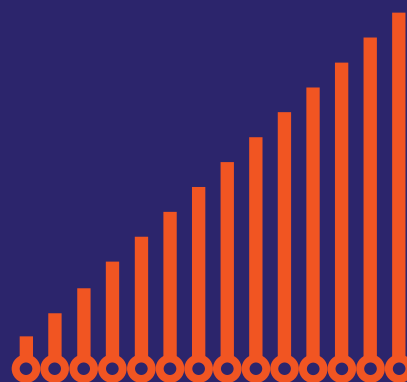
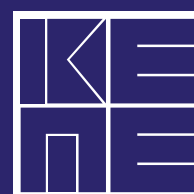


# GREEK ECONOMIC OUTLOOK



- Macroeconomic analysis and projections
- Public finance
- Human resources and social policies
- Development policies and sectors
- Special topics



# GREEK

## *Economic Outlook*

*Publisher:*

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<b>Editorial</b>	<b>3</b>
<b>1. Macroeconomic analysis and projections</b>	<b>4</b>
<b>1.1. Recent developments and prospects in the main demand components,</b> <i>Ersi Athanassiou</i>	<b>4</b>
<b>1.2. The evolution of the Consumer Price Index (CPI) in Greece</b> <b>and in the Eurozone,</b> <i>Yannis Panagopoulos</i>	<b>12</b>
<b>1.3. Factor model forecasts for the short-term prospects in GDP,</b> <i>Factor Model Economic Forecasting Unit</i> <i>Ersi Athanassiou, Theodore Tsekeris, Ekaterini Tsouma</i>	<b>15</b>
<b>1.4. International environment: Recent developments and prospects</b> <b>of the global economic activity,</b> <i>Aristotelis Koutroulis</i>	<b>18</b>
<b>2. Public finance</b>	<b>23</b>
<b>2.1. Evolution of the State Budget 2018,</b> <i>Elisavet I. Nitsi</i>	<b>23</b>
<b>2.2. The evolution and structure of public debt,</b> <i>Christos Triantopoulos</i>	<b>27</b>
<b>3. Human resources and social policies</b>	<b>31</b>
<b>3.1. Recent developments in key labour market variables,</b> <i>Ioannis Cholezas</i>	<b>31</b>
<b>3.2. Foreigners in the Greek labour market,</b> <i>Ioannis Cholezas</i>	<b>39</b>
<b>4. Development policies and sectors</b>	<b>46</b>
<b>4.1. Sharing economy-Collaborative economy: Use of services in Greece,</b> <i>Ersi Athanassiou, Agapi Kotsi</i>	<b>46</b>

**4.2. Competitiveness of the Greek economy, *Athanasios Chymis*** **55**

**4.3. Developments in the Greek capital market, *Fotini Economou*** **59**

**Special topics** **64**

**The special purpose vehicle (SPV) as a mechanism of banks' relief  
from the NPLs through securitization,**

*Spilios Mouzoulas, Yannis Panagopoulos, Ioannis Peletidis* **64**

The 38th issue of KEPE's *Greek Economic Outlook* is circulating at a crucial time, as the Greek economy continues its post-memorandum transition. On 21 November 2018, the first post-memorandum report on Enhanced Surveillance of the Greek Economy was published by the European Commission, following the visit of the representatives of Institutions to Athens on 10-14 September. The second report is expected to be published on 27 February 2019, where the conclusions of the evaluation conducted in Athens from 21 to 25 January 2019 will be presented. The second evaluation focused on the key challenges facing the Greek economy: fiscal adjustment and the prospects for achieving the primary surplus target of 3.5% of GDP, the implementation of 16 specific reform commitments (which should have been completed by end of last year), the continuation and completion of the key reforms launched under the program and the consolidation of financial stability, including the issues of non-performing loans and the revision of the First Home Protection Act (Katseli Law). The Institutions have expressed serious reservations about the Greek government's draft revision of the Katseli law: they stressed that if their concerns were not addressed within the next few weeks, the outcome of the second evaluation could be affected. A negative evaluation from the Institutions could mean not only that Greece might not receive the disbursement of central bank profits from Greek bonds—about one billion euros—but it could also have a destabilising impact on the markets. The second report is due to be discussed at the Eurogroup meeting in March.

In the international arena, the most important issue for Greece was the ratification of the Prespa Agreement by the Greek Parliament with 153 votes on January 25, 2019, following months of intense political confrontation and strong social unrest and polarisation. The Prespa Agreement entered into force on February 12 and the Former Yugoslav Republic of Macedonia (FYROM) was officially renamed the Republic of Northern Macedonia: this paved the way for the normalisation of bilateral relations between Greece and its

northern neighbour, the immediate integration of the Republic of Northern Macedonia into NATO and the revitalisation of its European Union prospects. At the same time, the four amendments to the Constitution—which the House of Representatives voted for on 11 January—came into force, while the process of issuing new passports and installing new road signs has also begun. Moreover, within the framework of the Prespa Agreement, Statues and Public Buildings that represent part of Greece's historical heritage will be given new inscriptions with clarifications that they symbolize the Ancient Greek period and honour the friendship between the two nations. As part of the Prespa agreement, the government of the Republic of Northern Macedonia also committed to removing the Vergina Sun, including its use in flags, from all public spaces and from public use.

The 38th issue of KEPE's *Greek Economic Outlook* is presented in two parts. Part One examines the recent developments and prospects for the main components of demand, the Consumer Price Index in Greece and the Eurozone, as well as the factor model forecasts for short term prospects of GDP. An overview of the recent economic developments and prospects in the international environment is also presented. Public finances are examined through an analysis of the State Budget Execution (2018) as well as the evolution and structure of public debt. Recent developments in key variables of the Greek labour market are discussed, as well as the issue of the participation of foreigners in the Greek labour market. Finally, sectoral policies are analysed through an examination of the sharing economy-collaborative economy: use of services in Greece, as well as key developments in the competitiveness of the Greek economy and the Greek capital market. Finally, the article presented in Part Two analyses "The special purpose vehicle (SPV) as a mechanism of banks' relief from the NPLs through securitization".

