflation was recorded in Estonia (12.0%), Lithuania (10.7%) and Poland (8.0%), while the lowest was recorded in Malta (2.6%), Portugal (2.8%) and Finland (3.2%).

According to the Eurostat data, the main contribution to the euro area inflation in December 2021 came from the Energy sector (+2.46 percentage points), followed by the Services sector (+1.02 percentage points), the Non-energy industrial products (+0.78 percentage points) and the Food sector (+0.71 percentage points).

FIGURE 1.2.3
HICP in the euro area, monthly data, annual % change (2015=100)



Source: Eurostat.

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

Factor Model Economic Forecasting Unit **Ersi Athanassiou, Theodore Tsekeris**

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 the fourth quarter of 2021 and the first two quarters of 2022,¹ 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 2021.

As in the more recent issues of the *Greek Economic Outlook*, this section highlights the extraordinary and constantly changing conditions prevailing in the Greek economy due to the COVID-19 pandemic. More particularly, the forecasts presented herein incorporate data for the third quarter of 2021, during which a significant number of emergency protective measures restraining economic and social activity in the country were removed. However, the continuation of the pandemic, in combination with the remaining restrictions and their associated economic consequences, do not allow for the assumption that the Greek econ-

omy returned to normal in the third quarter of 2021. Therefore, forecasting the course of the real GDP over subsequent quarters remains difficult, due to both the ensuing uncertainty and the continuous alternation between periods of implementation of widespread restraining measures and periods of partial and gradual lifting of restrictions. At the same time, the overall extent of the adverse effects of the disruption is not yet clear, and it remains difficult to accurately quantify the impact of the compensatory measures adopted to deal with the pandemic and shield the economy. In addition, the forecasting procedure followed does not allow any direct consideration of policy measures that could potentially have major effects on economic activity from the second half of 2021 onwards, such as the disbursement and progressive utilisation of the Recovery and Resilience Facility funds.⁴

According to the factor model econometric estimates presented in Table 1.3.1, the mean rate of change of real GDP for the second half of 2021 is projected at 9.9% (as compared to the corresponding period of 2021), while the mean annual rate of change for the whole year 2021 is forecasted at 8.6%, signifying a significant recovery of the economy in 2021 (versus an annual real GDP loss of -8.8% in year 2020). These forecasts constitute an upward revision compared to the immediately preceding factor model forecasts, both for the second half of 2021 (8.8%), and for year 2021 as a whole (7.9%). It is noted that the forecasted annual rate of change for 2021 takes into account the published (provisional) data of the period from Janu-

1. The date of the forecast is January 12, 2022.

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 direct analysis of the impact caused by immense 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 2021). 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 forecasts presented 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 significant 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.

TABLE 1.3.1 Real GDP rate of change: 2021 and 1st half of 2022 (% , y-o-y)

Quarters	2021	2022	
	2021Q4	2022Q1	2022Q2
Quarterly rate of change	6.37 [5.45 , 7.29]	6.98 [5.62 , 8.36]	3.49 [1.78 , 5.24]
Mean rate of change, 1st half*	-	5.24 [3.70 , 6.80]	
Mean rate of change, 2nd half **	9.90 [9.45 , 10.36]	-	
Mean annual rate of change ***	8.63 [8.40 , 8.86]	-	

Notes: 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 1st half of 2021, since it does not incorporate a forecast. ** The mean rate of change for the 2nd half of 2021 incorporates the officially available (provisional) data for the 3rd quarter of 2021, on a seasonally adjusted basis. *** The mean annual rate of change incorporates the officially available (provisional) data for the first three quarters of 2021, on a seasonally adjusted basis.

ary to September 2021,⁵ according to which the GDP increased by 13.4% in the third quarter of the year (in terms of chain linked volumes), as compared to the respective quarter of 2020. Furthermore, the forecast incorporates the projection of a positive rate of change of 6.4% for the fourth quarter of 2021, on a year-on-year basis. Economic recovery is expected to continue in year 2022 as reflected in the forecast of a real GDP growth rate of 7% for the first quarter of 2022, as compared to the first quarter of 2021. For the second quarter of 2022, the estimate of a positive rate of change of 3.5% (as compared to the corresponding quarter of 2021) represents a deceleration in the growth rate relative to the previous quarters, but reflects an additional increase in real GDP from the level reached on the basis of the 16.6% rate of change recorded in the second quarter of 2021.

The above forecasts for the course of real GDP in 2021 and the first half of 2022 signal the gradual return of economic activity to the levels recorded before the deep recession of 2020, and the transition to significant growth rates in 2022. This outlook stems from the gradual restoration of the smooth operation of economic activities from the second quarter of 2021 onwards, following the gradual lifting of restrictive measures, and in conjunction with the progress of the country's vaccination programme. Until the third quarter of

2021, potential factors that could undermine growth dynamics (such as the effects of price increases in goods and services, and hurdles in the smooth functioning of supply chains) had not yet reached dimensions capable of significantly influencing the course of economic variables. Furthermore, trends were remarkably positive for the majority of the economic variables underlying the forecast, as reflected in the observations for the third quarter of 2021, as compared to the corresponding quarter of 2020 (on a non-seasonally and non-calendar adjusted basis).

More specifically, a significant recovery was signaled in terms of all main GDP components. Private consumption expenditure, consumption expenditure by the General Government, fixed capital investment and exports of goods and services recorded significant –and in some cases (fixed capital investment and, more notably, exports of services) double-digit– positive rates of change, as compared to the corresponding quarter of 2020. Double-digit positive rates of change also characterized the course of four of the six individual fixed investment subcategories. Favourable developments were indicated by the evolution of the industrial production index, in terms of the general index and all the sub-indexes. Furthermore, the course of the turnover index in industry was also notable, both in total and for the external and the internal markets,

5. According to the most recent ELSTAT *Quarterly National Accounts* publication, dated December 6, 2021.

with double-digit positive rates of change recorded in nearly all categories in the third quarter of 2021 (with the only exception observed in the category of *durable consumer goods*, where the total market index recorded a single-digit positive rate of change, while the index for the external market recorded a single-digit negative rate of change). Developments in retail trade were also generally positive, as indicated by course of the overall volume index, as well as the double-digit positive rates of change observed in five out of the eight underlying sub-indexes (exceptions were the *supermarkets* subcategory index which recorded a single-digit positive rate of change and the *department stores* and *automotive fuel* subcategory indices which presented negative rates of change).

Positive developments were also observed with regard to construction and building activity, as indicated by the significant increase in private building activity in terms of volume on the basis of permits issued, as well as the rise of the production index in construction and the subindex of production of *building construction* (in contrast to the subindex of *civil engineering productions* which declined). Similar dynamics in the same positive direction characterised the General Index of the Athens Stock Exchange, the turnover index for motor trade (*wholesale and retail trade, repair of motor vehicles and motorcycles*), the turnover index in wholesale trade, as well as transport receipts and travel receipts, the latter notably recording an impressive rebound (153.6%), as compared to the third quarter of 2020.

An improvement was further observed in terms of cost/price competitiveness, as suggested on the basis of the relevant underlying indicators, while particularly positive developments characterised spreads, which declined significantly as compared to the respective quarter of 2020 (while also recording a decrease compared to the second quarter of 2021). With respect to indicators reflecting agents' expectations and assessments regarding the economic climate in the country, the course of individual economic sectors and the prospects of important economic aggregates, such as exports, trends during the third quarter of 2021, as compared to the respective quarter of the previous year, were exceptionally favourable.

Regarding developments in domestic labour market conditions during the third quarter of 2021, as compared to the corresponding quarter of 2020, there were positive signals from an increase in total employment

and employment in the broad economic sectors (primary, secondary and tertiary), as well as from a significant moderation in unemployment, in terms of the total unemployment rate, long-term unemployment and the newly unemployed.

The projected course of real GDP in 2021 and the first half of 2022 may develop less or more favourably than the above-presented forecasts, depending on the effects of a number of crucial and dynamic factors, a number of which continue to be directly intertwined with the evolution of the pandemic and its short-term consequences. All these factors will determine, among other things, demand and supply dynamics, Greece's export performance, investment and saving decisions by households and enterprises, employment and unemployment aggregates and, hence, income, as well as financial conditions and fiscal aggregates.

Factors that could potentially operate in the positive direction include: (a) further progress in overcoming the pandemic and its health effects (vaccination programme, combating variants, protection measures), which would help to establish a secure environment at the domestic and international levels, (b) the application of targeted measures to support households and businesses in dealing with the short-term economic consequences of the pandemic and (c) the initiation of implementation of the National Recovery and Resilience Plan, utilising the resources of the Recovery and Resilience Facility in order to boost investment and complete crucial structural reforms for the transformation and advancement of the Greek economy.

Factors that could potentially operate in the negative direction include: (a) the high degree of uncertainty with respect to the evolution of the pandemic, which could cause, among other things, a withholding in major economic aggregates, (b) any potential adverse development with respect to the pandemic in the first half of 2022 (due to the emergence of the Omicron variant and the consequent implementation of restraining measures), severe enough to once again negatively affect economic activity in the country, (c) the prolongation of the duration of the adverse economic effects of the pandemic, such as the disruption of the smooth operation of supply chains, the rise in prices of goods and services and the increase in transport costs, and (d) any unwarranted developments in the direction of an aggravation of geopolitical tensions and an intensification of migration waves.

1.4. Export performance and Current Account developments

Ioanna Konstantakopoulou

1.4.1. Introduction

In the January-September 2021 period, the Current Account (CA) showed a deficit. Specifically, the deficit of the CA (see Table 1.4.1) stood at 4.13% of GDP, compared to 6.79% in the corresponding period of 2020. In absolute terms, the deficit increased by €2.75 billion (see Table 1.4.2). This decline comes, primarily, from the service balance, mainly reflecting the increase in

receipts from tourism services, and, secondarily, from the increase in receipts from transport services.

The improvement of the epidemiological data in the summer of 2021 in our country helped to increase the two aforementioned components of the service balance. In addition, the primary and secondary income balances contributed marginally to the shrinking of the CA deficit.

In the Greek economy, ***the services balance contributes to the reduction of the CAB deficit, while the goods balance widens the deficit.***

The source of the CA problem is the balance of goods, mainly due to the large imbalance of the goods balance excluding oil and ships and the oil balance. ***The deficit of the balance of goods excluding oil and ships is associated with the export specialisation***

TABLE 1.4.1 Current Account (as percent of GDP)

	CA	Goods	Exports	Imports	Services	Primary income	Secondary income
2015	-0.82	-10.02	14.06	24.08	9.40	0.09	-0.29
2016	-1.75	-10.29	14.11	24.40	9.34	-0.46	-0.34
2017	-1.93	-11.21	15.85	27.06	10.20	-0.60	-0.32
2018	-2.91	-12.52	18.03	30.55	10.75	-0.96	-0.18
2019	-1.49	-12.46	17.70	30.16	11.52	-0.87	0.32
2020	-6.63	-11.21	17.48	28.69	4.40	-0.17	0.34
2019Q1	-9.11	-14.47	18.57	33.03	3.62	1.82	-0.06
2019Q2	-0.79	-12.16	18.50	30.66	11.44	-1.30	1.24
2019Q3	8.12	-11.77	16.16	27.93	23.38	-2.69	-0.80
2019	-0.07	-12.72	17.67	30.39	13.41	-0.87	0.11
2020Q1	-8.67	-13.77	18.85	32.64	2.81	1.87	0.42
2020Q2	-9.11	-10.06	16.87	26.92	2.72	-0.98	-0.79
2020Q3	-3.10	-10.61	15.87	26.45	8.09	-1.55	0.97
2020Q1-Q3	-6.79	-11.48	17.16	28.64	4.69	-0.24	0.25
2021Q1	-6.72	-12.71	21.80	34.51	1.88	4.04	0.08
2021Q2	-10.64	-13.17	21.50	34.68	3.35	0.08	-0.91
2021Q3	3.44	-13.37	19.03	32.40	15.69	-1.50	2.62
2021Q1-Q3	-4.13	-13.11	20.65	33.76	7.63	0.63	0.73

Source: Bank of Greece.

TABLE 1.4.2 Current Account (in EUR billions)

	CA	Goods	Exports	Imports	Services	Primary income	Secondary income
2015	-1.44	-17.67	24.81	42.47	16.58	0.15	-0.51
2016	-3.05	-17.96	24.61	42.57	16.30	-0.80	-0.59
2017	-3.41	-19.83	28.04	47.87	18.04	-1.06	-0.56
2018	-5.23	-22.49	32.37	54.86	19.30	-1.73	-0.32
2019	-2.73	-22.83	32.43	55.27	21.12	-1.59	0.58
2020	-10.96	-18.53	28.90	47.43	7.28	-0.28	0.56
2019Q1	-3.78	-6.00	7.70	13.70	1.50	0.75	-0.03
2019Q2	-0.36	-5.60	8.52	14.12	5.27	-0.60	0.57
2019Q3	4.05	-5.87	8.06	13.93	11.66	-1.34	-0.40
2019	-0.09	-17.47	24.28	41.75	18.43	-1.19	0.15
2020Q1	-3.52	-5.59	7.65	13.25	1.14	0.76	0.17
2020Q2	-3.45	-3.81	6.39	10.20	1.03	-0.37	-0.30
2020Q3	-1.38	-4.72	7.06	11.77	3.60	-0.69	0.43
2020Q1-Q3	-8.35	-14.12	21.10	35.22	5.77	-0.30	0.30
2021Q1	-2.64	-5.00	8.58	13.58	0.74	1.59	0.03
2021Q2	-4.74	-5.87	9.58	15.45	1.49	0.04	-0.40
2021Q3	1.78	-6.92	9.85	16.77	8.12	-0.78	1.36
2021Q1-Q3	-5.60	-17.79	28.01	45.80	10.35	0.85	0.98

Sources: Bank of Greece and ELSTAT.

of the Greek economy (Konstantakopoulou, 2015; Konstantakopoulou, Magdalinos, and Skintzi, 2019; Konstantakopoulou and Tsionas, 2019). Meanwhile, the oil balance deficit is linked to the oil dependence of the Greek economy and is affected by changes in oil prices.

1.4.1. Balance of goods

In the period January-September 2021, the balance of goods deficit as a percentage of GDP stood at 13.11, marking a 14.2% increase compared to the corresponding period of 2020. In absolute terms, the balance of goods deficit stood at €17.79 billion compared to €14.12 billion in the corresponding period for 2020 (see Figure 1.4.1), up by 26%. Exports of goods amounted to 20.6% of GDP in the period January-September 2021, while imports of goods were 33.7% of

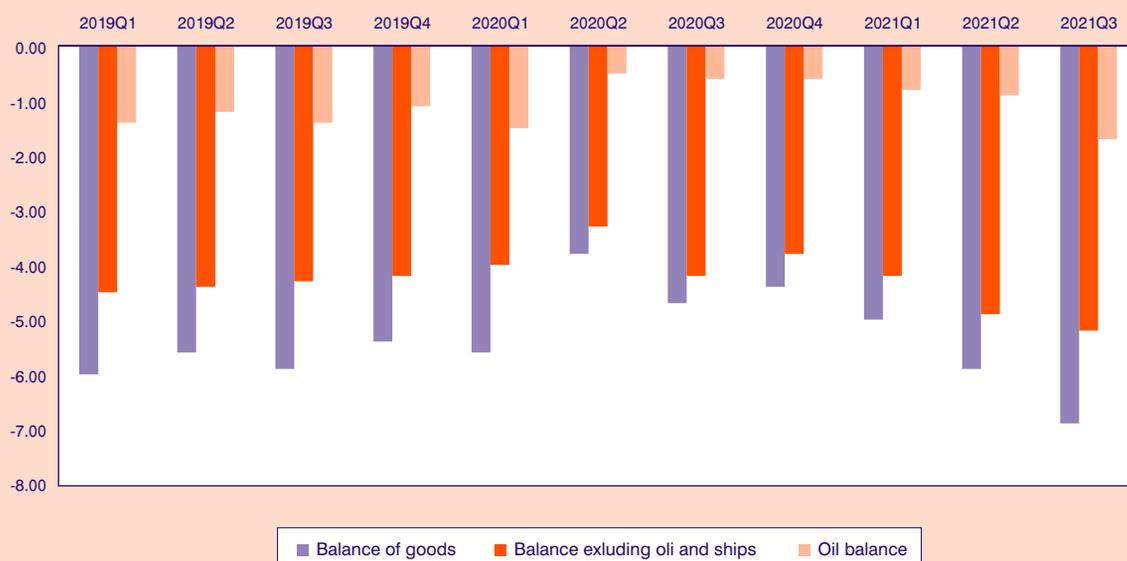
GDP. In absolute terms, exports reached €28.01 billion euros, while imports were €5.8 billion euros.

Greek products show resilience in international markets and are constantly gaining market shares, demonstrating **the dynamic role they will play in the future in improving the CA**. However, imports continue to be a worrying factor for the CA, as, once again, the increase in domestic income has led to an increase in imports.

The balance excluding oil and ships represents the largest deficit in the CA, reaching 10.5% of GDP in the period January-September 2021, amounting to €14.3 billion in absolute terms.

Table 1.4.3 presents the shares of exports and imports in the four main categories of goods: raw materials, intermediate goods, consumer goods and capital goods. For 2020, the annual share of consumer goods in total Greek exports was 57.78%, the share of inter-

FIGURE 1.4.1
Balance of goods, oil balance and balance excluding oil and ships (in EUR billions)



Source: Bank of Greece.

mediate goods was 20.52%, of raw materials 11.65% and of capital goods 10.05% of total exports.

We also notice that with **the onset of the deep recession in the Greek economy, in 2009, Greek firms turned to foreign markets to channel their products**, thus achieving a significant increase in exports, mainly in consumer goods. The other aforementioned product categories showed a contraction of their shares in total Greek exports. At the same time, for 2020, Greek imports are distributed among consumer goods with an annual share of 37.25%, raw materials with 26.96%, intermediate goods with 9.35% and capital goods with 16.44% of total imports. **We note that consumer goods dominate the imports of the Greek economy**, while intermediate and capital goods have smaller import shares. The above categories are often blamed for the negative effect of the foreign sector, **but intermediate and capital goods contribute to Greek production, having an added effect, while imported consumer goods have zero effect on Greek production.**

One category of consumer goods is electrical appliances. Recently, the media reported news about a state subsidy for the replacement of household electrical appliances. However, as Greece does not produce electrical appliances (air conditioners, elec-

tric cookers, washing machines, refrigerators) these are imported consumer goods; **therefore, any state subsidy for their replacement will worsen the CA**, while energy prices are a constantly fluctuating variable. Table 1.4.4 reports the net exports of electrical appliances, in 4-digit SITC coding, Rev. 3. The products we examine are:

- SITC: 7751 – Domestic laundry equipment
- SITC: 7752 – Domestic refrigerator/freezer
- SITC: 7753 – Domestic dishwashers
- SITC: 7754 – Electric shavers/clippers
- SITC: 7757 – Domestic electric machines
- SITC: 7758 – Electro-thermic equipment

Based on UNCTAD data, we observe that for 2020, we have a deficit of €341 million, while in 2019, the deficit reached €398 million. However, Table 1.4.4 shows that all categories of electrical appliances present a deficit, which means that we import much more than we export, because we do not have domestic production. Therefore, the result of the subsidy application for the replacement of electrical appliances, which essentially subsidises foreign products, will expand the CAB deficit.

TABLE 1.4.3 Export and import shares (of total exports and imports, respectively)**Export shares, 2000-2020**

	Raw materials	Intermediate goods	Consumer goods	Capital goods
2000-04	15.12	23.03	50.06	11.79
2005-09	12.96	25.02	51.04	10.98
2010-14	11.62	19.95	60.65	7.78
2015	10.96	21.70	57.83	9.50
2016	12.44	20.42	57.45	9.68
2017	11.39	20.42	59.74	8.45
2018	10.21	20.85	60.62	8.32
2019	10.62	19.22	61.35	8.81
2020	11.65	20.52	57.78	10.05

Import shares, 2000-2020

	Raw materials	Intermediate goods	Consumer goods	Capital goods
2000-04	16.93	19.34	36.81	26.93
2005-09	18.73	18.31	40.47	22.50
2010-14	29.64	16.68	37.62	16.06
2015	24.89	19.22	38.62	17.27
2016	22.68	19.55	38.99	18.78
2017	23.49	18.95	37.91	19.65
2018	26.96	19.35	37.25	16.44
2019	25.10	20.31	39.22	15.37
2020	20.85	24.32	37.87	16.96

Source: UNCTAD.

1.4.2. Service balance

In the January-September 2021 period, the surplus of the services balance amounted to 7.6% of GDP, marking a change of 62.6% compared to the corresponding period of 2020. In absolute terms, it amounted to €10.35 billion, increased by €4.58 billion compared to the corresponding period of 2020. This positive development is attributable to a parallel increase in net transport and travel services. Specifically, net transport receipts increased by €0.601 billion over the corresponding period of 2013. As a percentage of GDP, net transport receipts were 3.7%, up by 19.5% (3.3%), compared to the corresponding period of 2013 (2012). The main components of the balance of services that

determine its result are tourism services and transport services.

Net receipts from travel services have been on the rise since 2004, with a positive average annual rate of change of 9% between 2013-19. Despite this positive development that contributes significantly to the reduction of the CA deficit, in addition to **the above positive effects tourism has on an economy, it also has negative effects on economies that rely heavily on tourism.**

Net receipts from transport services show a large fluctuation over time; in 2020, they reached €3.9 billion, compared to €5.9 in 2019. For the period January-September 2021, net receipts from transport services reached

TABLE 1.4.4 Net exports (in EUR millions)

	SITC 7751: Domestic laundry equipment	SITC 7752: Domestic refrigerator/ freezer	SITC 7753: Domestic dishwashers	SITC 7754: Electric shavers/ clipper	SITC 7757: Domestic electric machines	SITC 7758: Electro-thermic equipment	Deficit
2000-04	-72.00	-40.86	-25.50	-2.14	-54.58	-114.00	-309.08
2005-09	-115.85	-56.72	-47.45	-6.56	-76.56	-225.25	-528.41
2010-14	-77.48	-50.36	-22.82	-5.38	-55.46	-129.04	-340.53
2015	-69.75	-68.20	-16.87	-5.20	-52.73	-88.12	-300.86
2016	-63.10	-72.63	-18.16	-7.61	-62.95	-106.57	-331.01
2017	-62.62	-77.74	-16.77	-10.23	-44.70	-118.63	-330.69
2018	-72.46	-84.58	-17.40	-10.47	-40.26	-126.38	-351.55
2019	-80.04	-87.49	-18.63	-10.02	-55.25	-147.30	-398.73
2020	-67.82	-75.10	-15.96	-9.04	-48.89	-124.17	-340.98

Source: UNCTAD.

€2.62 billion compared to €3.08 billion in 2020, marking a 14.8% decrease.

1.4.3. Net International Investment Position developments

The situation of the Greek economy in the foreign sector is reflected in the variable of the net international investment position. For the whole period under review, the country's net foreign liabilities by far exceed the limit of -35% of GDP, which is the threshold used in the macroeconomic imbalances process, beyond which the possibility of future shocks increases. The country's net foreign liabilities to other countries after 2020 are about five times the aforementioned threshold (164.55% of GDP). For the period January-September 2021, its net investment position stood at -178.45% of GDP, compared to -161% of GDP in the corresponding period of 2020.

Figure 1.4.2 shows a continuous increase of the net international investment position as a percentage of GDP for the Greek economy. This negative result undermines the country's future course in the international capital markets. Finally, we note that, for the first nine months of 2021, the average net investment

position of the Eurozone countries was -25.8% of GDP. For the same period, the Eurozone countries with the highest NIIP were Ireland with -155% of GDP, Cyprus with -133.9% of GDP, Portugal with -102.5% of GDP and the Netherlands with -97.4% of GDP. By contrast, in the Eurozone countries with a surplus, it reached 97.43% of GDP for the Netherlands, 65.30% of GDP for Germany, 56.67% for Malta, 53.70% of GDP for Belgium, 43.13 % of GDP for Luxembourg, 13.43% for Austria, and 4.93% of GDP for Italy.

1.4.4. Conclusions

- In the Greek economy, the services balance contributes to the contraction of the CA deficit, while the goods balance widens the deficit.
- **The deficit of the balance of goods excluding oil and ships is associated with the export specialisation of the Greek economy.**
- Greek products show resilience in foreign markets and are constantly gaining market shares, emphasising the dynamic role of exports for improving the CA.
- With the onset of the deep recession of the Greek economy, Greek firms turned to foreign markets to

FIGURE 1.4.2
Net international investment positions (NIIP) (as % of GDP)



Source: Eurostat.

channel their products, thus achieving a significant increase in exports, mainly in consumer goods.

- Imports continue to be a worrying factor for the CA, as, once again, the increase in domestic income has led to an increase in imports.
- Consumer goods dominate the imports of the Greek economy, while intermediate and capital goods have smaller import shares.
- Imports of consumer goods have zero effect on Greek production.
- The subsidy for the replacement of electrical appliances, which essentially subsidises foreign products, will expand the CA deficit. As Greece does not produce electrical appliances (air conditioners, electric cookers, washing machines, refrigerators), these are imported consumer goods, while energy prices are a constantly fluctuating variable.

- The country's net foreign liabilities to other countries after 2020 stood at 164.55% of GDP. It is necessary to improve the result of the CAB and achieve a high growth rate of nominal GDP, in order to improve the country's net international investment position.

References

Konstantakopoulou, I., Magdalinos, T. and Skintzi, G., 2019. *Investigation of external trade and export competitiveness of euro-zone countries*. KEPE Studies No. 80. ISBN: 978-960-341-124-6. (in Greek)

Konstantakopoulou, I. and Tsionas, M., 2019. Measuring comparative advantages in the Euro Area. *Economic Modelling*, 76, 260-269.

Konstantakopoulou, I., 2015. *Analysis of Greek external trade: sectoral analysis, comparative advantages, exports and economic growth, 2000-2014*. KEPE, Studies No. 76. ISBN: 978-960-341-112-3. (in Greek)

1.5. Positive returns in the Greek stock market for 2021

Fotini Economou

1.5.1. Introduction

Following a year of negative returns after the outbreak of the COVID-19 pandemic in early 2020, the Greek stock market returned to positive returns in 2021, despite the ongoing health crisis and the associated uncertainty.

During the year 2021, the Greek economy recorded significant signs of recovery with positive prospects, as reflected in the key macroeconomic figures. In this context, there was a series of credit rating upgrades for Greece by international rating agencies, with the goal of returning to investment grade approaching (Table 1.5.1). Recently, the rating agency Fitch upgraded Greece's outlook to positive, noting, among other things, the significant progress that Greek banks have made in improving the quality of their assets, "sharply reducing the level of non-performing loans (NPLs) in the banking sector and enhancing their ability to provide credit to the real economy".¹

During the same period, government bond yields remained low, enabling low-cost borrowing. The Greek stock market completed 2021 with positive returns for the majority of stock indices with the medium capitalization and the technology sector standing out, while the developments in the institutional management sector were particularly positive.

This article presents the course of the Greek stock market in 2021 with emphasis on key stock market indices and data. Moreover, the course of the bond market and the institutional management sector are presented for the year 2021. The last section of the article summarizes and identifies the challenges for the Greek capital market.

1.5.2. The course of the stock market in 2021

The stock market was affected by the ongoing health crisis, with fluctuations throughout the year 2021. According to Athens Stock Exchange (ATHEX) data, the medium capitalization, as well as individual sectors, stood out in terms of returns for the year 2021. More specifically, according to ATHEX data (Table 1.5.2), the Athex Composite Share Price Index increased by 10.43%, reaching 893.34 points at the end of December 2021 from 808.99 points at the end of December 2020. Note that even though the stock market returned to positive returns after the losses of 2020,

TABLE 1.5.1 Credit rating of Greece

Rating Agency	Rating	Outlook	Date of last review
Moody's	Ba3	Stable	November 2020
Fitch	BB	Positive	January 2022
Standard & Poor's	BB	Positive	April 2021
Rating and Investment	BB	Stable	March 2021
DBRS	BB	Positive	September 2021
Scope Ratings	BB+	Stable	September 2021

Source: Public Debt Management Agency, January 2022.

1. See Fitch Ratings, Rating Action Commentary, January 14, 2022. <<https://www.fitchratings.com/research/sovereigns/fitch-revises-greece-outlook-to-positive-affirms-at-bb-14-01-2022>>

the performance of the Athex Composite Share Price Index lagged behind the performance of major European markets and the US market. Moreover, the FTSE/Athex Large Cap Index also recorded a positive return of 11.07%, reaching 2,148.86 points at the end of December 2021 from 1,934.64 points at the end of December 2020. Significantly higher returns were recorded by the FTSE/ATHEX Mid & Small Cap Factor-Weighted Index (49.43%) and the FTSE/Athex Mid Cap Index (34.72%).

The majority of sector indices moved upwards, with the FTSE/Athex Technology index standing out, recording

the impressive return of 96.54%. Note that the technology sector had a return of 21.31% in 2020, despite the declining market after the outbreak of the pandemic. Moreover, several sectors achieved returns of over 20% in 2021, i.e., the FTSE/Athex Industrial Goods & Services (27.24%) index, FTSE/Athex Telecommunications (24.73%), FTSE/Athex Health Care (24.66%) and FTSE/Athex Basic Resources (20.21%). In addition, the FTSE/Athex Banks index completed the year 2021 with a return of 10.78%, after losses of -41.37% in 2020. Negative returns were recorded for FTSE/Athex Consumer Goods & Services (-6.71%), FTSE/Athex Personal Products (-3.53%), FTSE/Athex Finan-

TABLE 1.5.2 Prices and returns for selected indices of the ATHEX (31/12/2020-31/12/2021)

	31/12/2021	31/12/2020	Year min	Year max	Year change (%)
FTSE/ATHEX Mid & Small Cap Factor-Weighted Index	4,668.47	3,124.15	2,996.13	4,754.69	49.43%
FTSE/Athex Mid Cap Index	1,491.91	1,107.38	1,026.21	1,731.39	34.72%
Athex All Share Index	230.06	187.55	175.88	240.71	22.67%
Hellenic Mid & Small Cap Index	1,372.98	1,202.50	1,110.37	1,442.42	14.18%
FTSE/Athex Large Cap	2,148.86	1,934.64	1,718.82	2,259.27	11.07%
Athex Composite Share Price Index	893.34	808.99	726.02	931.94	10.43%
FTSE/Athex Technology	2,146.88	1,092.34	1,043.00	2,165.21	96.54%
FTSE/Athex Industrial Goods & Services	3,731.79	2,932.95	2,762.19	3,996.37	27.24%
FTSE/Athex Telecommunications	4,545.62	3,644.51	3,294.37	4,734.07	24.73%
FTSE/Athex Health Care	552.48	443.19	396.54	611.35	24.66%
FTSE/Athex Basic Resources	7,397.72	6,153.83	5,233.31	8,597.84	20.21%
FTSE/Athex Energy	3,443.49	2,964.77	2,835.10	3,724.35	16.15%
FTSE/Athex Food & Beverage	11,332.54	9,885.18	9,045.03	12,311.96	14.64%
FTSE/Athex Travel & Leisure	1,963.12	1,732.48	1,540.34	2,183.50	13.31%
FTSE/Athex Utilities	5,151.00	4,602.67	4,264.97	5,607.62	11.91%
FTSE/Athex Banks	574.93	518.99	405.46	639.42	10.78%
FTSE/Athex Construction & Materials	2,978.90	2,761.06	2,565.75	3,422.77	7.89%
FTSE/Athex Insurance	1,994.86	1,909.42	1,808.06	2,192.44	4.47%
FTSE/ATHEX Real Estate	4,812.09	4,825.18	4,187.35	5,770.64	-0.27%
FTSE/Athex Retail	49.22	49.57	46.54	58.68	-0.71%
FTSE/Athex Financial Services	749.05	763.95	679.98	843.74	-1.95%
FTSE/Athex Personal Products	8,724.26	9,043.89	8,256.95	9,116.06	-3.53%
FTSE/Athex Consumer Goods & Services	7,260.09	7,781.92	6,939.31	9,231.17	-6.71%

Source: Daily official list of trading activity of the ATHEX (31/12/2021 and 31/12/2020).

FIGURE 1.5.1**Average daily value of the KEPE GRIV index per month from Dec. 2020 to Dec. 2021**

cial Services (-1.95%), FTSE/Athex Retail (-0.71%) and FTSE/ATHEX Real Estate (-0.27%).

According to ATHEX data (2021), the market capitalization of the ATHEX (assets under custody of domestic and foreign investors in total listed equities with the participation of the Financial Stability Fund) reached €56.53 billion at the end of December 2021, increased by 2.7% compared to the end of the previous month (€55.04 billion), while a significant increase was recorded compared to the end of December 2020, which was at €44.98 billion. The participation of foreign investors (with the participation of the Financial Stability Fund) was 62.45%, with foreign investors recording inflows of €41.59 million in December 2021 and 53.5% of total transactions. Furthermore, according to ATHEX data (2021), the value of transactions for the whole market reached €1,072.93 million in December 2021, reduced by 43.51% compared to December 2020. However, considering the (whole) year 2021, the cash value of settled transactions of equities amounted to €17.49 billion, higher compared to the year 2020, which was at €16.05 billion.

Finally, the KEPE GRIV implied volatility index, i.e., the so-called “fear” index, recorded a decrease in December 2021. The KEPE GRIV index reflects the uncertainty of the derivatives market participants about the expected short-term course of the Greek market and is calculated on the basis of the FTSE/ATHEX Large Cap options prices. The KEPE GRIV index decreased in December 2021, reaching 28.10% on 31/12/2021 from 32.40% on 30/11/2021. The evolution of the index

indicates a decrease in uncertainty for the expected short-term course of the Greek market compared to the end of the previous month. The index remained below its historical average level (since January 2004) for the Greek market, which stands at 32.68%. Moreover, in December 2021, the average daily value of the index increased, reaching 30.67% from 25.95% in November 2021 (Figure 1.5.1). The year 2021 ended with the KEPE GRIV index at a higher level compared to the end of 2020, which was 23.97% on 31/12/2020, reflecting the concerns about the course of the pandemic and the new Omicron variant.

1.5.3. Greek Government T-bills, Greek Government bonds and corporate bonds

Successful issues of the Greek Government T-bills and bonds were recorded in 2021 at low borrowing costs. As shown in Table 1.5.3, negative returns were observed in all 13-, 26- and 52-week T-bills issued in 2021, with the latest issue of the year (26-week T-bill) reaching -0.46%.

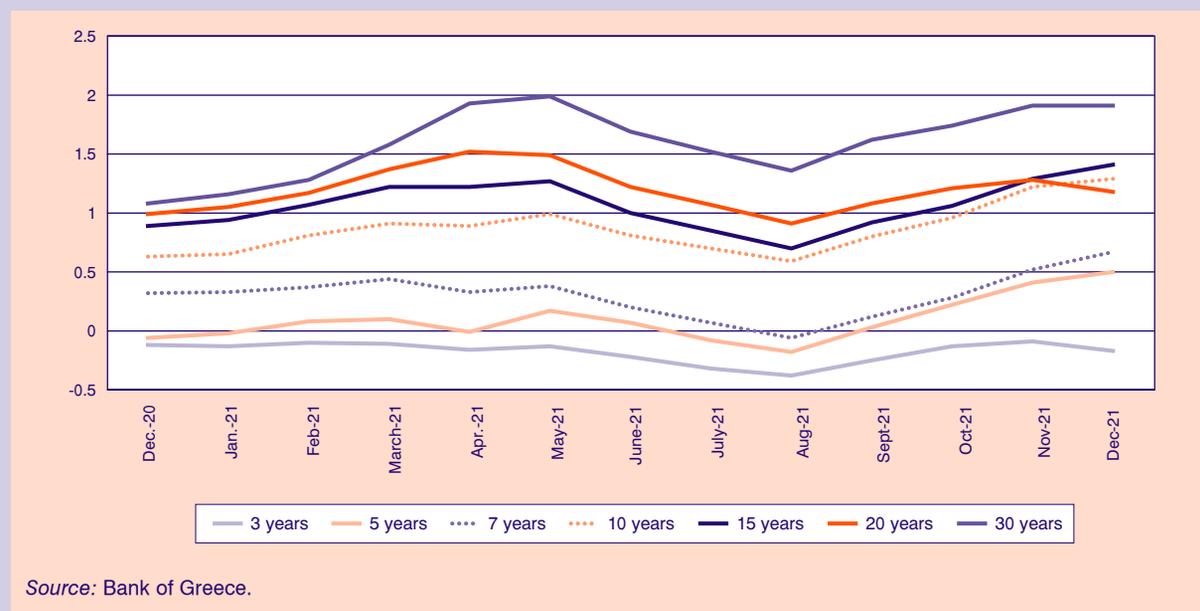
In addition, 5-, 10- and 30-year bonds were issued during the year. The most recent simultaneous reissue of 5-year and 30-year bonds was in September 2021, with the reissue of the five-year bond (0% coupon) having a new record-low yield of 0.02%. Looking at the overall course of Greek government benchmark bonds, according to the Bank of Greece data, the average monthly yield of 3-year Greek government bonds was reduced in December 2021 compared to December

TABLE 1.5.3 Greek Government T-bills yields (issues of 2021)

Auction date	13 weeks	Auction date	26 weeks	Auction date	52 weeks
3/11/2021	-0.43%	29/12/2021	-0.46%	8/12/2021	-0.40%
6/10/2021	-0.40%	1/12/2021	-0.43%	8/9/2021	-0.31%
4/8/2021	-0.40%	26/10/2021	-0.41%	9/6/2021	-0.31%
7/7/2021	-0.40%	29/9/2021	-0.39%	10/3/2021	-0.22%
5/5/2021	-0.40%	25/8/2021	-0.39%		
7/4/2021	-0.32%	28/7/2021	-0.39%		
3/2/2021	-0.32%	30/6/2021	-0.39%		
5/1/2021	-0.32%	2/6/2021	-0.36%		
		28/4/2021	-0.32%		
		31/3/2021	-0.24%		
		24/2/2021	-0.28%		
		27/1/2021	-0.28%		

Source: Ministry of Finance.

FIGURE 1.5.2
Monthly average yield (%) of Greek Government benchmark bonds (Dec. 2020-Dec. 2021)
for maturities of 3, 5, 7, 10, 15, 20 and 30 years



Source: Bank of Greece.

2020, remaining at negative levels throughout the year. On the contrary, the average monthly yield of Greek government bonds with maturities of 5, 7, 10, 15, 20 and 30 years increased in December 2021 compared to December 2020, with 30-year bonds showing the

largest increase. Note that fluctuations were observed during the year with bonds of 3, 5, 7, 10, 15 and 20 years recording the lowest average monthly yields of the year in August 2021 and the 10-year bond reaching a historically low level.

Focussing on corporate bonds, according to ATHEX (2021) data, the course of the corporate bond indices was also positive, with the Hellenic Corporate Bond Price Index² recording a return of 1.57% and the Hellenic Corporate Bond Index³ recording a return of 4.61% in 2021.⁴ Moreover, the cash value of settled transactions of corporate bonds increased, reaching €245.42 million in 2021, from €189.44 million in 2020. Note that €1.42 billion was raised in 2021 from seven new corporate bond issues, recording an increase compared to the €1.02 billion raised from three corporate bond issues in 2020.

1.5.4. The course of the institutional management sector

The year 2021 was a very positive year for the institutional management sector. According to the Hellenic Fund and Asset Management Association (HFAMA) (2022) data, the total amount of funds under management amounted to €22.2 billion on 31/12/2021, recording an increase of 23.23% compared to the beginning of the year and an increase of 9.21% compared to the previous quarter. The composition of these funds on 31/12/2021 concerned 50.2% in Undertakings for Collective Investment in Transferable Securities (UCITS), 33.7% in the Asset Management sector, 15.5% in Real Estate Investment Companies (REICs)⁵ and 0.6% in Alternative Investment Funds (AIFs).

An impressive increase was recorded in the total assets of UCITS managed by Greek Mutual Fund Management Companies, reaching €11.13 billion on 31/12/2021 (€8 billion in UCITS Law 4099/12 and €3 billion in EU UCITS), an increase of 37.5% since the beginning of the year and 6.1% compared to the previous quarter (Figure 1.5.3). Thirty-one percent of these assets are bond funds, 23% balanced, 24% Funds of Funds, 15% equity, 4% specialist and 3% money market. Note that the inflows of funds to UCITS continued for the seventh consecutive quarter, with total inflows of the last quarter of 2021 reaching €478 million, while the total inflows since the beginning of the year reached €2.5 billion.

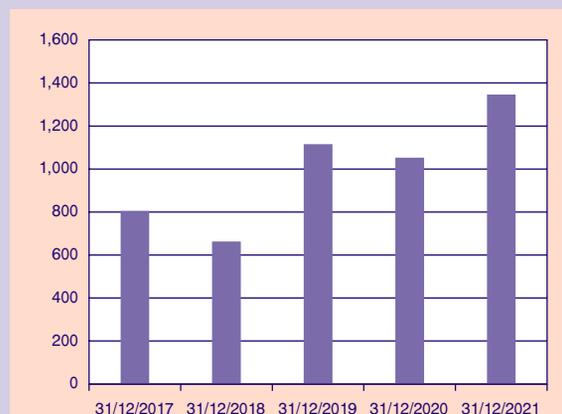
Positive returns were recorded in all the individual categories of equity and balanced funds with the highest returns for Equity Funds – North America (24.56%), Eq-

FIGURE 1.5.3
Total assets under management of UCITS, million € (31/12/2017-31/12/2021)



Source: Hellenic Fund and Asset Management Association.

FIGURE 1.5.4
Equity Funds - Greece assets, million € (31/12/2017-31/12/2021)



Source: Hellenic Fund and Asset Management Association.

uity Funds – Developed Markets (22.99%), Equity Funds – Emerging Markets (19.34%) (see HFAMA, 2022). Note that Equity Funds – Greece recorded a return of 16.66%, with all individual funds recording positive returns ranging from 11.13% to 25.90% and total assets increased by 27.90% since the beginning of the year (Figure 1.5.4).

2. Based on the net price of each bond.

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

4. Returns on 29/12/2021 according to the daily official list of trading activity of the ATHEX of 31/12/2021.

5. On 30/6/2021 (latest published data), see Hellenic Fund and Asset Management Association (2022).

1.5.5. Conclusions

The year 2021 ended with increased capitalization and positive returns for the stock market with the medium capitalization stocks and the technology sector standing out. Moreover, the successful public issues provided financing with low borrowing costs, reflecting the confidence of international markets in the Greek economy. The course of the institutional management sector was also positive, with increased funds under management, inflows and positive returns in all the individual categories of Equity Funds and Balanced Funds.

The strengthening of the Greek capital market is a priority for the year 2022, given the conditions of uncertainty created by the pandemic and the Omicron variant, as well as the inflationary pressures on energy and raw materials. The continuation of capital raising observed in 2021 (€7.82 billion raised in ATHEX regulated market - main market, €6.40 billion from share

capital increases and €1.42 billion from corporate bonds)⁶ could operate in addition to the funding traditionally provided by banks to boost the real economy. Finally, regarding the strengthening of the credibility of the Greek capital market, note that 2021 was the first year of implementation of the law on corporate governance, and at the beginning of 2022, the consultation of the bill of the Ministry of Finance for the modernization of the operating framework of the Hellenic Capital Market Commission was completed.

References

Hellenic Fund and Asset Management Association, Press release 13/1/2022.

Athens Exchange Group, Monthly Statistics Bulletin AxiaNumbers, Securities Market, December 2021.

Athens Exchange Group, Monthly Statistics Bulletin AxiaNumbers, Securities Market, December 2020.

6. See ATHEX, Capital Raised, 1st and 2nd semester 2021. <<https://www.athexgroup.gr/el/web/guest/info-markets-activity-publications-capital-raised-securities-market>>

1.6. International environment: Recent developments and prospects of the global economic activity

Aristotelis Koutroulis

The global economy continues to recover. However, progress toward recovery is clouded by new sources of uncertainty and downside risks. Shielding the national economies from these risks requires international co-operation and closer coordination of individual national policies.