RITSA PANAGIOTOU  
Editor

# 1. Macroeconomic analysis and projections

KEPE, *Greek Economic Outlook*, issue 38, 2019, pp. 4-11

## 1.1. Recent developments and prospects in the main demand components

*Ersi Athanassiou*

According to the most recent seasonally adjusted data of the quarterly *National Accounts* (ELSTAT, provisional data, December 2018) during the third quarter of 2018 Greece's GDP continued to increase, recording a rate of change of 2.2% as compared to

the corresponding quarter of 2017 (Table 1.1.1). At a first glance, this development does not appear to differ significantly from the course of the GDP in the previous quarters, and therefore the Greek economy appears to remain on a path of moderate recovery. However, the dynamics of this recovery, as reflected in the evolution of individual macroeconomic aggregates, presented during this period comparatively more intense elements of instability, mainly on the part of domestic demand. More particularly, gross fixed capital investment declined considerably in the third quarter of 2018, as compared to the corresponding quarter of the previous year. In parallel, private consumption, although remaining on a rising

**TABLE 1.1.1 Main macroeconomic aggregates**

*% rates of change compared to the corresponding period of the previous year (seasonally adjusted data at constant prices)*

								9 month period Jan.-Sept.	
	2017Q1	2017Q2	2017Q3	2017Q4	2018Q1	2018Q2	2018Q3	2018	2017
Private consumption	1.1	1.2	1.5	-0.2	0.5	1.3	0.7	0.8	1.3
Public consumption	-3.0	-1.1	0.4	1.7	-0.6	-4.3	-4.1	-3.0	-1.2
Gross fixed capital formation	8.0	-8.5	26.1	12.2	-8.8	19.2	-23.2	-6.2	8.3
Domestic demand*	1.5	0.0	3.6	1.5	-0.9	2.6	-3.5	0.7	-1.1
Exports of goods and services	5.7	9.1	7.0	5.9	8.1	9.2	7.6	8.3	7.3
Exports of goods	3.3	8.3	2.9	8.2	11.0	7.0	7.9	8.6	4.8
Exports of services	9.3	11.4	10.5	2.9	4.8	12.2	8.0	8.3	10.4
Imports of goods and services	15.7	5.8	5.3	3.2	-7.5	2.7	15.0	3.1	8.9
Imports of goods	17.5	4.3	4.7	2.2	-11.3	-0.1	15.0	0.6	8.8
Imports of services	9.8	13.6	5.2	7.8	11.8	16.0	16.0	14.6	9.4
Balance of goods and services	0.0	1.8	2.0	2.1	2.5	1.7	2.2	2.1	1.2

Source: *National Accounts*, ELSTAT (December 2018), own calculations.

\* Excluding the change in inventories.

track, seemed to present, once more, a weakening of its rate of change. These developments, in combination with the continuing restraint in public consumption in the framework of fiscal adjustment, resulted in a decline in domestic demand by -3.5% as compared to the corresponding quarter of 2017, with the corresponding negative contribution to the rate of change of the GDP amounting to -3.6 percentage points (Figure 1.1.1).

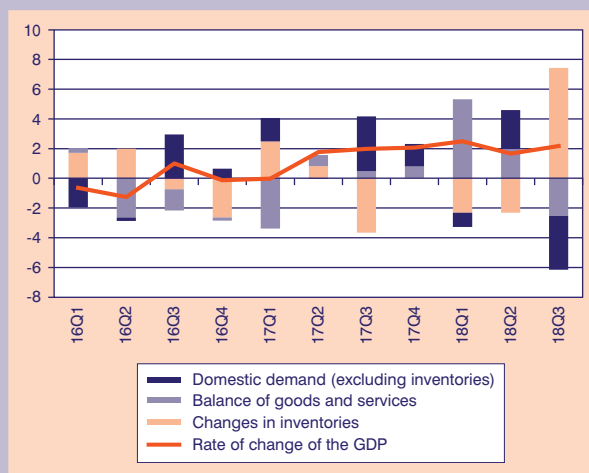
With respect to developments in the external sector, favourable conditions in international demand continued to exert a positive effect on exports, which presented significant growth for a ninth consecutive quarter. In parallel, a considerable increase was recorded over the same period in imports, a development that

is partly related to the increase in oil prices and the consequent pressures on the cost of fuel imports. On the whole, the negative contribution to the rate of change of the GDP from the increase in imports outweighed the corresponding positive contribution from the strengthening of exports; the result being a negative contribution of the external sector to the rate of change of the GDP in the third quarter of 2018 (-2.5 percentage points).

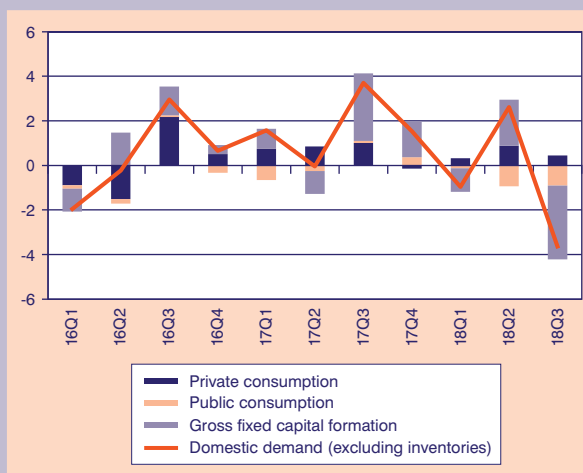
From the aforementioned evolution in the figures of domestic demand and the external sector, it is evident that developments in inventories played a crucial role in shaping positive GDP growth in the third quarter of 2018. As illustrated in Figure 1.1.1, the contribution of the change in stocks to the rate of change of the GDP

**FIGURE 1.1.1**  
**Contributions to the rate of change of the real GDP**

*Domestic and net external demand*

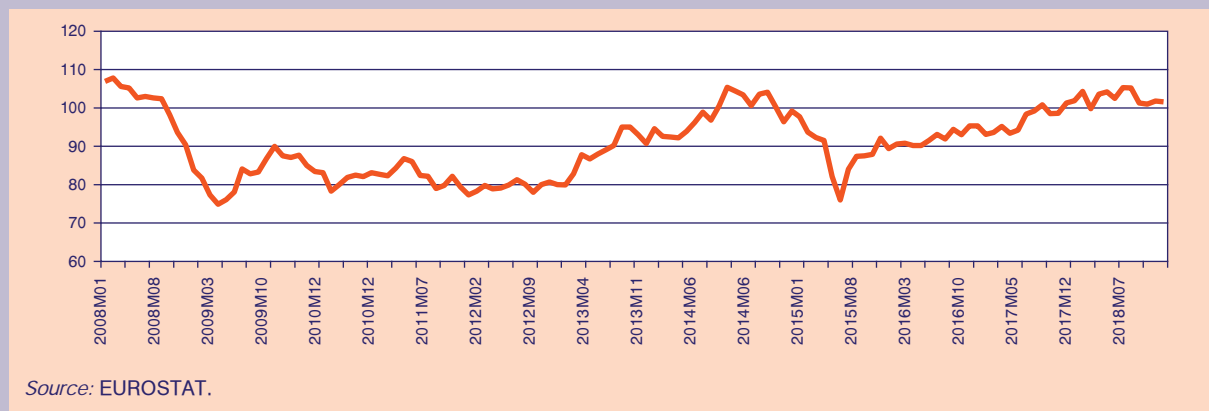


*Individual components of domestic demand*



Source: National Accounts, ELSTAT, own calculations.

**FIGURE 1.1.2**  
**Economic sentiment indicator**



Source: EUROSTAT.

was unusually high during this period, a development which is likely to be related to the weakening of domestic demand and the consequent lower absorption of produced and imported goods.

Focusing on the available indications with respect to the course of economic activity during the most recent period, the economic sentiment indicator remained on an upward trend up to August 2018, thereafter exhibiting a marked decline in September and small fluctuations up to December (Figure 1.1.2 above). These developments suggest that, while the economic climate remains comparatively favourable, its dynamics appear to stabilise recently.

Regarding the main factors shaping the recent developments in the GDP and its main components, next follows a more detailed analysis of their evolution and prospects, on the basis of *National Accounts* data and selected short-term indicators.

### 1.1.1. Private consumption

According to *National Accounts* data, private consumption remained on a rising trend during the third quarter of 2018, presenting nevertheless a deceleration of its rate of growth to 0.7% as compared to the corresponding quarter of the previous year.

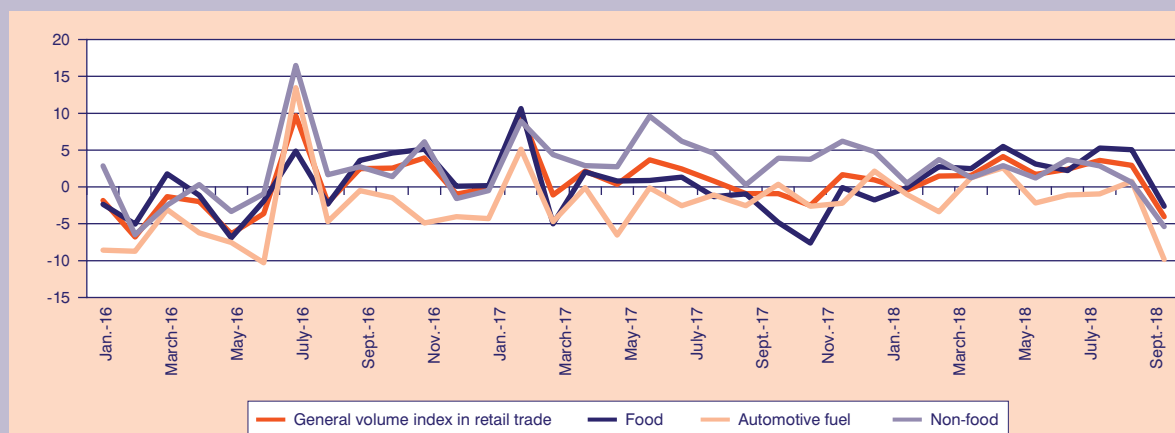
Additional indications on the recent course of private consumption are provided on the basis of the evolution of the monthly volume index in retail trade for the period July-October<sup>1</sup> 2018. Following the upward

trend prevailing in the first and second quarter of the year, the general index recorded positive percentage changes in July (2.4%), August (3.6%) and September (2.9%) and a negative change in October 2018 (-4.0%). With respect to developments in the three main retail sector categories, namely the *food* sector, the *automotive fuel* sector and the *non-food* sector, the trends recorded during the period July-September 2018 were purely positive in the case of the *non-food* sector, mostly positive in the case of the *food* sector and mostly negative in the case of the *automotive fuel* sector. However, in all three categories the index recorded a significant decline in October 2018 (Figure 1.1.3).

The above mixed trends in retail trade are also mirrored in the evolution of the indices in the individual retail store sub-categories. More particularly, in the period from July-September 2018, the indices referring to *supermarkets*, *pharmaceuticals-cosmetics*, *clothing-footwear*, *furniture-electrical equipment-household equipment* and *books-stationery-other books* recorded positive percentage changes compared to the corresponding period of 2017 (in the area of 4.3%, 1.2%, 2.8%, 0.7%, 6.1% and 2.2%, respectively). On the contrary, a marginally negative rate of change was recorded over the same period in case of the index for *automotive fuel* (-0.2%), while a significant reduction was observed in the sub-category referring to *food-beverages-tobacco* (-4.0%). With respect to developments in October 2018, the relevant indices recorded negative rates of change as compared to

**FIGURE 1.1.3**

**Percentage changes in the general volume index and the main sector indices in retail trade**



Source: ELSTAT, own calculations.

1. The data for October are provisional.

the corresponding month of the previous year in all individual sub-categories except *books-stationery-other books*.