1.6.1. Trends and developments in the global economy

Following a sharp contraction of 3.4 percentage points in 2020, the world economy entered a phase of dynamic recovery with GDP growth rates estimated to range from 5.5 to 5.9 per cent in 2021 (see Table 1.6.1). Increases in key components of demand (e.g., private consumption and investment), macroeconomic policy support, favourable financial conditions and vaccination progress have all contributed to the recovery of the global economy.

The rebound of economic activity has significantly improved the economic climate. Nevertheless, relative to pre-pandemic projections, global GDP in 2021 is estimated to be 3 percentage points lower (OECD, 2021; UN, 2022). Due to insufficient vaccination coverage and limited fiscal space, output losses were particularly large in low- and middle-income developing economies (OECD, 2021). Countries featuring a poor productive base and/or a disproportionately high dependence on tourism have registered large output losses as well.

Over the next two years, the world economy is expected to continue recovering. However, global growth momentum is set to lose steam amid a wide array of negative factors (e.g., demand-supply imbalances, remaining bottlenecks in the production and delivery of energy and other products, rising inflationary pressures and the slowdown of economic activity in China and the US) (IMF, 2022). According to international organizations, the deceleration of the global economic

recovery is estimated to range from 1.1 to 1.4 percentage points (see Table 1.6.1).

1.6.2. Inflation and Unemployment

After a long period of sluggish inflationary pressures and low inflation expectations, the sharp rise in inflation over the past months took households, businesses, and analysts by surprise. Indeed, even in advanced economies, where monetary authorities place emphasis on price stability, inflation has moved beyond central bank targets. The problem is particularly worrisome in the USA, where the average annual inflation in 2021 exceeded 4% (see Table 1.6.2).

The list of factors that served to aggravate inflationary tendencies is comprised of supply-side bottlenecks, steep increases in the prices of energy and food products, and demand-supply imbalances. Looking ahead, inflation is estimated to remain high in most regions of the world (see Table 1.4.2). However, the gradual consumer demand shift from goods to services along with production normalization and tighter monetary conditions are expected to exert downward pressures on inflation during the second half of 2022 (IMF, 2022).

Regarding labor market conditions, statistical data give rise to a mixed picture. In several advanced economies, the evolution of employment appears to be more compatible with economic recovery. So, if current trends continue over the medium term, it is expected that employment rates in most advanced economies will return to their pre-pandemic levels by the end of 2022 (see Table 1.6.3) (OECD, 2021). On the contrary, stagnant labor markets in developing economies, combined with faster growth rates of the workforce, create negative expectations for the near future. The differentiation between advanced and developing economies partly reflects the limited fiscal space and the workforce's low vaccination rates in most regions of developing world (UN, 2022).

So far, the improved conditions in the labor markets of advanced economies have not benefited all workers equally. Specifically, in key industries of the tertiary sector –tourism, travel services, catering and accommodation– the pandemic continues to restrain the recovery of productive activity and employment. Given that most jobs in these sectors are assigned to low-skilled and low-paid workers, this development deteriorates the living conditions of the most vulnerable groups of workers, thereby sharpening social and

TABLE 1.6.1 Real Gross Domestic Product^{1,2}
(annual percentage changes)

	2020*				2021**				2022**				2023**								
	IMF	EC	OECD	WB	UN	IMF	EC	OECD	WB	UN	IMF	EC	OECD	WB	UN	IMF	EC	OECD	WB	UN	
World economy	-3.1	-3.4	-3.4	-3.4	-3.4	5.9	5.7	5.6	5.5	5.5	4.4	4.5	4.5	4.1	4	3.8	3.5	3.2	3.2	3.2	3.5
Advanced economies	-4.5	-4.4	:	-4.6	-4.8	5	5.3	:	5	4.8	3.9	4.1	:	3.8	3.7	2.6	2.5	:	2.3	2.5	2.5
USA	-3.4	-3.4	-3.4	-3.4	-3.4	5.6	5.8	5.6	5.5	5.5	4	4.5	3.7	3.7	3.5	2.6	2.4	2.4	2.4	2.6	2.4
Euro Area	-6.4	-6.4	-6.5	-6.4	-6.5	5.2	5	5.2	4.7	4.7	3.9	4.3	4.3	4.2	4	2.5	2.4	2.4	2.5	2.1	2.5
Japan	-4.5	-4.8	-4.6	-4.5	-4.6	1.6	2.4	1.8	1.7	2.2	3.3	2.3	3.4	2.9	3.3	1.8	1.1	1.1	1.1	1.2	2.7
United Kingdom	-9.4	-9.7	-9.7	:	-9.8	7.2	6.9	6.9	:	6.2	4.7	4.8	4.7	:	4.5	2.3	1.7	2.1	:	2	2
Developing economies	-2	-2.5	:	-1.7	-1.6	6.5	6	:	6.3	6.4	4.8	4.8	:	4.6	4.5	4.7	4.4	:	4.4	4.7	4.7
Brazil	-3.9	-4.1	-4.4	-3.9	-4.1	4.7	4.9	5	4.9	4.7	0.3	2.1	1.4	1.4	0.5	1.6	2.3	2.1	2.7	1.9	1.9
Russia	-2.7	-3	:	-3	-3	4.5	3.9	:	4.3	4.2	2.8	2.6	:	2.4	2.7	2.1	2.2	:	1.8	2.3	2.3
India	-7.3	-7	-7.3	-7.3	-7.1	9	9	9.4	8.3	9	9	7.8	8.1	8.7	6.7	7.1	6	5.5	6.8	6.1	6.1
China	2.3	2.3	2.3	2.2	2.3	8.1	7.9	8.1	8	7.8	4.8	5.3	5.1	5.1	5.2	5.2	5.3	5.1	5.3	5.1	5.5

Sources: IMF, *World Economic Outlook Update, January 2022*; OECD, *OECD Economic Outlook (Vol. 2022/2)*; European Commission, *European Economic Forecast, Autumn 2021*; United Nations, *World Economic Prospects and Situation, January 2022*; 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.

TABLE 1.6.2 Inflation¹
(annual percentage changes)

	2020			2021*			2022**			2023**						
	IMF	EC	OECD	UN	IMF	EC	OECD	UN	IMF	EC	OECD	UN				
Advanced economies	0.7	:	:	0.8	3.1	:	:	3.2	3.9	:	:	2.6	2.1	:	:	2
USA	1.2	1.2	1.2	1.2	4.3	4.3	3.9	4.6	5.9	3.3	4.4	3.6	2.7	2.2	2.5	2.5
Euro Area	0.3	0.3	0.3	0.3	2.8	2.4	2.4	2.4	3	2.2	2.7	1.9	1.7	1.4	1.8	1.5
Japan	0.8	0	0	0	0.4	-0.5	-0.2	0	0.7	0.2	0.8	1	0.7	0.4	0.8	1.1
United Kingdom	:	1	0.9	1	:	2.4	2.4	2.7	:	3.2	4.4	2.2	:	2.2	2.4	2.7
Developing economies	5.1	:	:	5.5	5.7	:	:	8.1	5.9	:	:	5.5	4.7	:	:	4.6
Brazil	:	:	3.2	3.2	:	:	7.8	8.4	:	:	5.1	6.9	:	:	3.5	3.8
Russia	:	3.4	:	3.4	:	6.2	:	6.4	:	4.8	:	3.2	:	4	:	3.2
India	:	:	6.2	5.6	:	:	6.4	5.9	:	:	4.8	5.6	:	:	4.2	5.3
China	:	2.5	2.5	2.1	:	:	0.8	2.5	:	:	1.7	3.4	:	:	2.4	3.6

Sources: IMF, *World Economic Outlook Update, January 2022*; OECD, *OECD Economic Outlook (Vol. 2022/2)*; European Commission, *European Economic Forecast, Autumn 2021*; United Nations, *World Economic Prospects and Situation, January 2022*.

* Estimations, ** Projections.

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

TABLE 1.6.3 Annual unemployment rates

	2020				2021*				2022**				2023**			
	EC	OECD	ILO	EC	OECD	ILO	EC	OECD	ILO	EC	OECD	ILO	EC	OECD	ILO	
World economy	:	:	6.6	:	:	6.2	:	:	5.9	:	:	5.9	:	:	5.7	
Low-income countries	:	:	5.6	:	:	5.9	:	:	6	:	:	6	:	:	5.7	
Lower-middle-income countries	:	:	6.6	:	:	5.9	:	:	5.6	:	:	5.6	:	:	5.4	
Upper-middle-income countries	:	:	6.7	:	:	6.7	:	:	6.6	:	:	6.6	:	:	6.3	
High-income countries	:	:	6.5	:	:	5.6	:	:	4.9	:	:	4.9	:	:	4.7	
USA	8.1	8.1	:	5.5	5.4	:	4.2	3.8	:	4	3.4	:	4	3.4	:	
Euro Area	7.9	7.9	:	7.9	7.7	:	7.5	7.2	:	7.3	7	:	7.3	7	:	
Japan	3	2.8	:	2.8	2.8	:	2.6	2.6	:	2.4	2.4	:	2.4	2.4	:	
United Kingdom	4.5	4.5	:	4.9	4.5	:	4.7	4.3	:	4.4	4.2	:	4.4	4.2	:	

Sources: OECD, OECD Economic Outlook (Vol. 2022/2); European Commission, European Economic Forecast, Autumn 2021; International Labour Organization, World Employment and Social Outlook: Trends 2022.

* Estimations, ** Projections.

economic inequalities (UN, 2022). At the same time, several productive sectors in advanced economies are experiencing labor shortages (EC, 2021; OECD, 2021; and UN, 2022). In general, the coexistence of unemployment and job vacancies resulting from the mismatch between skills and job opportunities is not a new phenomenon. However, economists have recently observed an adverse change in the relationship between the unemployment rate and the number of job vacancies with the two variables moving upwards simultaneously. According to most analysts, this development is attributed to changes in the behavior of consumers, businesses and workers caused by the pandemic (e.g., change in the composition of consumer spending in favor of manufacturing products, rapid growth of online economic transactions, industrial automation acceleration, reduced geographical and sectoral labor mobility, etc.) (EC, 2021; OECD, 2021; and UN, 2022).

1.6.3. World trade and commodity prices

In 2021, global trade improved remarkably with the rate of expansion exceeding 9 percentage points (see Table 1.6.4). The strength of the rebound owes, primarily, to the rapid increase of demand for manufacturing products during the first half of 2021. Unlike trade in goods, trade in services remained subdued due to the slow recovery of international tourism (World Bank, 2022).

Global trade expansion began to decelerate in the second half of 2021. Among the factors contributing to this

development, particularly influential were: (a) the slow-down of demand for industrial products, and (b) the conditions of congestion that prevailed in the production, delivery, and transportation of major intermediate and final goods. On the assumption that the situation in global industrial production will normalize and that there will be no further trade tensions between major economies, the growth rate of global trade in 2022 will range from 5 to 6% (see Table 1.6.4).

Regarding commodities prices, oil, natural gas and coal prices rose particularly sharply over the past 18 months. While the energy price surge is driven by a common factor (rising demand coupled with supply-side disruptions), extraordinary circumstances have played a key role as well. Specifically, stronger than anticipated demand for electricity generation, oil extraction and refinery disruptions were due to extreme weather in February 2021 and Hurricane Ida last August added to international oil price pressures. Concerning coal, very unusual incidents (floods in Indonesia and Australia the derailment of a train carrying coal in South Africa, strict pandemic-control measures in China) had similar effects on the international price of coal. As for natural gas, exceptionally high demand for liquidated gas from China, the low production of electricity by wind turbine generators based in Europe, and finally, Russia's efforts to stockpile part of the pumped natural gas have all exerted upward pressures on gas prices (OECD, 2021).

According to the World Bank, prices for other commodities rose as well. Specifically, historically large price increases were recorded for tin (due to high demand on the part of manufacturers of electronics) and aluminum (due to reduced production in China). Concerning agricultural products, the average annual price increased by 23 percentage points in 2021. The peak of food prices reflects China's rising demand for cereals and vegetable oil, increased prices of inputs used in agriculture, and poor harvests due to adverse weather conditions. (World Bank, 2022).

1.6.4. Downside risks and international policy coordination

After a severe economic crisis and two years into the Covid-19 pandemic, current economic trends and vaccination rates across the globe should have made each one of us more optimistic about the future. They have not. The global economy remains susceptible to several 'old' downside risks –extreme weather events due to climate change, increasing protectionism and geopolitical tensions. Moreover, new sources of un-

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

	2020	2021*	2022**	2023**
IMF	-8.2	9.3	6	4.9
OECD	-8.4	9.3	4.9	4.5
WB	-8.2	9.5	5.8	4.7
UN	-8.3	11	5.7	4

Sources: IMF, *World Economic Outlook Update, January 2022*; OECD, *OECD Economic Outlook (Vol. 2022/2)*; United Nations, *World Economic Prospects and Situation, January 2022*; World Bank, *Global Economic Prospects, January 2021*.

* Estimations, ** Projections.

certainty and risks – supply bottlenecks, high energy prices, rising inflation, and deteriorating financial conditions— put additional pressure on an already fragile recovery.

With public deficits and debts in several economies at record highs and monetary policy reaching its limits, most governments have no policy space to shield their economies from the new and old risks. Against this background, national fiscal and monetary authorities across the globe are expected to coordinate their policies. However, as detailed in the reports of international organizations, designing and implementing a global policy architecture that will mobilize governments towards cooperation while maintaining a balance between different countries' national goals is quite challenging.

References

European Commission (2021), *European Economic Forecast, Autumn 2021*, European Economy, Institutional Paper 160.

International Labour Organization (2022), *World Employment and Social Outlook: Trends 2022*, Geneva: International Labour Office.

International Monetary Fund (2022), *World Economic Outlook Update (January 2022): Rising Caseloads, a Disrupted Recovery and Higher Inflation*, IMF, Washington, DC.

OECD (2021), *OECD Economic Outlook*, Volume 2021, Issue 2, No 110, OECD Publishing, Paris.

United Nations (2022), *World Economic Situation and Prospects*, New York: United Nations.

World Bank (2022), *Global Economic Prospects, January 2022*, Washington, DC: World Bank.

2. Fiscal developments

KEPE, *Greek Economic Outlook*, issue 47, 2022, pp. 43-50

State Budget, public debt, and fiscal figures perspectives

Elisavet I. Nitsi

2.1. Execution of the 2021 State Budget

The 2021 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 14,872 million euros or 8.39% of Gross Domestic Product (GDP),² against 22,806 million euros or 13.79% of GDP in 2020, but much lower than the targets set by the 2021 State Budget and the MTF5 2022-2025, as well as the estimated deficit of the 2022 State Budget of a deficit around 17,500 million euros or 10% of GDP (Table 2.1.1). Accordingly, the primary balance is also deficient, as it reached 10,327 million euros or 5.81% of GDP, against a deficit of 18,195 million or 11.01% in 2020 and targets for a primary deficit of around 13,000 million euros or 7.5% of GDP based on the 2021 State Budget, the MTF5 of 2022-2025, as well as the 2022 State Budget (Table 2.1.1). It is obvious that the 2021 State Budget execution is improved compared to the forecasts and estimates due to the significant growth of the Greek economy that exceeded the ominous forecasts owing to the Covid-19 pandemic and the measures taken to address both the health crisis and the consequent economic crisis resulting from the lockdown of the economic activity and the need to support the real economy.

The economic recovery resulted in a significant increase of the 2021 State Budget's net revenues and a simultaneous reduction in expenditures compared to the corresponding period of the previous year. More specifically, net revenues of the 2021 State Budget amounted to 54,878 million euros, up by 7,514 million euros or 15.86%, as well as the targets set by the 2021

State Budget, which projected that revenues were set to reach 52,970 million euros, a gain of 1,908 million euros or 3.6%. Economic growth has led to upward revisions of revenue figures to 53,132 million euros in the MTF5 2022-2025 and to 53,420 million euros in the latest estimate in the 2022 State Budget, with the discrepancy being limited to 1.5 billion euros. The increase can be attributed to increased VAT revenue, transfers (including revenue of ANFAs amounting to 644 million euros, which was not foreseen to be collected, while it is estimated that about 300 million euros was not collected due to the extension of the deadline for payment of traffic fees) and the inflow of funds from the Recovery and Resilience Fund.

Expenditures amounted to 69,750 million euros, showing a decrease of 419 million euros or 0.6% compared to 2020. However, there is a large deviation from the expenditures that were initially foreseen by the 2021 State Budget, by 1,939 million euros or 2.86%, as at the time of its submission, the evolution of the pandemic with the new mutation, "Delta", was not expected. This led to a new lockdown and restrictions in the economic activity, which required an increase in transfers through the Public Investment Program to meet the financing needs of both the health system and the anti-pandemic measures.

More specifically, revenues of the 2021 State Budget amounted to 59,981 million euros, showing an increase of 6,945 million euros or 13.1% compared to the corresponding period of the previous year, an increase that was partly foreseen in the target set by the 2021 State Budget and the MTF5 2022-2025 (1,755 million euros or 3% and 2,029 or 3.5%, respectively), as well as the latest estimate of the 2022 State Budget (1,901 million euros or 3.27%), which projected that revenues were set to reach 54,710 million euros, a loss of 7,346 million euros or 13.4%. It is worth mentioning the significant rise in revenue from tax collection that reached 48,126 million euros, much higher than 2020, by 4,928 million euros or 11.4%. As for the targets set in the 2021 State Budget, they were very optimistic.

1. The State Budget Execution Bulletin, December 2021, Ministry of Finance, January 2022.

2. According to the GDP projections for 2021 from the 2022 State Budget.

TABLE 2.1.1 State Budget 2021, million euros on a modified cash basis

	2020	2021	Budget	MTFS 2022-2025	Budget
	Outcome ¹	Outcome ¹	Forecasts 2021 ²	Forecasts ³	Estimates 2022 ⁴
State Budget					
Net Revenue	47,364	54,878	52,970	53,132	53,420
Revenue	53,036	59,981	58,226	57,952	58,080
<i>Taxes</i>					
<i>From which:</i>	43,198	48,126	48,652	45,792	46,860
VAT	15,008	17,431	17,492	16,867	17,036
Excise taxes	6,427	6,659	6,599	6,573	6,540
Property taxes	2,427	2,652	2,847	2,607	2,549
Income taxes	13,589	14,697	15,429	12,961	13,975
<i>Social contributions</i>	54	55	54	55	55
<i>Transfers</i>	6,537	8,690	6,951	8,982	8,177
<i>Sales of goods and services</i>	507	611	603	623	590
<i>Other current revenue</i>	2,731	2,495	1,636	2,163	2,369
<i>Sales of fixed assets</i>	8	4	330	336	30
<i>Tax refunds</i>	5,672	5,103	5,256	4,820	4,660
Recovery and Resilience Facility Funds⁵	0	2,310	2,635	4,029	2,310
Expenditure	70,169	69,750	67,811	70,071	70,907
<i>Compensation of employees</i>	13,335	13,494	13,544	13,481	13,472
<i>Social benefits</i>	137	281	199	194	271
<i>Transfers</i>	38,751	37,038	31,394	36,806	37,605
<i>Purchases of goods and services</i>	1,618	1,922	1,251	1,832	2,044
<i>Subsidies</i>	248	346	80	80	345
<i>Interest payments (gross basis)</i>	4,774	4,873	4,510	4,760	4,801
<i>Other current expenditure</i>	29	52	91	91	89
<i>Non allocated expenditure (without PIP)</i>	0	0	4,709	1,579	671
<i>Purchase of fixed assets</i>	631	2,672	2,646	2,647	2,657
Public Investment Program (PIP)					
<i>Revenue⁶</i>	5,542	4,569	4,192	4,793	4,793
<i>Expenditure⁷</i>	10,647	9,001	6,750	10,647	8,950

TABLE 2.1.1 (continued)

	2020	2021			
	Outcome ¹	Outcome ¹	Budget Forecasts 2021 ²	MTFS 2022-2025 Forecasts ³	Budget Estimates 2022 ⁴
State Budget Primary Balance^{8,9,10,11}	-18,195	-10,327	-12,946	-13,359	-12,949
% GDP	-11,01	-5,81	-7,29	-7,52	-7,29
State Budget Balance^{8,9,10,11}	-22,806	-14,872	-17,487	-17,939	-17,487
% GDP	-13,79	-8,37	-9,85	-10,10	-9,85
GDP¹²	165,326	177,608	177,608	177,608	177,608

Source: *Budget Introductory Report 2021 and 2022*, Ministry of Finance.
 Medium-Term Fiscal Strategy Framework (MTFS) 2022-2025, Ministry of Finance.
 State Budget Execution, General Accounting Office, Ministry of Finance, January 2022.

Notes:

1. The data for the revenues and expenditures of the State Budget for the years 2020 and 2021 are temporary and will be finalized with the ratification of the Revenue and Expenditure Report of the State for the fiscal years 2020 and 2021.
2. Budget estimates, as depicted in the 2021 Budget Introductory Report.
3. Budget estimates, as depicted in the Medium-Term Fiscal Strategy Framework 2022-2025.
4. Budget estimates, as depicted in the 2022 Budget Introductory Report.
5. Revenues from the Recovery and Resilience Facility Fund are included in lines "Transfers".
6. Public Investment Budget revenues are included in lines "Transfers" and "Other current revenues".
7. Public Investment Budget expenditure include around 336 million euros, which are financed by the REACT EU program and will be settled within the fiscal year 2022.
8. + surplus, - deficit.
9. Outcome includes the settlement program of previous years' arrears and pending pension applications.
10. Data is presented according to the new economic classification (Presidential Decree 54/2018).
11. The State Budget balance includes 5.8 million euros of expenditure, which were not accounted for at the time of publication of the bulletin.
12. The GDP estimate for 2021 as reflected in the estimates of the Introductory Report of the 2022 Budget.

Compared to 2020, an even greater increase by about 500 million euros or 1% was expected. This forecast was revised to the worst in the MTFS 2022-2025, when the problems due to the pandemic became obvious (2,334 million euros or 5.1%), while the estimate of the 2022 State Budget reduced the discrepancy to 1,266 million euros or 2.7%, due to the economic recovery. Larger increases compared to 2020 were recorded for VAT receipts (2,423 million euros or 16.1%) and income tax revenues (1,108 million euros or 8,2%). In addition, transfers increased by 2,153 million euros or 32.9%. It should be noted that increased revenues are due to inflows of 2,310 million euros from the Recovery and Resilience Facility Fund.

Simultaneously, the 2021 State Budget shows a decrease in its expenditures, as they amounted to 69,750 million euros, lower by 419 million euros or 0.6% compared to 2020. Expenditures were expected to be even lower in the 2021 State Budget, as the target was set at

67,811 million euros, that is 1,939 million euros or 2.9% lower from their actual level. However, while the MTFS 2022-2025 forecast was rather close –a deviation of 321 million euros or 0.5% higher– the latest estimate of the 2022 State Budget predicted expenditures even higher, by about 900 million euros, from the MTFS 2022-2025. This decrease is owed to transfers (1,713 million euros or 4.4% compared to 2020), through the Public Investment Program, to cover the needs created by the pandemic and the measures to support the real economy. On the other hand, expenditures for the purchase of fixed assets, amounting to 2,672 million euros, are increased by 2,041 million euros or 323.5% compared to 2020, but this fact was foreseen in all relevant targets and estimates.

The Public Investment Program (PIP) shows a significant decrease in both revenue and expenditure, as expenditures for dealing with the pandemic were lower relatively to 2020. Revenues amount to 4,569 million

euros, lower by 973 million euros or 17.6% compared to the 2020 outcome, and 224 million euros or 4.7% against the target set by the MTF5 2022-2025 and the 2022 State Budget. However, the 2021 State Budget had foreseen more revenues from the PIP, by 377 million euros or 9%. Respectively, expenditure, amounting to 9,001 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.

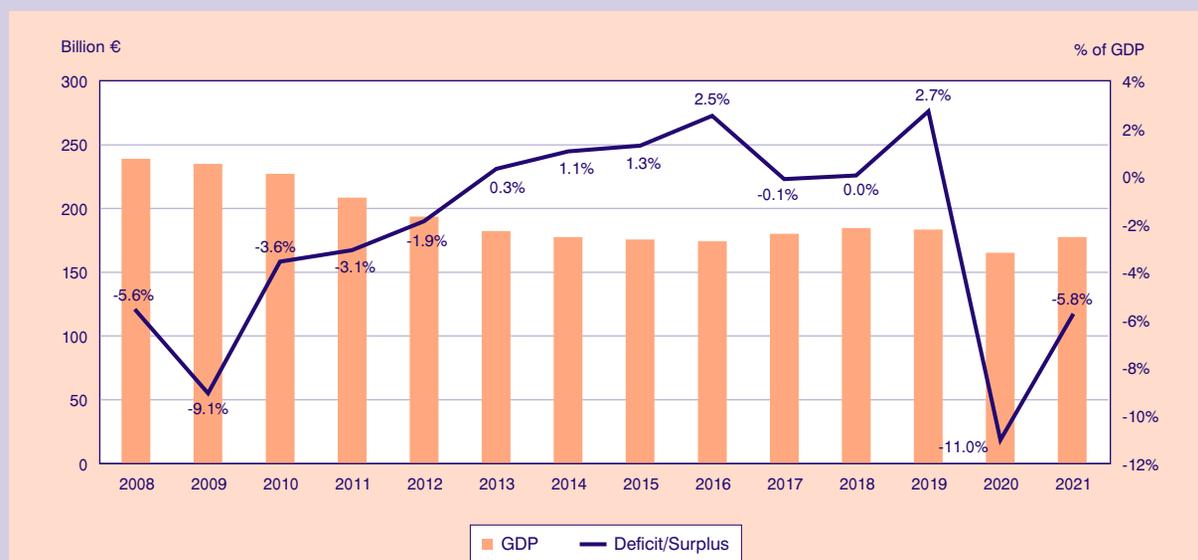
Overall, improved revenues combined with restrained expenditures significantly improved the fiscal result, as well as the balance of the State Budget. Graph 2.1.1 presents the evolution of the primary deficit/surplus in the period 2008-2021, accompanied by the evolution of GDP. The period ranges from 2008, before the debt crisis of the Greek economy, until the latest data. The graph shows that in 2020, the GDP is at the lowest observed in the whole period under consideration, while it recovered a significant part of the loss in 2021. Moreover, the estimate for the primary balance deficit reached 11% of GDP in 2020, two percentage points

of GDP more than the 2009 deficit that led the country into the consolidation program, a deficit reduced by half in 2021.

Regarding the targets set, the deviations from the State Budget submitted for 2021 are due to the underestimation of the course of the pandemic, as the mutation “Delta” of the original SARS-Cov-2 virus, which was highly contagious and lethal, as well as to the euphoria for the end of the pandemic due to the discovery of the vaccine. However, the magnitude of the needs and measures necessary to address both the financial implications of the lockdowns and the increased needs of the healthcare system was soon realized, and the estimates of the MTF5 2022-2025 and the 2022 State Budget Report were adjusted accordingly.

Finally, it should be noted that since June 2021, the Harmonized Consumer Price Index (CPI) has increased, after a period of one year of continuous decline due to reduced demand owing to the economic crisis caused by the pandemic. This increase is due to the particularly high international prices of oil and the energy sector in general, but also to the rise in food and transport prices. Thus, the increase in inflation in 2021 reached 5.1%,³ which is mainly imported due to

GRAPH 2.1.1
Gross Domestic Product (GDP) and State Budget Primary Deficit/Surplus 2008-2021
(in % of GDP and billion €)



Source: Budget Introductory Report, several issues. State Budget Execution, General Accounting Office, Ministry of Finance, January 2022.

Note: 2021 is an estimation from the State Budget of 2022.

3. ELSTAT, Consumer Prices Index, Press Release, 13 January 2022.

the developments in the prices of energy, raw materials, and basic goods. However, it will have a significant impact on the disposable income of Greek households and the operating costs of businesses, which in turn will lead to a reduction in household consumption expenditure, investment and the volume of exports of goods, losses which were attempted to be mitigated by measures taken against the energy crisis.

2.2. The evolution of Greek public debt, third quarter 2021

According to the latest data available from the General Accounting Office,⁴ for the third quarter of 2021, the Central Government's debt amounted to 386,824.51 million euros, showing a small decrease of approximately 500 million euros (0.13%) compared to the

previous quarter, while it is increased by 12.8 billion (3.43%) in relation to end of the year 2020 and 21.9 billion (6.02%) compared to the corresponding quarter of 2020. In addition, cash deposits showed an increase of 1.6 billion (0.42%) compared to the previous quarter and 2.2 billion (0.59%) compared to the end of 2020 and just 569 million euros (0.16%) in relation to the corresponding quarter in 2020. The observed debt increase can be attributed mainly to the increase in borrowing used to finance the increased budget expenditures 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 2021 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, amount-

TABLE 2.2.1 Central Government debt¹ (in million €)*

Period	2020 (C' quar.)	2020 (D' quar.)	2021 (B' quar.)	2021 (C' quar.)
Outstanding Central Government Debt	364,864.58	374,005.73	387,328.87	386,824.51
Debt by type of interest rate				
Fixed rate ²	352,459.18	361,663.54	381,518.94	382,182.62
Floating rate ^{2,3}	12,405.40	12,342.19	5,809.93	4,641.89
Debt by way of trading				
Tradable	77,716.16	78,541.20	92,571.60	94,385.18
Non-Tradable	287,513.29	295,464.53	294,757.27	292,439.33
Debt by currency				
Eurozone	360,851.07	369,891.67	386,554.21	386,050.86
Non-Eurozone currencies	4,013.51	4,114.06	774.66	773.65
Non-Eurozone currencies⁴	19,527.80	17,891.90	18,484.40	20,097.70
Debt guaranteed by the Central Government	14,330.54	14,306.26	19,776.11	19,601.19

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 euros on 31/6/2021 and 30/9/2021.

* Estimates.

4. Public Debt Bulletin, September 2021, General Accounting Office, Ministry of Finance.

ed to 98.8% and 1.2%, respectively. The change in the composition of debt in favor of floating rates continues, although at a diminishing rate compared to the previous quarter (98.5% and 1.5%), but mainly regarding the corresponding quarter of 2020 (96.6% and 3.4%, respectively). An analogous change is observed in favor of the non-tradable to tradable debt, which stood at 24.4% and 75.6%, respectively, over the period considered. Finally, the composition of Central Government debt by currency remained essentially unchanged compared with the previous quarter, 99.8% in euro currency, and shows little variation compared to the same quarter of 2020 (98.9% in euro). In addition, as far as the guarantees provided by the Greek government are concerned, they stabilized in the last quarter, in com-

parison to the end of 2020, which were particularly high 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 2021, is reflected in Table 2.2.2. Short-term Greek Government securities (with maturity less than one year) represent 13.45% of the total, compared to 11.6% from the medium-term notes (with maturities of one to five years), and 74.9% from long-term issues (maturity after five years) of 13.7%, 11.2% and 75.1%, respectively, which was the previous quarter of 2021. Compared to the same quarter of 2020, a decrease in the share of short-term and medium-term securities is observed with a corresponding increase in the securities.

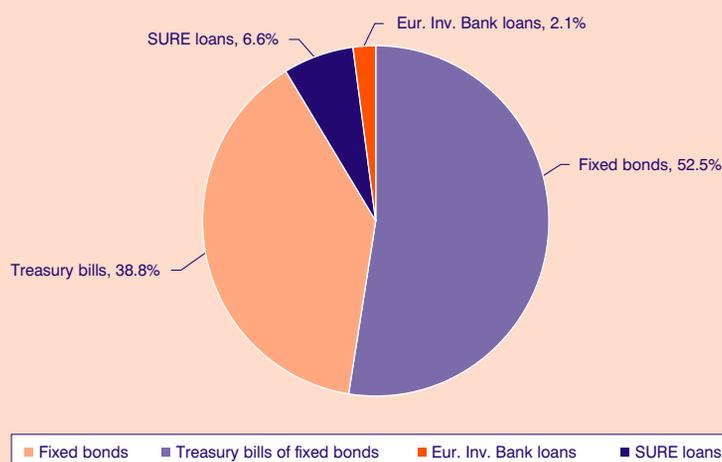
TABLE 2.2.2 Budgetary Central Government debt by residual maturity (amounts in million €)*

Period	2020 (C' quar.)	2020 (D' quar.)	2021 (B' quar.)	2021 (C' quar.)
Total volume	364,864.58	374,005.73	387,328.87	386,824.51
Short-term (up to 1 year)	46,992.01	52,461.48	53,053.05	52,186.90
Medium-term (1 to 5 years)	39,314.45	39,861.04	43,327.99	44,858.30
Long-term (more than 5 years)	278,558.12	281,683.21	290,947.83	289,779.31

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

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

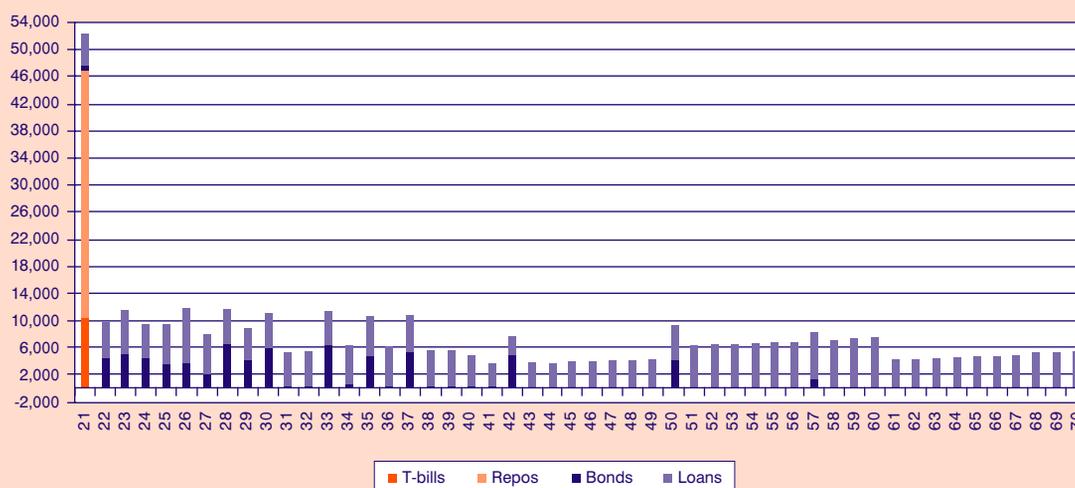
GRAPH 2.2.1
Composition of borrowing for the third quarter of 2021



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

GRAPH 2.2.2

Redemption schedule of Budgetary Central Government debt on 30/9/2021 (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.

The average residual maturity of the total Central Government debt stood at 18.93 years, slightly reduced from that of 19.90 years in the corresponding quarter of 2020. Moreover, the average residual maturity of the total Central Government debt amounted to 9.95 years, displaying a decline from the 10.06 years in 2020. The new borrowing for the third quarter of 2021 decomposes to 52.5% of fixed bonds, 38.8% of Treasury bills, 6.6% of SURE loans, and 2.1% of the loans comes from European Investment Bank (Graph 2.2.1).

Graph 2.2.2 shows the redemption schedule of the Central Government debt based on the latest published data. From the display of newer data, it seems that apart from the rest of the 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, the debt remained essentially stable in the third quarter of 2021, a fact that shows that the financing needs of the Greek economy in this period, although increased due to the pandemic and the measures to deal with it, was covered by the existing State Budget without requiring additional funds from external borrowing.

2.3. Fiscal figures perspectives

The Greek economy is expected return to normality in 2022. This means a full recovery in GDP from the 2020

losses. This will occur from increased economic activity, as the country returns to normality in terms of the health crisis. The significant percentage of already vaccinated citizens, combined with extra measures for the unvaccinated and the obligatory vaccination for people over 60 years of age, allows the unobstructed operation of the markets, but also the economic relations internationally, which leads to a significant further recovery of tourism with a significant increase in revenues (increase of 60% compared to 2021).

In addition, significant capital inflows from the Recovery and Resilience Facility Fund, expected to reach 3,199 million euros, will give a significant boost to the country's growth, forecasted to reach 2.9 percentage points of GDP, without considering the leverage through the contribution of forthcoming reforms. Moreover, development measures to improve the business environment and increase household incomes through measures to address the pandemic, such as reducing the corporate income tax rate from 24% to 22%, providing incentives for small and medium-sized enterprises to merge, tax incentives for the use of electronic transactions, the abolition of the tax on parental benefits and the increase of the minimum wage, are factors in increasing the growth of the economy. The above seems to lead to a significant reduction of the deficit and an improvement of the balance of payments deficit to pre-crisis levels.

However, regarding the evolution of the pandemic, although it is not expected to cause shocks in the

Greek economy, the risk has not been removed, as there is always uncertainty due to possible mutations and the continuation of vaccination coverage of the population. Thus, in the 2022 State Budget, interventions have already been foreseen with a total cost, on a cash basis, of 3,297 million euros, of which 2,038 million euros relate to the revenue side and 1,259 million to the expenditure, amounts significantly reduced compared to 2021, as the return to some regularity is expected due to the significant percentage of vaccinated citizens. On the revenue side, the interventions concern the reduction of insurance contributions, the suspension of payment for the Special Solidarity Contribution, the reductions in housing rents, the reduction of VAT on transport services, alcoholic beverages, spectacles, etc. On the expenditures side, the interventions concern the coverage of health expenditures and extraordinary expenditures of the Central Government due to the Covid-19 pandemic, the coverage of insurance contributions and the subsidy of 200 euros for the long-term unemployed, the Bridge 2 and SYN-ERGASIA programs, etc.

In addition, price increases in energy, raw materials, transport, and the supply chain in general, pose a significant risk to the Greek economy and its growth rate and, consequently, to fiscal revenues. The war in Ukraine and its aftermath have burdened energy and commodity prices even more, as Russia is the major exporter of natural gas to Europe and, together with Ukraine, is a major exporter of cereals. Furthermore, inflationary pressures create conditions for a negative impact on nominal GDP. Another negative factor for growth could arise from the limitation of the expansionary policy pursued over the last two years due to the pandemic. Reducing support for economic activity can have a negative effect in the short term.

It should be noted that a slowdown in economic recovery can potentially result from natural disasters, which are becoming more frequent due to climate change. Finally, it is particularly important to emphasize that any obstacles to the timely implementation of the Recovery and Resilience plan will lead to a lag in investment and therefore economic activity, thus holding back the economic growth of the Greek economy.

3. Human resources and social policies

KEPE, *Greek Economic Outlook*, issue 47, 2022, pp. 51-58

3.1. Recent developments in key labour market variables

Ioannis Cholezas

3.1.1. Introduction

The labour market continued to recover in 2021. Employment rebounded, but without fully compensating for the losses in 2020, as revealed from the comparison with 2019. The data for the first nine months of the year show that the evolution of female employment and youth employment falls short of that of males and individuals aged 30-64, respectively. Labour market participation declined, since some groups were discouraged by the pandemic. The analysis of employment changes by sector of economic activity leads to some alarming findings. One finding that needs to be further researched is the increase in the number of the self-employed in the last two years, probably as a consequence of the measures implemented to support employment or as a last resort for those who cannot find jobs as employees. Part-time employment seems to increase at a slower pace compared to full-time employment, perhaps because sectors that use it extensively have not recovered yet, but at least it seems less of a forced choice than before. The decrease in the number of the underemployed also points to an improvement in labour market conditions, even though it is not equally experienced by all population groups. Reviewing developments in paid employment does not change the general conclusions, but it allows an in-depth analysis by sector and occupation and leads to interesting findings. The unemployment rate was further reduced in 2021, while the decrease in the number of the long-term unemployed allows for some optimism. The faster decline in the youth unemployment rate is also a positive development, but the slower decline in the female unemployment rate should be

examined more thoroughly. Finally, the state, due to the emergence of new coronavirus variants, seems willing to continue supporting employment and took additional measures to that end.

3.1.2. Employment

The quantitative characteristics of employment

The number of the employed continued to increase in the third quarter of 2021 (2021Q3). There were more than 201.6 thousand employed compared to 2021Q2 and 184.7 thousand more employed on a y-o-y basis (2020Q3-2021Q3) aged 15-64. Even compared to 2019Q3, i.e., before the pandemic, the number of the employed in the period July-September 2021 increased by 129 thousand. Even though this is a positive development, which indicates that the labour market is recovering from the pandemic with the help of seasonal activities, averages of the first nine months reveal that the number of the employed has not yet fully recovered since there were 47.3 thousand fewer people employed compared to the first nine months of 2019, but 2.2 thousand more compared to 2022 (Graph 3.1.1).¹

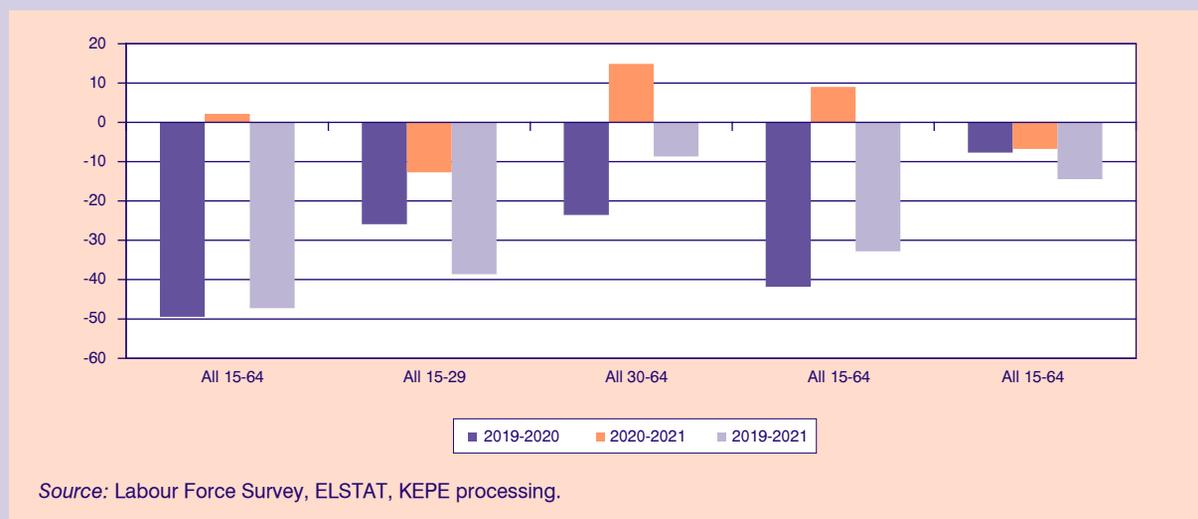
The number of the employed went down in October on a y-o-y basis by -46.5 thousand (compared to September), but it increased in November by 55 thousand, compensating for the initial decrease. The number of the employed in both months has increased compared to the respective months in 2020 by 101.2 thousand (October) and 209 thousand (November). This means that on an annual basis, the number of the employed increased by 2.5% and 5.4% respectively. So long as there is no drastic change in December, the number of the employed is expected to be bigger than the last quarter of 2020.

The comparison with the first nine months of 2019 reveals that the number of employed men have decreased faster than employed women (-32.8 thousand vs. -14.4 thousand); compared to 2020, the former

1. Considering in the analysis people over 64 does not change the results significantly, but it decreases the size of the employment shortfall.

GRAPH 3.1.1

Change in the number of the employed in the first nine months (in thousands)



have increased, but the latter have decreased (+9 thousand vs. -6.7 thousand). Therefore, it seems that the number of employed men is more volatile than women; this is unfavourable in periods of decreasing employment, but beneficial in periods of increasing employment. The same holds for young people aged 15-29. In other words, the number of the employed decreased compared to the first nine months of 2019, but more so for young people than for people 30-64 (-7.7% vs. -0.3%). Compared to 2020, the number of the former decreased by -12.7 thousand while the number of the latter increased by 15.9 thousand.

Despite the smaller number of the employed, the employment rate has increased in 2021 and is similar to that of 2019 and only marginally bigger than 2020 (56.6%, 56.5% and 56.2%, respectively). In any case, the employment rate has been almost stable for the past three years, close to 65% for men 15-64 and approximately 47.5% for women, since the decrease in the number of the employed was compensated by the reduction in the population in both sexes. On the other hand, the participation rate (share of working age people who are either employed or unemployed) in the first nine months of 2021 is lower by 1.7 percentage points compared to 2019 and 0.4 percentage points compared to 2020. This means that not all variables have returned to the pre-pandemic levels; hence, there is no room for complacency.