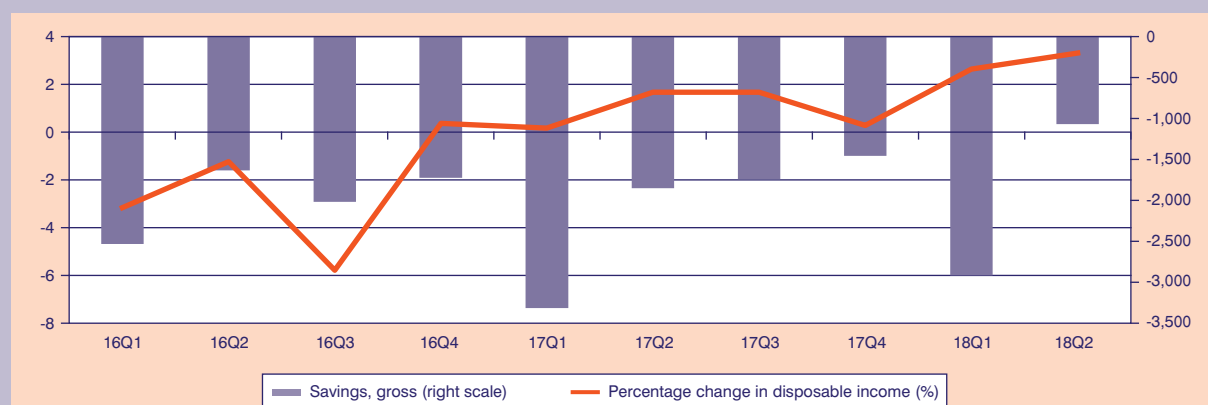
With respect to the data and indices mentioned above it seems that private consumption is under the influence of opposing forces and as a result the prevailing upward trend is restrained or temporarily interrupted. On the one hand, the recovery of private consumption is favoured by developments in household disposable income, which as illustrated in Figure 1.1.4 recorded a significant increase in the first and second quarters of 2018 (2.6% and 3.3%, respectively, as compared to the first and second quarters of 2017). On the other

hand, household savings remain negative, a situation which induces households to hold back their consumption or use part of the increase in their incomes to lessen their negative savings position, particularly in periods of increased financial obligations or rising cautiousness.

Regarding the prospects of private consumption, the negative turn in the volume index in retail trade in October 2018 may be incidental, but nevertheless is not a favourable sign with respect to developments in consumption in the fourth quarter of 2018. On the other hand, the wider prospects for the continuation of the recovery of the economy is consistent with a positive

**FIGURE 1.1.4**

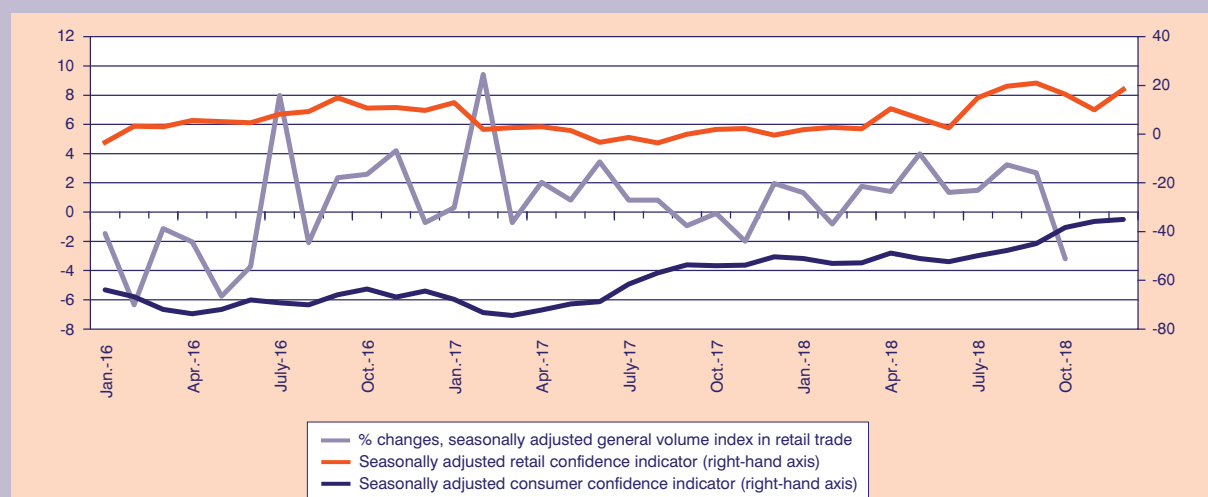
**Gross Savings (million euro) and percentage change of the disposable income of households and NPISHS**



Source: ELSTAT, own calculations.

**FIGURE 1.1.5**

**General volume index in retail trade and confidence indicators**



Source: ELSTAT, EUROSTAT, own calculations.

projection for private consumption in 2019, subject to the condition that no further uncertainty will arise with respect to compliance with the country's main economic obligations and the further normalization of economic conditions. At this point consumers exhibit improved expectations with regard to the course of their consumption expenditure, as reflected in the significant and continuous increase of the consumer confidence indicator during the period July-December 2018 (Figure 1.1.5 above). In parallel, positive expectations, with some fluctuations, are also observed on the part of retailers, with the retail confidence indicator rising during the period from July to September 2018, falling in October and November and then rising once again in December 2018.

### 1.1.2. Investment

Following a significant decline in the first quarter of 2018 and a considerable increase in the second quarter of the year, gross fixed capital formation decreased substantially in the third quarter of 2018, with the relevant rate of change amounting to -23.2% as compared to the corresponding quarter of 2017 (Table 1.1.2). As a result of the latter development, the contribution of investment to the rate of change of the GDP amounted to -3.3 percentage points in the third quarter of 2018,

from -1.1 and 2.1 points in the previous two quarters, respectively.