A more thorough look at individual constituents of the labour force reveals that it decreased faster than the

population because the number of the unemployed decreased faster. In particular, in the first nine months of 2019, the unemployed represented 17.6% of the labour force, while in 2021, that share dropped to 15.4%.² The decrease in the number of the unemployed is obviously a positive development, but it would be even better if it were accompanied by a respective increase in the number of the employed so as to increase labour force participation. Note that the pandemic led to the increase in the number of the economically inactive by almost 85 thousand in 2020. Only 4 thousand seem to have returned to the labour force since then, and according to detailed data, the number of inactive individuals aged 30-44 has increased by approximately 69 thousand in the period 2019-2021, of which around 43 thousand were women. Their return to the labour force will not be an easy task.

The biggest increase in the number of the employed in the first nine months of 2021 was reported in *Public administration and defence, mandatory social security* (+42.9 thousand) and the second biggest in *Agriculture, forestry and fishing* (+25.6 thousand). On the other hand, the biggest reduction was reported in *Accommodation and food service activities* (-30.3 thousand). The same sectors stand out compared to 2019, but in this case, employment losses in tourism are greater than 66 thousand. This means that despite the improvement in labour market conditions, some sectors have not fully recovered from the pandemic, especially tourism. It also means, though, that there is room for

2. These figures correspond to unemployment rates for people aged 15-64.

increases in the near future. Moreover, the increase in employment in the agricultural sector and the public sector can only be considered temporary. However, it should be further explored, especially if it is associated with low productivity and fiscal burden.

The qualitative characteristics of employment

Most employed individuals over the age of 15 work as employees. Employees account for 68.7% of the employed in the third quarter of 2021. The second biggest group consists of self-employed without personnel (20.2%) and the third one consists of self-employed with personnel (8%). The share of employees is marginally bigger in the first nine months of 2021 compared to previous years (Table 3.1.1). Also compared to 2020, following the reduction that took place due to the pandemic and social distancing, during which only self-employed with personnel were spared (+5.1 thousand), in 2021, the number of self-employed with and without personnel both increased. On the contrary, the number of employees and helpers in family businesses continued to decline. The former have decreased by -3.5 thousand and the latter by -2.2 thousand when comparing the average of the first nine months. The strengthening of self-employment over the past two years, especially self-employed with personnel, may be the outcome of state measures to support businesses and employment, but also distorting motives.³

Part-time employment accounted for 8.1% of total employment in 2021Q3, while the number of part-time employees increased by 4.7% compared to the same quarter in 2020, interrupting the fall which started in 2020Q2. Despite the increase of the third quarter, full-time employment has recovered following the decline in 2020, but part-time employment has not; the number of part-time employees declined by 10% (Table 3.1.1). It is worth mentioning that the reduction is three times bigger than the one corresponding to period 2019-2020. As a result, comparing 2021 to 2019 reveals that the number of full-time employees over the age of 15 declined by 17.5 thousand while the number of part-time employees declined by 45.5 thousand; in relative terms, these figures represent a reduction of

-0.5% and -12.7%, respectively. The reduction of involuntary part-time employees is remarkable and much faster than all part-timers. This is a favourable development;⁴ even more so during the first months of 2021 when the decline reached -28%.

The number of the underemployed has also declined over the past two years. The decline reached 20 thousand in 2021Q3, of which 57.5% were men. The reduction amounted to -21.7% or 46.7 thousand in the first nine months of 2021, almost equally divided between men and women. However, women continue to be underemployed more often than men and the gender gap has increased over time: 62.7% of the total number of the underemployed were women in 2021Q3, 57.5% in 2019Q3, 55% in 2017Q3. The reduction in the number of the underemployed was -28.7% or 67.6 thousand individuals in period 2019-2020 (Table 3.1.1). This means that the reduction in period 2020-2021 was bigger than the reduction in period 2019-2020. Therefore, despite the pandemic and the problems it caused, underemployment continued to shrink, but not across the board since the gender differential has widened. There is also an imbalance in the evolution of undeemployed youth aged 15-29, since the relative decline is almost double that reported for the underemployed aged 30+ (-33.2% vs. -17.5%) in period 2020-2021.

The frequency of absence from work increased in 2021Q3 (Table 3.1.2). Even though one out of ten was absent from work, this figure falls short of the maximum in 2020Q2 (more than 20%); it is surely bigger than the previous two years. On the contrary, average working hours declined to 37.2 per week, i.e., 1.2 fewer hours compared to the respective quarter in 2020 and 1.6 fewer hours compared to 2021Q2. This means that the increase in the number of the employed was accompanied by a decrease in the intensity of employment. Note also that the average working hours for the first nine months still fall short of the respective average in 2019. *Other services* is the sector reporting the shortest working week (29.9 hours) and the highest frequency of absences from work (19.7%), while *Agriculture, forestry and fishing* reports the longest working week (42.6 hours) and the lowest frequency of absences from work (1.9%).

3. Note that according to ELSTAT's data on the demographics of businesses (<https://www.statistics.gr/el/exp-ent-startups>), some 47.4 thousand businesses were established in 2019, while 59 thousand businesses were established in the first nine months of 2020 and another 75.4 thousand businesses in 2021. Based on the same data (<https://www.epixeiro.gr/article/248900>), almost 11 thousand fewer businesses closed in 2020; this represents a reduction of -22.7% compared to 2019.

4. On the contrary, there was a big increase in the number of those working part-time due to illness or incapacity (+48.1%) and those declaring other reasons (-31.7%) in the first nine months of 2021.

TABLE 3.1.1 Qualitative characteristics of employment (age 15+)

	2019 Q1-Q3	2020 Q1-Q3	2021 Q1-Q3	2019-2020 Δ%	2020-2021 Δ%	2019-2021 Δ%	Δ%
<i>Type of employment relationship</i>							
Employed	3,914.1	3,874.5	3,886.2	-39.6	11.8	-27.9	-0.7
Self-employed with personnel	290.3	295.4	305.6	5.1	10.3	15.4	5.3
Self-employed without personnel	835.4	815.4	822.6	-20.0	7.2	-12.8	-1.6
Employee (wage or salary)	2,664.5	2,642.8	2,639.2	-21.7	-3.5	-25.2	-1.0
Help in family business	124.0	120.9	118.7	-3.0	-2.2	-5.2	-4.2
<i>Type of employment</i>							
Full-time employed	3,556.2	3,527.4	3,573.7	-28.9	46.4	17.5	0.5
Part-time employed	357.9	347.1	312.4	-10.8	-34.7	-45.5	-12.7
Could not find full-time employment	228.9	215.4	165.1	-13.5	-50.4	-63.8	-27.9
<i>Underemployment</i>							
Total	235.9	215.0	168.3	-20.9	-46.7	-67.6	-28.7
Men	101.6	90.4	67.4	-11.2	-23.0	-34.2	-33.7
Women	134.3	124.6	100.9	-9.7	-23.7	-33.4	-24.9
Total (15-29)	63.3	57.9	38.7	-5.4	-19.2	-24.7	-39.0
Total (30+)	172.5	157.1	129.6	-15.4	-27.5	-42.9	-24.9

Source: Labour Force Survey, ELSTAT, KEPE processing.

TABLE 3.1.2 Indices measuring the impact of the pandemic on the labour market

	Absence from work* (%)	Working hours
2019Q1	3.3	38.2
2019Q2	2.0	39.4
2019Q3	6.9	38.5
2019Q4	2.8	39.1
2020Q1	9.2	35.5
2020Q2	22.3	30.3
2020Q3	8.6	38.4
2020Q4	11.6	35.3
2021Q1	8.8	35.6
2021Q2	3.5	38.8
2021Q3	10.2	37.2
2019Q1-2021Q1	5.5	-2.6
2019Q2-2021Q2	1.5	-0.6
2019Q3-2020Q3	1.7	-0.1
2020Q1-2021Q1	-0.4	0.1
2020Q2-2021Q2	-18.8	8.5
2020Q3-2021Q3	1.6	-1.2

Source: ELSTAT, Labour Force Survey Press Releases Q1, Q2, Q3 2021, KEPE processing.

* As a share of employed.

3.1.3. Developments in paid employment

The reports of the information system ERGANI of the Ministry of Labour and Social Affairs describe the evolution of paid employment on a monthly basis and are published before the Labour Force Survey. This means that they provide an early view of the labour market even though they address paid employment only. Autumn, i.e., September, October and November, as well as December to a smaller extent, is often characterised by a negative flow of paid employment jobs. In other words, layoffs and quits are more than hires, since the positive net flows in September are usually not enough to compensate for the negative net flows of the following two months, while net flows in

December can have either sign. It is interesting that in 2021, contrary to previous years, the reduction in paid jobs was greater in November, indicating that layoffs and quits were delayed this year. Perhaps this is one reason why net flows are negative in December. Moreover, net flows, although negative, were smaller than those in years 2018 and 2019, but larger than all previous years since 2001.

Approximately 349 thousand more hires took place in 2021 compared to 2020, but considerably fewer compared to 2019 (435 thousand) (Table 3.1.3). Since the number of layoffs and quits moved in a similar manner, i.e., they have increased compared to 2020 but fall short compared to 2019, the net flow of paid jobs has a positive sign and is comparable in size to 2013. A greater positive net flow was reported only in period 2016-2018, possibly because measures to protect employment reduced layoffs but did not affect hires.

The increasing trend observed in full-time job hires in 2020 continued in 2021. Hence, new full-time jobs accounted for 53.4% of all new jobs throughout the year, i.e., an increase of 2 percentage points compared to 2020, 8.3 percentage points compared to 2019 and 7.8 percentage points compared to 2018. On the other hand, the share of new part-time jobs and work-in-shifts jobs decreased compared to previous years. This is especially true for work-in-shifts jobs compared to 2019 (-4.8 percentage points) and 2018 (-5.2 percentage points). There is no doubt that this is a positive development for the employed, coupled with the reduction in involuntary part-time employment discussed above, although it may indicate a reduction of labour market flexibility.

Conversions of full-time job contracts into flexible forms of employment moved in a similar way (Table 3.1.4). The total reduction reached -32.9% in 2021, when the increases of the two previous years recorded 5.1% (2018-2019) and 5.5% (2019-2020). Perhaps 2021 is the start of something new, but it has to be verified in the coming months. In particular, following the strong increase in conversions to work-in-shifts without the consent of the employee in 2020, there was a strong decline by approximately 80% in 2021. Moreover, the increase in conversions to work-in-shifts with the employee's consent in 2020 reached 48.9%, followed by a decrease in 2021 that ultimately led to fewer conversions even compared to 2019. On the contrary, conversions of full-time job contracts into part-time job contracts decreased in both 2020 (-12.7%) and 2021 (-14.5%).

TABLE 3.1.3 Changes in paid employment flows

	2019-2020			2020-2021			2019-2021					
	Hires		Layoffs/quits	Hires		Layoffs/quits	Hires		Layoffs/quits			
	N	%		N	%		N	%				
January	20,491	13.0	15,476	8.6	-80,764	-45.5	-100,420	-51.5	-60,273	-38.4	-84,944	-47.3
February	18,492	11.2	21,465	15.6	-85,174	-46.4	-87,540	-55.1	-66,682	-40.4	-66,075	-48.1
March	-99,155	-49.0	-13,879	-8.7	1,300	1.3	-59,764	-41.2	-97,855	-48.4	-73,643	-46.4
April	-233,626	-82.8	-129,936	-75.9	77,807	160.2	51,802	125.3	-155,819	-55.2	-78,134	-45.6
May	-224,267	-69.3	-151,958	-69.6	156,730	157.9	94,539	142.6	-67,537	-20.9	-57,419	-26.3
June	8,864	3.1	-57,297	-22.2	13,296	4.5	37,362	18.6	22,160	7.7	-19,935	-7.7
July	56,489	22.6	-26,113	-9.9	-17,915	-5.8	25,601	10.7	38,574	15.4	-512	-0.2
August	-34,842	-17.8	-36,073	-18.8	22,485	14.0	4,342	2.8	-12,357	-6.3	-31,731	-16.5
September	-48,700	-15.8	-84,578	-27.7	44,479	17.1	38,529	17.4	-4,221	-1.4	-46,049	-15.1
October	-52,308	-21.0	-144,620	-38.6	33,890	17.3	-33,356	-14.5	-18,418	-7.4	-177,976	-47.6
November	-89,008	-42.7	-89,634	-37.5	83,215	69.6	132,411	88.6	-5,793	-2.8	42,777	17.9
December	-106,873	-53.4	-112,655	-55.2	99,638	106.7	104,352	114.4	7,235	-3.6	-8,303	-4.1
Whole year	-784,443	-27.7	-809,802	-30.0	348,987	17.1	207,858	11.0	-435,456	-15.4	-601,944	-22.3

Source: ERGANI, Ministry of Labour and Social Affairs, KEPE processing.

TABLE 3.1.4 Conversions of full-time job contracts to flexible types of job contracts, January-December

	2021	2020-2021	2019-2021
	N	%	%
Part-time employment	29,309	-14.5	-25.3
Work-in-shifts with employee's consent	7,934	-52.3	-29.0
Work-in-shifts without employee's consent	1,288	-80.3	-68.3
Total	38,531	-32.9	-29.3

Source: ERGANI, Ministry of Labour and Social Affairs, KEPE processing.

Based on the data provided by the Labour Market Diagnosis System⁵, the new paid employment jobs in 2021 were mostly full-time jobs (84,618, i.e., +16.1% compared to 2020) followed by part-time jobs (35,274, i.e., +75.8%) and, finally, work-in-shifts job contracts (13,190). Youth aged 15-24 occupied a disproportion-

ately big share of paid jobs (49.8% of the total and more than 66 thousand posts), while new contracts were divided almost equally between full-time and part-time jobs (30,780 vs. 28,669). Contrary to the remaining age groups, the number of jobs occupied by individuals over 55 declined.

Five sectors of economic activity had large positive net flows of paid employment jobs (>9,000) in 2021; *Retail trade, except for motor vehicles and motorcycles* (+17,042), *Accommodation and food service activities* (+26,629), *Public administration and defence, compulsory social security* (+14,011), *Human health and social work activities* (-11,175), *Wholesale trade, except for motor vehicles and motorcycles* (+9,016). The distribution of new jobs by type of job contract is presented in Table 3.1.5 and there are striking differences between sectors. For instance, the number of new full-time paid jobs in *Accommodation and food service activities* went down (-3.2%), but increased economy wide (+16.1%). It should also be noted that there is a considerable difference between wholesale and retail trade; the former created mostly full-time jobs (97% of total) in 2021, while only 48.3% of jobs were full-time in the latter.

Most new paid jobs in 2021 were occupied by office clerks (+32,712); the strongest sub-group was other office clerks in *Wholesale trade, Human health activities* and *Main offices and management consulting activities*. Employees in personal service activities were the second biggest group with 16,649 net new posts; the big-

TABLE 3.1.5 Net paid employment jobs by type of contract

	Full-time	Part-time	Work-in-shifts	Total
<i>Retail trade except for motor vehicles and motorcycles</i>	8,238 48.3%	7,858 46.1%	946 5.6%	17,042 100%
<i>Accommodation and food service activities</i>	-530 -3.2%	9,407 56.6%	7,752 46.6%	16,629 100%
<i>Public administration and defence, compulsory social security</i>	11,709 83.6%	2,236 16.0%	66 0.5%	14,011 100%
<i>Human health and social work activities</i>	9,354 83.7%	1,627 14.6%	194 1.7%	11,175 100%
<i>Wholesale trade, except for motor vehicles and motorcycles</i>	8,742 97.0%	337 3.7%	-63 -0.7%	9,016 100%

Source: Labour Market Diagnosis System, KEPE processing.

5. <https://eu-west-1a.online.tableau.com/t/mechanismoflabourmarketdiagnosis/views/2014-/sheet0?:showAppBanner=false&:display_count=n&:showVizHome=n&:origin=viz_share_link>

gest sub-category is waiters and the second biggest cooks, mostly in *Accommodation and food service activities*. *Models, salespersons and demonstrators* were in the third place (+14,912); the biggest sub-group was salespersons in shops in *Retail trade*. The fourth place was occupied by market sales workers, housekeepers, etc. (+11,702); the biggest sub-category was cleaners in offices, hotels, etc. in *Public administration, defence, compulsory social security*. Unskilled workers in mines, construction, manufacturing and transport are in the fifth place (+10,830); the biggest sub-group is unskilled workers in manufacturing industries who were hired mostly in *Public administration, defence, compulsory social security* and then followed hires in the *Food industry*.

3.1.4. Unemployment

The share of unemployed persons aged 15-64 continued to fall in the third quarter of 2021, facilitated by seasonal activities, reaching 13.2% (13% for people aged 15+). The number of the unemployed went down by 113.1 thousand compared to 2021Q2 and 138.3 thousand compared to 2020Q3. Since the increase in the number of the employed discussed above is bigger than the decrease in the number of the unemployed, it is safe to conclude that a large share of those who stopped being reported as unemployed actually found a job. It is also important to note that the number of the long-term unemployed decreased to approximately 415 thousand: 93 thousand fewer compared to 2021Q2 and 156 thousand compared to 2020Q3. Their share stood at 66.4% in 2021Q3 while, in 2014, that figure exceeded 75%. However, it is still exceptionally high. Note that according to Eurostat, the share of the long-term unemployed in the EU27 stood at 40.9% in 2021Q3.

Typically, the unemployment rate is higher for youth aged 15-29, even though it went down by approximately 6 percentage points compared to 2021Q2 and 2020Q3, reaching 24.6%. The unemployment rate for men stood at 9.7% and for women at 17.5%. It is interesting that while the unemployment rate differential between youth 15-29 and individuals aged 30-64 has been narrowing (13.5 percentage points in 2021Q3, i.e., roughly similar to 2010), hence the employment prospects for the youth have been improving, the differential between men and women stopped shrinking

at the beginning of 2020, possibly due to the pandemic. This means that targeted actions to fight unemployment should continue.

The most recent monthly data from the Labour Force Survey show that the unemployment rate remained almost constant in November (13.3% vs. 13.4% in October), but, in any case, almost 3 percentage points lower than the respective month in 2020. At the same time, the number of the unemployed also declined in November by -121.6 thousand on an annual basis following the decline reported in October (-154.6 thousand). On the contrary, on a monthly basis there was an increase in the number of the unemployed in both months, despite the reduction in the unemployment rate (+5.9 thousand in October and +3.5 thousand in November). Having the unemployment rate and the number of the unemployed move in opposite directions is not unusual, since to calculate the unemployment rate one uses the number of the employed as well.

3.1.5. Measures to protect employment

The outbreak of the coronavirus variants that has been unfolding since December 2021 in Greece has led the government to introduce additional measures or to extend measures already in place to protect employment.⁶ Hence, the suspension of job contracts with special purpose compensation (534 euros/month) was activated in January 2022. Only businesses classified in certain economic activities (NACE) are eligible and those selected are not allowed to lay off personnel. Moreover, the state will also compensate artist musicians and similar speciality professionals. The programme SYN-ERGASIA has been extended until 31 March 2022 for full-time employees. According to the programme, the employer has the right to reduce working hours up to 50% (for working hours lost, the state will compensate the employee up to 60% of the wages due) while layoffs are banned. In addition, up to 50% of any firm's personnel should work from home so long as the nature of the job allows it, and staggered working hours have been introduced to reduce overcrowding on public transport during rush hours. Lastly, audits by the Hellenic Labour Inspectorate (SEPE) have intensified to ensure the use of masks and compliance with prescribed social distancing in work places.

6. See <<https://covid19.gov.gr/category/oikonomia-ergasia/>>.

3.2. The 2022 World Inequality Report

Vlassis Missos

3.2.1. Introduction

The “World Inequality Report 2022” offers new insights into the current state of economic inequality. The project is an initiative of a large group of internationally acclaimed researchers and social scientists,¹ and it has greatly contributed towards raising awareness on such an urgent topic. A major part of the 2022 report is based on the formation of a comprehensive database, covering all countries and providing open access to an abundance of statistical data dealing with key indicators, with long time-series in distributions of both income and wealth. The Introduction is co-signed by the 2019 Nobel laureates Abhijit Banerjee and Esther Duflo, who point out that “it is the product of a relentless data amassment which makes it possible to provide better answers to almost every question we want to ask about what is happening to inequality worldwide” (Chancel, Piketty, Saez, Zucman et al., 2022, p. 3). Among other things, the report examines the long-term trend of income inequality *within* and *between* countries. Its basic findings can be summed up as follows (ibid., pp. 22-23):

- Data generated for almost all countries and over a period of two centuries show that the level of income inequality has scaled up. Findings reflect the persistence of an extremely hierarchical type of social organization and that since 1980, inequality within countries has intensified, whereas inequality between countries had declined.
- The report focuses on the issue of the public-private allocation of wealth, demonstrating that the private share has grown at the expense of the public share, as a result of the measures of privatization and deregulation and of increasing government debt.
- Moreover, the gender aspect of inequality is also emphasized by reference to the labor share be-

tween women and men. According to the report, women’s representation in the higher level of income distribution is low. Furthermore, labor share of women is estimated to be close to 35%, given its upward trend over the last three decades.

- The report highlights some new data on carbon emissions, the allocation of which follows that of income. It is characteristic that the upper 1% of emitters contributes more than the entire bottom 50%.
- Lastly, the report discusses the adoption of a progressive wealth tax as a mediocre tool for curbing the process of wealth concentration.

Although the range of its contents is particularly wide, the scope of the present article is to comment on the main findings concerning the level of international inequality between income and wealth, indicating the relative position of Greece whenever this is possible. The data presented in section 3.2.3 refer to between-country comparisons.

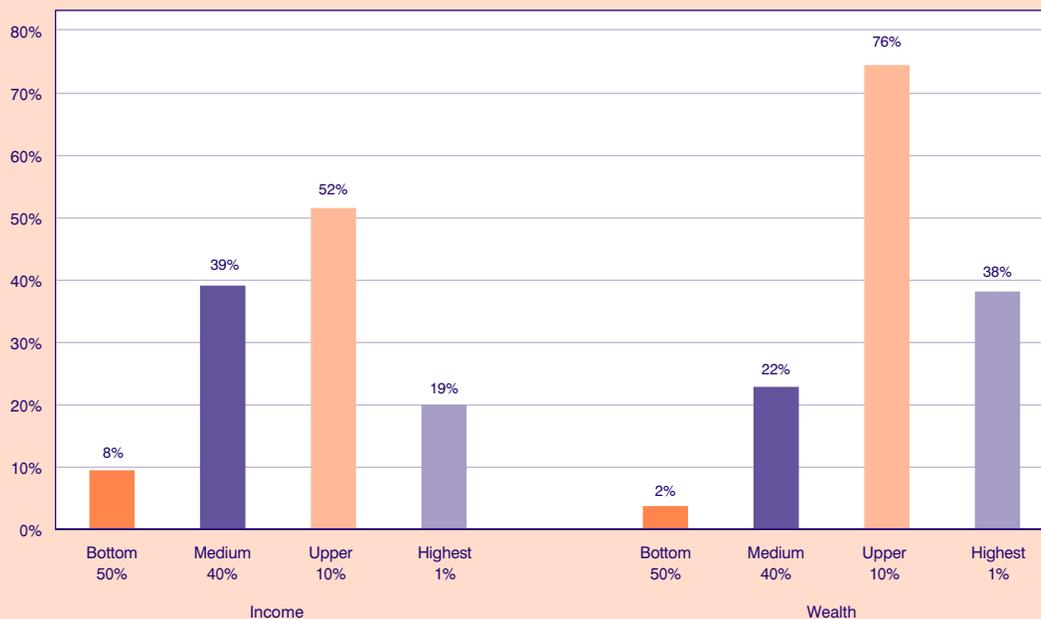
3.2.2. The difference between income and wealth inequality

The report develops two distinguished approaches on inequality. The first one is associated with national income, as the sum of all income flows received by individuals, independently of source –for example, wages from labor or interests from bank deposits. The second one refers to national wealth, being the sum of the value of all assets owned. Wealth is a stock that stems from processes such as capital accumulation or price fluctuations. For comparability purposes, all estimations are in euros and converted into purchase power parities (PPP). Hence, for 2021, global income is estimated at €86 trillion, whereas global wealth is at €510 trillion.

Figure 3.2.1 shows how unequal the allocation of global income (left side) and wealth (right side) is. Classifying the world’s population from poorer to wealthier, a substantial difference between the allocation of the two magnitudes is reported. Eight percent of the total income and 2% of the overall wealth correspond to the bottom 50% of the population. In the same manner, 39% of income and 22% of wealth are allocated to the medium 40%, whereas 52% and 76% are attributed to the higher 10%. The extreme high level of inequality

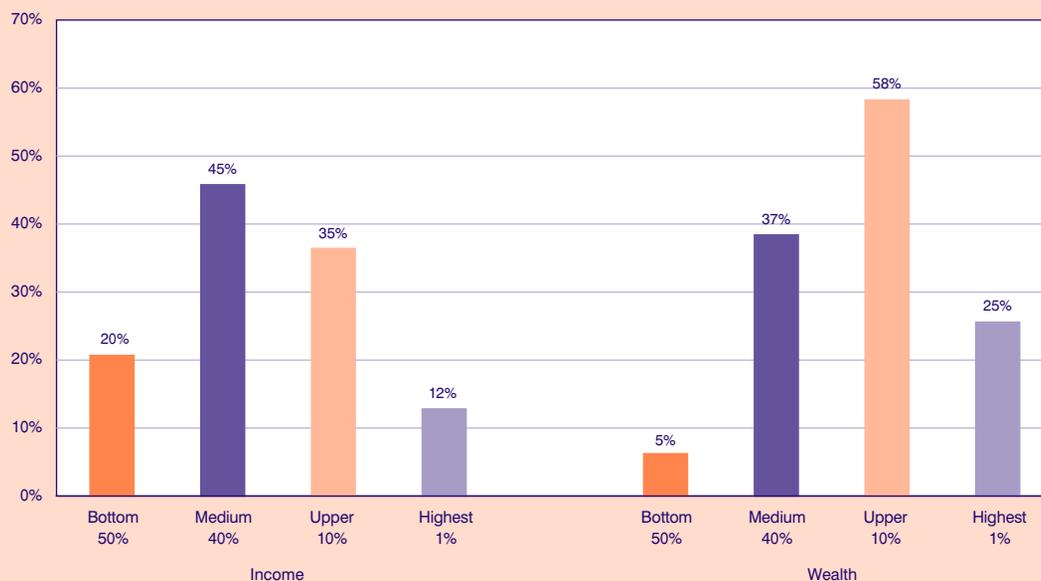
1. For the participants see: <<https://inequalitylab.world/en/team/>>.

FIGURE 3.2.1
Global inequality of income and wealth, 2021



Source: WIR 2022, Figure 1.1, p. 27.

FIGURE 3.2.2
Inequality of income and wealth in the EU, 2021



Source: World Inequality Database, <<https://wid.world/data/>>.

FIGURE 3.2.3

Income and wealth inequality in Greece, 2021

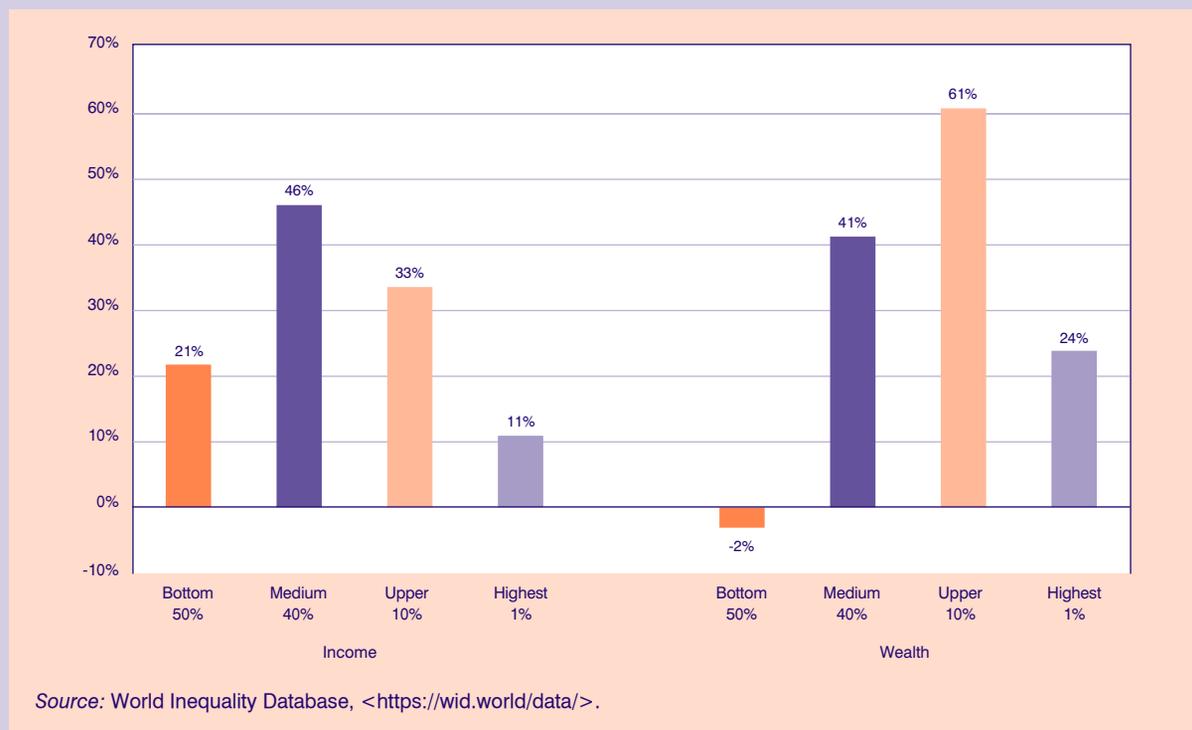


FIGURE 3.2.4

National income per adult in PPP. Long-term fluctuations, 1950-2021, selected EU countries

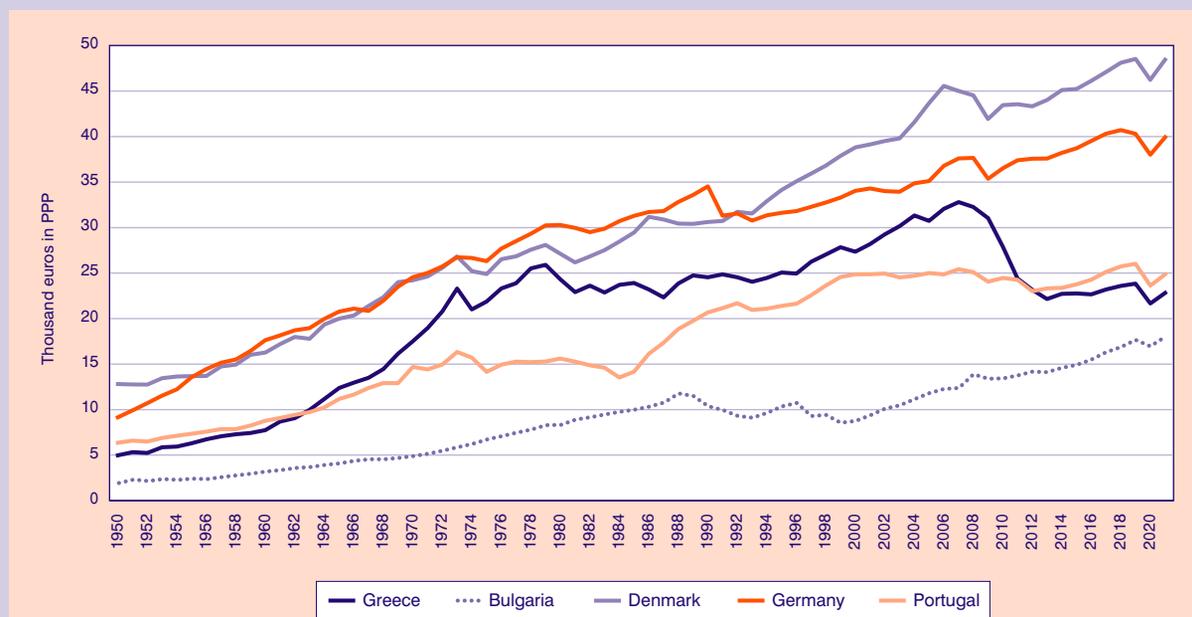


TABLE 3.2.1 National income per adult in PPP by country, as a percentage of Denmark's (100%). Countries of the European continent, selected years

	1950	1960	1970	1980	1990	2000	2010	2020	2021
Albania	22.4%	26.7%	25.5%	25.3%	18.5%	17.2%	23.6%	24.5%	24.6%
Austria	58.9%	81.8%	83.6%	101.1%	102.9%	97.6%	95.5%	85.1%	84.7%
Belgium	78.4%	81.2%	85.3%	97.4%	100.3%	96.1%	90.4%	82.3%	82.8%
North Macedonia	-	-	-	-	-	24.2%	25.5%	26.1%	25.9%
Bulgaria	14.5%	19.2%	19.9%	30.4%	33.6%	22.4%	30.8%	36.6%	37.0%
France	73.6%	84.8%	89.2%	100.5%	101.8%	92.5%	84.3%	73.4%	74.9%
Germany	71.4%	108.3%	101.4%	111.7%	112.8%	87.7%	84.1%	82.2%	82.4%
Denmark	100%								
Switzerland	139.3%	151.8%	143.5%	143.1%	140.2%	120.5%	114.3%	103.1%	104.1%
Greece	38.8%	47.5%	72.3%	89.7%	80.1%	70.4%	64.2%	46.9%	47.1%
Estonia	-	-	-	53.2%	47.8%	37.5%	45.0%	60.3%	59.8%
United Kingdom	84.8%	83.5%	68.0%	63.2%	73.9%	78.6%	76.2%	66.4%	67.5%
Ireland	59.0%	60.1%	69.2%	76.2%	81.2%	93.7%	87.6%	90.8%	106.1%
Spain	45.7%	49.2%	63.5%	74.2%	79.1%	71.4%	65.5%	60.7%	63.2%
Italy	59.6%	75.9%	81.9%	97.9%	98.5%	86.1%	72.8%	59.4%	60.1%
Croatia	-	-	-	-	57.2%	38.4%	42.6%	43.1%	43.7%
Cyprus	-	-	44.8%	59.9%	80.5%	76.9%	78.2%	68.0%	-
Latvia	-	-	-	63.3%	60.2%	23.9%	34.6%	47.5%	48.0%
Lithuania	-	-	-	55.0%	49.1%	31.3%	45.2%	64.6%	64.1%
Luxembourg	-	152.6%	125.9%	147.6%	158.2%	196.9%	305.6%	125.3%	115.5%
Malta	-	-	26.3%	53.7%	61.1%	61.1%	59.4%	73.3%	73.9%
Netherlands	95.3%	104.2%	117.7%	121.2%	106.0%	106.2%	101.7%	94.9%	95.5%
Hungary	30.3%	41.1%	44.9%	54.4%	51.6%	35.4%	37.3%	46.7%	47.1%
Poland	41.6%	43.4%	38.1%	42.8%	33.9%	37.6%	44.8%	54.8%	54.9%
Portugal	49.6%	53.9%	60.7%	57.6%	67.6%	64.1%	56.3%	51.1%	51.3%
Romania	20.7%	23.9%	24.4%	47.6%	41.3%	26.0%	36.6%	49.8%	51.0%
Serbia	-	-	-	52.5%	52.8%	19.6%	27.4%	29.4%	23.8%
Slovakia	-	-	-	-	44.2%	30.9%	46.4%	50.6%	50.7%
Slovenia	-	-	-	-	60.9%	53.6%	57.3%	59.2%	58.9%
Sweden	73.0%	77.6%	75.2%	78.1%	82.3%	78.6%	84.6%	93.7%	93.3%
Czech Republic	-	-	-	-	69.9%	48.3%	52.3%	57.5%	57.8%
Finland	55.3%	65.0%	69.6%	80.9%	86.4%	82.9%	85.6%	78.3%	77.3%

Source: World Inequality Database, <<https://wid.world/data/>>.

Note: 1950-1990 Western Germany, 1991-2021 Germany.

is clearly demonstrated by the share of income and wealth associated with the highest 1%, i.e., 19% and 38%, respectively.

Similarly, Figure 3.2.2 above depicts the unequal distribution of income and wealth for 2021 in the European Union (EU). Comparing with the rest of the world, the estimated degree of inequality – in both income and wealth – of the EU is evidently lower at all income brackets. For example, the bottom 50% is associated with 20% of total income and 5% of wealth, while the estimated share of the medium 40% corresponds to 45% and 37%, respectively. In addition, it is crucial to underline the fact that in comparison with the rest of the world, the EU shares attributed to the upper 10% are lower than that of the medium 40%.

As far as Greece is concerned, the difference between inequality of income and wealth follows that of the EU, but with a crucial exception. While the percentage share of income allocated to the bottom 50% is estimated at 21%, its corresponding share of wealth is negative, at -2%. This suggests that the value of private debt of the poorer 50% of the population exceeds the value of wealth assets with which it is associated.

3.2.3. Long-term fluctuations among European countries

Apart from providing an extensive database on inequality, the report also contributes towards offering a series of insightful indicators on income and wealth covering a long period of time. Figure 3.2.4 above illustrates the relative changes of national income per adult in PPP between 1950 to 2021. The number of countries depicted is confined for presenting the figure with clarity. Denmark and Bulgaria are included as setting the upper and lower boundaries, being the highest and the lowest income economies in the EU. Portugal is included for purposes of comparability with Greece, and Germany for having the highest GDP in the EU.

However, our attention is focused on the relative fluctuations of Greece, which can be separated into three distinct sub-periods. According to the available data, the first period is characterized by a long-term trend of convergence towards Denmark and Germany. The second – after 1974 – is marked by a slower-paced, but also positive, converging trend. Lastly, the third concerns the economic adjustment process in the af-

termath of the 2009 crisis that was also followed by the coronavirus pandemic. During this phase, the income gap between Greece and Denmark has widened substantially, and for a considerable period of time, it remained stagnant.

Furthermore, Table 3.2.1 above focuses on the relative data for the majority of the countries comprising the European continent. In some cases, long-term fluctuations are crucial, showing either convergence or divergence. Particularly for Greece, the compound effects of the severe recession (2009-2016), followed by sluggish growth (2017-2019) and the consequences of the coronavirus, are vividly demonstrated. It is observed that for 2021, Switzerland, Ireland and Luxembourg have surpassed Denmark's benchmark, while Austria, Belgium, Germany, the Netherlands and Sweden are well over 80%. In addition, estimations for France, Finland and the United Kingdom show them to be higher than 65%, while a great number of countries performs between 50%-65% – Italy and Spain among them. From the early 1980s, Greece has gradually taken a divergent path, and the spread continues to widen, ending at 47.1% of Denmark's – at the same level as Hungary and Latvia. Lastly, Albania, North Macedonia and Serbia remain below 30%.

3.2.4. Conclusions

The issue of economic inequality is high on the international research agenda. The report's contribution to this debate is at least twofold. First, it succeeds in raising awareness of the state of world inequality. Second, it succeeds in producing a consistent database of inequality indicators for all countries and for an extended period of time. Moreover, the distinction between income and wealth is revealing. Estimations on inequality, using both of these approaches, show a significant difference that can offer better insights into how the nature of inequality has actually changed. Lastly, as far as Greece is concerned, its relative long-term position is documented in Table 3.2.1, showing various fluctuations and indicating the lasting impact of the latest recession.

Reference

Chancel, L., Piketty, T., Saez, E., Zucman, G. et al. (2022). *World Inequality Report 2022*. World Inequality Lab. <<https://wir2022.wid.world>>.

4. Reforms-Economic development

KEPE, *Greek Economic Outlook*, issue 47, 2022, pp. 64-71

4.1. Short-stay accommodation via collaborative platforms: Regulatory framework and supply of services in Greece

Ersi Athanassiou

Agapi Kotsi

4.1.1. Introduction

In the case of Greece, short-stay accommodation booked via online collaborative platforms represents the most developed part of the sharing economy, a new and emerging international category of activities. Two interesting and interrelated aspects of the short-term real estate market, with significant developments and newly available data in recent times, concern the institutional framework for regulating this activity and the characteristics of the market in terms of supply. The present article examines developments and newly available data related to these two issues, focusing on the case of Greece, and in the light of the broader picture at the European Union (EU) level.

4.1.2. Developments in the short-term real estate market

Starting from a few dozen available accommodations in 2010, the short-term real estate market in Greece grew rapidly from year to year (Athanassiou & Kotsi, 2018), until before the outbreak of the COVID-19 pandemic. Technological developments, high-speed networks, the rise of social media and the growing access

of Greeks to the internet have all played an important role in the development of the short-term accommodation sector and the overall increase in the use of collaborative platforms in Greece. The total share of users of collaborative platforms in the population of Greece showed rapid convergence with the relevant EU average (from 9% in 2016 to 22% in 2018 in Greece, compared to 23% in 2018 in the EU-28), a pattern observed in all individual sub-categories of users in terms of gender, age, education and other characteristics (Athanassiou & Kotsi, 2019).

According to a new data set published by Eurostat in 2021 (latest version December 2021) and comprising the evolution of key statistics on short-stay accommodation offered via online collaborative platforms in the years 2018, 2019 and 2020,¹ the number of stays, nights and guest nights² in short-term accommodation rentals reached high levels prior to the outbreak of the pandemic both in Greece and the EU-27. In particular, in 2019 the number of stays amounted to 47.0 million in total for the EU (39.4% domestic and 60.6% international) and 2.1 million (21.7% domestic and 78.3% international) in the case of Greece. Accordingly, short-term accommodation nights reached 173.6 million in the EU (33.9% domestic and 66.1% international), of which 8.3 million were spent in Greece (15.8% and 84.2%, respectively), while guest nights totaled 511.9 million in the EU (33.2% domestic and 66.8% international) and 24.3 million in Greece (14.0% domestic and 86.0% international). It is noteworthy that all the above measures of performance of the sector took significantly higher values in year 2019 compared to 2018, with the relevant growth rates in the case of Greece exceeding those of the EU-27, amounting, respectively, to 23.9% versus 18.5% for the number of stays, 20.6% versus 17.1% for the number of nights and 19.5% versus 15.8% for the number of guest nights. As to the subsequent ef-

1. It is noted that these statistics, which are the first to become available by official statistical sources in Europe, are compiled based on datasets transmitted by four major international platforms (Airbnb, Booking, Expedia, Tripadvisor), following the signing in March 2020 of non-disclosure agreements with the European Commission (Eurostat).

2. According to Eurostat's definitions, the term "guest nights" refers to the number of nights spent during a stay, taking into account the size of the travel party. For example, a family of four staying three nights in an apartment represents 1 stay, 3 nights and 12 guest nights.

fects of the COVID-19 health crisis on these figures, the negative impact experienced in 2020 was more intense in the Greek case, with the corresponding rates of decline in Greece and the EU amounting to -61.5% versus -50.3% for stays, -58.9% versus -44.0% for nights and -63.2 % versus -46.9% for guest nights. The comparatively stronger impact of the pandemic on short-term real estate rentals in Greece is possibly related to the fact that the country is characterised by a higher proportion of international bookings in the activity of the sector.

According to the latest indications, short-stay accommodation activity has returned to an upward trajectory in 2021, both in Greece and internationally. This development has contributed to maintaining interest in the economic prospects and effects of the sector and the need for improving relevant market regulation.

4.1.3. Issues relating to the regulatory framework of the market

The new activities developing internationally via collaborative platforms, in particular in the field of short-term accommodation rentals, and the new relationships being formed between the parties involved, do not seem to be fully regulated, and in many cases operate under a vague institutional framework. The assessment of the various dimensions of these activities, the evaluation of their possible effects and the identification of issues, areas or concerns raised, require further investigation and additional institutional interventions. New literature on the evolution of short-term rentals in various destinations around the world brought to the fore the potential impact of this sector on income, tourism, tax revenues, rents and the real estate market, while also placing emphasis on issues of a social, spatial and environmental nature (see, e.g., Balabanidis et al., 2021; Katsinas, 2021; Zervas et al., 2017; Hellenic Chamber of Hotels, Grant Thornton, 2017; Frenkel & Schor, 2017). In Greece and the EU, the need to formulate a clear institutional framework, setting the boundaries and rules for the operation of this market, led to a series of relevant legislative initiatives and interventions.

Issues and developments at the EU level

The issue of legislation regarding short-term accommodation rental services concerns policy makers across EU countries as well as EU central authorities, as the development of a fair regulatory framework is considered particularly important for the sector to op-

erate in a positive and legitimate manner. In particular, the need has been identified for setting clear and simple rules, in order to promote the balanced and responsible development of the sector's activities, to safeguard the sustainability of the tourism ecosystem, to secure public revenues, to establish a level playing field for all providers (hosts renting out occasionally and those renting out in a more professional capacity), to ensure the protection of users and employee and consumer rights and to guarantee a minimum level of quality of the services provided. In addition, efforts have been made to address informal economy and tax evasion phenomena that have arisen due to the absence or inadequacy of the regulatory framework, as well as to resolve issues related to the availability of affordable local housing, sustainable urban development, urban planning and compliance with health and safety rules.

It is noted that large differences have been identified between EU countries in terms of the regulatory framework governing the operation of the short-term accommodation market. According to a study carried out by the European Commission in 2018 on the assessment of regulations affecting this market in the 28 member states (2018b), it was observed that in 22 member states there were authorization schemes, specific registration schemes (10 countries including in Greece) or other market access requirements (e.g., proof of compliance with sanitary, fire and minimum equipment conditions, maximum number of properties/rooms, persons or days, minimum size of rooms, host presence, etc.) applying to collaborative economy providers in the accommodation sector at the national, regional or local level. On the other hand, in 6 member states, the legal framework did not specify market access schemes, such as authorization or registration requirements for providers, but included only general requirements related to a business or economic activity. In relation to taxation, it was found that the majority of member states (24 out of 28) applied general national tax rules, 4 member states have enacted specific legislation at the national level, mainly related to income tax and VAT obligations, some cities or regions applied a so-called "tourist tax" and 2 member states have introduced obligations for the online platforms to collect taxes. In a relevant score provided in the study to classify the degree of openness of market access and the extent of business-friendliness of taxation rules, Greece was ranked among member states with a medium degree of openness in terms of the market access requirements and a relatively less supportive environment with regard to taxation.

At the EU level, the issue of regulation of activities provided through collaborative platforms has been identified in the European agenda for the collaborative economy (EU, 2016). In this direction, relevant initiatives have been taken within the EU, a series of studies have been carried out and relevant decisions of the EU Court of Justice have been issued. In 2021, the European Commission (EC, 2021) took the initiative to develop a new European legislative framework (Tourist services - short-term rental initiative), aiming at the responsible, fair and trusted growth in short-term rentals, as part of a well-balanced tourist ecosystem. Through the establishment of an appropriate regulatory framework, the aim is to improve the access of public authorities to sector-related data, to streamline and harmonise market access rules and to remove obstacles arising from fragmented, burdensome and restrictive rules. The relevant process is underway, with the public consultation phase completed in December 2021.

Market regulation in Greece

In recent years, Greece has proceeded to a series of legislative interventions to regulate the operation of the short-term rentals market. However, despite the successive legislative amendments, the activities of the sector do not seem to be fully regulated in Greece, while the pandemic crisis affected the implementation of measures that were either planned or adopted but were not yet fully implemented.

Specifically, a significant change in the way the market operates in Greece was brought about by Law 4336/2015, which, as of November 1, 2015, allowed the rental of real estate for any short period of time without it being characterized as tourist accommodation. Subsequently, Law 4446/2016 (article 111) made necessary clarifications of basic concepts related to short-term accommodation rentals and introduced, for the first time, terms and requirements for the provision of short-stay accommodation via online collaborative platforms. In the following year, Law 4465/2017 (article 36) and Law 4472/2017 (articles 83, 84) amended the relevant regulations, while, subsequently, a series of decisions by the governor of the Independent Authority for Public Revenue (AADE) (POL. 1187/2017, POL. 1170/2018 and A. 1079/2021) specified the obligations of all parties involved in short-term rentals in the framework of the sharing economy, and set out the process of registration in the “Short-Term Stay Property Registry”, the relevant monitoring instruments and sanctions, and the content and process of submission of the “Statement on

Short-Term Stay”. Based on the above-mentioned regulations, property managers don’t have to be natural persons, but can take any legal form, and property owners have the obligation to submit, on time, to the portal of the General Secretariat of Information Systems an electronic statement with details of each lease. All steps required to complete the necessary procedures were explained in a guide published by AADE, while there was also a provision for the issuance of a joint Ministerial Decision by the Ministries of Development, Finance and Tourism, which would define the geographical areas where certain restrictions of Law 4446/2016 would apply (lease limit of 90 or 60 days, rental revenues limit of €12,000 per annum, lease of up to 2 properties per tax identification number-AFM, property area of at least 9 sq.m. with natural ventilation and heating, legality of the building). It is noted that in the case of non-compliance with the above conditions, an independent administrative fine of €5,000 is imposed on property owners, with the fine set at double this amount for repetition of the same violation within one year, and reaching €20,000 in the case of each subsequent violation of the same kind. The process of detecting any non-compliance was facilitated following the signing in April 2021 of a protocol of cooperation between AADE and the online platforms Airbnb, Booking.com and VRBO of the Expedia Group.

Regarding taxation, the income obtained from short-term accommodation rentals in the framework of the sharing economy is considered as real estate income and is taxed independently (scale: €0–12,000 at a rate of 15%; €12,001–35,000 at a rate of 35%; and €35,001 and above at a rate of 45%). It is exempt from VAT and is subject to a special social solidarity tax at a scale ranging from 2.2% to 10% if the total income of the owner exceeds €12,000 (the solidarity tax has been temporarily suspended). Guests in short-stay accommodation via collaborative platforms in Greece are exempt from the overnight stay tax payable by guests in other tourist accommodations.

4.1.4. Supply of short-stay accommodation via collaborative platforms

A series of recent data on the supply of short-stay accommodation rentals in Greece and the EU underline the development and characteristics of this activity, but also point to parameters that are of interest in terms of market regulation needs or effects. Important information in this context is provided by the European Commission’s Flash Eurobarometer survey on the use and provision of services via collaborative platforms (EC,

2018a), as well as the corresponding recent survey on short-term rentals in the EU (EC, 2021).³

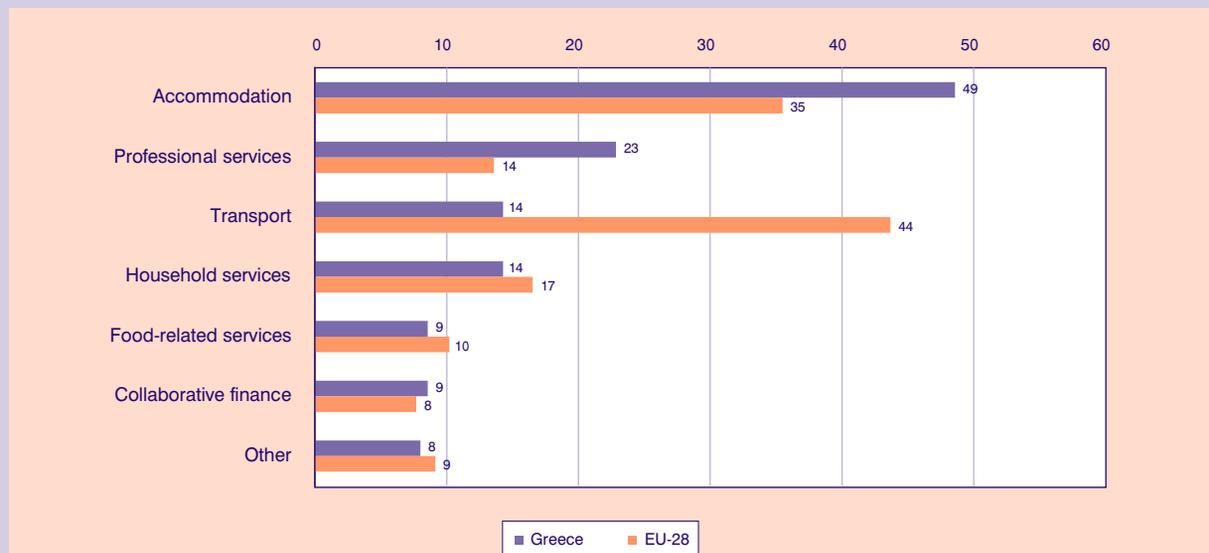
According to the findings of these surveys, 3% of respondents in Greece in year 2018 said they had offered some kind of services through collaborative platforms, a share lower than the EU-28 average for this year (6%), with shares in other member states ranging from 2% in Cyprus to 17% in Latvia. Regarding the frequency of offering services via collaborative platforms, in Greece 1% had offered them once or a few times, 1% had offered them occasionally –once every few months– and 1% had offered them on a regular basis –once a month or more often (compared to 3%, 2% and 1% in the EU-28, respectively). Regarding the services offered via collaborative platforms by sector, the ones most commonly offered were in the accommodation sector in the case of Greece (49% versus 35% in the EU), and in the transport sector in the EU countries on average (Figure 4.1.1).

The share of respondents who had offered at any time accommodation as a short-term rental via a collaborative platform increased significantly between 2018 and 2021 in all EU countries (except Latvia), rising from 2.2% of respondents to 5.8% of respondents, respec-

tively (Figure 4.1.2). In Greece, the relevant increase was higher, with the corresponding share of respondents rising from 1.7% in 2018 to 8.0% in 2021, the latter figure exceeding the respective EU average. The countries with the highest proportion of respondents having offered short-term accommodation rentals in 2021 were Denmark (11.8%), Spain (11.3%) and Malta (10.1%), while the lowest proportions were observed in Latvia (2.3%), Romania (2.6%) and Belgium (2.7%).

Regarding the frequency of offering a room, apartment or house for short-term rental via a collaborative platform, in the most recent survey, a share of 81.6% of respondents in Greece stated that they have never offered such services (compared to 90.2% on average in the EU-27 in 2021) and 10.2% said that they had not, but were considering doing so (compared to 3.7% in the EU-27, respectively). Similarly, 2.8% stated that they had offered these services in the past, but did not think of doing so anymore (compared to 1.7% respectively), 1.3% that they offered them occasionally (compared to 2.1%, respectively), 0.8% that they offered them once every few months (compared to 1.1%, respectively) and 3.2% that they offered them once a month or more often (compared to 0.9%, respectively).

FIGURE 4.1.1
Services most commonly offered by collaborative platforms (% of providers), Greece, EU-28, 2018



Source: European Commission, 2018a.

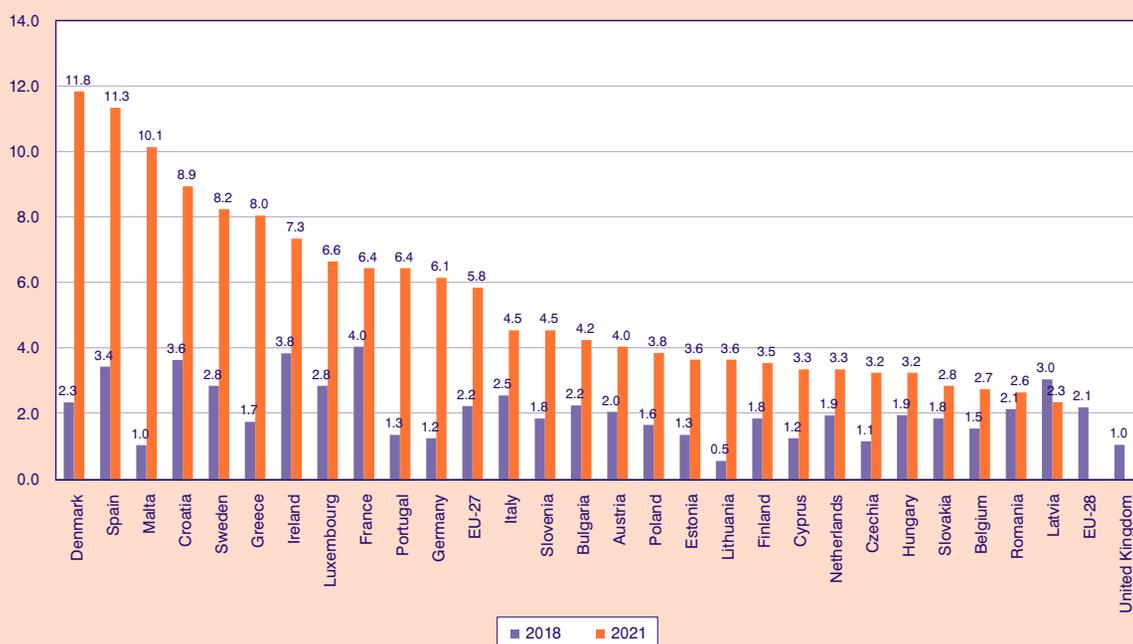
3. The 2021 survey was conducted in September 2021, via telephone interviews on a representative sample of 25,700 citizens of the 27 member states of the EU, including a sample of 1,004 citizens of Greece. The 2018 survey was conducted on a sample of 26,544 citizens of the 28 member states of the EU, including 1,000 citizens of Greece.

Among respondents who stated that they continue to offer short-term rentals via collaborative platforms, as many as 35.8% said that they rented out their entire apartment/house from time to time, a share twice as high compared to the corresponding EU-27 average (17.7%) (Figure 4.1.3). This represents the most common form of short-term accommodation rental in Greece, while at a slightly higher level compared to the EU average stands the regular rental of an entire apartment or house (13.2% in Greece compared to 10.3% in the EU). Renting out a room in one's apartment/house from time to time or regularly is not a practice adopted in Greece, in contrast to the EU average where the share of respondents in these categories amounted to 18.3% and 4.2%, respectively. Regarding the offer of accommodation purchased for the purpose of being rented out via a platform, which can be regarded as a more professional form of activity within the short-term rental sector, the renting out of several apartments or houses of this kind stood at a very high level in Greece compared to the EU average (30.2% versus 5.7% of providers, respectively), while similar to the EU average was Greece's share of those who rented out one apartment or house bought for that purpose (11.3% of providers in Greece versus 12.3% in the EU, respectively).

Based on the statements of the participants in the Eurobarometer survey on the services provided via collaborative platforms (EC, 2018a), the main reasons for offering accommodation services through platforms are presented in Figure 4.1.4. The additional income obtained from this activity was reported as an important motive by 80% of providers in Greece versus 59% of providers in the EU on average. Furthermore, 17% of providers in Greece versus 13% of providers in the EU reported short-term rentals as being their main source of income. Slightly higher importance as a motive in Greece compared to the EU was placed to the flexibility in working hours (47% versus 44%), while somewhat lesser importance in Greece compared to the EU average was placed on the access to more consumers (50% versus 62%), the ease of interaction with consumers (52% versus 59%), the more sustainable and efficient use of resources (42% versus 53%), the ease of becoming a service provider (40% versus 50%) and the opportunity to offer additional or more innovative services (34% versus 41%).

In the same survey, the main problems encountered when providing accommodation services via collaborative platforms (Figure 4.1.5) were, in the case of Greece, the lack of clarity about how to provide the services legally (41% versus 25% in the EU average),

FIGURE 4.1.2
Offer of short-term accommodation rentals in EU countries (% of all respondents), 2018, 2021



Source: European Commission, 2018a, 2021, authors' calculations.

FIGURE 4.1.3

Type of accommodation rented out via collaborative platforms (% of providers), Greece, EU-27, 2021

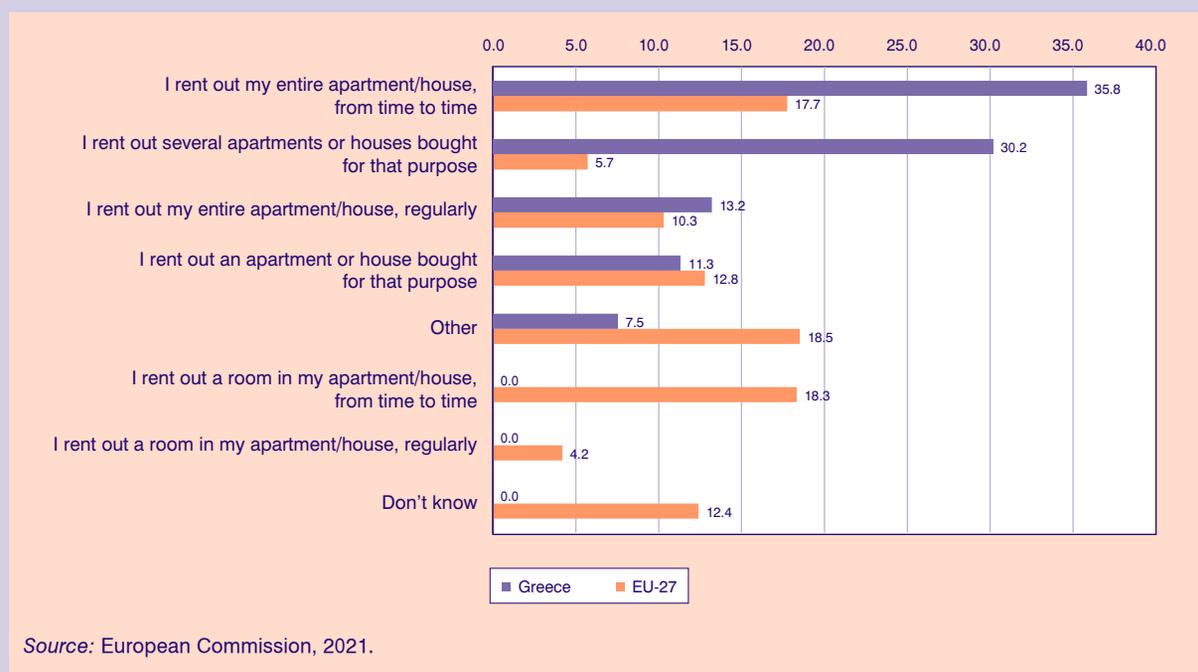
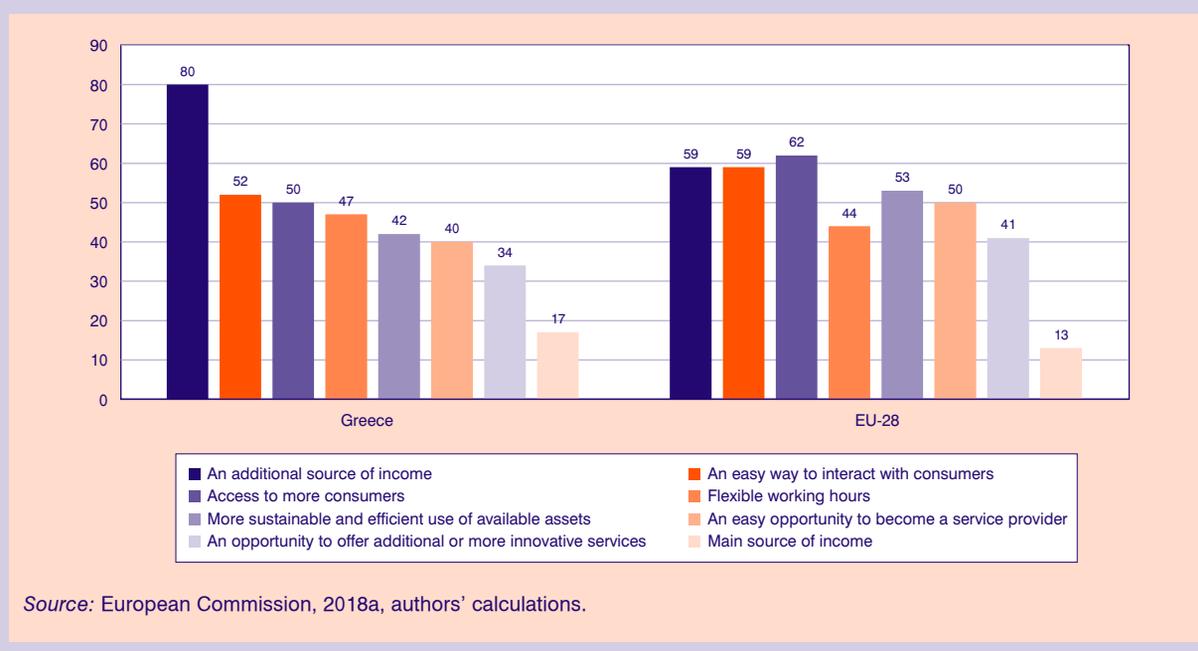


FIGURE 4.1.4

Reasons for offering short-term accommodation services (% of providers), Greece, EU-28, 2018



the complexity of the tax payment system (38% versus 23%, respectively), the complexity or difficulty in providing services legally (24% versus 16%, respectively) and the unclear impact on the employment status of the provider (18% versus 12%, respectively). Further-

more, difficulties were also reported in relation to consumers using the services (19% in Greece versus 22% in the EU). The share of providers not reporting a problem was lower in Greece compared to the EU average (25% versus 40%).

FIGURE 4.1.5
Main problems encountered when providing short-term accommodation services (% of providers), Greece, EU-28, 2018

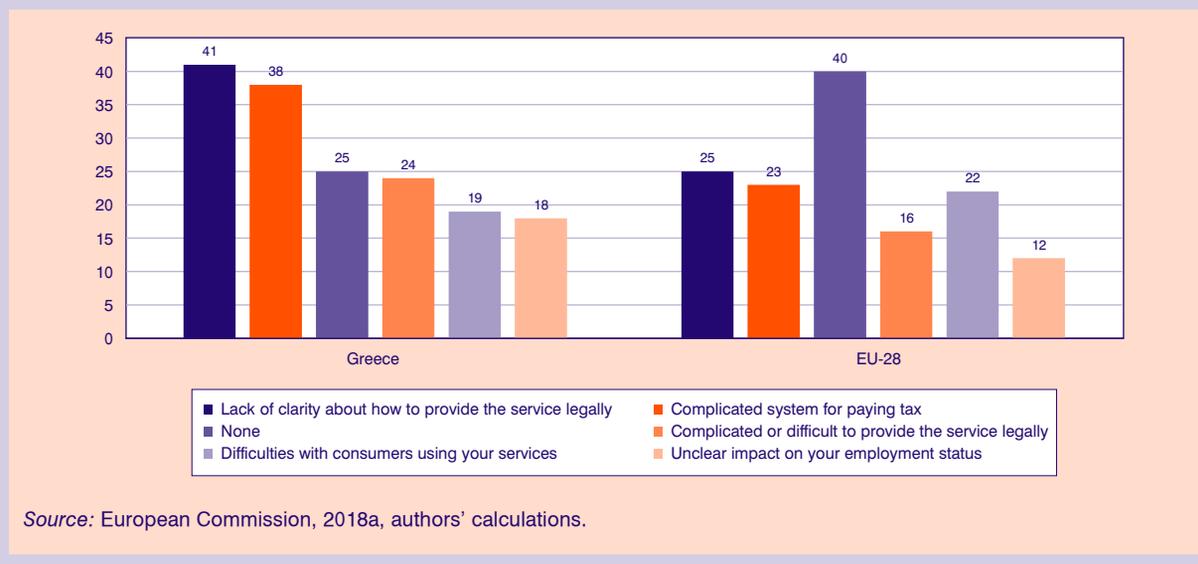


FIGURE 4.1.6
Reasons to stop offering short-term rental services via platforms (% of respondents who stopped offering or considered doing so), Greece, EU-27, 2021



According to respondents in the most recent Eurobarometer survey (EC, 2021) who indicated that they no longer offer a short-term rental via a platform or are considering stopping, the main reason for stopping in both Greece and the EU-27 average was found to be the unavailability of accommodation to rent out (36.6% and 37.6%, respectively) (Figure 4.1.6). Furthermore, a comparatively high share of respondents in Greece reported as a reason that the provision of the service was not economically beneficial (32.8% compared to 15.1%

in the EU-27). Other frequent obstacles in Greece were related to administrative restrictions, with 18.3% stating that they were deterred by registration or other requirements (compared to 9.6% in the EU-27), 14.5% stating that the rules of local authorities were too strict or complicated (compared to 12.3%, respectively) and 13.7% indicating that the rules of the platform were too strict or complicated (compared to 7.1%, respectively). In addition, 10.7% of these respondents in Greece and 11.6% in the EU, on average, reported a bad experi-

ence with renters, while a fairly high percentage cited other reasons (26.7% in Greece compared to 30.6% in the EU-27).

4.1.5. Conclusions

In Greece, short-stay accommodation rentals via collaborative platforms, which represent the most developed part of the sharing economy in the country, have grown rapidly in recent years, with the share of the population providing these services exceeding the respective EU average. Greece has proceeded to a series of legislative interventions to regulate the operation of the short-term rentals market, while further regulatory adjustments are likely to be made in the future, in the framework of the European Commission's initiative towards a new European legislative framework aiming at the responsible, fair and trusted growth of the sector.

On the basis of recent surveys of the European Commission concerning short-term accommodation rentals, it seems that Greece differs from the EU average with respect to certain supply-side features. These features may be of importance, both from the point of view of the sector's role as a source of income for providers, and with regard to the adequacy of the legislative framework.

The most common form of supply of short-term accommodation rentals in Greece is the renting out of an entire apartment/house, while the practice of offering a room in one's apartment/house is rarely adopted in the Greek case. Regarding the more professional form of activity within the short-term rental sector, that is the renting out of accommodation purchased for the purpose of being offered via a platform, this practice represents a higher share of supply in Greece compared to the EU. Notably, the share of providers stating that they rent out several apartments or houses bought for this purpose was observed to be five times higher in Greece relative to the EU average.

The income (additional or main source) obtained from the provision of accommodation services via collaborative platforms was reported as being the foremost reason for offering these services in Greece in 2018, while somewhat lesser importance as a motive for supply in Greece compared to the EU average was placed on the access to more consumers, the ease of interaction with consumers, the more sustainable and efficient use of resources, the ease of becoming a service provider and the opportunity to offer additional or more innovative services. The main problems encountered in 2018 when providing accommodation services via collaborative platforms were, by order of incidence

in the case of Greece, the lack of clarity about how to provide the services legally, the complexity of the tax payment system, the complexity or difficulty in providing services legally and the unclear impact on the employment status of the provider, while one-quarter of providers in Greece did not report a problem. In 2021, the unavailability of accommodation to rent out was the main reason for no longer offering a short-term rental via a platform both in Greece and in the EU average. In the case of Greece, twice as many respondents stated that the provision of the service was not economically beneficial, and quite considerable obstacles were reported with respect to administrative restrictions and the strictness or complexity of platform rules.

References

- Athanassiou, E. & Kotsi, A. (2019). Sharing economy – Collaborative economy: Use of services in Greece. KEPE, *Greek Economic Outlook*, 38, 46-54.
- Athanassiou, E. & Kotsi, A. (2018). The sharing economy in Greece: developments in short-term real estate rentals. KEPE, *Greek Economic Outlook*, 37, 49-54.
- Balabanidis, D., Papatzani, E. & Pettas, D. (2021). *Airbnb in the city: Opportunity or Threat*; Athens. Polis Publications (in Greek).
- Hellenic Chamber of Hotels, Grant Thornton (2017). *The taxability of hotels and the possibility of utilizing the sharing economy for the tax smoothing of the sector* (in Greek).
- European Commission-EC (2021). Flash Eurobarometer 495. *Short-term rentals in the EU*.
- European Commission-EC (2018b). *Study on the assessment of the regulatory aspects affecting the collaborative economy in the tourism accommodation sector in the 28 Member States* (580/PP/GRO/IMA/15/15111J), Final report.
- European Commission-EC (2018a). Flash Eurobarometer 467. *The use of the collaborative platforms*.
- European Commission-EC (2016). A European agenda for the collaborative economy. Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions. {SWD (2016) 184 final}. Brussels 2.6.2016, COM(2016) 356 final.
- Eurostat (2021). *Short-stay accommodation offered via online collaborative economy platforms*. Eurostat Experimental statistics.
- Frenkel, K. & Schor, J. (2017). Putting the Sharing Economy into Perspective. *Environmental Innovation and Societal Transitions*, 23(10).
- Katsinas, P. (2021). Professionalisation of short-term rentals and emergent tourism gentrification in post-crisis Thessaloniki. *Environment and Planning, A* 53(6).
- Zervas, G., Proserpio, D., & Byers, J.W. (2017). The Rise of the Sharing Economy: Estimating the Impact of Airbnb on the Hotel Industry. *Journal of Marketing Research*, 54(5), 687-705.

4.2. Digital competitiveness of the Greek Economy

Athanasios Chymis

4.2.1. Introduction

In 2021, the pandemic was again the major crisis of the year. Covid-19 has been the catalyst for the acceleration of the digital transformation worldwide. In particular, at the European level, the digital transformation (or digital transition) is supported by two very important initiatives: the Resilience and Recovery Plan (RRP)¹ and the Digital Compass (DC) for the digital decade.²

The RRP provides significant funds for member states to carry out economic, social, and environmental transformation. Specifically, by 2026, Greece will receive approximately €30.5 billion (€17.77 billion as grants and €12.73 billion as loans), 23.3% of which will support the digital transition, 37.5% will support the green transition and the rest will support other (economic, social, job training, etc.) goals.

Focusing on the digital transition, the European Commission (EC) presented on March 9, 2021 the compass for Europe's digital transformation by 2030. It has four pillars: a) skills, b) infrastructure, c) business and d) government. Indicatively, some of the goals of this digital transition are basic digital skills for at least 80% of the population, gigabit for everyone, 5G everywhere, first computer with quantum acceleration, 75% of companies using cloud/artificial intelligence/big data, more than 90% of SMEs reaching at least a basic level of digital intensity, 100% of public services being provided online, 100% of citizens having electronic access to medical records, 80% of citizens using digital identity.

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

The latest version of the DESI index (2021) has significant changes from previous versions due to the adaptation of the index to the initiatives described above.

Specifically, the index includes four, not five, parameters in correspondence with the four axes of the DC: 1) Human capital, 2) Connectivity, 3) Integration of digital technology and 4) Digital public services.

Human capital includes 7 criteria related to people's digital skills as well as the number of ICT specialists and graduates. Connectivity includes 10 criteria for penetration and coverage of fixed and mobile broadband communications, 5G readiness and 4G and 5G coverage. The integration of digital technology concerns businesses and includes 11 criteria related to the use of social media, mass data, artificial intelligence, electronic invoices, as well as the degree of adoption of e-commerce, ICT for environmental sustainability and electronic information exchange. Finally, digital public services concern the state and include 5 criteria regarding the number of public services for citizens and businesses that offer digital, open data, and pre-filled forms.

The above changes significantly reduce the comparability of the latest version of the index with past versions. Moreover, the updated index does not include the United Kingdom, so it concerns the 27 member states. Like every edition, the data used concern the previous year from the edition year, i.e., the latest version of the index (2021) refers to 2020 data. An important feature of DESI is that it takes into account policies that have been voted upon and will be implemented as well as changes to data or more recent data, reaching up to August 2021 in an effort to make the index as up-to-date as possible in relation to its date of issue.

Table 4.2.1 presents the performance of Greece based on the DESI 2021, the European average, and the best performer. It seems that Greece relatively improved its performance. According to DESI 2021, it is ranked 25th out of 27 countries while the previous edition ranked Greece 27th out of 28 countries. In terms of digital skills (human capital), Greece holds the best relative position (21st) and is closer to the European average. It also has a relatively good position in the integration of digital technology by companies, although compared to Finland (the best performer) it is, in terms of points, at approximately 50-60% of Finland's performance.

The country performs much worse in terms of infrastructure (connectivity), where it holds the last position

1. <https://ec.europa.eu/info/business-economy-euro/recovery-coronavirus/recovery-and-resilience-facility_en>

2. <https://ec.europa.eu/info/sites/default/files/communication-digital-compass-2030_en.pdf>

(27th), and e-government (digital public services) despite the latest significant reforms in this field. These reforms will be seen in the next edition of the index in 2022. The country will have to further accelerate the digital transition of the public sector in order to be able to cover the long distance that separates it from Estonia, not only the best performer in this field, but also with the highest score among all 4 DESI parameters.

It is noted that DESI scores range from 0 to 100, where 100 is the perfect performance. The score of the best performers as well as the EU average demonstrate

that there is still much road to be covered for the full digital transition.

4.2.3. The IMD World Digital Competitiveness Index

IMD publishes, annually, the Global Competitiveness Yearbook. In addition, for the last 5 years, it has been publishing the Digital Competitiveness Index in response to the rapid developments of the digital transformation worldwide. The latest version (2021) includes

TABLE 4.2.1 Greece's score and rank according to DESI 2021

Indicator	Greece		EU-27	Best performer	
	Rank	Score	Score	State	Score
DESI	25	37.3	50.7	Denmark	70.1
Human capital	21	41.0	47.1	Finland	71.1
Connectivity	27	37.7	50.2	Denmark	74.0
Integration of digital technology	22	28.5	37.6	Finland	59.5
Digital public services	26	41.9	68.1	Estonia	91.8

Source: Digital Economy and Society Index (DESI) 2021 Greece.

TABLE 4.2.2 The evolution of the ranking of the Greek economy according to the IMD World Digital Competitiveness ranking (total number of countries: 64)

Factor ranking/Year	2016	2017	2018	2019	2020	2021*
Total ranking	45	47	53	53	46	44
<i>Knowledge</i>	46	51	51	53	48	45
Talent	47	47	50	53	50	42
Training and education	51	55	58	60	56	55
Scientific concentration	34	33	37	34	36	35
<i>Technology</i>	52	52	51	54	43	46
Regulatory framework	51	49	47	52	41	43
Capital	55	58	54	52	49	52
Technological framework	49	49	48	49	46	50
<i>Future readiness</i>	36	47	46	53	46	43
Adaptive attitudes	33	41	50	41	44	43
Business agility	40	53	49	60	55	51
IT integration	43	48	47	50	45	41

Source: IMD World Digital Competitiveness Ranking 2021.

* Orange (light orange) color shows improvement (deterioration) relative to 2020 ranking.

64 countries. The index measures the ability and readiness of states to adopt digital technologies auxiliary to their necessary economic and social transformation.³

It is worth mentioning that out of a total of 52 criteria used by the index, only 19 exclusively measure digital competitiveness. The remaining 33 are criteria shared with the competitiveness index of the global yearbook.

This means that the two indices are significantly related and may explain why the European index DESI ranks Greece ahead of only Bulgaria and Romania, while the IMD index ranks it ahead of other European countries such as Croatia, Slovakia, and Hungary.

Table 4.2.2 above shows the evolution of Greece's ranking according to the IMD digital competitiveness index. Remember, the index refers to data of the pre-

TABLE 4.2.3 Greece's ranking of selected criteria according to the IMD 2021

Criterion	Ranking 2020	Ranking 2021
International experience (s)	47	19
Foreign highly-skilled personnel (s)	58	52
Digital technological skills (s)	41	36
Employee training (s)	56	44
Total expenditure on R&D	35	31
Scientific and technical employment	25	20
High-tech patent grants	45	47
Enforcing contracts	59	60
Development and application of technology (s)	47	36
Scientific research legislation (s)	40	43
Funding for technological development (s)	50	41
Venture capital (s)	57	49
Investment in telecommunications	11	22
Mobile broadband subscribers	40	41
Wireless broadband	40	32
High-tech exports	32	32
E-Participation	41	41
Internet retailing	29	33
World robots distribution	44	44
Agility of companies (s)	57	51
E-Government	37	37
Public-private partnerships (s)	40	30
Cyber security (s)	37	42
Software piracy	52	52

Source: IMD World Digital Competitiveness Ranking 2021.

Note: Orange (light orange) [blue] color indicates improvement (deterioration) [stagnation]. (s) indicates that the specific criterion was measured using the Executive Opinion Survey.

3. For more information on the method of the index, you can refer to last year's homonymous article (*Greek Economic Outlook*, issue 44, February 2021).

vious publication year, i.e., it refers to 2020. As pointed out in the case of DESI, the significant changes and developments that occurred in 2021 will be captured by the next version of the index. Greece rose two places from the previous edition, reaching the 44th rank, which is the best position since 2016, when this index was published for the first time. This, of course, does not mean everything is fine. On the contrary, Greece needs a significant acceleration of its digital reforms if it wants to achieve not only a higher degree of digital transformation, but also some degree of digital convergence with its partners, i.e., to get closer to the EU average.

Orange color in Table 4.2.2 indicates improvement compared to the previous version of the index (2020), while the light orange indicates deterioration. Of the three key factors that make up the index, two (Knowledge and Future Readiness) improved in the ranking while one (Technology) declined.

Table 4.2.3 presents selected criteria that either improved compared to the previous version of the index, deteriorated, or remained stagnant. The improvement of the criterion “International experience” (referring to business boards) is impressive. It is worth noting that many of the criteria, such as the above, receive values based on the survey questionnaire sent annually to business executives and are not based on objectively measurable data, such as, for example, the penetration of broadband. Of the 52 criteria, about 2/3 are calculated based on objective data and 1/3 based on the (subjective) answers to the executive opinion survey. In any case, the effect of a single criterion is not capable of significantly affecting the overall ranking of the country. In Table 4.2.3, the criteria calculated based on the survey are indicated by (s) next to the criterion.

4.2.4. Concluding remarks

The digital performance of Greece according to the two main digital indicators – the European digital economy and society index DESI and the international digital competitiveness index of the IMD – shows a slight improvement of the relative position of the country in comparison to its partners in Europe as well as globally. According to DESI, Greece rose one place to 25th among the 27 member states, and according to the IMD index, it rose 2 places to 44th out of 64 countries.

The reforms and changes that have taken place in Greece over the last 2 years have certainly been affected and accelerated by the COVID-19 pandemic. But the same has happened in most, if not all, countries of the world and especially the group of high-income countries, which Greece is part of. This suggests that the digital transition should be further accelerated if the country’s goal is to break away from the bottom of international rankings and come closer to the European average. The relatively positive results of the indicators of the last editions show that this is not impossible. The next editions of the indices will show if Greece converges to the EU average regarding its digital transformation.

References

European Commission (2021). *Digital Economy and Society Index (DESI) 2021. Greece*. Available at: <<https://ec.europa.eu/newsroom/dae/redirection/document/80479>>.

IMD (2021). *IMD World Digital Competitiveness Ranking 2020*. Available at: <<https://www.imd.org/globalassets/wcc/docs/wco/pdfs/countries-landing-page/GR.pdf>>.

KEPE, *Greek Economic Outlook*, issue 47, 2022, pp. 76-89

Inequalities between men and women in 21st century Greece

Ioannis Cholezas*,**

Abstract

Inequalities between men and women, often referred to as gender inequality, are still evident in Greece. The aim of this article is to chart the situation, starting from the legislative acts and continuing with the presentation of relevant research findings regarding the factors that determine the extent and nature of gender inequality, while at the same time, serve to perpetuate them. The analysis is conducted using two reliable contemporary indices of gender inequality that capture the phenomenon in its entirety. The findings suggest that, despite the progress achieved, gender inequality is still strong in Greece compared to other European countries, and the backwardness of Greece has expanded over the past decade. Gender inequality indices attribute the biggest contributions to gender inequalities to differences between sexes in the domains of power, time and labour. Family and the education system also play a crucial role by, either deliberately or inadvertently, shaping students' views and beliefs about women, while the under-representation of women in decision-making centres seems to trap them in a vicious cycle.

Keywords: *gender inequality, SIGI, GEI, household, family, education.*

JEL classification: *J16, I24*

1. Introduction

The unequal treatment of women in Greece has often been at the centre of public discourse. Gender inequalities are evident in various aspects of daily life and are not new. Over the past few decades, awareness has risen, and there have been state efforts to ensure gender-equal opportunities under the guidance of the European Union.¹

The unequal treatment of women has social and ethical consequences, but also economic ones. Discriminating against half of the population means less than optimal benefits for the society and the economy, and it leads to underutilisation or even complete depreciation of human capital and waste of resources.² For instance, the World Bank estimated in 2018 that the annual cost of compensating women with lower wages than men, which results partially from treating women unequally once entering into the labour market, as well as before, e.g., while in education or while looking for a job, amounted to 160.2 trillion dollars worldwide (Wodon and de la Brière, 2018). Moreover, there is cost associated with gender violence. The European Institute for Gender Equality (EIGE) estimated this monetary cost at 336 billion euros annually in the EU; 79% of the cost is attributed to violence against women (EIGE, 2014).

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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.

1. There is an interesting description of the steps taken in Greece and the EU towards gender equality in Vougiouka and Papagiannopoulou (2019).

2. One should consider the amount of resources allocated to an individual's education to cover the direct and indirect cost, private and social, and how those resources are lost to a great extent (but not entirely) because the individual never integrates into the labour market.

The main goal of this article is to shed light on the intensity and nature of gender inequality in contemporary Greece³ using two composite indices. These indices rely on a great number of parameters and, therefore, they paint a more complete picture than would result from relying solely on one criterion, e.g., the gender earnings differential. According to Eurostat,⁴ the gender wage gap in 2018 was smaller in Greece than the EU27 average (10.4% of gross mean male earnings in Greece vs. 14.4% in the EU27), while, compared to previous years, it has been declining (12.5% in 2014 and 15% in 2010). Relying only on the wage gap, one would have to argue that women in Greece are doing better than their European peers and their relative position is steadily improving over time. However, that would not be a safe conclusion, since it ignores the fact that a respectable share of women, much bigger than in other EU countries, do not participate in the labour market in the first place. Those women would probably be low paid; hence, their absence leads to an underestimated gender wage gap. On top of that, economically active women face fewer employment opportunities compared to men (Cholezas and Kanellopoulos, 2016). Moreover, focusing on the wage gap utterly ignores gender inequality manifested in other aspects of women's lives even before they enter into the labour market.

However, before discussing gender inequality indices, it would be useful to present briefly the changes in the Greek legislative framework associated with gender equality that have taken place roughly over the past fifty years and to discuss the findings of selected research studies that refer to the description and interpretation of the relevant position of Greek women.

2. Legislative initiatives to fight gender inequality

The Greek state did not remain idle in the face of gender inequality. The most important initiatives can be summarised as follows. Article 22 of the Greek Constitution states: 'All workers, irrespective of gender or other divisions have a right to equal compensation for equal work provided'. However, the goal cannot

be accomplished without targeted legislative measures. Hence, law 1414/1984 abolished discrimination against women in the labour market by applying EU law in areas like professional orientation and vocational training, access to employment, workers' compensation schemes (underpaid employment and self-employment), working conditions and professional development, etc. Despite expectations, the results were not satisfactory (Karamessini and Ioakimoglou, 2003; Papagiannopoulou and Paparouni, 2005). Law 2839/2000 followed; it required that at least 1/3 of the members of administrative boards or other administrative collective bodies in public services, legal entities of public or private law and local government organisations be female. However, even recent studies (e.g., Vougiouka and Papagiannopoulou, 2019) show that gender equality in the domain of power has not yet been achieved.

Law 1414/1984 was updated two decades later with law 3488/2006, adapting the Greek law to the changes introduced in the EU law⁵ associated with the equal treatment of men and women in the domains of employment, vocational education, professional prospects and working conditions. Nevertheless, it seems that not much has changed since then (Papagiannopoulou, Amitsis et al., 2008). So long as vocational education and training does not provide men and women with equal opportunities, it perpetuates obstacles blocking women's access to the labour market. Law 3896/2010 (article 25) was implemented a few years later; it aimed at ensuring equal opportunities to and equal treatment of men and women in the context of a relevant European directive⁶ regarding: a) access to employment and professional development, including vocational education; b) terms and conditions of work, including pay; and c) occupational social security systems.

Law 4343/2016, passed in the mid-2010s, incorporated two more EU directives⁷ into Greek law that involved, among other things, the equal treatment of individuals in employment and work irrespective of their personal characteristics. The terms employment and work include the following: a) terms of access to work and employment (selection criteria, hiring terms,

3. The analysis purposely stops in 2019 to avoid possible bias caused by the unique circumstances prevailing in the subsequent two years in the labour market due to Covid-19.