The decline of gross fixed capital formation in the third quarter of 2018 was due exclusively to the drop in investment in other constructions, as expenditure in this category fell by -49.1% compared to the corresponding quarter of the previous year (Table 1.1.2). This development reflects partly a lack of sufficient volume of large construction projects which could contribute decisively to investment expenditure. In contrast to the category of other constructions, investment in the other main categories increased in the third quarter of 2018. More particularly, investment in transport equipment recorded a large increase (154.4%), while a significant boost was also observed with respect to investment in machinery and equipment (18.4%) and ICT equipment (16.5%). In parallel, investment in other products increased marginally (0.2%), while developments were promising in the case of investment in dwellings (20.8%), which seems to be favoured by the apparent trend for recovery of the real estate market.

More particular information with regard to the recent developments in residential investment is derived, in principle, from the residential buildings indicator with respect to square meters of useful floor area, based on building permits. According to both the individual monthly

**TABLE 1.1.2 Main investment aggregates**

*% rates of change compared to the corresponding period of the previous year (seasonally adjusted data, constant prices)*

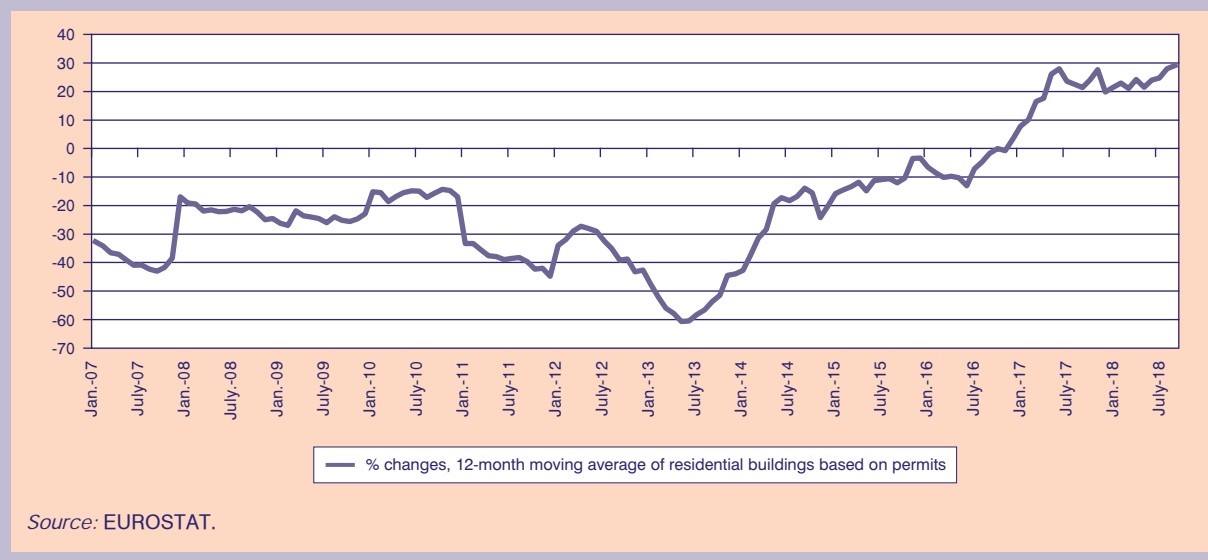
	Quarters						
	2017Q1	2017Q2	2017Q3	2017Q4	2018Q1	2018Q2	2018Q3
Cultivated assets	12.5	20.5	27.6	16.2	3.1	3.6	5.7
Other machinery and equipment and weapon systems	-5.3	1.7	-1.2	29.3	22.1	20.8	18.4
Transport equipment and weapon systems	150.5	0.9	-19.0	89.0	-55.3	-44.5	154.4
Information Communication Technology (ICT) equipment	-16.6	-1.1	11.2	34.8	25.5	15.8	16.5
Dwellings	-8.5	-1.4	-3.8	-8.1	11.1	5.4	20.8
Other construction	-13.3	-29.0	89.4	-24.8	9.4	53.2	-49.1
Other products	-2.5	-1.7	-1.2	0.2	-1.4	-0.5	0.2
Gross fixed capital formation	8.0	-8.5	26.1	12.2	-8.8	19.2	-23.2

Source: National Accounts, ELSTAT (December 2018), own calculations.

observations of the residential buildings indicator and the estimated private building activity,<sup>2</sup> conditions have improved over the most recent period of reference. More specifically, the monthly percentage changes of the residential buildings indicator remained significantly positive in July, August and September of 2018 (17.6%, 46.6% and 26.6%, respectively, on a year-on-year basis), while, in parallel, positive rates of change were also recorded during the same period in the estimated private building activity (24.7% in July, 28.0% in August and 29.2% in September) (Figure 1.1.6).

Looking back to developments in investment over the past two years, one observes significant volatility in the relevant rates of change, and a failure to maintain the positive dynamics prevailing from time to time. This turbulence in the path of investment underlines the fact that the stabilization of the economy and the general improvement of the economic climate are necessary but not sufficient conditions for the consistent recovery of investment expenditure. The achievement of the fast and continuous growth in investment that is necessary for securing stable and viable economic recovery, is

**FIGURE 1.1.6**  
**Estimated residential building activity based on permits**



**FIGURE 1.1.7**  
**Construction confidence indicator**



2. A twelve-month moving average and the related percentage point changes are calculated.

subject, on one hand, to the improvement of financing and liquidity conditions in the market through a further stabilization of the domestic banking system, and on the other hand to the implementation of major projects that will boost the investment climate and strengthen investment expenditure in the construction sector.

On the basis of the above, it is evident that the short-term path of fixed capital formation in the country will depend upon progress in the areas just mentioned, while effects on investment aggregates may arise in 2019, in the framework of the election cycle. Concerning the constructions sector, market players appear to remain cautious, as indicated by the relevant confidence indicator which recorded a decline in September and an improvement in October and November 2018 (Figure 1.1.7 above).

### 1.1.3. External balance of goods and services

Exogenous factors continued to play a significant role in the evolution of the external balance of the country in the third quarter of 2018, with the maintenance of high rates of growth of international trade favouring exports, and the considerable rise in oil prices, as compared to the corresponding period of the previous year, weighing significantly on the deficit of the balance of trade in fuels.