4. <https://ec.europa.eu/eurostat/databrowser/view/sdg_05_20/default/table?lang=en>

5. Application of the Directive 2002/73/EC of the European Parliament and the Council.

6. Directive 2006/54/EC of the European Parliament and the Council.

7. Directive 2000/43/EC and Directive 2000/78/EC of the European Parliament and the Council.

etc.), b) access to vocational education and training, apprenticeships, etc., c) terms and conditions of work like wages, health, safety at work and, in case of unemployment, reintegration and reemployment, and d) participation in trade unions. Probably the most important change introduced by this law was the reversal of the burden of proof from the employee to the employer. This means that if the employee accuses the employer of discrimination based on personal characteristics, the employer has to prove that the accusation is false.

More recently, law 4604/2019 regulated matters aiming at promoting gender equality, preventing and fighting gender violence.⁸ Several definitions clarify relevant concepts like gender mainstreaming and sexual harassment, the gender plan (a sum of complete and self-complementing interventions of public or private bodies and businesses aiming at gender equality in practice), the gender equality badge (in businesses that pursue policies of equal treatment and equal opportunities) and the Network of Structures (counselling centres for women, etc.). Moreover, the law provides for the establishment of a national mechanism for gender equality at central, regional and local levels as well as the establishment of the National Council for Gender Equality under the General Secretariat for Demography and Family Policy and Gender Equality. The first part of the law defines the concepts of integrating gender equality and the gender dimension in public policies, integrating the gender dimension in private life and employment, as well as the content and the composition of the Network of Structures for preventing and fighting violence and multiple discriminations against women.

Lastly, the National Action Plan for Gender Equality in period 2021-2025⁹ constitutes a complete strategy that includes four axes of priority and 67 actions. The first axis is about preventing and fighting gender and domestic violence and sets four distinct goals, among which is fighting violence at work. The second axis refers to women's equal opportunities to participate in decision-making positions and take on leading roles and includes three distinct goals, among which is the increase in the number of women involved in politics and the reinforcement of women's and girls' education and training for taking on leading roles. The third axis is concerned with the equal participation of women in the labour market with five separate goals, among

which is the promotion of women's entrepreneurship and the strengthening of women's and girls' education and training in research and technology. The fourth axis is about integrating the gender dimension into sectoral politics. It provides for eight specific goals, among which is the promotion of gender equality in education, science and research, as well as the collection of statistical data, research and access to knowledge from a gender perspective. Providing for a specific monitoring process of the action plan at central, regional and local levels could prove crucial. It is worth noting that there were action plans for gender equality in the past in the EU's Support Framework and later in the Partnership Agreements. They contributed to the improvement of the position of women, both before they decide to participate in the labour market (e.g., through improving their skills) and once they participate, by succeeding in neutralising discrimination to some extent and promoting equal opportunities for all.

3. Empirical studies on gender inequality

A careful reading of studies addressing gender inequality in Greece, combined with the legislative initiatives already presented, suggests that there has been progress towards gender equality both in the public and private sector, utilizing national and European resources to implement actions and policies to that end. However, the state of play for women in Greece is still problematic since gender mainstreaming and the appropriate management of factors contributing to inequality between men and women remain desirable, not accomplished.

The studies presented in this section mainly focus on three issues associated with gender inequality. In the beginning of the 2000s studies dealt with the description and assessment of the results of interventions to promote gender equality, while, at the end of the decade, studies focused on exploring factors responsible for preserving gender inequality with special attention paid to education and family. The most recent studies deal with the importance of striking a work-life balance, especially for women.

In particular, many Greek private-sector firms introduced positive actions in the past to promote gender equality; for example, measures to reconcile work with family/private life, extend parental leave, increase the flexibility of working hours, special leaves of absence,

8. Law 4531/2018 had passed earlier. It validated the Convention of the Council of Europe for preventing and fighting violence against women and domestic violence in its first five articles.

9. The entire action plan is available at: <<http://www.opengov.gr/minlab/wp-content/uploads/downloads/2021/07/ΕΣΔΙΦ-2021-2025.pdf>>.

child-care services within the firm's premises, modern personnel management systems, etc. (Alitzoglou et al., 2002). Those were steps towards the right direction, but they were often ignored in practice. Various policies promoting gender equality were also introduced from time to time by the state. For instance, all-day school, including kindergarten, and daycare schools aimed at facilitating women with young children; care centres for the elderly aimed at relieving women who care for them, and the programme 'Help at Home' supported the low income elderly living alone. Moreover, seminars for gender equality organised at secondary schools and vocational schools aimed at raising teachers', students', parents' and society's awareness of gender inequality; gender quotas in apprenticeships and scholarships aimed to direct women towards male-dominated studies and professions and to facilitate their integration to the labour market (Papagiannopoulou and Paparouni, 2005). The last point is very important, since the share of women in the labour force in Greece is typically low.¹⁰ However, active labour market policies have not yet been able to escape the trap of gender inequality, since eligibility criteria often favour men even where training programmes are concerned (Papagiannopoulou, Amitsis et al., 2008).

Therefore, it is not hard to show that the concentration of women in specific fields of study, occupations and sectors is associated with lower female wages, i.e., there is a gender wage gap (Karamessini and Ioakimoglou, 2003). This conclusion is not new; however, it verifies previous findings. Kanellouopoulos (1986) attributes a big share of the wage differential between men and women to the occupational segregation. Moreover, according to Karamessini and Ioakimoglou (2003), discrimination against women in hiring practices and collective agreements leads, at least to some extent, to lower female wages. Indeed, the International Labour Office supports the view that collective agreements that shape the working environment could contribute to the reduction of obstacles facing women at work (ILO, 2015). In practice, collective agreements in Greece do not seem to promote gender inequality so long as firms comply. This is not a given though, since the risk of a firm being punished is relatively small. In addition, most vulnerable workers, often women, have no substantial role in forming the agenda of collective bargaining; hence, it is difficult to promote their interests and goals (Giannakourou and Soumeli, 2002).

Education is one of the most important areas in which gender inequality is observed because it is also a factor promoting it; children's socialisation takes place in schools while their views and stereotypes are shaped. Although there seems to be some gender balance in the composition of teachers and students at first sight, in practice there are big qualitative differences (Delianni-Kouimtzi et al., 2003; Moschovakou, Korella et al., 2008). Therefore, most women choose to study in specific scientific areas which lead to occupations and sectors with lower wages and worse career prospects. Even in sectors where women have a strong presence, like education, they seem to prefer pre-school and primary education, while female teachers in secondary education prefer classes with fewer and younger students as well as specific subjects, e.g., ancient Greek, Greek language and foreign languages. There are also fewer women professors in tertiary education, although their number is increasing over time.

The underrepresentation of women in administrative posts and positions of authority in all levels of education is also worth mentioning. At the same time, women are almost completely absent from vocational education. The fact that most male teachers do not realise their own contribution to preserving gender inequality, through everyday practices and methods of teaching, is alarming but not surprising. Recognising the role of education in fighting gender inequality, the Ministry of Education and Religious Affairs and the General Secretariat for Demography and Family Policy and Gender Equality have taken several actions. Such actions include special educational material that promotes gender equality; books, studies and guides for teachers and students; the establishment of post-graduate studies providing scholarships for women, etc.¹¹ Despite those initiatives, a survey on teachers suggests that professional development in education continues to rely disproportionately on gender (Papagiannopoulou, Kavoulakos et al., 2008).

Other surveys confirm that stereotypes, behaviours and views women have with respect to their own gender role, which are shaped within the educational system and familial environment, are also responsible for both the horizontal and vertical occupational segregation of women (Moschovakou, Kantaraki et al., 2008; Vryonis, Dinapogias et al., 2008). In addition to the distribution of household tasks that burden

10. According to official Eurostat data, the labour force participation rate of females aged 20-64 in 2019 stood at 65.3% in Greece compared to 82.9% for men and 72.5% for women in the EU27.

11. An assessment of the effects of EU funded programmes promoting gender equality and addressing the labour market can be found in Papagiannopoulou, Kaliveza et al. (2008).

women more than men as well as biased views with respect to a woman's role by parents and the family that are passed on to children (Moschovakou, Korella et al., 2008), stereotypes at the workplace and the constant pressure women feel to prove their worth when they occupy a position of authority create additional obstacles to their professional development (Moschovakou, Kantaraki et al., 2008).

The distribution of housework between men and women makes it difficult for women to reconcile personal and family life with work. The reason is that women usually undertake more tasks and devote more time to housework despite progress made over time at the family and the state level via relevant policies and actions, probably because this progress is fragmentary (Simeonaki, Karamessini et al., 2016). The burden is bigger for married women with children or other household members who need care. As a result, women more often work part-time, earn lower wages, have fewer career prospects and fewer chances to develop professionally while they suffer from labour law violations.

Interestingly, there is less unequal distribution of housework among better educated women, younger women and women who earn higher wages according to Germotsi, Moschovakou and Papagiannopoulou (2016). The same study argues that it is long working hours, limited flexibility in working time, short hours of public childcare services and lack of support from other household members (however, when it exists it emanates from the spouse) that cause difficulties in reconciling work with family life. Moreover, any benefits enjoyed by women, e.g., maternity leave, are often perceived as competitive disadvantages by employers and sometimes women themselves.

To summarise, existing gender inequality can be attributed to institutions that more or less involuntarily facilitate the perpetuation of stereotypes and views about the role of women in contemporary society and economy; family and education are two important institutions. They shape women's perceptions about themselves and direct them to specific areas of study often associated with low wages and poor career prospects. Moreover, the institutional framework, even after decades of interventions, has not yet managed to eliminate gender inequality, partly because its implementation is often incomplete. Therefore, the underrepresentation of women in decision-making positions (Vougiouka and Papagiannopoulou, 2019) comes naturally and binds women's unequal opportunities. At

the same time the underrepresentation of women perpetuates these unequal opportunities, depriving them of the power to challenge the status quo and cause changes to their benefit.

4. Gender (In)equality indices

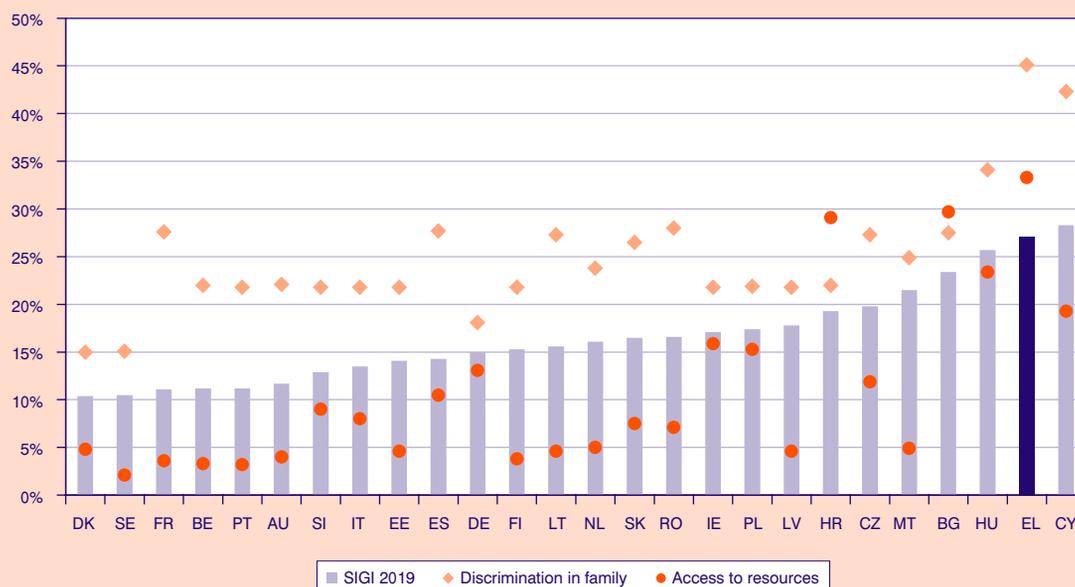
After reviewing empirical research on gender inequality in Greece over the past years, this section is dedicated to the current situation. The intensity and nature of discrimination against women compared to other European countries is approximated using two composite indices: the Social Institutions and Gender Index (SIGI), developed by the Development Centre of the OECD, and the Gender Equality Index (GEI), calculated by the European Institute for Gender Equality (EIGE). Both indices were chosen because they consider multiple parameters to capture all aspects of gender (in)equality. Moreover, due to the common methodology they use, they allow for comparisons between countries and years.

The SIGI measures the unequal treatment of women by social institutions, reflected in formal and informal laws, social norms and practices.¹² The index combines qualitative and quantitative data considering discrimination against women in social institutions either by the law and moral correctness or practices. The information collected involves the entire life of women, since discrimination by social institutions intertwine, leading women to poverty and depriving them of the chance to actually have control of their lives. In other words, women's access to justice is often restricted along with their rights and opportunities to empowerment, while their ability to self-determine and make decisions on their own is downplayed. Even though some of the above sound unfamiliar to Greece, it should be noted that the index is estimated for 180 countries. The estimation of the index includes four dimensions of social institutions that affect women's lives:

- a) Discrimination in the family (distribution of housework, ease of divorce, etc.),
- b) Restricted physical integrity (violence against women, reproductive autonomy, etc.),
- c) Restricted access to productive and financing resources (workplace rights, access to financial services, etc.),
- d) Restricted civil liberties (representation in political life, treatment of women in public office, etc.).

12. Detailed information can be found at <<https://www.genderindex.org/sigi/>>.

GRAPH 1
Social Institutions and Gender Index (SIGI) and selected sub-indices, 2019



Source: OECD <<https://www.genderindex.org/ranking/?region=europe>>.

Note: Austria (AT), Estonia (EE), Cyprus (CY), Portugal (PT), Belgium (BE), Latvia (LV), Romania (RO), Bulgaria (BG), Spain (ES), Lithuania (LT), Slovakia (SK), France (FR), Ireland (IE), Luxembourg (LU), Slovenia (SI), Germany (DE), Italy (IT), Malta (MT), Sweden (SE), Denmark (DK), Netherlands (NL), Hungary (HU), Czech Republic (CZ), Greece (EL), Croatia (HR), Poland (PL), Finland (FI).

The general SIGI for 25 EU countries in 2019 is presented in Graph 1. A higher index value represents higher gender inequality. European countries typically belong to the two last groups of countries characterised by either low values of the index (it ranges from 20% to 30%) or very low values of the index (lower than 20%). The index in Greece stands at 27.1%, which means that the country ranks second to last amongst the 26 EU countries and the expanded group of 37 European countries;¹³ only Cyprus fares worse. Note that in Italy, which is often considered culturally similar to Greece, the index stands at 13.5% and in Denmark at 10.4%. Moreover, Greece has the worst performance in the sub-index that measures discrimination within the family and the sub-index that measures equal access of men and women to productive

and financial resources. In practice, this means that in Greece women are burdened with housework disproportionately compared to men and women in other European countries. At the same time, it is more difficult for women to access funds, e.g., necessary to set up a business, and to claim equal opportunities in the labour market as men.

The evolution of the index over time cannot be observed since – due to lack of data – it was not calculated for 2014. Regarding the individual indices that constitute the general index, discrimination within the family seems to have increased over time. On the contrary, there is an improvement in the sub-index which measures political freedom¹⁴ in period 2014-2019. Hence, Greece ranks somewhere in the middle of the list of 25 countries of the EU¹⁵ in 2019.

13. Switzerland has the lowest index value (8.1%) amongst 37 European countries. Surprisingly, Cyprus is categorised in West Asia. If it is included in Europe, since it is a member of the EU after all, it is the country with the greatest gender inequality (28.3%) amongst the European countries included in the analysis.

14. Note that there were many countries with zeros in this specific sub-index in 2014 but positive values in 2019. Since it is not clear what these zeros actually mean, these findings should be interpreted with caution.

15. Cyprus and Luxembourg are missing from the list.

The second index employed is the Gender Equality Index (GEI).¹⁶ The index was constructed to allow for the monitoring of the intertemporal evolution of gender inequality in EU countries and for comparisons between them.¹⁷ The index is a composition of individual indices that estimate gender inequality based on six parameters:

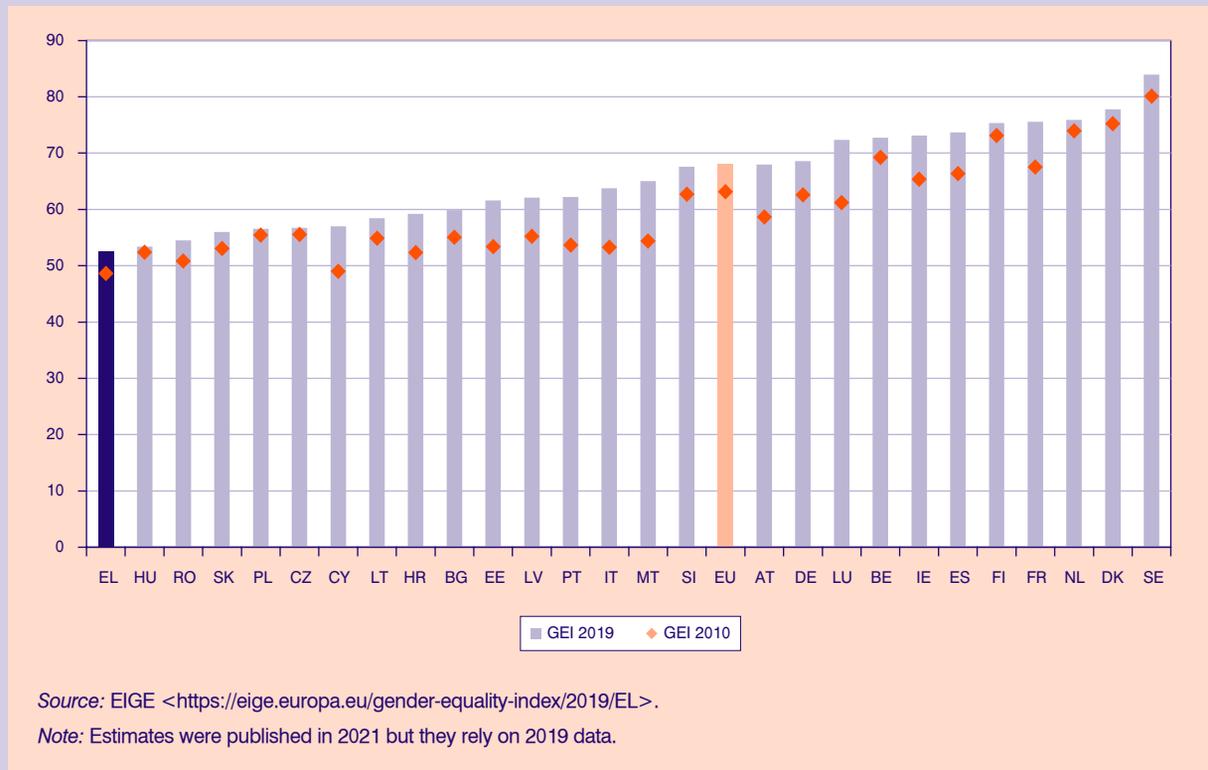
- a) Work (gender differences in the labour force participation rate, women’s segregation in specific occupations, etc.),
- b) Money (gender differences in wages and income, the risk of poverty, etc.),
- c) Knowledge (gender differences in education attainment and training, women’s segregation in specific fields of study, etc.),
- d) Time (gender differences in time devoted to unpaid work, like housework and child-rearing, etc.),

- e) Power (gender differences in participation in political and economic processes, etc.), and
- f) Health (gender differences in health status and access to health services, like differences in life expectancy, access to dental services, etc.).

Contrary to the SIGI, lower values of the GEI represent greater gender inequality. Greece ranks last amongst EU27 countries based on the most recent estimates in 2019 (Graph 2). Gender equality in Greece falls short by approximately 30 percentage points of Sweden’s, which ranks first, and more than 15 percentage points of the EU27 average. Hungary and Romania complete the trinity of countries with the poorest performances, along with Greece.

Between 2010 and 2019, the GEI increased in Greece by 4 points (from 48.6 to 52.5), which represents an improvement in gender equality. However, the EU27 average GEI improved by 15 points (from 53.4 to 68).

GRAPH 2
Gender Equality Index (GEI) 2010/2019



16. A detailed discussion of the index is available in EIGE (2013).

17. The index was recognized by the Joint Research Centre of the European Commission as a reliable measure of gender inequality in the EU (Papadimitriou, Norlen and Del Sorbo, 2020). Detailed information can be found at <<https://eige.europa.eu/sites/default/files/documents/MH0113513ENC.PDF>>.

This has two consequences. The first one is that advancements in Greece have been relatively small since 2010; this means that the position of women improved slowly and, therefore, the country should pick up its pace. The second consequence is that the gender equality gap with the EU27 has expanded over the period because the position of women improved faster there.

The decomposition of the GEI to its constituent parameters is interesting and informative. Table 1 presents all the necessary information in a clear and comprehensive manner.¹⁸ Next to each of the six parameters that were used to construct the index, there is a column that shows the ranking of the country based on the specific parameter. This piece of information can be used to reach useful conclusions; for example, it makes it easy to trace the parameters in which Greece falls farther behind and suggest suitable interventions to promote gender equality.

In particular, Greece ranks second to last, in the 26th place on the list, in three parameters: work, time and power. Of these three parameters, it falls alarmingly short in power (28 points lower than the EU27 average), then time (20.2 points lower) and, finally, work (6.3 points deviation from the average). In the first parameter, the worst performance is reported in Italy, in the second parameter in Bulgaria and in the third in Hungary. However, what makes Greece stand out in a negative way is the fact that it performs systematically poorly in almost all parameters and the variables that constitute them. Health is the only exception since Greece ranks 15th.

With respect to the parameter of work, Greece's disadvantage is the biggest (10.7 points) compared to the EU27 average in the variable 'Full time equivalent employment rate, where women seriously underperform compared to men (Table 2). The maximum value of the index is reported in Sweden (94%), 30 points bigger than Greece. The variable 'Ability to take one hour or two off during working hours to take care of personal or family matters' comes next; the value of the index in Greece is 10.5 points smaller than the EU27 average and 41.2 points smaller than the best performing country, i.e., the Netherlands (92.6%). Unsurprisingly, Greece's performance is better (40.6%) than the EU27 average (35.2%) regarding the variable 'Employed people in education, human health and social work activities'; these three sectors tend to attract a lot of women in Greece.

Regarding the parameter of time, Greek women do worse than men in the variable 'Workers doing sporting, cultural or leisure activities outside of their home, at least daily or several times a week' (Table 2). This means that men engage in such activities more often than women, probably because they have more free time. The difference from the EU27 average is greater than 26 points and more than 58 points from the Netherlands. Relatively more women in Greece are involved in daily cooking and cleaning at home, so this sub-index is approximately 26 points smaller than the EU27 average. Sweden ranks first once more, probably because women share those responsibilities with men there, and the sub-index stands at 86.7%, 26 points bigger than Greece. Note that Greece scores lower than the EU27 average in all variables with respect to the parameter of time.

As far as power is concerned, there are eleven variables used to construct the parameter (Table 2). Greece performs lower than the EU27 average in all of them. The greatest disadvantage is reported in the share of female board members of research funding organisations, which is 72.2 points smaller than the top performing country, i.e., Luxembourg, and 49.3 points smaller than the EU27 average. Note that Greece performs worst in this variable compared to all variables, not just the variables used to construct the sub-index for this parameter. The second worst performance of the country is reported in the share of female board members of publically owned broadcasting organisations; the value of the variable in Greece is 36.3 points smaller than the EU27 average and 64.4 points smaller than the best performing country, i.e., Ireland with 98%.

Even though Greece ranks 15th in the list of countries regarding health (Table 2), this should not cause complacency since the value of the sub-index is lower than the EU27 average by 3.5 points. This is despite the fact that Greece fares better than average in seven out of ten variables used. Among them, Greece has the biggest advantage in the variable regarding the share of people considering their health is either good or very good. In other words, women consider themselves of good health more often than men. Obviously, one's own perception need not reflect the truth. In any case, it seems clear that efforts to promote gender equality do not have to start from this parameter.

18. Table 2 presents the sub-indices and individual variables used to construct the indices for both the EU27 and Greece.

TABLE 1 Gender Equality Index (GEI) sub-indices, 2019

	GEI	Rank	Work	Rank	Money	Rank	Knowledge	Rank	Time	Rank	Power	Rank	Health	Rank
EU	68.0	-	71.6	-	82.4	-	62.7	-	64.9	-	55.0	-	87.8	-
SE	83.9	1	83.1	1	85.4	10	75.2	1	90.1	1	84.5	1	94.6	1
DK	77.8	2	79.4	2	89.1	3	71.0	2	83.1	3	66.8	5	89.5	9
NL	75.9	3	78.3	3	87.0	7	67.4	7	83.9	2	64.0	6	90.2	7
FR	75.5	4	73.2	14	86.3	8	67.0	8	67.3	9	81.4	2	87.4	11
FI	75.3	5	75.5	8	87.9	4	61.9	11	77.4	4	74.3	4	89.5	16
ES	73.7	6	73.7	12	78.4	16	67.9	5	64.0	14	76.9	3	90.3	13
IE	73.1	7	76.5	6	87.8	5	67.4	6	74.2	6	58.4	10	91.3	6
BE	72.7	8	74.9	9	89.9	2	70.8	4	65.3	11	61.0	8	86.3	8
LU	72.4	9	76.3	7	92.4	1	70.8	3	69.1	8	53.4	12	89.9	4
DE	68.6	10	72.4	17	86.0	9	54.7	24	65.0	12	62.8	7	90.7	23
AT	68.0	11	76.8	4	87.7	6	64.3	10	61.2	15	48.2	16	91.9	14
SI	67.6	12	73.0	15	83.7	12	56.6	18	72.9	7	53.0	13	87.8	19
MT	65.0	13	76.8	5	84.2	11	65.2	9	64.2	13	37.5	19	92.3	10
IT	63.8	14	63.7	27	79.4	14	59.0	13	59.3	16	52.2	14	88.4	20
PT	62.2	15	73.2	13	73.6	21	56.5	19	47.5	24	53.6	11	84.8	2
LV	62.1	16	74.3	10	68.7	26	50.9	27	65.8	10	50.4	15	79.3	5
EE	61.6	17	72.5	16	73.2	23	57.3	16	74.7	5	36.6	20	82.2	25

TABLE 1 (continued)

	GEI	Rank	Work	Rank	Money	Rank	Knowledge	Rank	Time	Rank	Power	Rank	Health	Rank
BG	59.9	18	69.6	20	64.5	27	55.2	22	42.7	27	60.2	9	77.2	24
HR	59.2	19	70.1	19	74.0	19	51.8	26	51.0	21	45.3	17	83.8	21
LT	58.4	20	74.2	11	69.9	24	56.1	20	50.6	22	39.3	18	80.3	3
CY	57.0	21	70.6	18	82.6	13	56.0	21	51.3	20	30.0	24	87.9	26
CZ	56.7	22	67.4	23	78.9	15	58.5	14	57.3	17	28.1	25	86.3	22
PL	56.6	23	67.2	24	76.7	17	57.6	15	52.5	19	31.5	22	83.3	18
SK	56.0	24	66.8	25	75.1	18	61.6	12	46.3	25	30.7	23	85.5	27
RO	54.5	25	67.5	22	69.1	25	52.8	25	50.3	23	34.7	21	71.3	17
HU	53.4	26	68.0	21	73.3	22	57.2	17	54.3	18	22.9	27	86.7	12
EL	52.5	27	65.3	26	73.7	20	54.9	23	44.7	26	27.0	26	84.3	15

Source: EIGE.

TABLE 2 Detailed Gender Equality Index (GEI) sub-indices, 2019

	EU	EL
Work	71.6	65.3
Participation	81.3	72.7
FTE employment rate (%)	75.5	64.9
Duration of working life (years)	87.1	80.5
Segregation and quality of work	63.1	58.7
Employed people in education, human health and social work activities (%)	35.2	40.6
Ability to take one hour or two off during working hours to take care of personal or family matters (%)	61.9	51.5
Career Prospects Index (points, 0-100)	92.1	84.0
Money	82.4	73.7
Financial resources	76.9	62.2
Mean monthly earnings (PPS)	78.2	66.7
Mean equivalised net income (PPS)	75.7	57.7
Economic situation	88.3	87.3
Not at risk of poverty (%)	94.6	94.6
Income distribution S20/80	82.0	80.1
Knowledge	62.7	54.9
Attainment and participation	72.5	67.3
Graduates of tertiary education (%)	81.2	80.2
People participating in formal or non-formal education (%)	63.8	54.4
Segregation	54.1	44.8
Tertiary students in education, health and welfare, humanities and arts (%)	54.1	44.8
Time	64.9	44.7
Care activities	69.1	50.9
People caring for and educating their children or grandchildren, elderly or people with disabilities, every day (%)	80.1	69.6
People doing cooking and/or household work, every day (%)	58.1	32.2
Social activities	61.0	39.3
Workers doing sporting, cultural or leisure activities outside of their home, at least daily or several times a week (%)	65.8	39.6
Workers involved in voluntary or charitable activities, at least once a month (%)	56.3	39.0

TABLE 2 (continued)

	EU	EL
Power	55.0	27.0
<i>Political</i>	58.5	36.1
Share of ministers (%)	58.9	29.7
Share of members of parliament (%)	60.5	38.0
Share of members of regional assemblies (%)	56.2	40.5
<i>Economic</i>	48.8	21.1
Share of members of boards in largest quoted companies, supervisory board or board of directors (%)	53.2	20.8
Share of board members of central bank (%)	44.4	21.5
<i>Social</i>	58.2	25.7
Share of board members of research funding organisations (%)	73.3	24.0
Share of board members of publically owned broadcasting organisations (%)	70.0	33.7
Share of members of highest decision making body of the national Olympic sport organisations (%)	31.3	19.3
Health	87.8	84.3
<i>Status</i>	92.1	95.2
Self-perceived health, good or very good (%)	87.8	95.3
Life expectancy at birth (years)	95.7	96.2
Healthy life years at birth (years)	92.9	94.0
<i>Behaviour</i>	74.8	66.6
People who don't smoke and are not involved in harmful drinking (%)	77.0	80.2
People doing physical activities and/or consuming fruits and vegetables (%)	72.7	53.0
<i>Access</i>	98.2	94.5
Population without unmet needs for medical examination (%)*	98.3	94.0
Population without unmet needs for dental examination (%)*	98.1	95.0

Source: EIGE.

Note: Greece has an advantage in sub-indices reported in bold letters.

* These sub-indices have a negative content, so a smaller value is preferable.

5. Discussion and suggestions

Based on the preceding discussion, there have been important steps promoting gender equality in Greece in the public and the private sector. This view seems to be justified by the relevant literature, the legislative initiatives and the Gender Equality Index (the SIGI is unable to provide a clear view), which shows an improvement of the position of women over time. However, this improvement is slow and falls behind the improvement reported in the EU27 average; therefore, the gap between Greece and the European average has expanded.

Both indices reviewed seem to agree that discrimination in the family, associated mainly with the disproportionate burden placed on women with respect to housework, is an important scope of action to promote gender equality; relevant studies seem to verify this conclusion. The time women have at their disposal, due to increased housework responsibilities, is not enough to allow them to participate in social activities that are necessary for their professional, social and economic progress. As a consequence, women have a disadvantage compared to men, when it comes to the labour market especially regarding employment rates, and they are unable to reconcile work with private life given the limited flexibility in working hours. The fact that women are heavily underrepresented in positions of authority and influence according to the GEI, e.g., fewer women are board members of organisations funding research or publicly owned broadcasting organisations, is both a result of and a cause for gender inequality.

Interventions that could turn the tables and decrease gender inequality to a measurable extent are not easy to specify. According to the reviewed literature, there are factors that affect gender inequality in complex ways like education and family or the lack of women's power. It seems then that there is a vicious cycle at play that perpetuates the current status. Family and education shape views and perceptions that facilitate the persistence of the social and economic status quo and block changes in the institutions of family and education. Either directly, because it is always hard for parties involved to accept changes, or indirectly, because people who are actively involved in those changes do not realise the reasons why they are necessary. At the same time, women are unable to make decisions and force changes to their benefit because they lack the necessary power.

This means that any changes decided upon should be implemented in a concerted and resolute way. Instead of specific suggestions, since there are many of those

in the literature reviewed, general directions of actions considered crucial are put forward. A very important one is gender mainstreaming, i.e., the integration of the gender aspect in every policy and action; from now on, the ways an initiative improves the position of women in practice should be proved. Additionally, the importance of gender mainstreaming is already recognised in the National Action Plan for Gender Equality. Revising the past practices and methods in the education system is absolutely necessary if essential progress is to be made, including raising the awareness of teachers, students and parents across all levels of education. It goes without saying that the cooperation of involved parties is a necessary prerequisite for success. Through reforming education, the familial environment will also change. Additional actions to mobilise parents could speed up the process.

It is necessary to assess all interventions in order to trace any problems and points that require improvement. This is particularly important where the labour market is concerned. Enforcing the principle of gender equal treatment in the labour market is essential, but it is of utmost importance to monitor and ensure compliance with the rules; this is a task complicated by the number of small-size businesses in Greece. Moreover, some of women's labour rights put them at a disadvantage versus men; e.g., the maternity leave. Expanding those rights to men could help balance the pressure on women. However, at the same time, there should be measures to support businesses bearing the extra cost. In this context, some European countries have managed to promote gender equality efficiently and could be used as role models and provide solutions adapted to the Greek reality. Furthermore, reforming vocational education and training as well as lifelong learning practices to consider the needs (and skills) of women could only have positive effects on their career development prospects. Also, legislating to increase women's participation in positions of authority and influence, even if limited to the public and broader public sector and political parties, would increase women's power and facilitate all necessary interventions. Last but not least, the new National Action Plan for Gender Equality seems adequately equipped to succeed so long as the pathologies that blocked the effectiveness of actions promoting gender equality in the past are traced and overcome.

References

Alitzoglou, E., Koutsivitou, A., Liapi, M., Sereti, N. and Stratigaki, M. (2002). *Positive actions for equal opportunities of men and women in small-medium and big businesses*. Research Centre for Gender Equality (KETHI).

- Cholezas, I. and Kanellopoulos, C.N. (2016). *Decomposing gender unemployment differentials in Greece*. Discussion Paper No. 148. KEPE. Athens.
- Deligianni-Kouimtzi, B., Ziogou-Karastergiou, S. and Frosi, L. (2003). *Gender and educational reality in Greece: promoting interventions for gender equality in the Greek education system*. Research Centre for Gender Equality (KETHI).
- EIGE (2014). *Estimating the costs of gender-based violence in the European Union: Report*. European Institute for Gender Equality. Luxembourg: Publications Office of the European Union.
- EIGE (2013). *Gender Equality Index Report*. European Institute for Gender Equality.
- Germotsi, V., Moschovakou N. and Papagiannopoulou, M. (2016). *Gender equality in the labour force: reconciling professional with family/private life in Greek industries. A guide of good practices for gender mainstreaming in public administration*. Research Centre for Gender Equality Issues (KETHI).
- Giannakourou, M. and Soumeli, E. (2002). *Equality between men and women in Collective Bargaining*. Research Centre for Gender Equality (KETHI).
- International Labour Office (2015). *Collective bargaining: A policy guide*. International Labour Office (ILO).
- Kanellopoulos, N.C. (1986). *Incomes and poverty in Greece: Determining Factors*. Study No. 22, KEPE. Athens.
- Karamessini, M. and Ioakimoglou, E. (2003). *Determining factors of the wage gap between men and women*. Research Centre for Gender Equality (KETHI).
- Moschovakou, N., Kantaraki, M., Pagkaki, M. and Stamatelopoulou, E. (2008). *Occupational Segregation by Gender (Vertical and Horizontal): Discrimination against Women in Education*. Research Centre for Gender Equality (KETHI).
- Moschovakou, N., Korella, G., Ksidopoulou, E.K., Sakellariou, E., Flaggini, A. and Fotopoulou, B. (2008). *Collecting, critically commenting and organising of the digitalisation of the current research output in the field of equality in education*. Research Centre for Gender Equality (KETHI).
- Papadimitriou, E., Norlen, H. and Del Sorbo, M. (2020). JRC Statistical Audit of the 2020 Gender Equality Index, EUR 30423 EN, Publications Office of the European Union, Luxembourg, ISBN 978-92-76-24507-0, doi:10.2760/39645, JRC122232.
- Papagianopoulou, M. and Paparouni, R. (2005) *National Policies for Gender Equality in Employment*. Research Centre for Gender Equality (KETHI).
- Papagiannopoulou, M., Amitsis, G., Dimou, E., Molioti, A. and Profiri, I. (2008). *A series of monitoring and assessing actions and policies for the improvement of women's access to the labour market through educational preparation*. Research Centre for Gender Equality (KETHI).
- Papagiannopoulou, M., Kaliveza, M., Katsamagkou, M., Paparouni, R., Tamposi, St. (2008). *Series to monitor and assess the impact of actions in the context of EPEAEK II on gender*. Research Centre for Gender Equality (KETHI).
- Papagiannopoulou, M., Kavoulakos, K.I., Voudouri, S., Zavali, M., Kapouralou, H., Papadopoulos, E., Petroulaki, K. and Tsirigoti, A. (2008). *Series of reports on specific issues addressing centres for decision making and policy implementation*. Research Centre for Gender Equality (KETHI).
- Simeonaki, M., Karamessini, M., Skomba, M. and Chatzivarnava, E. (2016). *Literature Review and Analysis of Policies about Reconciling Professional with Family/Private life*. Research Centre for Gender Equality (KETHI).
- Vougiouka, A. and Papagiannopoulou, M. (2019). *Elect and be elected: Explore and Document Attitudes, Perceptions and Convictions about Issues of Women's Participation and Representation in Political Decision Making Organisations*. Research Centre for Gender Equality (KETHI).
- Vrionis, M., Dinapogias, A., Petroulaki, K. and Tsirigoti, A. (2008). *A series of monitoring and assessing the impacts of educational policies on gender*. Research Centre for Gender Equality (KETHI).
- Wodon, Q. T. and de la Brière, B. (2018). *Unrealized Potential: The High Cost of Gender Inequality in Earnings. The Cost of Gender Inequality*. Washington, DC: World Bank.

PsychoManagement: A new approach to management

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Abstract

Emotional Intelligence (EI), and in particular the areas of empathy and social skills, are the foundation of the principles of “PsychoManagement”. The a priori theoretical relationship between the new approach to human resource management –based on EI– and the effects it may have on employees’ satisfaction is the subject of this article. For the empirical evaluation and analysis of this relationship, the most appropriate methodological tools are used: the Wang & Law (WLEIS) questionnaires for EI and ESI (Employee Satisfaction Index) for employees. Indices and statistical analysis of primary research data lead to the conclusion that “PsychoManagement” can be the core for the development of a modern management model, which can be effectively implemented in companies and contribute to the job satisfaction of human resources.

Keywords: PsychoManagement; Emotionally intelligent manager/team; Management; Empathy; Social Skills; Human Resources Satisfaction and Performance.

JEL classification: M12

1. Introduction

“PsychoManagement” (Palaskas, et al., 2020; Spillane, 2017) is a contemporary approach to answering the “why”, instead of the “how” one manages, as one manages his/her own human resources and everyday situations. The ultimate goal of “PsychoManagement” is the combination of the four basic questions “what” and “why” with “how” and “who”, economics with psychology, as well as emotion with logic (Palaskas,

2019). Emotional Intelligence, i.e., the ability of the individual “to give accurate reasoning about emotions and the ability to use emotions and emotional knowledge to enhance thinking” (Lindebaum, 2013), is the core of “PsychoManagement” (Tsirimokou, et al., 2021).

Creativity, concern for results and a desire for responsibility are a subset of the key individual characteristics for defining a “successful” manager. At the same time, his/her skills and knowledge enhance his/her career (Bourantas & Mandes, 1987). This tendency of managers to improve their EI in order to motivate their immediate subordinates for higher performance, in terms of efficiency and effectiveness, (Zervopoulos & Palaskas, 2010) in the private and public sector (Jordan, et al., 2002; Shooshtarian, et al., 2013; Afzalur Rahim & Minors, 2003) was recorded at the end of the 20th century.

The “PsychoManagement” approach recognizes the role of individual characteristics, skills, and knowledge in effective management. For this reason, it proposes a management model that incorporates basic characteristics of EI, such as, among others, empathy, i.e., the ability of the individual to evaluate and understand the feelings of others, and self-regulation, the ability of the individual to identify, evaluate and control his/her emotions (Goleman, 1998), which is a prerequisite for the effective communication of the individual with others (social skills) (Riggio, et al., 1989). The “PsychoManagement” approach focuses, in addition to abilities and skills, on the process of producing human behavior that is influenced by the individual’s psychology, intelligence, and emotions. This influence is justified by the fact that human behavior creates responses to tensions, which individuals are called upon to manage during the communication process (Hedman & Valo, 2015; Aunger & Curtis, 2008). For this reason, the self-regulation of emotion is an essential element in ensuring a distinct framework of communication and conciliation (Riggio, et al., 1989).

The new approach, “PsychoManagement”, is a promising possible solution to improve the performance and effective (or inefficient) management of human

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resources (Quebbeman & Rozell, 2002). Conventional management models, such as the pursuit of annual goals, etc., do not meet the requirements of a team's EI, and therefore its effective operation, a feature that is a necessary and achievable condition of "PsychoManagement" to create a work environment whose members believe they can achieve more when they belong to this group than individually (Palaskas, et al., 2020). Technology now plays an important role in the production function of companies, i.e., accumulated knowledge of human capital, which thinks and feels in the context of value-added collaborations for their workplace. If a new management approach could address people by improving their EI, then it could help boost public and private sector performance (Tsimokou, 2021), because there is a positive statistical relationship between the quality of EI and team and human resource performance with business performance (Jordan, et al., 2002).

2. The role of "PsychoManagement" in job satisfaction

The high-performance manager, in terms of efficiency and effectiveness (Zervopoulos & Palaskas, 2010) and in order to achieve the financial goals of the company, adopts the strategy of creating a sense of job satisfaction for his/her staff and an emotionally intelligent team. The emotionally intelligent group is a necessary and achievable condition for employees' satisfaction (Shukla, et al., 2016; Hefferman, et al., 2008; Rahim & Malik, 2010; Kaura, 2011; Orhan & Dincer, 2012; Abi & Jijo, 2012), who feel that they can achieve more as team members than as individuals. More specifically, EI has a positive effect both on employees' sense of satisfaction (Papathanasiou & Siaty, 2014) and on their performance (Dulewicz, et al., 2003), as well as on the development of sustainable constructive communication practices (Al Ali, et al., 2011).

These sustainable communication practices, i.e., the ability to express arguments clearly and convincingly, in the context of "PsychoManagement", presuppose the ability of self-regulation (Lawrence, et al., 2011), because it can create the appropriate response framework of the manager in different behaviors and reactions of subordinates (Cameron & Chan, 2008). In terms of behavior, it could be described as self-motivated by creating a useful interaction between an animal and its environment (Millikan, 2000), where cognition through repetition creates behaviors flexible in its living conditions, resulting in "regulated structures" within animals, which create adaptive behaviors, called "Behavior Product Units" (BPU) (Aunger & Curtis, 2008).

Human behavior, on the other hand, includes both verbal and non-verbal messages. Verbal behavior includes the search, collection, creation, proclamation, explanation, and support of ideas, while non-verbal behavior refers to facial expressions; eye, hand and foot movements; and the general appearance and "attitude" of the individual. The combination of both behaviors is essential (Stewart, 1998), because they create the framework for communication and conciliation. The manifestation of this combination, through the processes, is unique to each person. Of course, these processes and how one ultimately ends up having a specific behavior are influenced by his/her intelligence, way of thinking, and experiences, which differ from person to person (Paraskevopoulos & Charalampopoulos, 1985; Lord & Kanfer, 2002; Boyatzis, et al., 2015). Concisely, the behavioral response process that the manager is called upon to manage is influenced by his/her intelligence and emotions, which are factors of impact and influence.

In terms of social skills, "PsychoManagement" argues that managers must have the ability to self-regulate in order to form and maintain a clear and distinct communication framework (Riggio, et al., 1989). EI describes a different set of social intelligence aspects (Goleman, 1998; Salovey, et al., 2007; Mayer, et al., 2000). First, EI is more extensive than social intelligence, because it incorporates the "why" not only for emotions in social relationships, but also for internal emotions, which are vital for individual improvement. In addition, EI is more focused on society because it examines the emotions involved in personal and social issues (Mayer, et al., 2000).

Emotions, either personal or social, are a state of feelings that incorporate physiological responses and action sequences that are triggered by stimuli that make sense to individuals (Coget, et al., 2011). Gross (1998) describes emotions as "adaptive behavioral and physiological responses that are directly triggered by evolutionarily important situations" (Chi-Sum & Law, 2002; Gross, 1998). Therefore, the ability to recognize the other's feelings (empathy) (Goleman, 1998) helps the manager to understand the context of communication conciliation with his subordinates. This ability, combined with the ability to self-regulate emotion, create the right conditions for the implementation of an effective management and communication system (Halford, et al., 1994).

3. PsychoManagement: A new approach

The "PsychoManagement" approach to improving a manager's performance has as a starting point the role

of EI either in all five areas (according to D. Goleman,¹ i.e., self-awareness, self-regulation, motivation, social skills, and empathy), or in part of these (Goleman, 1998). Enhancing the manager's performance is associated with improving his social skills and empathy, because they are the most interactive features of the manager-subordinate dipole, as empathy helps the manager to deeply understand how his/her subordinates feel (Gentry, et al., 2007), and social skills are a key tool for conveying messages, thus contributing to communication improvement (Spitzberg & Dillard, 2001).

In particular, empathy could serve as a "mirror" in which the feelings and attitudes of the individual are reflected (Redmond, 1989), thus allowing him/her to "listen" to his/her own perceptions and emotions that are nurtured. Process, which enhances the possibilities for accurate and complete reflection of the individual's condition (Redmond, 1989). Ultimately, understanding the feelings of others can lead to a better consolidation of the relationship between managers and their subordinates, thereby causing a sense of security, which acts as a variable with a positive sign in the employee satisfaction function (Gentry, et al., 2007).

It becomes clear that managers with a high EI score, and especially a high score in the field of emotion regulation, have better communication skills as they can understand how they feel during communication and define the context of its regulation. This involves controlling their behavioral response (Riggio, et al., 1989).

In short, internal, physical, and mental balance is able to help managers manipulate their emotions, truly understand the feelings of others, and have the ability to communicate their ideas and thoughts (Goleman, 1998; Sinha & Sihna, 2007). Therefore, "PsychoManagement" and the new approach can be adopted by companies or organizations for the smooth implementation of new management approaches, which help to enhance the level of satisfaction of employees, which, in turn, leads, *ceteris paribus*, to high productivity and performance (Singh & Jain, 2013; Springer, 2011).

4. Research

4.1. Methodology

For the purpose of this research, a random sample was identified, to whom an appropriate questionnaire

was sent. From this questionnaire, primary qualitative and quantitative data were collected, which were then coded and statistically analyzed.

The questionnaires used for this research were identified through the literature review and were valid and weighted ready-to-use questionnaires (Stalikas, et al., 2012). In our case, questionnaires were used to measure EI and employee satisfaction. In the case of EI, the Wong and Law questionnaire was used –Wong & Law Emotional Intelligence Scale / WLEIS (Wong & Law, 2002; Kafetsios & Zampetakis, 2008). This questionnaire was suitable for providing measurements on empathy and social skills. In terms of employee satisfaction, the Employee Satisfaction Inventory (ESI) was used. Respondents had to state their answers on the Likert scale.

Wong and Law Emotional Intelligence Scale (WLEIS)

The WLEIS questionnaire was distributed to managers and supervisors of Greek companies/departments of organizations, regardless of size and industry, for the measurement of Emotional Intelligence. The questionnaire consists of the following parts:

The first part includes closed-ended questions about the respondent's demographics, such as gender and age.

The second part focuses on Emotional Intelligence, which includes:

- Self-Emotion Appraisal (SEA) - Q1 to 4
- Others Emotion Appraisal (OEA) - Q5 to 8 (Empathy)
- Use of Emotion (UOE) - Q9 to 12
- Regulation of Emotion (ROE) - Q13 to 16 (Social skills)

Respondents had to answer each question using the Likert 7-point scale (1 = strongly disagree, 7 = strongly agree).

Employee Satisfaction Inventory (ESI)

The ESI questionnaire was distributed to employees (subordinates) of Greek companies/departments of organizations, in order to measure their satisfaction with

1. Self-awareness: recognizing and understanding our emotions and the impact of these emotions on others; Self-regulation: regulating emotions and reactions; Motivation: coping with difficulties; Social skills: maintaining good relationships and developing contacts (network); Empathy: recognition of another person's subjective experience.

TABLE 1 Demographic characteristics of the sample

Sample					
Gender	Male	37.38%	Educational background	Bachelor	65.89%
	Female	62.62%		Elementary School	47.00%
Marital status	Divorced	5.61%	High School	10.28%	
	Single	47.66%	Professional Institute	9.81%	
	Married	46.73%	Technical Institute	13.55%	
Age group	20-30	14.02%	Higher education	PhD	3.27%
	30-40	63.55%		Master	36.45%
	40-50	18.22%		N/A	39.81%
	50-60	4.21%		PostDoc	0.47%
Sector of employment	Freelance	13.55%	Years of employment	<3	24.30%
	Private	73.36%		3-6	21.50%
	Public	13.08%		6-9	14.49%
Position	Managers	29.91%		>9	39.72%
	Subordinates	70.09%			

Source: Primary research data processing: Lountzis, Palaskas (2021).

their job. The questionnaire consists of the following parts:

The first part consists of closed-ended questions about the respondent's demographics, such as gender and age.

The second part is related to employee satisfaction, which includes:

- Working conditions - Q1 to 5
- Salary - Q6 to 9
- Promotion - Q10 to 12
- Work - Q13 to 16
- Supervisor - Q17 to 20
- Organization (Company) - Q21 to 24

Respondents had to answer each question using the Likert 5-point scale (1 = strongly disagree, 5 = strongly agree).

4.2. Data processing

The data was collected, encoded, and processed through IBM SPSS 24 and Microsoft Excel 2013.

4.3. Sample

As mentioned above, the present article uses a sample of Greek companies/organizations of various sectors and sizes. Specifically, managers/supervisors and immediate subordinates/employees were asked to complete a questionnaire with honesty and spontaneity.

The distribution of the questionnaires took place from October 19 to October 31, 2017. The number of responses collected was 214 (two hundred and fourteen): 64 (sixty-four) are managers/supervisors and 150 (one hundred and fifty) subordinates.

The demographic characteristics of the sample are listed in Table 1.

Based on the responses collected, most of the participants were women (62.62%). This can be explained by the fact that working women (managers/supervisors/subordinates) are more willing to take part in a survey (Curtin, et al., 2000; Singer, et al., 2000) and their intention to help to others is higher (Mestre, et al., 2009).

A balance is recorded between unmarried and married participants (~47%). The age group that participated in the research was between 20-60. However, 63.55% of the sample belongs to the age group 30-40. Also,

65.89% of the participants hold a university degree, while 36.45% have a postgraduate degree.

To the sample, 73.36% are employed in the private sector, 13.55% work as self-employed and 13.08% work in the public sector. The majority of the participants (39.72%) stated that they have been working for the same company or organization for more than 9 years, 21.50% for 3-6 years, 24.30% for less than 3 years, and 14.40% stated that they have been working for 6-9 years. More than half of the sample (54.21%) has been working for the same company for more than 6 years.

There are more subordinates than managers/supervisors. The sample consists of 29.91% managers/supervisors and 70.09% subordinates. Of managers/supervisors, 59.38% do not refer to any other senior executive. Therefore, 40.63% hold both manager and subordinate positions. The combination of these two percentages serves the statistical analysis to confirm –or not– the *a priori* main hypothesis of the present work.

5. Statistical analysis and results

The following paragraphs present the most important findings of the research based on the questions asked. That is, the recording of the scores for the EI of the managers and its various characteristics, as well as the degree of job satisfaction of the subordinates.

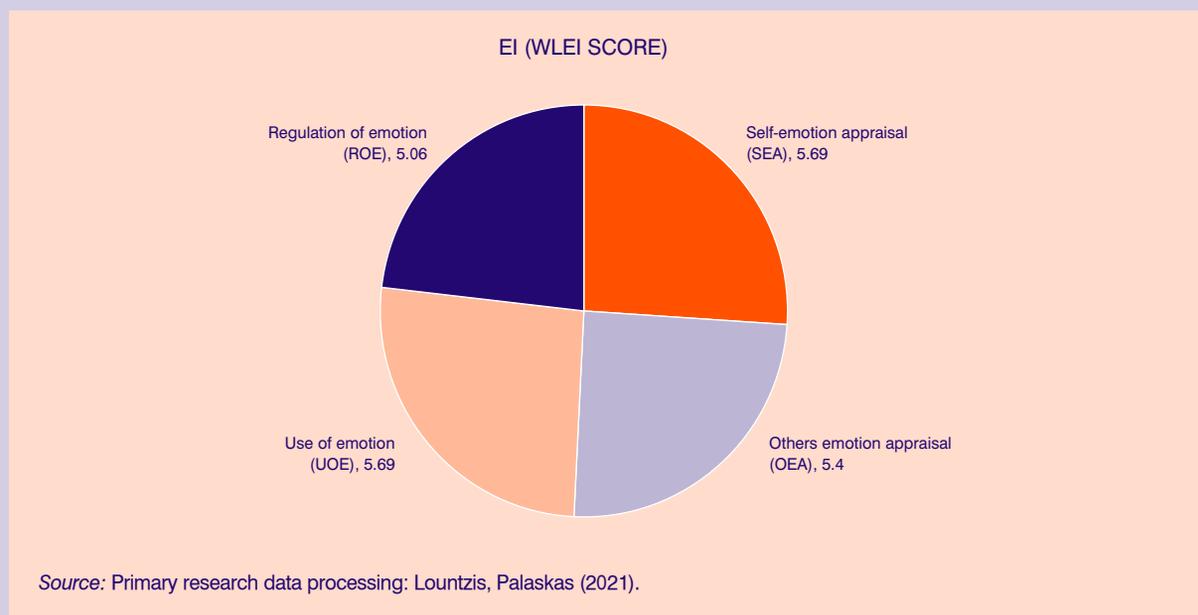
5.1. Managers

The new “PsychoManagement” approach, as previously analyzed, is based on EI. Empathy and social skills are the key characteristics, which will be analyzed in relation to the research results. The analysis of the sample information concerning the employees (or employers) who hold a managerial position in departments of companies or organizations or are employers –as self-employed– in their associates, leads us to the conclusion that the managers of the sample record a high EI score.

In more detail, Figure 1 shows the distribution of WLEIS (for all managers) in the four different areas covered by the WLEIS Score: Self-Emotion Appraisal (SEA), Others Emotion Appraisal (OEA), Use of Emotion (UOE), and Regulation of Emotion (ROE). The average score of EI among Greek managers is 5.46/7, which confirms that they have a high score of EI. In terms of empathy and ability to self-regulate, managers/supervisors scored high (5.4/7 and 5.04/7, respectively).

Of particular interest is the comparison of scores between the characteristics of EI for male and female managers. According to Table 2, female managers have a higher score in the field of empathy (OEA) than male managers.² Empathy seems to be more common in women. One reason is that motherhood, and

FIGURE 1
Distribution of EI score on the sample



2. $\chi^2_{212} = 269$, $P < 0.05$ → the initial hypothesis H_0 (all means are equal) is rejected.

TABLE 2 Comparison of the EI sectors between male – female managers

	Female managers	Male managers
SEA	5.60	5.77
OEA	5.59	5.24
UOE	5.81	5.59
ROE	4.91	5.19
WLEIS	5.48	5.45

Source: Primary research data processing: Lountzis, Palaskas (2021).

TABLE 3 Comparison of the EI sectors between parent – non-parent managers

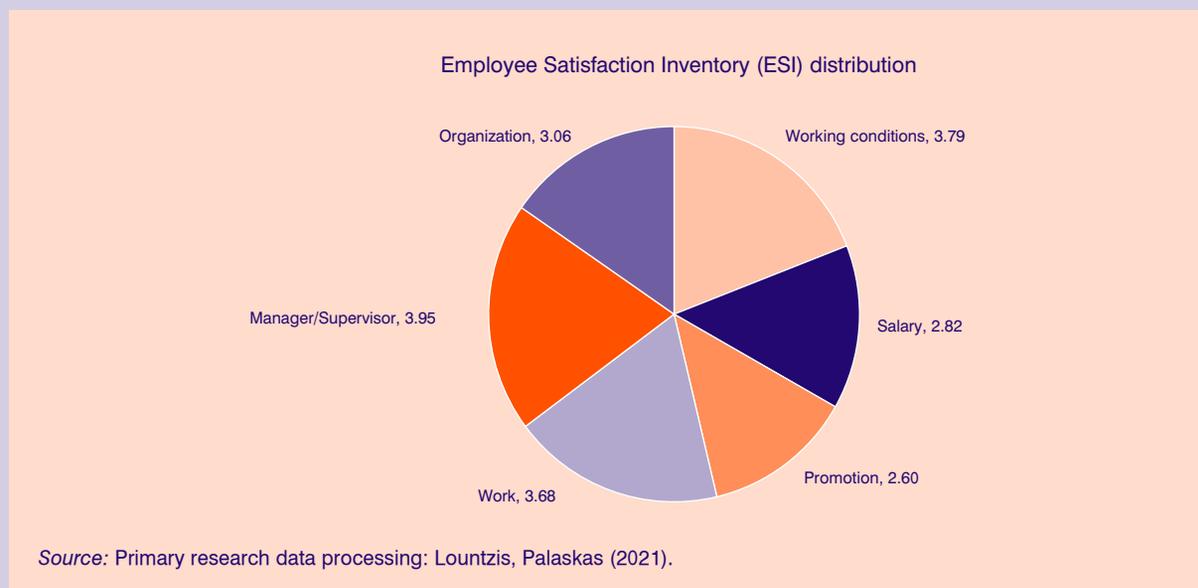
	Parents	Non-parents
SEA	5.79	5.58
OEA	5.30	5.53
UOE	5.59	5.82
ROE	5.35	4.71
WLEIS	5.51	5.41

Source: Primary research data processing: Lountzis, Palaskas (2021).

therefore the female biological system, makes women feel closer to others. Thus, the ability to understand the feelings of others seems to be innate due to the secretion of hormones in their body that help in the birth and lactation of children (Plank, et al., 2021; Boorman, et al., 2019). There is a slightly bigger difference in the regulation of emotions (ROE), in which the Greek male managers have achieved a higher score. Thus, female managers can better understand their subordinates than male managers, who, however, seem to regulate their emotions more effectively than female managers.

In Table 3, we observe the differences of EI in relation to the parental role. The main difference is in the field of Regulation of Emotion (ROE). This index for managers with children seems to be increased by 9.14% compared to those who do not have children. One possible explanation is that parents need to be more flexible and willing to regulate their emotions because of their children. Raising children enables parents to train and practice the ability to regulate emotions throughout their lives, as parents are called upon to deal with emotional challenges on a daily basis (Hajal & Paley, 2020; Bariola, et al., 2011).

FIGURE 2 Distribution of the Employee Satisfaction Inventory



5.2. Subordinates

According to the literature review, job satisfaction is the dependent variable of the relationship with empathy and the ability to self-regulate emotion, $ESI_i = a + b_2EM_i + b_3SR_i + U_i$ [1], key characteristics of EI.

The results of the job satisfaction inventory obtained from the primary survey (Figure 2 above) show that the employees are reportedly satisfied with their managers/supervisors (3.95/5), and therefore, with the way they manage.

By analogy, analysis of the same inventory shows that female employees are reportedly quite satisfied with their managers (3.89/5) and with promotion opportunities (2.61/5) that they may have. On the contrary, their salary, always according to the ESI, does not seem to satisfy them (2.82/5). The male employees are very satisfied with their managers/supervisors, with a score of 4.06/5. However, like female employees, the score of the ESI in terms of promotion opportunities (2.59/5) and their salary (2.8/5) shows a low degree of satisfaction.

In conclusion, the ESI presents marginal deviation scores for female and male subordinates. More specifically, male employees are more satisfied with the management of their managers/supervisors than female subordinates. However, in general, there is convergence between employees – men and women – in terms of job satisfaction (including the employer and the organization).

TABLE 4 Comparison of ESI between female – male

	Female subordinates	Male subordinates
Working conditions	3.76	3.87
Salary	2.82	2.80
Promotion	2.61	2.59
Work	3.77	3.48
Manager/Supervisor	3.89	4.06
Organization	3.05	3.08
ESI	3.32	3.31

Source: Primary research data processing: Lountzis, Palaskas (2021).

6. Conclusions

The *a priori* relationship [1] between the new approach to human resource management – based on EI – and the effects it may have on employee satisfaction is confirmed by OneWay ANOVA in the primary data (Table 5 and 6), since it is accepted at a level of 95%.

More specifically and in relation to the principles of “PsychoManagement”, a high score of empathy was found in female managers, especially mothers. The results (Table 7) show that there is a correlation between empathy and the interaction of parenthood with position (whether managers have a direct supervisor or not):

TABLE 5 Correlation of the social skills of managers with employee job satisfaction through OneWay-ANOVA

ANOVA					
Social skills					
	Sum of squares	df	Mean square	F	Sig.
Between groups	6.559	1	6.559	4.486	0.038
Within groups	90.659	62	1.462		
Total	97.218	63			

TABLE 6 Correlation of manager empathy with employee job satisfaction through OneWay-ANOVA

ANOVA					
Empathy					
	Sum of squares	df	Mean square	F	Sig.
Between groups	21.721	12	1.810	2.681	0.007
Within groups	34.434	51	0.675		
Total	56.155	63			

TABLE 7 Correlation of manager empathy with parenthood and position through TwoWay-ANOVA

ANOVA					
Dependent variable: Empathy					
Source	Type III Sum of squares	df	Mean square	F	Sig.
Corrected model	4.628 ^a	3	1.543	3.620	0.018
Intercept	1759.328	1	1759.328	4127.670	0.000
Parenthood	0.236	1	0.236	0.554	0.460
Position	0.830	1	0.830	1.948	0.168
Parenthood × position	3.316	1	3.316	7.780	0.007
Error	25.574	60	0.426		
Total	1898.063	64			
Corrected total	30.202	63			

a. R Squared = 0.153 (Adjusted R Squared = 0.111).

TABLE 8 Correlation of managers' social skills with parenthood and age through TwoWay-ANOVA

ANOVA					
Dependent variable: Social skills					
Source	Type III Sum of squares	df	Mean square	F	Sig.
Corrected model	16.047 ^a	5	3.209	2.293	0.057
Intercept	1024.496	1	1024.496	732.045	0.000
Parenthood	6.699	1	6.699	4.787	0.033
Age group	8.563	2	4.281	3.059	0.055
Parenthood × age group	0.588	2	0.294	0.210	0.811
Error	81.171	58	1.399		
Total	1734.938	64			
Corrected total	97.218	63			

a. R Squared = 0.165 (Adjusted R Squared = 0.093).

TABLE 9 Correlation of managers' social skills with parenthood and gender through TwoWay-ANOVA

ANOVA					
Dependent variable: Social skills					
Source	Type III Sum of squares	df	Mean square	F	Sig.
Corrected model	15.510 ^a	3	5.170	3.797	0.015
Intercept	1596.420	1	1596.420	1172.296	0.000
Parenthood	6.359	1	6.359	4.669	0.035
Gender	0.953	1	0.953	0.700	0.406
Parenthood × gender	8.388	1	8.388	6.160	0.016
Error	81.707	60	1.362		
Total	1734.938	64			
Corrected total	97.218	63			

a. R Squared = 0.160 (Adjusted R Squared = 0.118).

TABLE 10 Correlation of managers' social skills with parenthood and age group through TwoWay-ANOVA

ANOVA					
Dependent variable: Social skills					
Source	Type III Sum of squares	df	Mean square	F	Sig.
Corrected model	15.864 ^a	5	3.173	2.262	0.060
Intercept	807.051	1	807.051	575.375	0.000
Parenthood	1.468	1	1.468	1.047	0.311
Age group	4.205	3	1.402	0.999	0.400
Parenthood × age group	6.408	1	6.408	4.568	0.037
Error	81.354	58	1.403		
Total	1734.938	64			
Corrected Total	97.218	63			

a. R Squared = 0.163 (Adjusted R Squared = 0.091).

In terms of social skills – which have been interpreted through the ability of managers to regulate their emotions, as it is something that is required in communication, as mentioned earlier – managers/supervisors seem to be at a high level. The results show that social skills are related to parenthood (Table 8) and gender (Table 9) and age (Table 10):

7. Discussion – Future research

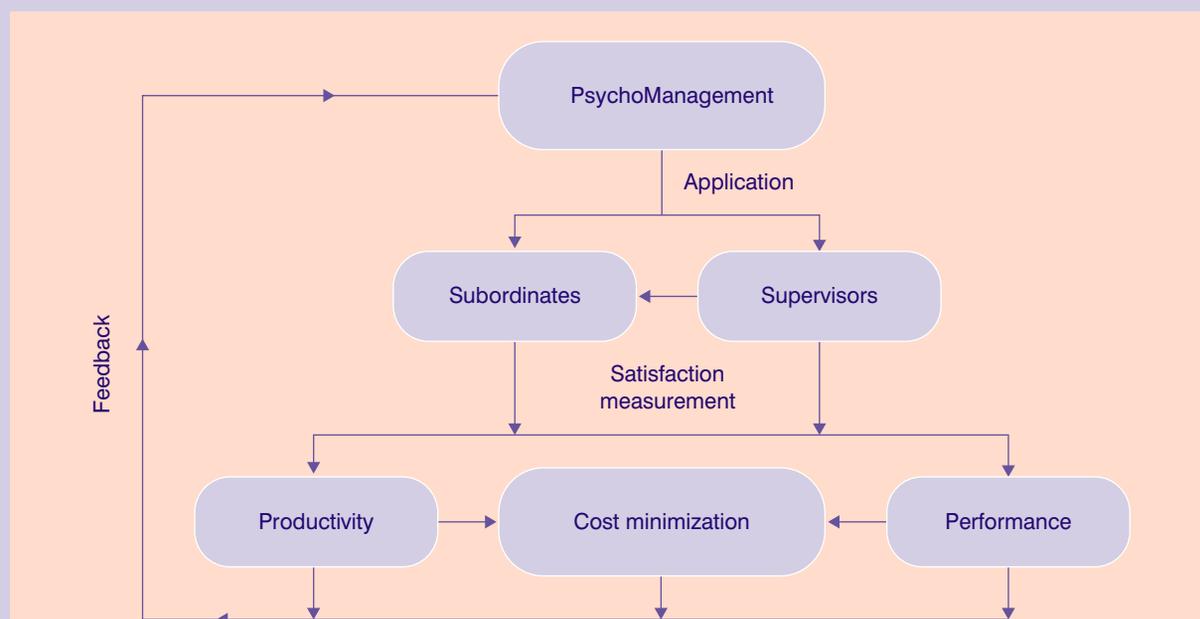
The attempt to formulate a new approach to management –based on theories and models of EI– was the impetus for further exploration of the management systems of modern business. The new approach is anthropocentric, because it sets as the core of this process the improvement of human experience, in all activities of an organization, from the production process, interaction with customers, financial management, and even its management. Companies and organizations are made up of employees, that is, people. Each person can be affected by a variety of parameters of their daily activity including their working time. According to the results of the research, the EI of the employees, as well as the EI of their team, is a feature that improves the self-management of the employees and, consequently, the management of a company/organization. EI characteristics are recorded that can be

improved and contribute synthetically to the formation of a new management approach, which will contribute to the strengthening the EI of the team and – to a significant degree – the improvement of the performance of the company/organization.

The key to successful business performance is a manager’s leadership model. Many studies have confirmed this correlation (Turner & Muller, 2005). Therefore, the management system chosen depends on the leadership. The implementation and further development of the management/administration model that is followed leads the company/organization to specific results that may affect the overall performance and/or profits.

Figure 3 illustrates the implementation of the proposed new approach based on the principles of “PsychoManagement” that could be applied. Continuous measurement of employees’ satisfaction and obtaining relevant results after the implementation of the new approach is essential for controlling the system. Employee satisfaction can affect (additional research needs to be conducted) their performance and productivity associated with the company/organization’s goal of minimizing overall costs. Feedback is an important action as the parameters of this approach are fully interrelated and interdependent.

FIGURE 3
The new management approach through “PsychoManagement”



Source: Primary research data processing: Lountzis, Palaskas (2021).

The sciences of psychology, economics, and neuroscience may have a common field of research. “PsychoManagement” is a new proposal for organizations and companies that want to operate through the cooperation of mental and physical skills. According to Daniel Kahneman (2012), “Utility Theory makes rational assumptions of economic logic that do not reflect people’s real choices and do not take into account cognitive bias” (Kahneman, 2012). This means that a manager or supervisor is called upon to manage the relationships and reactions between his/her subordinates, which are influenced by many different factors. The main purpose of this article is to combine skills and parameters from different sciences in order to propose a new approach to management, the equivalent of which does not exist, and which can apply to any type of business or organization.

As part of this new approach, it could be explored whether the application of “PsychoManagement” can be influenced by the manager’s eating habits and lifestyle. A healthy lifestyle leads to keeping our body and its endocrine system in good condition and so all the hormones that can affect a person’s emotions are controlled. According to Kafatos (1999) research, among the most important behavioral factors that affect health are smoking, food, and stress (Kafatos, et al., 1999). In addition, research conducted on people over the age of 60 showed that trying to implement a physical activity program led to significant improvement in their psychology and mental health during the program (Krawczynski & Olszewski, 2000). Therefore, the elements of empathy and self-regulation could be combined with the – healthy – lifestyle of managers to investigate whether this affects employee satisfaction.

Empathy and social skills are more than just basic skills for managers. A healthy lifestyle could offer a quality of life and therefore a natural-biological balance. These parameters can be improved by everyone. The implementation of such a management model could increase the overall efficiency of the staff, and most likely the productivity of the company.

References

Abi, E. & Jijo, G., 2012. Emotional Intelligence and Job Satisfaction: A Correlational study. *Research Journal of Commerce and Behavioral Science*, 1(4), pp. 124-141.

Afzalur Rahim, M. & Minors, P., 2003. Effects of emotional intelligence on concern for quality and problem solving. *Managerial Auditing Journal*, 18(2), pp. 150-155.

Al Ali, O. E., Garner, I. & Magadle, W., 2011. An Exploration of the Relationship Between Emotional Intelligence and Job Performance in Police Organizations. *Journal of Police and Criminal Psychology*.

Aunger, R. & Curtis, V., 2008. Kinds of Behavior. *Biology & Philosophy*, 23(3), pp. 317-345.

Bariola, E., Gullone, E. & Hug, E. K., 2011. Child and Adolescent Emotion Regulation: The Role of Parental Emotion Regulation and Expression. *Clinical Child and Family Psychology Review*, 14(198).

Boorman, R. J., Creedy, D. K., Fenwick, J. & Muurlink, O., 2019. Empathy in pregnant women and new mothers: a systematic literature review. *Journal of reproductive and infant psychology*, 37(1), pp. 84-103.

Bourantas, D. & Mandes, G., 1987. A profile of the Greek manager – A survey. *European Management Journal*, 5(1), pp. 57-61.

Boyatzis, R. E., Gaskin, J. & Wei, H., 2015. Emotional and Social Intelligence. In: *Handbook of Intelligence*. New York: Springer, pp. 243-262.

Cameron, L. D. & Chan, C. K. Y., 2008. Designing Health Communications: Harnessing the Power of Affect, Imagery, and Self-Regulation. *Social and Personality Psychology Compass*, 2(1), pp. 262-282.

Chi-Sum, W. & Law, K. S., 2002. The effects of leader and follower emotional intelligence on performance and attitude: An exploratory study. *The Leadership Quarterly*, Vol 13, pp. 243-274.

Coget, J.-F., Haag, C. & Gibson, D. E., 2011. Anger and fear in decision-making: The case of film directors on set. *European Management Journal*, 29(6), pp. 476-490.

Curtin, R., Presser, S. & Singer, E., 2000. The Effects of Response Rate Changes on the Index of Consumer Sentiment. *Public Opinion Quarterly*, 64(4), pp. 413-428.

Dulewicz, V., Higgs, M. & Slaski, M., 2003. Measuring emotional intelligence: content, construct, and criterion-related validity. *Journal of Managerial Psychology*, pp. 405-420.

Gentry, W. A., Weber, T. J. & Sadri, G., 2007. *Empathy in the Workplace: A Tool for Effective Leadership*. New York: Center for Creative Leadership.

Goleman, D., 1998. *Working With Emotional Intelligence*. London: Bloomsbury.

Gross, J. J., 1998. Antecedent- and Response-Focused Emotion Regulation: Divergent Consequences for Experience, Expression, and Physiology. *Journal of Personality and Social Psychology*, 74(1), pp. 224-237.

Hajal, N. J. & Paley, B., 2020. Parental emotion and emotion regulation: A critical target of study for research and intervention to promote child emotion socialization. *Developmental Psychology*, 56(3), pp. 403-417.

Halford, W. K., Sanders, M. R. & Behrens, B. C., 1994. Self-Regulation in Behavioral Couples’ Therapy. *Behavior Therapy*, Vol 25, pp. 431-452.

Hedman, E. & Valo, M., 2015. Communication challenges facing management teams. *Leadership & Organization Development Journal*, 36(8), pp. 1012-1024.

Hefferman, T., O’Neill, G., Travaglione, T. & Droulers, M., 2008. Relationship marketing: The impact of emotional intelligence and trust on bank performance. *International Journal of Bank Marketing*, 26(3), pp. 183-199.

- Jordan, P., Ashjanasy, N., Härtel, C. & Hooper, G., 2002. Workgroup emotional intelligence: Scale development and relationship to team process effectiveness and goal focus. *Human Resource Management Review*, 12(2), pp. 195-214.
- Kafatos, A., Manios, Y., Markatji, I., Giachetti, I. Vaz de Almeida M.D. & Engstrom, L.M., 1999. Regional, demographic and national influences on attitudes and beliefs with regard to physical activity, body weight and health in a nationally representative sample in the European Union. *Public Health Nutrition*, 2(1a), pp. 87-95.
- Kafetsios, K. & Zampetakis, L. A., 2008. Emotional intelligence and job satisfaction: Testing the mediatory role of positive and negative affect at work. *Personality and Individual Differences*, Vol 44, pp. 712-722.
- Kahneman, D., 2012. *Thinking Fast and Slow*. London: Penguin Books Ltd.
- Kaura, P., 2011. Enormity of Emotional Intelligence in India Banking Sector. *International Research Educational Consortium*, 12(1), pp. 165-177.
- Krawczynski, M. & Olszewski, H., 2000. Psychological well-being associated with a physical activity programme for persons over 60 years old. *Psychology of Sport and Exercise*, 1(1), pp. 57-63.
- Lawrence, S. A., Troth, A. C., Jordan, P. J. & Collins, A. L., 2011. A Review of Emotion Regulation and Development of a Framework for Emotion Regulation in the Workplace. *The Role of Individual Differences in Occupational Stress and Well Being*, Vol 9, pp. 197-263.
- Lindebaum, D., 2013. Does emotional intelligence moderate the relationship between mental health and job performance? An exploratory study. *European Management Journal*, 31(6), pp. 538-548.
- Lord, R. G. & Kanfer, R., 2002. Emotions in the workplace: Understanding the structure and role of emotions in organizational behavior. In: *Emotions and organizational behavior*. s.l.:s.n., pp. 5-19.
- Mayer, J. D., Caruso, D. R. & Salovey, P., 2000. Emotional Intelligence Meets Traditional Standards for An Intelligence. *Intelligence*, 27(4), pp. 267-298.
- Mestre, M. V., Samper, P., Frías, M. D. & Tur, A. M., 2009. Are Women More Empathetic than Men? A Longitudinal Study in Adolescence. *The Spanish Journal of Psychology*, 12(1), pp. 76-83.
- Millikan, R. G., 2000. *On Clear and Confused Ideas: An Essay about Substance Concepts*. Cambridge, UK: Cambridge University Press.
- Orhan, N. & Dincer, H., 2012. The Impacts of Emotional Intelligence Competency on Job Satisfaction in the Service Sector: An Application on the Turkish Banking Sector. *Asian Economic and Financial Review*, 2(5), pp. 617-634.
- Palaskas, T., 2019. *Psychomanagement & Management*. Kallithea, PMA19: Proceedings of the 1st Behavioral Economics Conference, pp. 8-9. (In Greek)
- Palaskas, T., Tsirimokou, C. & Lountzis, G., 2020. *Management of Companies and Organizations*. Athens: MSc Notes, Panteion University.
- Papathanasiou, S. & Siati, M., 2014. Emotional Intelligence and Job Satisfaction in Greek Banking Sector. *Research in Applied Economics*, 6(1), pp. 225-239.
- Paraskevopoulos, I. & Charalambopoulos, I., 1985. *Psychology individual disputes*. 4th edition Athens: OEDB. (In Greek)
- Plank, I. S., Hindi Attar, C., Kunas, S., Dziobek, I. & Bermphohl, F., 2021. Motherhood and empathy: increased activation in empathy areas in response to other's in pain.
- Quebbeman, A. J. & Rozell, E. J., 2002. Emotional Intelligence and dispositional affectivity as moderators of workplace aggression: The impact on behavior choice. *Human Resource Management Review*, Vol 12, pp. 125-143.
- Rahim, S. H. & Malik, M. I., 2010. Emotional Intelligence & Organizational Performance: (A Case Study of Banking Sector in Pakistan). *International Journal of Business and Management*, 5(10), pp. 191-197.
- Redmond, M. V., 1989. The Functions of Empathy (Decentering) in Human Relations. *Human Relations*, 42(7), pp. 593-605.
- Riggio, R. E., Tucker, J. & Coffaro, D., 1989. Social skills and empathy. *Personality and Individual Differences*, 10(1), pp. 93-99.
- Salovey, P., Brackett, M. A. & Mayer, J. D., 2007. Models of Emotional Intelligence. In: *Emotional Intelligence: Key Readings on Mayer and Salovey Model*. New York: Dude Publishing, pp. 81-122.
- Shooshtarian, Z., Ameli, F. & Lari, M. A., 2013. The Effect of Labor's Emotional Intelligence on Their Job Satisfaction, Job Performance and Commitment. *Iranian Journal of Management Studies*, 6(1), pp. 27-43.
- Shukla, S., Adhikari, B. & Ray, M. M., 2016. Emotional Intelligence and Job Satisfaction: An Empirical Investigation. *Amity Global HRM Review*, pp. 54-61.
- Singer, E., Van Hoewyk, J. & Maher, M. P., 2000. Experiments with Incentives in Telephone Surveys. *Public Opinion Quarterly*, 64(2), pp. 171-188.
- Singh, J. K. & Jain, M., 2013. A study of employees' job satisfaction and its impact on their performance. *Journal of Indian Research*, 1(4), pp. 105-111.
- Sinha, S. & Sihna, D., 2007. Emotional Intelligence and Effective Communication. In: A. Kaul & S. K. Gupta, eds, *Management Communication: Trends & Strategies*. s.l.:Tata McGraw Hill, pp. 450-460.
- Spillane, R., 2017. *Psychomanagement: An Australian Affair*. s.l.:Made For Success Publishing.
- Spitzberg, B. H. & Dillard, J. P., 2001. Social Skills and Communication. In: M. Allen, R. W. Preiss, B. M. Gayle & N. Burrell, eds, *Interpersonal Communication Research*. New York: s.n.
- Springer, G. J., 2011. A Study of Job Motivation, Satisfaction, and Performance among Bank Employees. *Journal of Global Business Issues*, 5(1), pp. 29-42.
- Stalikas, A., Triliva, S. & Roussi, P., 2012. *The Psychometric Tools in Greece*. Athens: Pedio. (In Greek)
- Stewart, D. M., 1998. *Handbook of Management Skills*. Second edition s.l.:Gulf Professional Publishing.
- Tsirimokou, C., 2021. *Emotional Intelligence in Family Business Management-An Empirical Study*. Athens: Doctoral Thesis, Department of Economic and Regional Development, Panteion University of Social and Political Sciences.

Tsirimokou, C., Richardson, C. & Palaskas, T., 2021. Emotional Intelligence and Machiavellianism: a meta-analysis. *Hellenic Journal of Psychology*, Issue accepted manuscript.

Turner, J. R. & Muller, R., 2005. The Project Manager's Leadership Style As A Success Factor On Projects: A Literature Review. *Project Management Institute*, 36(1), pp. 49-61.

Wong, C.-S. & Law, K. S., 2002. The effects of leader and follower emotional intelligence on performance and attitude: An exploratory study. *The Leadership Quarterly*, Vol 13, pp. 243-274.

Zervopoulos, P. & Palaskas, T., 2010. *Performance – Effectiveness – Efficiency Measurement Methods in Public Sector: International and Greek Experience*, MPRA Paper No. 30936. (In Greek)

Business activity and performance per economic sector: The position of Greece in the European Union before and after the economic crisis

Christos Tzomakas*,**

Abstract

The 2007 global economic crisis had a significant impact on the conditions under which enterprises operate. Public policies have been implemented in each European Union member state in order to resolve the crisis, yet the impact has not been the same everywhere.

This article, employing a comparative analysis, sheds light on Greece's pre-crisis and current business make up and performance in terms of production features (e.g., number of firms, firm size) across sectors and compares their productivity and profitability profiles with other European economies in order to provide useful insights and paradigms that policy makers may want to think about and emulate. To this end, a set of relevant indices is constructed, based on which a pre-crisis snapshot (e.g., of 2008) of business makeup and performance, along with the most recent snapshot (e.g., of 2018) of Greece, is derived and compared vis-à-vis the other European member states using official statistics provided by Eurostat. The findings of the article (i) confirm the ground lost in Greece in most of the business sectors in the course of the decade, (ii) identify the leaders and best performers to emulate in every sector; and (iii) contribute to the preparation of business-based and goal-oriented sectoral economic development policy plans.

Keywords: Economic crisis, business performance, Greece and EU.

JEL classification: C43, L60, L70, L80, L90, M20

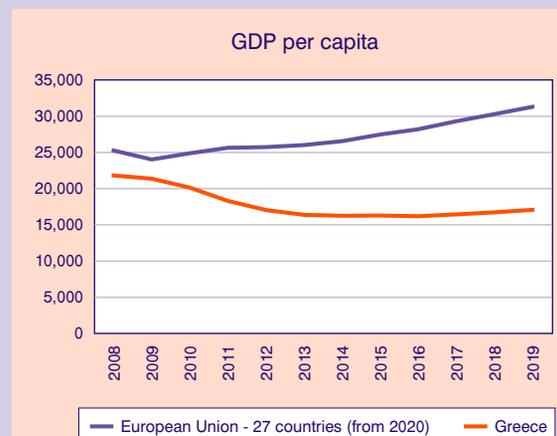
1. Introduction

The 2007-8 global economic crisis had a significant impact on the conditions under which enterprises operated. Each European Union (EU) member state responded in its own way. In Greece, the crisis arrived later than in other places, and it is often taken to coincide with a long period of austerity measures, reforms, and successive bailout programs.

While the rest of the EU rebounded quickly, it took Greece many years to return to positive GDP growth rates (Figure 1.1). Nevertheless, Greece was not able to follow the upward trend and is considerably lacking behind the European average (Figure 1.1).

In the present article, a comparative analysis over a set of business performance and activity indicators is performed using data of 28 countries in Europe available from the periods before and after the crisis across 12 economic sectors, and their evolution over time is

FIGURE 1.1
GDP per capita trend in the period 2008-2019
(Greece in orange line, EU-27 in blue line)



Source: Retrieved 17-1-2021 from <<https://ec.europa.eu/eurostat/>>.

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examined. In this way, the best performers or countries that achieved significant growth in each case are depicted so that other countries can further analyze their individual policy framework in an effort to identify good practices for policy transfer.

The main findings of the analysis reveal that Greece has lost ground in most sectors over the past decade and has not been able to recover from the 2008 crisis, as other countries did. Furthermore, the findings reveal that there is no overall performance “winner” for all business aspects and sectors that can serve as a paradigm for other countries. Performance disparities have been revealed among countries and among economic sectors and are made available for Greek (and any other) policy makers for any future action.

2. Literature review

In the international literature, there have been many studies trying to apply a comparison of growth status and competitiveness in Europe and globally with regards to business performance over time.

Two of the most common indicators for measuring business performance are productivity and profitability. It is widely recognized that increasing productivity is the ultimate target for firm survival and for the sustainability of the sector of a country in the long run (Porter, 1990; Krugman, 1994). On the other hand, profitability is considered as one of the main factors to assess industry attractiveness (Dawid & Reimann, 2004).

Labor productivity is considered as a key mechanism for increasing living standards (OECD, 2017), and it is a policy priority in the EU2020 agenda. It is measured as the ratio of the value added and hours worked. In general, productivity is determined by the number of hours that people work (labor input), the capital they have to work with (capital input) and how efficiently these inputs are combined in production: the so-called Total Factor Productivity (TFP). The latter, therefore, captures the impact of technological progress and innovation (Sanz, et al., 2016).

The European Central Bank (2017) lists the administrative and bureaucratic burdens on labor productivity growth compared to other advanced economies and attributes the weak Eurozone performance to deficiencies in institutional and regulatory quality, entry and exit barriers of firms, credit limitations and employment protection legislation.

Bottazzi et al. (2008) presented a comparative investigation of the dynamics of profitability and productivity for a large sample of Italian firms in the course of 1998–2003, in both manufacturing and services sec-

tors. They highlighted the inability to establish a firm relation among market pressure, profitability, productivity and growth. However, it was adequately documented that more efficient firms tend to be more profitable.

At the same time, productivity and profitability growth are often related to the size and the level of competition within an industry (Glen, et al., 2003; Pagano & Schivardi, 2003). This implies the need to turn to two other indicators for measuring business activity, namely business size and the number of enterprises within a sector.

Business size and number of enterprises, respectively, regarding scale and concentration, characterize the monopolistic-perfect competition continuum and constitute crucial market structure and policy features.

Cincera & Galgau (2005) make the case for a strong relation between market entry rates and an industry’s labor productivity growth, and for the importance of firm size in firm survival and growth.

Firm size is also used as a factor for measuring the growth barriers of a sector. In a recent study, Karlsson (2020) examined the relationship between growth barriers and firm size on an exhaustive panel of 44,000 Swedish Small and Medium Enterprises. The results suggest that small firms typically face constraints on equity financing, whereas larger firms face barriers regarding competition and recruitment.

At any rate, the importance of firm size is particularly evident in the European policy perspective; hence the definition and classification of European businesses in size classes according to staff numbers and balance sheet criteria (EC, 2020).

Very recently, Prodromidis et al. (2020) studied the trends of the manufacturing and energy sectors in EU member states during 2007-2016. They econometrically analyzed the trends in different sectors with regards to the number of enterprises, employment, labor productivity and profitability across countries. They suggest that in the EU, more competition affects more output and, hence, the use of more labor (employment), as well as the fact that more labor force in an industry affects positively the formation of more businesses in the said industry. At the same time, they find that, in many cases, employment and productivity moved in opposite directions.

It would be very interesting from a research and a policy point of view to look into other sectors of economic activity across the EU and, if possible, enrich the metrics used (e.g., by incorporating firm size, as in the previously mentioned studies).

The main differentiation of this article from previous works is that it is not trying to apply an econometric analysis of the various parameters (indicators) that are under investigation in order to derive relational conclusions. Instead, it studies their evolution over time individually in order to provide an overview of the status and performance of the various economic sectors across the European member states, in an effort to identify the best performers in each case that can serve as a policy paradigm for other countries. Performance measurement is a usual approach for defining best practices for policy review (De Vries, 2010). In a recent report from the McKinsey Global Institute, researchers applied an analysis of the long-term economic growth patterns of 71 emerging economies, focusing on the economic policy choices and the contribution of large firms that have driven growth (McKinsey Global Institute, 2018).