More particularly, concerning exports, the third quarter of 2018 was characterized by a significant increase both in the case of goods (7.9%) and in the case of services (8.0%), the result being a positive contribution of 2.6 percentage points to the rate of change of the GDP (see Figure 1.1.8). The increase in services

exports was due to the considerable improvement in transportation receipts (by 23.8% in the third quarter of 2018, according to Bank of Greece data), as well as to the continuing rise in tourism receipts (by 4.4%, respectively). In the case of transportation receipts, a significant positive role in their development seems to have been played both by favourable trends in world trade, and by the related higher levels of ocean shipping freight rates as compared to the corresponding period of the previous year.

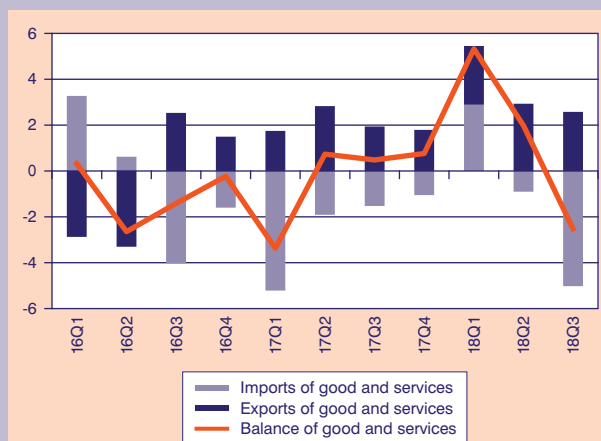
With respect to imports, despite the decline in domestic demand in the third quarter of 2018, the overall positive expectations with respect to the path of the economy appear to have influenced the demand for imports of goods and services. Moreover, the value of goods imports was augmented, as already mentioned, by higher oil prices, while payments for transportation services were clearly affected by the rise in ocean shipping freights. Thus, in the field of services imports, the rate of change as compared to the corresponding period of the previous year remained positive (16.0%), while in the field of goods exports, the relevant rate of change tuned positive (15%) after two quarters of decline. As a result of these developments, the contribution of imports to the rate of change of the GDP amounted to -5.0 percentage points in the third quarter of 2018.

Concerning the prospects of the external sector, the projections of international organizations for world trade growth and GDP growth in Europe during 2019 point to a deceleration as compared to the previous year. This development, in combination with the recovery of tourism activity in the markets of the Eastern Mediterranean, may affect to some extent Greece's exports of goods and services in the current year. On the other hand, the lower expected prices of oil in 2019 will help to restrain fuel imports, while the evolution of imports of goods other than fuel will depend on the course of domestic demand and more particularly on the extent of the recovery of investment and private consumption.

### 1.1.4. Conclusions and prospects

From the above analysis, one may observe a continuing course of gradual recovery for the Greek economy, but also recurring volatility as to the contribution of individual demand components to the rate of change of the GDP. An important positive feature of recent developments is fast growth in exports of goods and services. On the other hand, gross fixed capital formation continues to fluctuate widely, private consumption dynamics are rather weak, while expected developments

**FIGURE 1.1.8**  
**Contributions to the rate of change of the GDP**  
*Individual components of external demand*



Source: National Accounts, ELSTAT, own calculations.

in world trade and competitor countries in the tourism sector constitute additional challenges for the period ahead. In this framework, growth in the Greek economy will depend crucially upon further economic stabilization through the implementation of agreed structural reforms, as well upon investment dynamics, which are in turn subject to the restoration of the mechanism of business financing through the banking system, as

well as to the ability to speed up the implementation of major projects that will boost the investment climate and strengthen the construction sector. Overall, developments point to a prospect of the continuation of economic recovery in the country in the upcoming quarters, an assessment that is in line with the forecasts derived on the basis of the KEPE dynamic factor model (see Section 1.3).

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

*Yannis Panagopoulos*

### Greece

The Greek headline Consumer Price Index (CPI), from June 2018 up to end of the year, follows a relatively constant trend of 1.0% annually (see column of Table 1.2.1 and Figure 1.2.1). However, there are two outliers on this, which appear in October (1.8%) and December 2018 (0.6%). On the other hand, the core<sup>1</sup> of CPI presents a different picture. More specifically, from the beginning of 2018 up to the end of the year, the core of CPI has moved with almost zero changes (0%).

A similar trend was recorded by the Greek harmonized CPI (HCPI) and its core. More analytically, up to the end of 2018, the HCPI moved steadily with positive changes raging between 0.8%-1.1%, with October

2018 as the only exception (1.8%). On the other hand, the core of HCPI moved with a slightly higher percentage change than the corresponding core of CPI.

Additionally, according to the Hellenic Statistical Authority (ELSTAT), the aforementioned headline inflation rate (0.6%, y-o-y, in December 2018) can be mainly attributed to subsequent price increases in seven (7) main sub-categories, namely:

- (a) the “Communication” category (by 5.3%) mainly due to increased fees of telephone services,
- (b) the “Alcoholic drinks and tobacco” category (by 1.2%) basically due to price increases in tobacco,
- (c) the “Housing” category (by 1.1%) due to increases of residential heating and natural gas. Part of this increase was offset by the decreases in the prices in electricity bills,
- (d) the “Transportation” category (by 0.8%) mainly due to increases in transport airplane tickets as well as in petrol. Part of this increase was offset by the decreases of the price of automobile’ fuels and in the maintenance and repair of personal transportation equipments,
- (e) the “Restaurants-Hotels-Cafes” category (by 0.8%) mainly due to increases in the prices of Restau-

**TABLE 1.2.1 Inflation in Greece and in the Eurozone**

	Headline inflation (Greece)	Core inflation (Greece)	Harmonized inflation (Greece)	Core Harmonized inflation (Greece)	Harmonized inflation (EU19)	Core Harmonized inflation (EU19)
2018M5	0.6	0.0	0.8	0.5	1.9	1.3
2018M6	1.0	0.0	1.0	0.3	2.0	1.2
2018M7	0.9	-0.5	0.8	-0.1	2.1	1.3
2018M8	1.0	0.0	0.9	0.1	2.0	1.2
2018M9	1.1	0.1	1.1	0.4	2.1	1.1
2018M10	1.8	0.3	1.8	0.7	2.2	1.2
2018M11	1.0	0.1	1.1	0.5	1.9	1.1
2018M12	0.6	NA	0.8	NA	1.6	NA

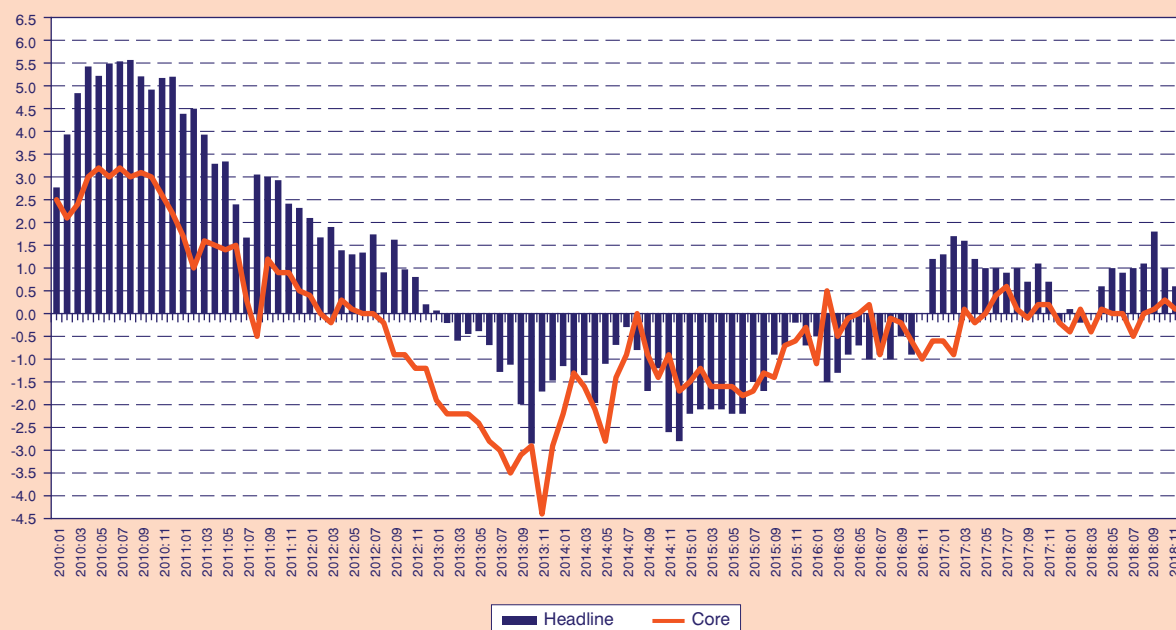
Source: ELSTAT, EUROSTAT.

Note: NA: No available data.

1. The core does not contain the prices of electricity, natural gas, and automobile petrol.

**FIGURE 1.2.1**

**CPI, % change relative to the respective month of the previous years**



Source: ELSTAT, EUROSTAT.

rants & Cafes. Part of this increase was offset by the decreases of the price of rents in motels and hotels,

- (f) the “Health” category (by 0.7%) especially due to price increases in pharmaceutical products,
- (g) the “Food and non-alcoholic beverages” category (by 0.4%) due to price increases mainly in fresh fish, beef, poultry, vegetables and potatoes. Part of this increase was offset by decreases in the prices of fresh fruits, pork, yogurt, cheese, olive oil and cold cuts.

Part of the aforementioned inflation rate was offset by the decrease in the prices mainly of four (4) sub-categories, namely:

- (a) the “Household equipments” category (by 1.7%) mainly due to decreases in prices of furniture and decoration, household textile products and in household consumption items,
- (b) the “Recreation and culture” category (by 0.8%) mainly due to decreases in the prices of optical and visual equipments, PCs and other repairs,

(c) the “Education” category (by 0.8%) mainly due to decreases in the fees for secondary schools,

(d) the “Miscellaneous goods and services” category (by 0.8%) basically due to reductions of the prices of personal care products, other personal items and vehicle insurance.