With regards to the latter, the identification of the best practice in each case is beyond the scope of the present article. As stated in the literature, searching for best practices in policies does not only depend on a comparative benchmark based on performance measures. It is also related to context and moment (De Vries, 2010; Löffler, 2000). Rather than that, the present article proposes a method for restricting the pool of good-practice paradigms for policy making by intermixing performance ranking, time and context information in terms of similarity measures on specific indicators.

3. Methodology

The method of comparing a country's sectoral status and performance is based on an approach developed by the OECD (2018) for the measurement of regional well-being. According to this approach, each region is assigned a score in relation to a current regional statistic (i.e., a well-being indicator); the score of the region is compared against the initial value of a reference year to define the indicator trend for the specific region. Furthermore, the OECD approach uses a similarity measurement (the Manhattan distance) for identifying similar regions.

However, in the OECD approach, there is no attempt to rate the relative performance growth of a region and/or combine the different pieces of information and incorporate the trend dimension with the aim to provide the "best fit" paradigms for a particular region to fol-

low. Any possible comparison among similar regions in the OECD approach is performed based on the "static view" of the status of a set of indicators of the regions.

In the present article, the OECD approach is applied at the country level using a business-oriented set of statistics, and incorporates information about the evolution of the statistics over the past decade. In this way, not only the current top-performers can serve as policy paradigms for a country, but also countries that exhibit a significant improvement in business activity and performance over the past years.

As proposed in the OECD 2018 report, rather than building one composite indicator to describe a complex statistic (e.g., the status of an economic sector), a set of indicators can be used to describe different macroeconomic factors of the statistic: "translating a composite index into concrete policy messages and actions has proven to be a complex task in practice for regional policy makers".

In the present article, the set of indicators that has been used for the analysis is comprised of four (4) measures:

- a) the average business size (s) in terms of employed people per number of businesses in the sector ($s = L/N$, where L stands for the labor force and N for the number of enterprises);
- b) the normalized number of enterprises (n), which is the number of enterprises in the sector divided by the average country population of the reference year ($n = N/P$, where P stands for the population);
- c) apparent labor productivity (ALP) in terms of gross added value per person employed ($ALP = Q/L$, where Q stands for the output and L for the labor force); and
- d) profitability (Π), which, in the SBS database, is captured (approximated) as the ratio of the gross operating surplus over the turnover of a specific sector ($\Pi = \text{Profit/Turnover}$).

The aforementioned set of indicators is available at the NACE Rev. 2 economic activity level 1 of the (non-financial and non-insurance) business oriented industries of the secondary and tertiary sectors, for each EU member state at the time, in the course of a good number of years from 2008 on. The 2008 figures provide a pre-crisis measurement, and the 2018 figures supply the most recent measurement^{1,2}.

1. Data available at <https://ec.europa.eu/eurostat/data/database> -> Database by themes -> Industry, trade and services -> Structural Business Statistics -> SBS - main indicators (sbs_na) -> Annual enterprise statistics for special aggregates of activities (NACE Rev. 2) (sbs_na_sca_r2).

2. Since data were not available for the years 2019-2020 at the time of writing of the present article, this study does not deal with possible implications due to the Covid-19 pandemic.

Table 3.1 provides the level 1 codes of the NACE rev. 2 classification that are employed in the analysis.

Table 3.2 presents the countries considered in the present article.

For the purpose of the present study, any missing data are omitted (i.e., a complete case analysis based pure-

ly on the official Eurostat data has been adopted). In cases where data of the earliest period (i.e., year 2008) are not available for the majority of the countries, as is the case of the construction sector, the comparison is drawn against the least recent available year (e.g., 2010, the year when Greece actually entered the crisis period, releasing the first round of austerity measures). Imputa-

TABLE 3.1 NACE rev. 2 coding

Statistical classification of economic activities in the European Community Rev. 2 (2008): Level 1 Codes

Code	Economic area
B	Mining and Quarrying
C	Manufacturing
D	Electricity, Gas, Steam and Air Conditioning Supply
E	Water Supply; Sewerage, Waste Management and Remediation Activities
F	Construction
G	Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles
H	Transportation and Storage
I	Accommodation and Food Service Activities
J	Information and Communication
L	Real Estate Activities
M	Professional, Scientific and Technical Activities
N	Administrative and Support Service Activities

TABLE 3.2 The country codes of the EU-28 countries considered in the analysis

AT Austria	IE Ireland
BE Belgium	IT Italy
BG Bulgaria	LT Lithuania
CY Cyprus	LU Luxembourg
CZ Czechia	LV Latvia
DE Germany	MT Malta
DK Denmark	NL Netherlands
EE Estonia	PL Poland
ES Spain	PT Portugal
FI Finland	RO Romania
FR France	SE Sweden
GR Greece	SI Slovenia
HR Croatia	SK Slovakia
HU Hungary	UK United Kingdom

tion (via interpolation) is applied only in the cases where intermediate data are missing in order to examine the trends of time series (for example, when comparing the performance trend of Greece against the European average over the last decade).

For the better representation and comparison of the 4 indicators examined herein, a min-max normalization of the data is applied following the OECD (2018) approach. Normalizing the data provides for the possibility to assign a score to each country for the specific statistic and capture its relative position in the specific dimension among the other EU countries.

The min-max normalization is performed by applying the following formula to each of the four indicators within each considered sector:

$$\hat{x}_{i,s} = \left(\frac{x_{i,s} - \min_i \{x_{i,s}\}}{\max_i \{x_{i,s}\} - \min_i \{x_{i,s}\}} \right) \times 10 \quad (3.1)$$

where $\hat{x}_{i,s}$ and $x_{i,s}$ are the score and value, respectively, of indicator s , $s = 1, \dots, 4$ (4 indicators are considered herein), for country i , ($i = 1, \dots, 28$) (indicators are calculated for each sector over all EU-28 countries). The multiplication with 10 takes place in order to derive an indicator score $\hat{x}_{i,s}$ in the range $[0, 10]$, with 0 and 10 being assigned to the countries with the minimum and maximum indicator values $x_{i,s}$, respectively.

As the OECD (2018) report proposes, in order to prevent extreme absolute indicator values $x_{i,s}$ from skewing the distribution of the calculated scores $\hat{x}_{i,s}$ of an indicator, a threshold is applied. Specifically, countries with absolute values $x_{i,s}$ that are below the 10th or above the 90th percentile of the $x_{i,s}$ values of all countries are directly assigned the scores 0 and 10, respectively, and do not participate in the calculation of the scores of the other countries.

The relative changes in ranking of any one country between 2008 and 2018 is calculated by subtracting the ranking position in 2018 from the one in 2008, as shown in the following equation:

$$RG_{i,s} = R_{i,s,2008} - R_{i,s,2018} \quad (3.2)$$

where $RG_{i,s}$ denotes the ranking growth of country i in regards to indicator s , while $R_{i,s,2008}$ and $R_{i,s,2018}$ denote the ranking position of the same country in years 2008 and 2018, respectively. Furthermore, a positive $RG_{i,s}$ -value suggests that the ranking position of country i in 2018 is improved compared to 2008 and vice versa. Especially for the construction sector, where data were not available for the year 2008, the ranking growth has been calculated for the reference years 2010 and 2018.

In addition, an attempt is made to identify countries with similar features to Greece on the basis of the low sum of the absolute differences of their indicator scores, the so-called Manhattan distance. This is calculated as follows:

$$MD_{i,j} = \sum_s |\hat{x}_{i,s} - \hat{x}_{j,s}| \quad (3.3)$$

where $MD_{i,j}$ is the Manhattan distance of countries i and j , while $\hat{x}_{i,s}$ and $\hat{x}_{j,s}$ are the scores of indicator s of countries i and j , respectively, calculated as per expression (3.1).

If a particular score is not available, the $MD_{i,j}$ is set equal to 5, and the four (4) countries with the lowest distance from a country are considered most similar to the said country (OECD, 2018).

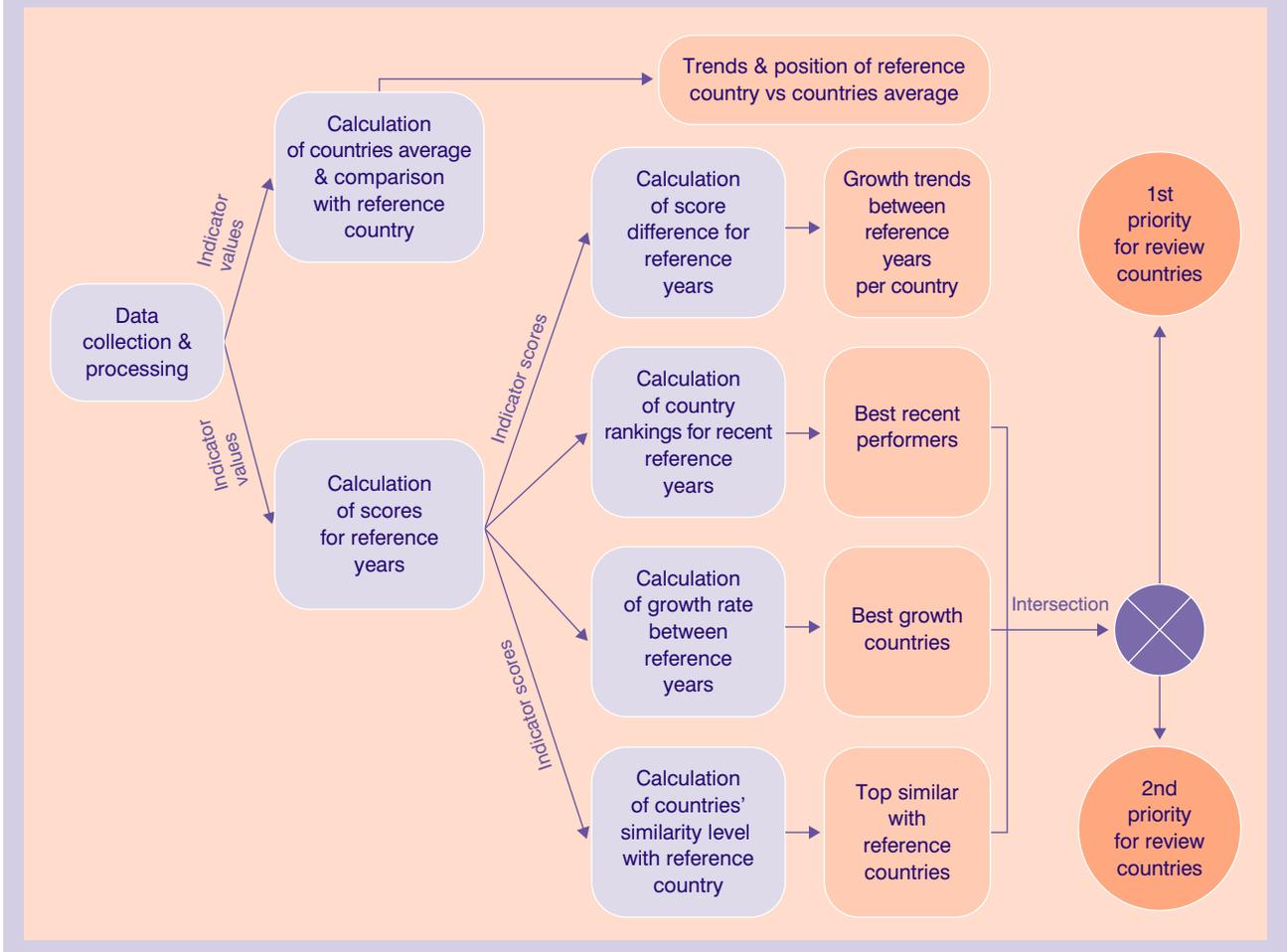
Based on the aforementioned indicator values and scores, a number of calculations and comparisons is performed for each considered sector, in order to derive useful performance metrics for all considered countries with a special focus on a particular one, which is considered as reference country (Greece herein). The analyses and comparisons regarding the sectoral performance of the countries are considered from the following perspectives:

- a country's trend (i.e., the evolution over time) against the average of all countries, aiming at deriving a first view of its convergence or divergence from the average trends, hence justifying the need for further analysis;
- the difference of the scores at the bounds of the considered reference period, aiming at rating the individual growth of each country;
- the relative ranking of the countries among their counterparts, with the objective of identifying the best performers in each sector;
- the growth rate of the countries in the reference period, aiming at identifying the best growth countries, hence indicating possible policy changes of interest;
- the similarity of the reference country with others in regards to one or more statistics, aiming at identifying the best growth countries, which due to their similarity with the reference one, may provide more feasible examples of interesting policy changes.

The further elaboration of the aforementioned outcomes provides lists of countries (candidate pools) for policy review, distinct in two levels:

- the 1st priority level contains countries that (a) exceeded in performance **or** exhibited a significant growth rate and achieved an above-threshold performance (e.g.,

FIGURE 3.1
Overview of research methodology



with regards to the reference country or the countries' average) and (b) feature a close resemblance vis-à-vis the reference country;

- the 2nd priority level comprises countries referenced in the individual candidate pools (i.e., excelled in performance or exhibited a significant growth rate), which were not, however, included in the 1st priority list due to non-resemblance with the reference country.

The overview of the aforementioned research methodology, which has been followed in the present article is graphically depicted in Figure 3.1.

4. Data analysis and results

4.1. Greece's performance against the EU average

As a first step, Greece's performance in each sector is compared against the EU average. To this end, for each year in the period 2008-2018, the EU-28 coun-

tries' figures are averaged in order to calculate the average EU-28 annual statistics for each of the four indicators. Specifically, for the construction sector, the analysis concerns the period 2010-2018 due to the unavailability of data in most countries for the years 2008 and 2009.

In Appendix A, Figures A.1 to A.12 present graphically the evolution of the values of the Greek indicators versus the corresponding EU-28 averages (arithmetic mean and median) per economic sector.

From this analysis, it is concluded that Greece shows a declining divergence against the European trend in business performance and activity, while it lags behind the European average in productivity terms, which is a major factor for competitiveness and sustainability.

More particularly, the following remarks can be drawn for Greece (per indicator):

- it has an overall smaller average business size than the EU-28 average, except sectors "Electricity et.al.", "Water supply et.al." and "Real estate" (on average);

- it has a mixed business activity profile after the crisis (e.g., a balance among sectors with a higher number of firms per 1000 inhabitants than the EU-28 average and sectors with a lower number of firms per 1000 inhabitants than the EU-28 average);
- it has an overall lower productivity than the EU-28 average with a declining trend (except sectors “Mining & quarrying” [peak in 2017], “Electricity et.al.”, “Transportation & storage”, “Real estate” [non declining trend]);
- it has an overall lower profitability than the EU-28 average with a declining trend (except sector “Mining & quarrying” [peak in 2017] and sector “Transportation and storage”).

4.2. Performance of EU-28 countries

4.2.1. Top performers per economic sector

In order to identify the best performing countries for each indicator, a ranking of the scores for each indicator is applied for the most recent year (2018). The following tables (Table 4.1 to Table 4.4) show the ranking of the countries’ scores per indicator for each economic sector for the most recent year (2018). The highlighted cells depict the top 5 performers in each sector.

In regards to Greece, the country exhibits a high ranking in entrepreneurial involvement (i.e., number of enterprises per 1000 inhabitants) in sectors D, G, H and I, holds a low rank position in terms of business size, productivity and profitability in all sectors, with the only exception being its 3rd position in profitability in sector B.

4.2.2. “Best growth” performers per economic sector

Next, the countries with the greatest increase in their performance over the past decade are identified. This is done irrespectively of the absolute development of the statistic (e.g., the statistic of the whole sector may decline but a particular country may be more resistant to this decline than the rest of the countries, indicating the use of resilient policies that could be further examined).

Ranking growth is presented in Table 4.5 to Table 4.8. The top three up to five “best growth” countries per indicator and per economic sector that reveal a significant ranking increase (i.e., at least 5 places difference) are highlighted. It should be noted, however, that only those that have achieved a ranking higher than the

ranking of Greece in 2018 would be of particular interest for Greek policy makers. In addition, in the case of the construction sector, where Greece’s ranking is not available (since Greek data were not available for the years 2008-2010), a “best growth” country is considered as a candidate paradigm for Greece only in case its ranking in 2018 is above the EU-28 median of the same year (e.g., up to rank 13), since Greece performed worse in 2018 than the EU median, as reported in Figure A.5.

In regards to Greece, the country managed a high growth rate in entrepreneurial involvement in sectors B, D and E (which implies market openness/fewer barriers, since more businesses were able to enter the sector); high growth in business size in sectors I and L (and significant growth in sector B); and negative growth in productivity and profitability in almost all sectors, with the exceptions of sector B, where it depicted a stable position in productivity and a high growth in profitability, and sector D, which depicted a stable position (with marginal growth) in profitability.

4.3. Countries’ patterns and profiles

From the obtained results, it is evident that there is no overall “best performer” for all indices in each and every sector. It would make sense to group the countries with similar characteristics together to locate the best performers among the individual groups. For example, it would be interesting to group countries according to their sectoral structure, since it is not expected that a small country with a restricted number of family or micro businesses in a sector could easily try (and manage) to emulate the performance of a country with a totally different sectoral structure where economies of scale play a significant role.

In particular, Greece’s performance is compared against countries with similar sectoral profiles in terms of size and number of businesses. To this end, the similarity measure (i.e., the Manhattan distance) is first calculated over the countries’ most recent scores (2018) considering the indicators “number of businesses” and “business size”. Then, the top four (4) countries with the shortest distance to Greece are selected. From these countries, the ones with a better performance than Greece in terms of productivity or profitability may be chosen as cases of interest for further investigation.

Figure 4.1 and Figure 4.2 depict the Manhattan distances between all EU-28 countries and Greece per economic sector, with regards to the indicators “number of businesses” and “business size”.

TABLE 4.1 EU-28 country ranking in year 2018 (Indicator: number of businesses, top 5 performers in highlighted cells)

GEO/ SECTOR	Number of enterprises / 1000 inhabitants ranking (2018)											
	Mining and quarrying (sector B)	Manufacturing (sector C)	Electricity, gas, steam and aircond. supply (sector D)	Water supply; sewerage, waste management & remediation activities (sector E)	Construction (sector F)	Wholesale and retail trade; repair of motor vehicles and motorcycles (sector G)	Transportation and storage (sector H)	Accommodation and food service activities (sector I)	Information and communication (sector J)	Real estate activities (sector L)	Professional, scientific and technical activities (sector M)	Administrative and support service activities (sector N)
BE	-	22	-	26	8	18	24	12	14	11	8	7
BG	12	15	13	25	26	5	14	15	19	15	24	27
CZ	18	1	1	1	2	2	10	8	4	8	2	18
DK	17	24	10	2	21	26	23	22	13	5	26	17
DE	24	25	2	21	24	27	28	20	25	19	27	20
EE	3	10	14	9	11	15	5	23	6	6	13	13
IE	5	19	-	8	3	21	3	13	11	17	17	8
GR	9	12	4	13	-	1	2	2	26	28	10	25
ES	16	17	8	19	15	10	6	4	27	12	18	14
FR	25	20	7	15	18	20	21	14	20	16	20	19
HR	8	13	16	11	23	23	20	10	23	26	25	24
IT	21	6	18	18	14	9	22	7	24	13	9	22
CY	11	8	21	6	7	7	12	3	18	25	16	10
LV	1	9	9	12	20	13	8	27	9	1	14	6
LT	13	4	5	17	4	4	1	21	16	2	12	15
LU	26	27	17	27	19	17	26	11	8	3	5	11
HU	19	11	22	14	16	14	15	18	5	14	7	4
MT	-	-	-	-	10	8	11	6	15	7	15	5
NL	22	16	24	23	5	11	16	16	1	21	1	3
AT	20	21	11	5	25	24	27	9	17	22	21	26
PL	6	7	20	7	12	12	4	26	12	24	19	23
PT	4	5	6	22	13	3	19	1	22	9	11	1
RO	10	23	25	16	27	22	18	28	28	27	28	28
SI	14	3	3	10	9	16	7	5	3	20	4	9
SK	15	2	19	3	1	6	9	17	7	18	6	2
FI	1	18	15	4	17	25	13	25	21	4	23	21
SE	7	14	12	20	6	19	17	19	2	10	3	12
UK	23	26	23	24	22	28	25	24	10	23	22	16

TABLE 4.2 EU-28 country ranking in year 2018 (Indicator: business size, top 5 performers in highlighted cells)

GEO/ SECTOR	Persons employed per enterprise ranking (2018)											
	Mining and quarrying (sector B)	Manufacturing (sector C)	Electricity, gas, steam and aircond. supply (sector D)	Water supply, sewerage, waste management & remediation activities (sector E)	Construction (sector F)	Wholesale and retail trade; repair of motor vehicles and motorcycles (sector G)	Transportation and storage (sector H)	Accommodation and food service activities (sector I)	Information and communication (sector J)	Real estate activities (sector L)	Professional, scientific and technical activities (sector M)	Administrative and support activities (sector N)
BE	-	9	-	14	20	14	6	23	20	17	16	10
BG	1	7	9	1	3	22	15	17	5	17	13	9
CZ	2	23	22	24	-	25	19	27	25	25	27	16
DK	12	5	18	26	8	2	4	4	8	13	3	14
DE	6	2	20	5	4	3	2	2	1	4	1	2
EE	7	11	8	19	12	12	17	8	17	16	16	18
IE	22	12	-	21	24	5	26	3	7	15	6	15
GR	16	26	21	22	-	24	27	16	15	10	24	20
ES	23	16	24	7	17	19	25	18	6	21	12	12
FR	-	-	-	-	14	-	-	-	-	-	-	-
HR	-	13	7	2	7	8	11	19	10	8	11	17
IT	20	22	16	11	22	25	9	21	14	23	25	13
CY	17	24	6	22	14	19	21	6	8	6	9	25
LV	18	17	12	13	6	11	7	5	15	9	13	22
LT	13	20	17	3	17	17	14	14	18	21	16	21
LU	5	1	11	12	1	7	1	7	4	23	4	1
HU	19	10	3	6	20	17	12	20	23	10	21	23
MT	-	-	-	-	23	21	13	10	-	25	6	8
NL	14	21	10	16	24	9	10	8	22	6	21	4
AT	11	3	15	20	2	4	3	13	10	2	5	3
PL	3	15	2	15	19	16	24	22	21	3	15	19
PT	21	19	23	8	13	22	20	25	12	20	16	27
RO	10	4	1	4	5	13	15	12	3	5	10	5
SI	9	17	19	10	16	15	22	25	26	17	25	24
SK	8	25	4	18	26	25	23	24	24	10	21	26
FI	24	8	14	25	9	6	17	15	2	27	6	6
SE	15	13	13	17	10	9	8	10	18	13	20	11
UK	4	6	5	9	10	1	5	1	13	1	2	7

TABLE 4.3 EU-28 country ranking in year 2018 (Indicator: productivity, top 5 performers in highlighted cells)

GEO/ SECTOR	Apparent labour productivity ranking (2018)											
	Mining and quarrying (sector B)	Manufacturing (sector C)	Electricity, gas, steam and aircond. (sector D)	Water supply; sewerage, waste management & remediation activities (sector E)	Construction (sector F)	Wholesale and retail trade; repair of motor vehicles and motorcycles (sector G)	Transportation and storage (sector H)	Accommodation and food service activities (sector I)	Information and communication (sector J)	Real estate activities (sector L)	Professional, scientific and technical activities (sector M)	Administrative and support service activities (sector N)
BE	-	3	-	2	8	2	3	5	4	9	5	6
BG	24	26	20	25	26	27	26	27	26	26	26	27
CZ	19	17	11	18	-	17	19	20	14	12	17	18
DK	1	2	2	1	3	4	2	8	5	1	3	4
DE	9	9	-	-	11	9	12	15	11	7	9	9
EE	17	19	13	14	16	15	16	18	19	15	16	15
IE	7	1	-	10	2	3	7	7	1	11	2	1
GR	13	15	17	15	-	26	17	26	17	25	25	23
ES	11	12	1	12	14	13	11	12	13	16	14	13
FR	-	-	-	-	9	-	-	-	-	-	-	-
HR	-	22	19	19	21	19	18	16	18	17	19	22
IT	5	11	3	11	12	11	10	13	12	14	12	12
CY	21	14	12	8	15	16	15	9	8	19	13	14
LV	23	24	21	22	23	24	22	24	25	27	27	24
LT	22	23	22	21	22	23	21	22	23	21	24	20
LU	8	6	7	6	5	1	1	1	2	3	1	2
HU	12	16	18	23	18	20	23	21	22	24	21	19
MT	-	-	-	-	13	14	-	6	-	8	11	10
NL	2	4	6	7	4	7	4	10	7	2	7	11
AT	6	7	10	5	6	6	5	3	9	6	10	5
PL	14	21	16	17	20	21	24	19	21	18	22	17
PT	16	18	5	13	19	18	13	17	15	23	18	25
RO	20	25	23	24	24	25	25	23	24	20	23	26
SI	15	13	15	16	16	12	14	14	16	13	15	16
SK	18	20	14	20	25	22	20	25	20	22	20	21
FI	10	8	4	3	10	8	8	4	6	4	8	8
SE	4	5	8	9	7	5	9	2	10	5	6	7
UK	3	10	9	4	1	10	6	11	3	10	4	3

TABLE 4.4 EU-28 country ranking in year 2018 (Indicator: profitability, top 5 performers in highlighted cells)

GEO/ SECTOR	Gross operating surplus / turnover ranking (2018)											
	Mining and quarrying (sector B)	Manufacturing (sector C)	Electricity, gas, steam and aircond. supply (sector D)	Water supply; sewerage, waste management & remediation activities (sector E)	Construction (sector F)	Wholesale and retail trade; repair of motor vehicles and motorcycles (sector G)	Transportation and storage (sector H)	Accommodation and food service activities (sector I)	Information and communication (sector J)	Real estate activities (sector L)	Professional, scientific and technical activities (sector M)	Administrative and support service activities (sector N)
BE	-	12	-	10	13	20	13	8	3	16	5	12
BG	8	10	7	19	10	19	5	15	8	3	12	15
CZ	22	16	19	21	-	9	18	19	10	12	19	23
DK	1	2	17	1	23	15	26	21	23	1	23	20
DE	23	25	-	-	5	7	21	6	25	8	14	5
EE	16	19	4	14	25	24	22	26	26	20	8	7
IE	10	1	-	9	5	6	12	19	6	23	4	1
GR	3	19	18	17	-	26	14	27	19	26	10	27
ES	12	23	5	12	21	16	2	16	20	21	20	22
FR	24	27	8	25	26	27	27	24	27	25	27	28
HR	-	9	14	7	18	2	3	2	2	5	18	18
IT	17	13	15	18	7	2	10	14	3	11	1	19
CY	-	3	-	3	11	14	22	1	7	14	7	6
LV	13	5	6	11	15	22	6	22	14	19	21	9
LT	11	18	10	8	20	11	9	17	21	9	9	16
LU	19	24	23	12	17	27	15	23	16	6	28	3
HU	6	6	20	24	3	4	25	10	12	24	15	13
MT	-	-	-	-	1	7	-	3	5	2	3	2
NL	15	22	9	16	8	5	11	5	14	4	16	8
AT	20	15	22	15	14	12	16	9	24	12	6	11
PL	4	7	3	4	9	9	6	13	9	17	22	17
PT	18	16	12	6	19	21	8	7	10	28	17	10
RO	9	13	13	22	4	1	20	10	13	7	12	14
SI	21	8	21	26	15	16	4	12	21	18	11	25
SK	7	26	15	20	12	18	16	28	16	27	25	24
FI	14	19	2	5	21	22	19	24	18	21	24	21
SE	5	11	1	23	23	24	24	18	28	14	26	26
UK	2	4	10	2	2	12	1	4	1	10	2	4

TABLE 4.5 Ranking growth for indicator “number of businesses” in the period 2008-2018 (for the construction sector 2010-2018); best growth countries in highlighted cells

GEO/ SECTOR	Number of enterprises / 1000 inhabitants growth (2008-2018)											
	Mining and quarrying (sector B)	Manufacturing (sector C)	Electricity, gas, steam and aircond. (sector D)	Water supply; sewerage, waste management & remediation activities (sector E)	Construction (sector F)	Wholesale and retail trade; repair of motor vehicles and motorcycles (sector G)	Transportation and storage (sector H)	Accommodation and food service activities (sector I)	Information and communication (sector J)	Real estate activities (sector L)	Professional, scientific and technical activities (sector M)	Administrative and support service activities (sector N)
BE	n/a	-6	n/a	-7	2	-4	0	-2	-1	8	5	12
BG	2	0	-2	-1	0	4	5	1	6	2	2	0
CZ	-8	0	9	1	0	4	-1	-2	0	-2	-1	-14
DK	1	-3	-9	-1	-2	-1	-9	-4	-5	0	-9	-9
DE	0	-1	20	5	1	0	-1	2	-2	-4	-3	1
EE	4	4	-7	-2	9	5	7	2	9	2	3	4
IE	-1	0	n/a	-2	1	-2	-1	-1	-5	-1	-5	-2
GR	6	-7	21	14	n/a	0	-1	-1	-6	0	-4	-11
ES	-7	-5	-6	-1	-4	-3	-3	0	-5	1	-8	-5
FR	-5	-2	7	-6	-4	1	4	0	-3	-2	-1	-6
HR	0	-4	4	1	-5	-6	-7	-1	-5	-6	-5	-1
IT	-8	-3	-1	-4	-9	-4	-5	1	-12	-6	-4	-12
CY	-8	-2	3	2	-4	-4	-8	0	8	-1	5	6
LV	4	8	-1	-1	4	3	7	-3	12	0	9	14
LT	8	7	7	4	18	4	17	5	11	1	13	9
LU	-4	-1	-8	-12	-3	-5	-6	-6	-5	-1	-2	-6
HU	-3	-3	-7	-9	-1	-3	-5	-3	-3	-5	0	-2
MT	n/a	n/a	n/a	n/a	-3	-4	-4	5	-6	4	-7	-2
NL	4	7	-5	0	8	11	7	4	10	1	10	12
AT	-3	-1	-7	-1	-2	0	-6	-2	-7	-4	-7	-4
PL	13	3	-4	6	5	-2	4	-3	7	1	3	2
PT	-2	-1	7	-2	-7	-1	-3	1	-6	3	-7	0
RO	2	-1	-4	1	0	-4	4	-1	-4	-1	-1	-2
SI	-3	-1	0	0	-1	-1	-2	8	4	3	5	9
SK	8	25	-1	22	0	22	19	11	21	9	22	26
FI	0	-5	-9	-1	-5	-2	-7	-4	-7	6	-8	-9
SE	-1	-7	-7	-4	3	-6	-6	-2	-1	-6	-1	-5
UK	2	-1	0	-2	-1	-2	1	-5	-5	-2	-4	-5

TABLE 4.6 Ranking growth for indicator “business size” in the period 2008-2018 (for the construction sector 2010-2018); best growth countries in highlighted cells

GEO/ SECTOR	Persons employed per enterprise growth (2008-2018)												
	Mining and quarrying (sector B)	Manufacturing (sector C)	Electricity, gas, steam and aircond. supply (sector D)	Water supply; sewerage, waste management & remediation activities (sector E)	Construction (sector F)	Wholesale and retail trade; repair of motor vehicles and motorcycles (sector G)	Transportation and storage (sector H)	Accommodation and food service activities (sector I)	Information and communication (sector J)	Real estate activities (sector L)	Professional, scientific and technical activities (sector M)	Administrative and support service activities (sector N)	
BE	n/a	4	n/a	-1	1	3	3	1	-2	2	3	-5	
BG	1	2	1	2	0	-1	-2	-4	1	-4	3	-1	
CZ	3	1	-6	-3	n/a	-2	-3	0	0	-1	0	9	
DK	3	1	5	-1	3	1	6	6	2	7	2	4	
DE	2	1	-15	1	2	-1	1	7	2	5	1	0	
EE	-1	-4	6	0	-3	-3	-6	-6	-5	-8	-1	-8	
IE	-3	2	n/a	1	1	2	0	4	10	-1	2	2	
GR	5	0	-20	-21	n/a	-1	0	10	-2	10	-2	3	
ES	-6	5	0	10	-5	-1	0	1	2	-5	5	0	
FR	n/a	n/a	n/a	n/a	2	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
HR	n/a	7	-1	2	1	4	5	-1	6	10	-3	3	
IT	-2	0	-1	4	1	2	6	0	6	-3	-1	6	
CY	6	1	-4	2	6	3	1	5	-6	0	-3	-1	
LV	-5	-7	0	-3	-1	-3	0	-2	-4	-2	-1	-9	
LT	-4	-5	-9	2	-10	-4	-6	-10	-13	-5	-8	-12	
LU	6	1	10	5	0	3	1	6	5	2	3	2	
HU	1	8	8	8	2	3	6	3	3	1	2	3	
MT	n/a	n/a	n/a	n/a	1	4	10	-2	n/a	2	15	14	
NL	-2	-9	3	-8	-6	-4	-5	-3	-15	-2	-17	-3	
AT	3	2	4	3	0	2	3	0	9	7	6	1	
PL	-2	2	7	1	-3	2	-1	-1	0	-1	3	-4	
PT	1	4	-1	3	0	4	0	0	10	-5	8	0	
RO	-7	0	3	3	-1	3	-3	0	11	0	2	6	
SI	1	1	-1	-1	-2	-2	-1	-6	-3	-6	-5	-4	
SK	-4	-24	3	-16	0	-22	-22	-18	-23	-7	-18	-20	
FI	0	3	6	1	5	4	2	1	2	-1	8	8	
SE	1	3	4	3	8	6	6	7	6	7	4	4	
UK	3	2	-2	3	-1	0	-1	0	2	0	-1	0	

TABLE 4.7 Ranking growth for indicator “productivity” in the period 2008-2018 (for the construction sector 2010-2018); best growth countries in highlighted cells

GEO/ SECTOR	Apparent labour productivity growth (2008-2018)												
	Mining and quarrying (sector B)	Manufacturing (sector C)	Electricity, gas, steam and aircond. (sector D)	Water supply; sewerage, waste management & remediation activities (sector E)	Construction (sector F)	Wholesale and retail trade; repair of motor vehicles and motorcycles (sector G)	Transportation and storage (sector H)	Accommodation and food service activities (sector I)	Information and communication (sector J)	Real estate activities (sector L)	Professional, scientific and technical activities (sector M)	Administrative and support service activities (sector N)	
BE	n/a	0	n/a	0	-2	0	-1	2	-1	-1	-2	-2	
BG	0	0	3	0	0	0	0	0	0	0	1	0	
CZ	-5	1	0	1	n/a	2	-1	0	2	3	0	0	
DK	0	4	6	10	-1	-1	-1	-5	1	4	2	3	
DE	1	1	n/a	n/a	0	0	-3	-2	-6	-1	-1	0	
EE	5	3	5	2	5	6	3	3	3	4	6	5	
IE	0	0	n/a	0	15	1	-4	1	0	3	0	0	
GR	0	-2	-1	-6	n/a	-11	-2	-10	-2	-1	-10	-11	
ES	1	-1	0	0	-2	-1	0	-3	-4	-4	-1	0	
FR	n/a	n/a	n/a	n/a	-2	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
HR	n/a	-2	1	-1	-3	1	-1	2	2	3	0	0	
IT	1	1	6	2	1	2	2	-3	-5	-1	0	-1	
CY	-12	0	1	-2	-5	-2	-1	-3	6	-3	-2	-4	
LV	0	-1	-2	0	1	0	-2	-1	-2	-2	-4	-3	
LT	-2	1	-1	2	3	2	3	4	2	6	0	4	
LU	0	-4	-1	2	3	0	3	0	0	-2	0	0	
HU	6	0	-4	-3	5	3	-1	4	-1	-2	4	6	
MT	n/a	n/a	n/a	n/a	1	4	n/a	9	n/a	3	5	5	
NL	0	0	-1	-3	-1	1	1	1	1	5	3	3	
AT	-1	0	0	0	-2	1	1	2	1	-2	-4	-2	
PL	1	-2	1	0	-1	1	-3	3	-2	3	-1	1	
PT	2	-1	-3	1	-4	-1	0	0	-2	-5	2	-2	
RO	-4	0	-1	0	-2	1	0	1	0	-3	3	0	
SI	2	2	0	-1	0	-1	2	0	2	-3	-1	0	
SK	3	1	-2	1	-5	-6	3	-6	-3	1	-2	-4	
FI	1	-3	-1	0	-1	-3	0	-2	5	-2	1	-2	
SE	0	3	-4	-2	-2	1	1	2	2	-2	1	1	
UK	0	-1	-2	-3	0	0	1	1	1	-1	0	2	

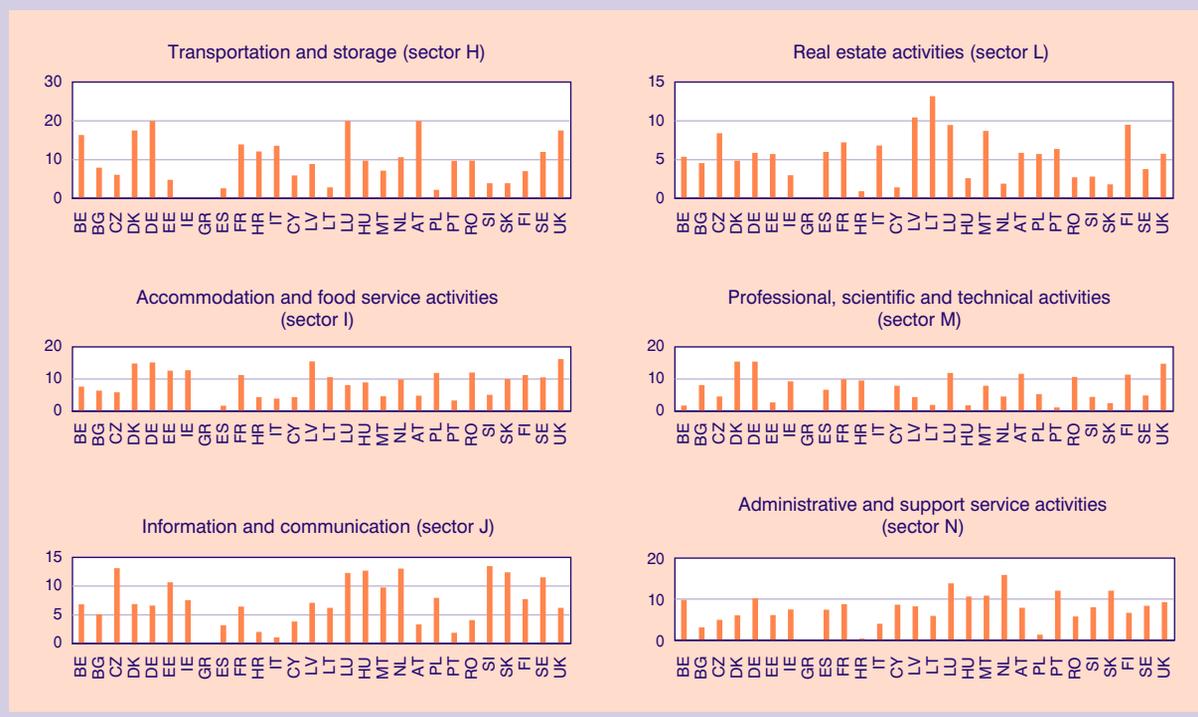
TABLE 4.8 Ranking growth for indicator “profitability” in the period 2008-2018 (for the construction sector 2010-2018); best growth countries in highlighted cells

GEO/ SECTOR	Gross operating surplus / turnover growth (2008-2018)											
	Mining and quarrying (sector B)	Manufacturing (sector C)	Electricity, gas, steam and aircond. supply (sector D)	Water supply; sewerage, waste management & remediation activities (sector E)	Construction (sector F)	Wholesale and retail trade; repair of motor vehicles and motorcycles (sector G)	Transportation and storage (sector H)	Accommodation and food service activities (sector I)	Information and communication (sector J)	Real estate activities (sector L)	Professional, scientific and technical activities (sector M)	Administrative and support service activities (sector N)
BE	n/a	11	n/a	11	-4	3	5	-1	16	-6	13	6
BG	4	11	14	-13	5	-9	6	-5	-7	11	-5	-7
CZ	-13	-4	-11	-2	n/a	7	-4	2	-5	8	-3	-8
DK	0	10	1	14	-3	6	-7	-1	2	5	4	8
DE	-5	-1	n/a	n/a	6	-1	-15	-4	-10	-5	-10	-2
EE	6	-2	9	-5	0	3	0	0	-12	-2	13	15
IE	9	0	n/a	11	21	14	11	8	21	5	22	11
GR	11	-16	1	-14	n/a	-24	-12	-12	-9	-9	-5	-18
ES	4	-7	1	0	-12	-6	3	1	-9	-15	-8	-2
FR	-4	-2	-6	1	-5	-2	-6	-2	-4	-4	-3	-4
HR	n/a	0	2	-2	-12	2	-2	3	6	11	-5	1
IT	7	9	5	7	0	10	10	0	6	11	0	5
CY	n/a	2	n/a	-1	-9	-6	-12	0	6	-5	-4	-4
LV	-2	5	3	-3	4	-7	-3	-4	-8	-4	-10	3
LT	-3	9	1	6	3	5	6	11	-1	14	5	1
LU	-6	-20	-1	10	5	1	9	-11	1	-4	-6	-2
HU	9	5	3	-7	14	19	2	15	9	3	10	10
MT	n/a	n/a	n/a	n/a	0	-1	n/a	13	-3	2	-1	5
NL	2	-3	8	-3	3	8	1	1	4	6	1	8
AT	-13	-7	-7	-6	-1	7	-3	-5	-1	-7	9	-6
PL	1	-1	7	0	-1	-8	-2	-5	-6	8	-16	-13
PT	-8	-1	-5	1	-2	-3	1	4	2	-2	-9	1
RO	-5	-7	-1	-4	1	2	-12	-7	-6	-6	-4	-2
SI	2	6	-7	-3	8	-7	11	7	1	1	8	2
SK	-1	-1	-11	-9	-8	-13	10	-15	-12	-3	-5	-18
FI	7	-2	1	10	-7	0	-2	-1	8	-15	-2	0
SE	-2	9	0	1	-7	1	1	6	0	-2	2	0
UK	0	-2	-5	-1	1	1	5	4	15	3	8	6

FIGURE 4.1
Manhattan distances between EU-28 countries and Greece (sectors B-G)



FIGURE 4.2
Manhattan distances between EU-28 countries and Greece (sectors H-N)



Finally, the list of candidates for policy analysis is further refined by calculating the “intersection” of the aforementioned grouping lists with the lists of “best performers” and “best growth performers”. More specifically, countries that are present in either the “top 5” or the “best growth” performers lists and reveal a similar sectoral structure to Greece in terms of the relative number of businesses and business size should be given priority in the further policy analysis; these countries are summarized in the 1st priority countries column of Table 4.9. Countries that belong in any of the aforementioned lists (“top 5”, “best growth”, “similar to Greek sectoral structure”) and have been left out from the previous sorting (i.e., the 1st priority countries) may be examined

at a second stage; these countries are summarized in the 2nd priority countries column of Table 4.9.

4.4. Policy recommendations and discussion

Having applied the aforementioned analysis, it is necessary to comment on the individual results in an effort to provide useful recommendations for further policy review.

As depicted in the preceding analysis, there is no single case where a country excels in all indicators.

In regards to the sectoral structure, as shown in Table 4.1 and Table 4.2, countries that rank top in the average

TABLE 4.9 List of candidate countries for policy review

Sector	Priority			
	1 st priority candidate countries for policy review		2 nd priority candidate countries for policy review	
	Productivity	Profitability	Productivity	Profitability
Mining and Quarrying	SE, HU		DK, NL, UK, IT	DK, UK
Manufacturing		CY, LV, IT, HU	IE, DK, BE, NL, SE, IT, CY	IE, DK, SE, BE, BG, LT, SE
Electricity, gas, steam and air conditioning supply	EE, PT	EE	CZ, ES, IT, DK, SI, FI	BG, NL, PL, PT, FI, SE
Water supply, sewerage, waste management and remediation activities	AT	IE, CY	BE, DK, FI, UK	BE, DK, CY, LT, LU, AU, PL, FI, SE
Construction	UK	HU, UK	DK, IE, LU, NL	DE, IE, HU, MT, RO
Wholesale and retail trade, repair of motor vehicles and motorcycles		CZ	BE, DK, LU, SE, EE	BG, DK, IE, HR, IT, HU, NL, AT, RO, PT, SK
Transportation and storage		IE, ES, LT	BE, DK, LU, NL, AT	BE, BG, HR, IT, PL, SI, UK
Accommodation and food service activities		CY	BE, ES, IT, CY, PT, LU, MT, AT, FI, SE	IE, ES, HR, IT, LT, HU, MT, NL, PT, SI, SE, UK
Information and Communication		HR, IT	BE, DK, IE, ES, IT, CY, LU, PT, FI, UK	BE, IE, CY, HU, MT, PT, FI, UK
Real estate activities	NL	NL	DK, HR, CY, LT, LU, SK, FI, SE	BG, CZ, DK, HR, IT, CY, LT, MT, PL, SK
Professional, scientific and technical activities	BE	BE, IT	DK, EE, IE, IT, LU, HU, MT, PT, UK	BE, EE, IE, IT, LT, MT, AT, UK
Administrative and support service activities			DK, EE, IE, HU, MT, LU, AT, UK	BE, BG, DK, DE, EE, IE, HR, IT, LU, HU, MT, NL, PL, UK

business size, rank average or below average in the number of enterprises and vice versa. This is an indication that “top” performers in business activity measures tend to reveal one of two distinct sector profiles: either a fragmented sector profile (e.g., a pluralism of very small enterprises) or a consolidated one (e.g., fewer enterprises of bigger size).³ The only exceptions of the previous remark are Poland and Estonia in sector B, Cyprus in sector I, Luxembourg in sector J, Latvia in sector L, Luxembourg in sector M, the Netherlands and Malta in sector N. These exceptions managed to rank high in both indicators, hence providing interesting paradigms for any policy related research topic.

In regards to business performance, as shown in Table 4.3 and Table 4.4, countries that excel in one of the two indicators (productivity and profitability) do not necessarily excel in the other one. However, there are country cases that depict high performance in both measures, such as Denmark, Sweden and United Kingdom in sector B, Denmark and Ireland in sector C, Spain and Finland in sector D, Denmark, Finland and United Kingdom in sector E, Ireland and United Kingdom in sector F, Belgium and United Kingdom in sector J, Denmark and Netherlands in sector L, Belgium, Ireland and United Kingdom in sector M, and, finally, Ireland and United Kingdom in sector N. These cases provide brilliant paradigms for further policy analysis for any potentially interested country.

Furthermore, it is not only the top performers that could be of interest for any kind of policy review. Countries that depicted a significant growth in their performance ranking within the European competition framework are worth of a further policy focus. Such paradigms have been reported in Table 4.5 to Table 4.8.

However, it is not expected that any country can easily emulate any other. Business size and competition intensity affect both the productivity and the profitability of a sector, as resulted from empirical studies reviewed in the introduction.

To that end, a grouping of countries according to their sectoral structure allowed for the identification of similar countries with respect to a reference country. Those countries should be given priority when searching for “best practices” (or better stated “good practices”) in terms of performance measures (either productivity or profitability).

In general, the selection of a country as a paradigm for policy analysis (and possible imitation) should depend

on the goal set by the policy maker or the researcher. For example, if the goal is to enhance employment in a sector, business size and/or number of enterprises are the obvious target statistics of the analysis. A potential pool of such paradigms for Greece for policy review could be the aforementioned countries of the second paragraph of the current section, which scored high in either business size and number of businesses. From these paradigms, policy measures that affect both sector and employment growth, such as SME-supporting policies or policies that facilitate the reduction of entry barriers (Benedetti-Fasil, et al., 2017), should be further examined.

On the other hand, if the goal is to make the sector more attractive for investing, priority should be given to profitability (Hax & Maljuf, 1983). Profitability is often the primary stimulus for private businessmen, at least in the short run. Increasing profitability provides perspectives to the sector and the country as well. Country paradigms for Greece are provided in this case in the respective “profitability” columns of Table 4.9. Policy measures engaged in this field that should be taken into account in a further analysis include economies of scale, taxation and competition laws, entry barriers (Glen, et al., 2003), as well as the examination of other statistical variables such as fixed capital investments and production costs.

Nevertheless, as stated in the literature review, increasing productivity is the ultimate target for firm survival and sustainability of the sector of a country in the long run. Productivity is usually determined by the human factor and engages aspects of research and development, technology, innovation, as well as other cultural or historical factors (Beugelsdijk, et al., 2018) that should be further examined for policy making. Country paradigms for Greece were provided in this case in the respective “productivity” columns of Table 4.9.

5. Conclusions

5.1. Summary of the work

The purpose of this article has been the analysis of the impact of a recent, serious economic crisis on the different economic sectors in Europe with a special focus on Greece. To this end, the business activity and performance of Greece and the other EU-28 member states has been analyzed for the period 2008-2018

3. The reference to “fragmented/consolidated profile” should not be mistaken with the concentration term within an industry, which can be defined as the degree to which a small number of firms make up for the total production in the market.

across twelve (12) different sectors with regards to four (4) indicators: the number of businesses in the sector (normalized by the country population), the business size, labor productivity and profitability.

The approach that has been applied for the comparative analysis of country performance stemmed originally from the OECD method for measuring the well-being status of regions worldwide (OECD, 2018). However, in the present article, a couple of extensions and enhancements to the aforementioned method have been introduced, in order not only to present the current status of the countries' performance, but also to (a) assess their growth rate over the past decade and (b) provide country paradigms for policy review from a pool of countries similar to a reference one (herein Greece) according to a goal-based criterion.

The comparison of scores of a pre-crisis reference year (2008) and a post-crisis year (2018) allowed for the countries' performance assessment in each sector over a number of factors and the identification of

- a) the best performers in each sector in Europe according to their current status (as of 2018); and
- b) the countries that achieved the best growth rates in each sector within the past decade.

In addition, considering Greece as reference country, the analysis allowed for

- a) the identification of countries of a similar profile with Greece (herein the similarity criterion has been the sectoral structure in terms of business size and engagement);
- b) the identification of the position of Greece against its EU counterparts, especially in the post-crisis era; and
- c) the construction of a pool of potential policy paradigms on the basis of country performance in terms of productivity and/or profitability growth, which could thus be of interest for further analysis by policy makers and/or researchers.

In conclusion, and in regards to Greece, which has been the reference country, the results of the present article reveal that, by 2018, Greek businesses had not yet recovered from the crisis and had lost ground in most sectors of economic activity. Even in sectors where Greece, traditionally, had a lead among the EU-28 member states in terms of entrepreneurial involvement (i.e., number of enterprises per 1000 inhabitants), such as in the sectors of "Wholesale and

retail trade, repair of motor vehicles and motorcycles", "Transportation and storage" and "Accommodation and food service activities" (where it ranked 1st, 2nd and 2nd, respectively, in 2018), its performance in terms of productivity and profitability is clearly below the European average.

The only sector where Greece reveals above-average productivity is the sector "Mining and quarrying" (ranked 13th), while it reveals above-average profitability in sectors "Mining and quarrying" (ranked 3rd) and "Professional, scientific and technical activities" (ranked 10th).

Last but not least, a significant contribution of the present article is the methodology introduced, which can serve the purpose of any related performance-based comparison for policy review, either with the present or any other related configuration (e.g., set of indicators, countries/regions, sectors, similarity criterion).

5.2. Future research

The methodology that has been followed in the present article, having Greece in focus, could be applied with a focus to any other country case for performance benchmarking and extraction of useful policy patterns. Furthermore, the approach introduced in the present study of comparing productivity and profitability performance across similar countries in terms of business size and engagement can be also used in different indicator configurations (e.g., "fixing" productivity as the basis of similarity measure and seeking for the top or best-growth performers in profitability, and so on).

Moreover, it should be emphasized that the results of the present article serve as a primary step for highlighting the paradigms from which Greek policy makers and researchers could extract data and inspiration for further analysis and review. The best performers in each sector and especially those with similar profiles to Greece, as denoted in Table 3-9, should be further examined in terms of policy measures and business practices that have led them to better results than their Greek counterparts.

Last but not least, the results of the present article provide for Greek policy makers an excellent stage for an internal review of the policy and sectoral strategies that have been followed in the last decade, and recognize possible mistakes as well as the positive measures undertaken so far that have led to the current performance.

Appendix A

Greece's performance against EU average trends

FIGURE A.1
Evolution of values in Mining and Quarrying

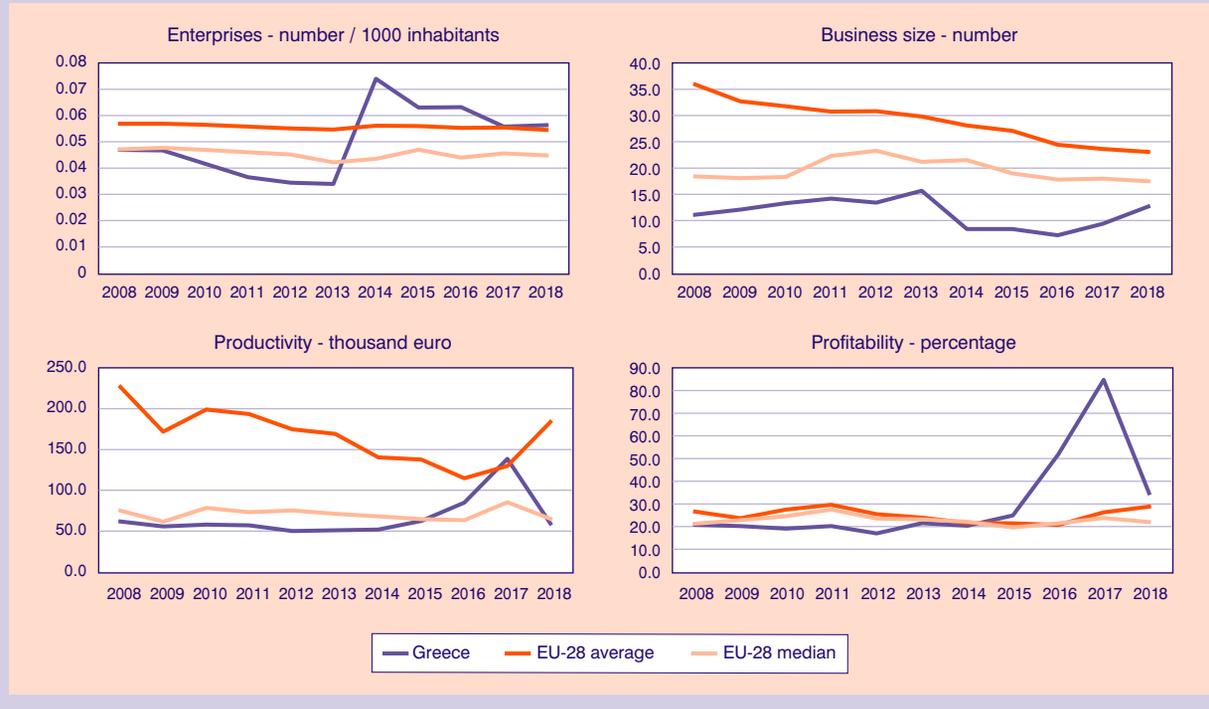


FIGURE A.2
Evolution of values in Manufacturing

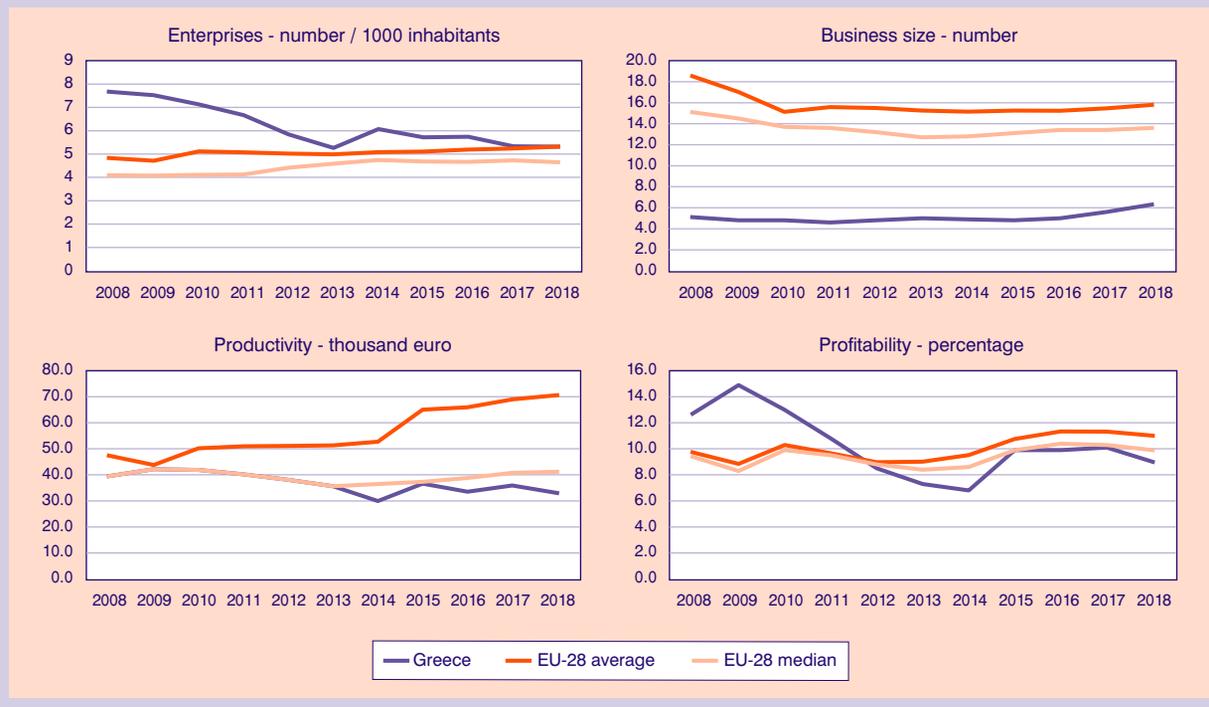


FIGURE A.3
Evolution of values in Electricity, gas, steam and air conditioning supply



FIGURE A.4
Evolution of values in Water supply, sewerage, waste management and remediation activities



FIGURE A.5
Evolution of values in Construction

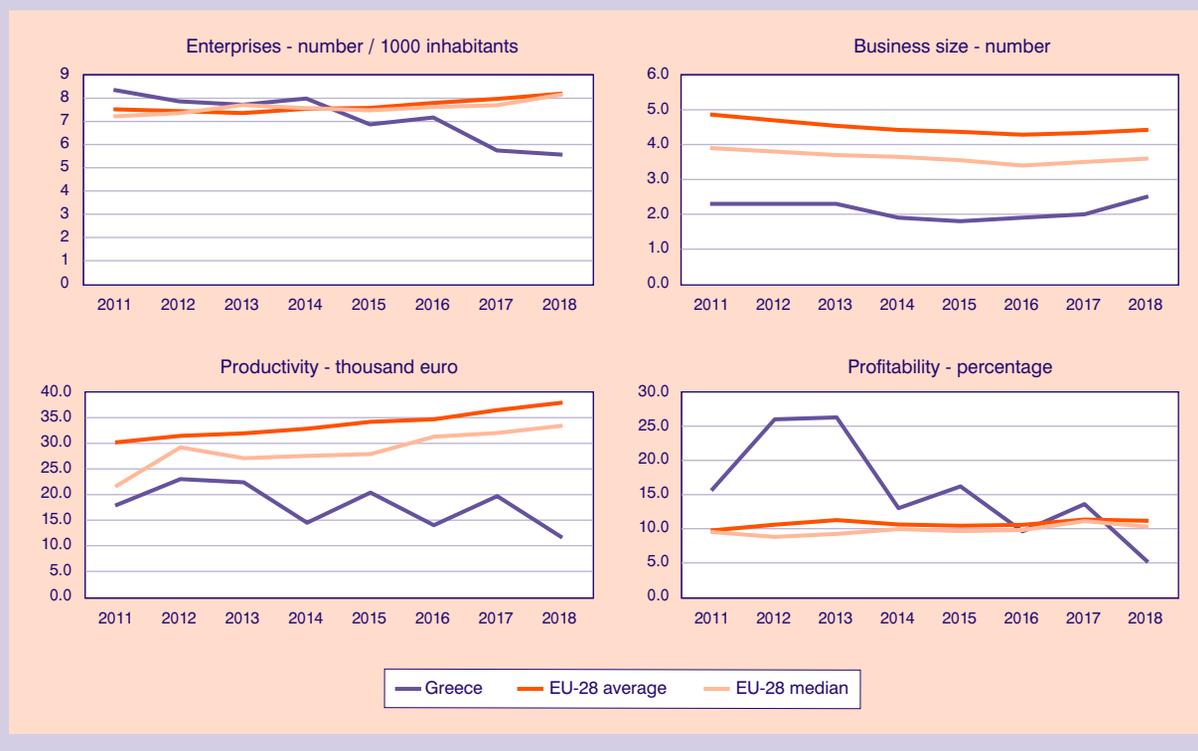


FIGURE A.6
Evolution of values in Wholesale and retail trade, repair of motor vehicles and motorcycles

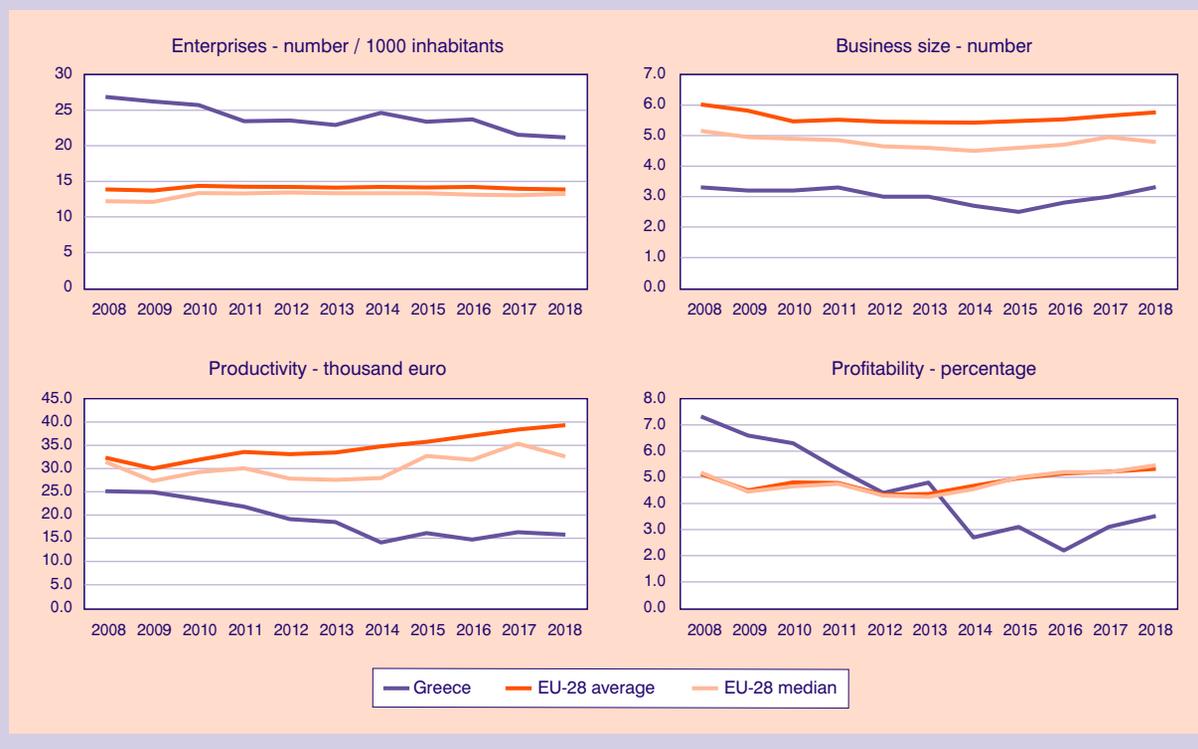


FIGURE A.7
Evolution of values in Transportation and storage

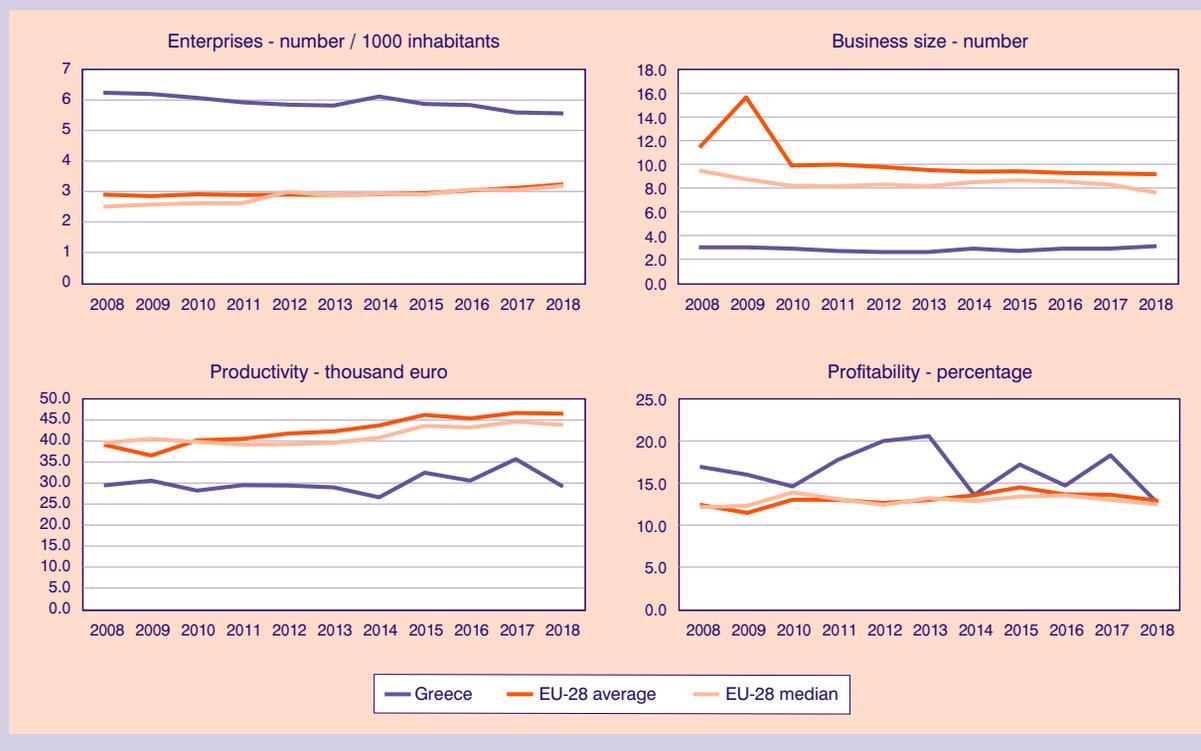


FIGURE A.8
Evolution of values in Accommodation and food service activities



FIGURE A.9
Evolution of values in Information and Communication

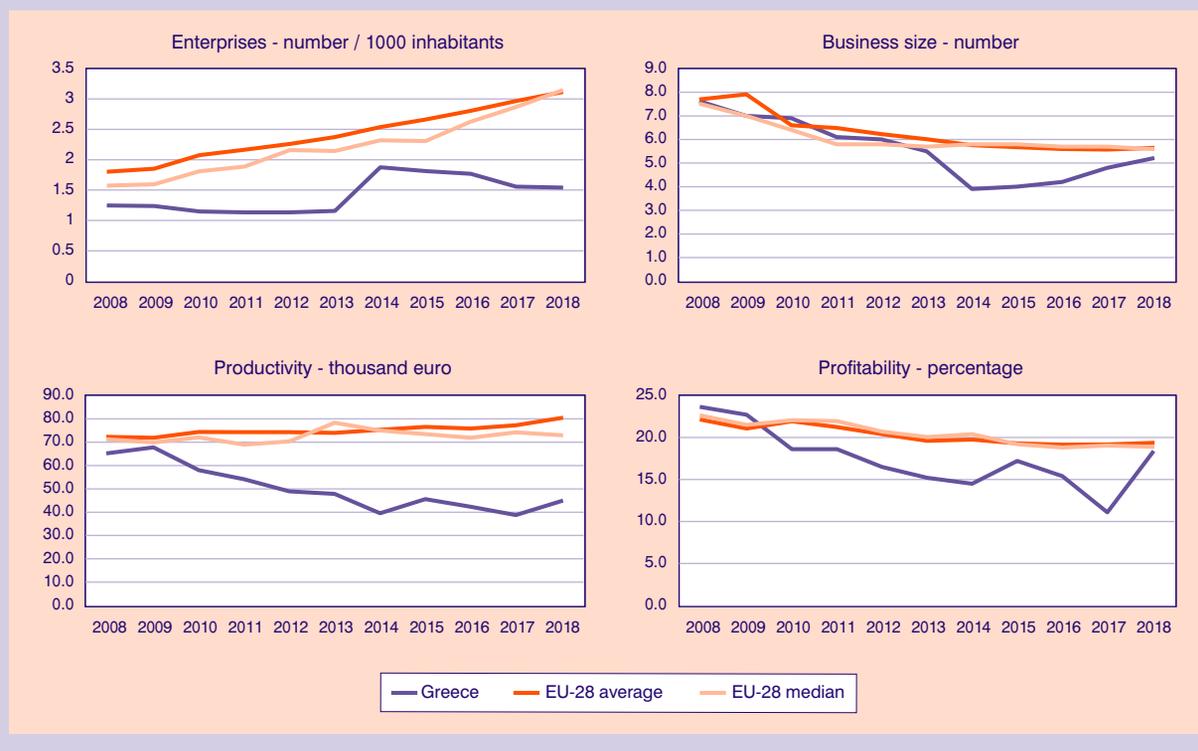


FIGURE A.10
Evolution of values in Real Estate activities

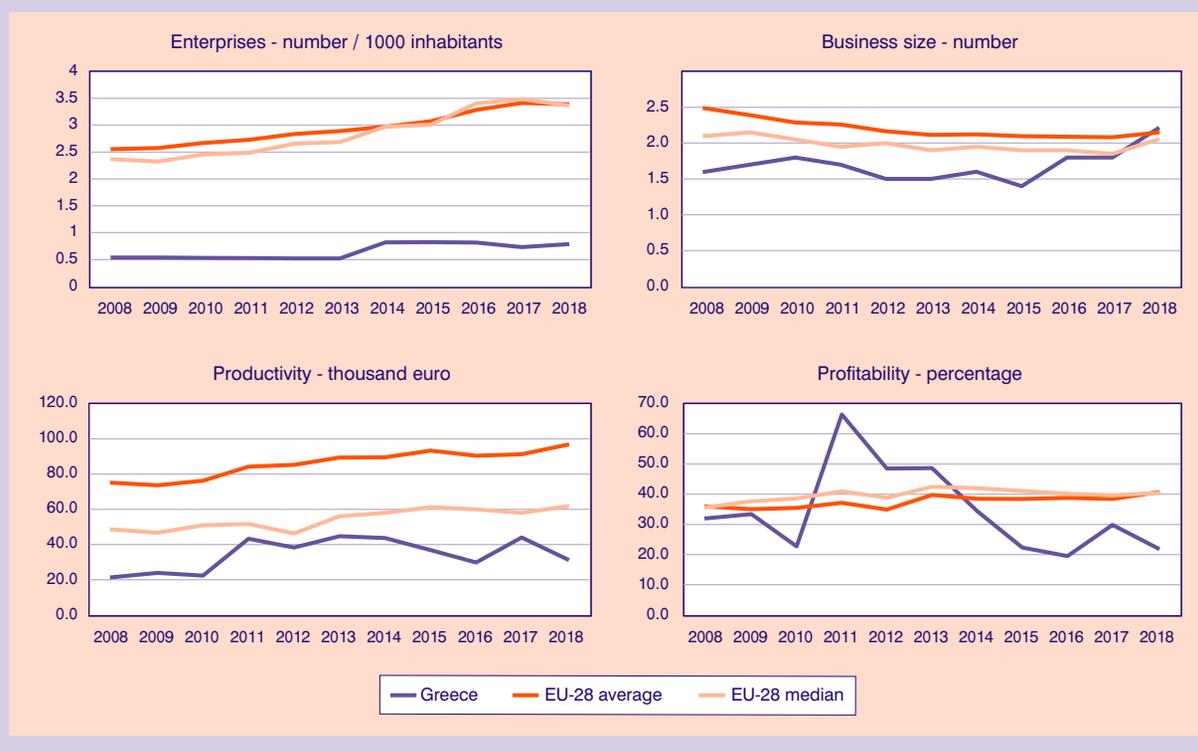


FIGURE A.11
Evolution of values in Professional, scientific and technical activities

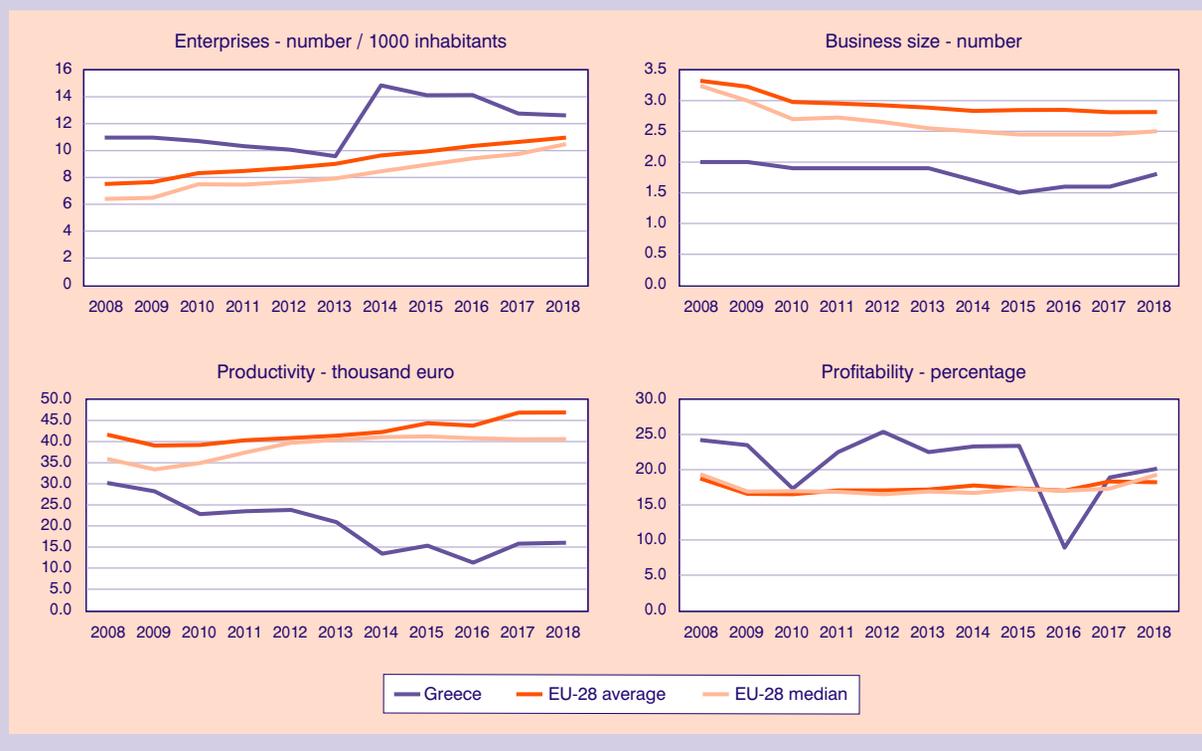
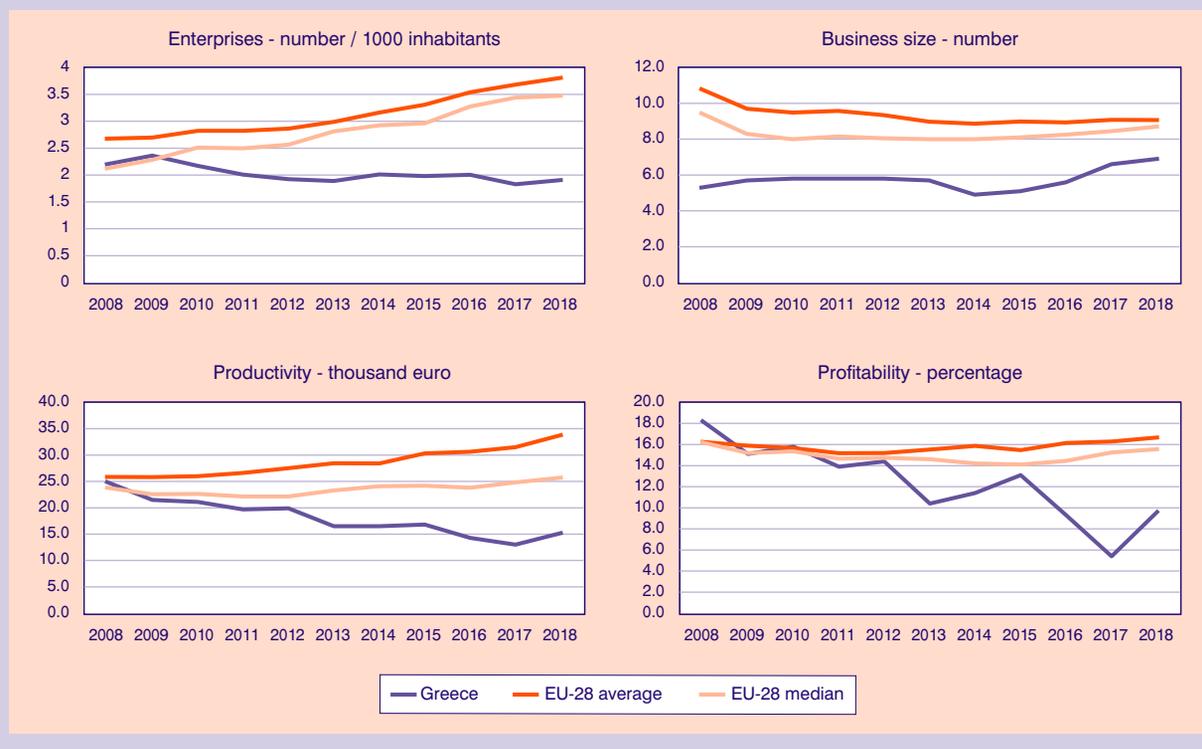


FIGURE A.12
Evolution of values in Administrative and support service activities



References

- Andrews, C., 2008. Best Practices in Local Government. In M.S. de Vries, P.S. Reddy and M. S. Haque (eds), *Improving Local Government: Outcomes of Comparative Research*, Basingstoke and New York: Palgrave Macmillan, pp. 172-192.
- Auzina-Emsina, A., 2014. *Labour productivity, economic growth and global competitiveness in post-crisis period*. Riga, Elsevier, pp. 317-321.
- Bartelsman, E. & Scarpetta, S., 2013. Cross-Country Differences in Productivity: The Role of Allocation and Selection. *American Economic Review*, 103(1). DOI: <http://dx.doi.org/10.1257/aer.103.1.305>, February, pp. 305-334.
- Benedetti-Fasil, C., Sanchez-Martinez, M., Christensen, P. & Robledo-Böttcher, N., 2017. *Entry barriers and their macroeconomic impact in the EU: an assessment using QUEST III*, Bruxelles: JRC Technical Report, doi:10.2760/722488.
- Beugelsdijk, S., Klasing, M. & Milionis, P., 2018. Regional economic development in Europe: the role of total factor productivity. *Regional Studies*, 52:4, DOI: [10.1080/00343404.2017.1334118](https://doi.org/10.1080/00343404.2017.1334118), pp. 461-476.
- Bottazzi, G., Secchi, A. & Tamagni, F., 2008. Productivity, profitability and financial performance. *Industrial and Corporate Change*. DOI:10.1093/icc/dtn027, 18 July, pp. 1-41.
- Christofakis, M., Gaki, E. & Lagos, D., 2019. The impact of economic crisis on regional disparities and the allocation of economic branches in Greek regions. *Bulletin of Geography. Socio-economic Series*, 44(44). DOI: <http://doi.org/10.2478/bog-2019-0011>, 5 June, pp. 7-21.
- Cincera, M. & Galgau, O., 2005. *Impact of Market Entry and Exit on EU Productivity and Growth Performance (Economic Papers)*, Brussels: EC, D-G for Economic and Financial Affairs.
- Corrado, L., Martin, R. & Weeks, M., 2005. Identifying and Interpreting Regional Convergence Clusters Across Europe. *The Economic Journal*, Volume 115, Issue 502, <https://doi.org/10.1111/j.0013-0133.2005.00984.x>, March, pp. C133-C160.
- Costanza, R., Posner, S., Hart, M. & Talberth, J., 2009. Beyond GDP: The Need for New Measures of Progress. In: *The Pardee Papers / No. 4*. Boston: Boston University.
- Database, E., 2020. *Eurostat - Your key to European statistics (accessed on 16-11-2020)*. [Online] Available at: <https://ec.europa.eu/eurostat/data/database>.
- Dawid, H. & Reimann, M., 2004. Evaluating Market Attractiveness: Individual Incentives Versus Industry Profitability. *Computational Economics* 24. DOI: [10.1007/s10614-005-6158-z](https://doi.org/10.1007/s10614-005-6158-z), 25 July, p. 321-355.
- De Vries, M., 2010. Performance measurement and the search for best practices. *International Review of Administrative Sciences*, Vol 76(2), doi:10.1177/0020852309365668, 6 July, pp. 313-330.
- Droungos, M., 2018. *The importance of private consumption during a period of economic crisis (2009-2016). A study of European Economies*. Patras: Hellenic Open University.
- Duignan, B., 2019. *Great Recession*. [Online] Available at: <https://www.britannica.com/topic/great-recession>.
- EC, 2008. *Communication {SEC(2008) 2101} {SEC(2008) 2102} - "Think Small First" - A "Small Business Act" for Europe / COM/2008/0394 final*. [Online] Available at: <https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A52008DC0394>.
- EC, 2020. *User Guide to the SME definition*, Luxembourg: EU.
- European Central Bank, 2017. The slowdown in euro area productivity in a global context. *ECB Economic Bulletin, Issue 3 / 2017*, pp. 47-67.
- Eurostat, 2020. *Structural business statistics overview*. [Online] Available at: https://ec.europa.eu/eurostat/statistics-explained/index.php/Structural_business_statistics_overview.
- Feenstra, R. & Taylor, A., 2012. *International Economics, 2nd edition*. New York: Worth Publishers.
- Gardiner, B., Martin, R. & Tyler, P., 2004. Competitiveness, productivity and economic growth across the European regions. *Regional Studies*, 38(9),doi:10.1080/0034340042000292638, pp. 1045-1067.
- Giannakis, E. & Bruggeman, A., 2017. Determinants of regional resilience to economic crisis: a European perspective. *European Planning Studies, Volume 25, 2017 - Issue 8*, pp. 1394-1415.
- Glen, J., Lee, K. & Singh, A., 2003. Corporate profitability and the dynamics of competition in emerging markets: A time series analysis. *The Economic Journal*, 113, November, pp. F465-F484.
- Goddard, J., Tavakoli, M. & Wilson, J., 2009. Sources of variation in firm profitability and growth. *Journal of Business Research*, Vol. 62, Issue: 4. DOI: <https://doi.org/10.1016/j.jbusres.2007.10.007>, pp. 495-508.
- Hax, A. & Maljuf, N., 1983. The use of the industry attractiveness-business strength matrix in strategic planning. *Interfaces*, 13, pp. 54-71.
- Jakobsen, J., Gluud, C., Wetterslev, J. & Winkel, P., 2017. When and how should multiple imputation be used for handling missing data in randomised clinical trials – a practical guide with flowcharts. *BMC Med Res Methodology* 17(1):162. DOI: <https://doi.org/10.1186/s12874-017-0442-1>, 6 12.
- Kapitsinis, N., 2018. The impact of economic crisis on firm relocation: Greek SME movement to Bulgaria and its effects on business performance. *GeoJournal* (2019) 84. DOI: <https://doi.org/10.1007/s10708-018-9863-6>, 28 February, pp. 321-343.
- Karlsson, J., 2020. Firm size and growth barriers: a data-driven approach. *Small Business Economics* (2020). doi: <https://doi.org/10.1007/s11187-020-00350-y>, 29 May.
- Krugman, P., 1994. *The Age of Diminished Expectations*. s.l.:MIT Press, Cambridge MA.
- Krugman, P. & Obstfeld, M., 2003. *International Economics: Theory and Policy, 6th Edition*. s.l.:Addison Wesley World Student Series.
- Löffler, E., 2000. Best-practice cases reconsidered from an international perspective. *International Public Management Journal*, 3, 1 July, pp. 191-204.
- Lund, S., Mehta, A., Manyika, J. & Goldshtein, D., 2018. *A decade after the global financial crisis: What has (and hasn't) changed?*. [Online] Available at: <https://www.mckinsey.com/industries/financial-services/our-insights/a-decade-after-the-global-financial-crisis-what-has-and-hasnt-changed#>.
- Malgarini, M., 2011. *Fifth Joint EU-OECD Workshop on Business and Consumer Opinion Surveys Brussels 2011 - papers*. [Online] Available at: <https://www.oecd.org/sdd/leading-indicators/49016374.pdf>.

- Mayr, G., 1877. *Die Gesetzmässigkeit im Gesellschaftsleben (in German)*. Munich: Oldenburg.
- McKinsey Global Institute, 2018. *Outperformers: high-growth emerging economies and the companies that propel them*. [Online] Available at: <<https://www.mckinsey.com/mgi>>.
- NIESR; IVIE; University of Valencia, 2016. *TFP growth: Drivers, Components and Frontier Firms*, s.l.: European Commission, DG GROW, Specific Contract SI2-725490, Framework Contract ENTR/300/PP/2013/FC-WIFO coordinated.
- OECD, 2018. *Regional Well Being: A User Guide*. [Online] Available at: <<https://www.oecdregionalwellbeing.org/assets/downloads/Regional-Well-Being-User-Guide.pdf>>.
- OECD, 2017. *Continued slowdown in productivity growth weighs down on living standards (accessed on 24-1-2021)*. [Online] Available at: <<https://www.oecd.org/sdd/productivity-stats/continued-slowdown-in-productivity-growth-weighs-down-on-living-standards.htm>>.
- OECD & JRC, 2008. *Handbook on Constructing Composite Indicators - Methodology And User Guide*, s.l.: OECD.
- Pagano, P. & Schivardi, F., 2003. Firm Size Distribution and Growth. *The Scandinavian Journal of Economics*. doi: <https://doi.org/10.1111/1467-9442.t01-1-00008>, 17 June.
- Pasteels, J.-M., 2013. *Review of best practice methodologies for imputing and harmonising data in cross-country datasets*, s.l.: ILO Internal Report.
- Porter, M., 1990. The Competitive Advantage of Nations. *Harvard Business Review*, March-April, pp. 73-91.
- Prodromidis, P. et al., 2020. Patterns and shifts in EU business numbers, size and performance in the manufacturing and energy sectors during 2007-2016. *KEPE, Greek Economic Outlook, issue 42, 2020*, pp. 70-84.
- Sanz, F. et al., 2016. *Single market integration and competitiveness report 2016*, Brussels: EC, Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs.
- UN, 2015. *Resolution 70/1: Transforming our world: the 2030 Agenda for Sustainable Development*. [Online] Available at: <https://sdgs.un.org/2030agenda>
- Voulgaris, F., Agiomirgianakis, G. & Papadogonas, T., 2015. Job creation and job destruction in economic crisis at firm level: the case of Greek manufacturing sectors. *International Economics and Economic Policy*. Springer, vol. 12(1). DOI: 10.1007/s10368-014-0287-6, March, pp. 21-39.
- Weche, J. & Wambach, A., 2018. *The Fall and Rise of Market Power in Europe*, Mannheim: Centre for European Economic Research (ZEW). Retrieved from <<http://zinc.zew.de/pub/zew-docs/dp/dp18003.pdf>>.
- WEF, 2019. *The Global Competitiveness Report*, Geneva: World Economic Forum.

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