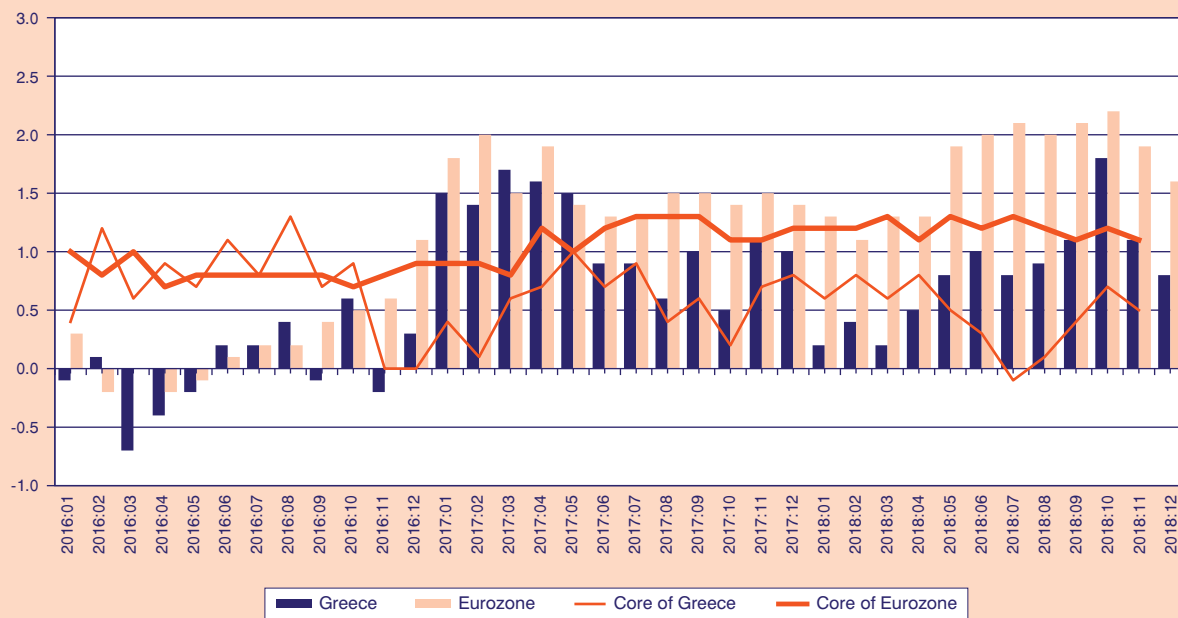
## The Eurozone

As regards to the change of the harmonized CPI of the euro area (HCPI-EU19) we can report that since May of 2018 and up to end of the year it has managed to stay close to the target/objective of the European Central Bank<sup>2</sup> (ECB) (see Figure 1.2.2). At the same time, the core of the HCPI-EU19 continues to move steadily, with positive changes of around 1.1%-1.3%. Regarding now the issue of convergence between the rate of change of the HCPI of the Eurozone and Greece, it is observed that, for the second semester of 2018, the difference will range around 0.8%-1.3% (with the exception of October 2018). This difference is more widened for the corresponding core indicators and ranges around 0.5%-1.4%.

2. The target of the ECB for the HCPI-EU19 is a percentage change of 2.0%.

**FIGURE 1.2.2**

**Harmonized indices of consumer prices, % change relative to the respective month of the previous years**



Source: ELSTAT, EUROSTAT.

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

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

The current section presents the updated short-term forecasts of KEPE concerning the evolution of the rate of change of real GDP in Greece in the last quarter of 2018 and the first two quarters of 2019.<sup>1</sup> The forecasts are produced by implementing a dynamic structural factor model, a detailed description of which can be found in Issue 15 (June 2011) of the *Greek Economic Outlook*. The underlying time series database used to estimate the model and produce the forecasts includes 126 variables, covering the main aspects of economic activity in the country on a quarterly basis, spanning the time period from January 2000 up to September 2018. Specifically, the database incorporates both real economy variables (such as the main components of GDP from the expenditure side, general and individual

indices concerning industrial production, retail sales, travel receipts and the labor market) and nominal variables (such as the general and individual consumer price indices, monetary variables, bond yields, interest rates, exchange rates and housing price indices). In addition, the data sample includes a considerable number of variables reflecting expectations and assessments of economic agents (such as economic sentiment and business expectations indicators). It is noted that the seasonal adjustment of all time series is carried out by the use of the Demetra+ software, which is freely available from Eurostat.<sup>2</sup>

According to the econometric estimates presented in Table 1.3.1, and having incorporated published (provisional) GDP data up to the third quarter of 2018, as well as the estimated positive rate of change of 2.3% for the last quarter of 2018, both the mean annual rate of change of real GDP for the whole year 2018 and the mean rate of change for the second half of 2018 are predicted at 2.2%. Compared to the predictions of the preceding period of reference, the forecasts of both the quarterly and the mean six-month rate of change reflect a marginal decrease of 0.1%, while the estimate for the whole year 2018 remains unchanged. In addition, the forecasted rates

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

Quarters	2018	2019	
	2018Q4	2019Q1	2019Q2
Quarterly rate of change	2.25 [2.18 , 2.31]	2.24 [2.12 , 2.36]	2.10 [1.92 , 2.28]
Mean rate of change, 1st half*	-	2.17 [2.02 , 2.32]	
Mean rate of change, 2nd half**	2.22 [2.19 , 2.26]	-	
Mean annual rate of change ***	2.16 [2.15 , 2.18]	-	

*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 first half of 2018, since it does not incorporate a forecast. \*\* The mean rate of change for the second half of 2018 incorporates the officially available (provisional) data for the third quarter of 2018, on a seasonally adjusted basis. \*\*\*The mean annual rate of change incorporates the officially available (provisional) data for the first three quarters of 2018, on a seasonally adjusted basis.

1. The date of the forecast is the 15<sup>th</sup> of January 2019.

2. The TRAMO/SEATS filter was used for the seasonal adjustment.

of change for the first two quarters and the first half of 2019 indicate that GDP growth will move around the same levels, without any significant change to the upward or downward direction. More specifically, the estimate for the first half of 2019 lies at 2.2%, with the corresponding quarterly rates of change for the first and second quarter of 2019 amounting to 2.2% and 2.1%, respectively.

The above presented estimates of the rate of change of real GDP mirror the key dimensions of the most recent short-term developments in the Greek economy and are consistent with the course indicated by the included statistical data for the first nine months of 2018. At the same time, they are in line with the previous factor model forecasts for 2018 and the overall evidence for a gradual recovery and stabilization in the Greek economy. In parallel, they reconfirm the observation that there is still a lack of indications for stronger growth dynamics in the country –a piece of evidence relating primarily to the domestic demand component and owed, to a significant degree, to the overall financial burden weighing on enterprises and households. In addition, the fact that growth rates are not predicted to strengthen in the first half of 2019 might further reflect delays in the implementation and reinforcement of several necessary structural reforms. It could also suggest the reluctance and wait-and-see stance probably characterizing the decisions of the agents, due to the uncertainty associated with the electoral cycle, as 2019 is a year of elections.

More analytically, as indicated by the non-seasonally adjusted economic data for the third quarter of 2018, the most recent upward course in a significant number of economic variables, as reflected in positive and, in many cases, even double-digit rates of change, as well as the course of the main GDP components, are compatible with the above findings and assessments. Indicative are the positive trends in: (a) goods and services' exports, (b) industry, based on both the general industrial production index and the individual index categories (with the exception of the index for durable consumption goods), as well as the general turnover index in industry, for the overall as well as for the internal and external markets,<sup>3</sup> (c) retail trade, according to the general volume index and most of the individual index categories, (d) travel and transport receipts, (e) passenger cars and motorcycles trade, according to private passenger car licenses issued and the turnover

index for motor trade, respectively, (f) building activity, in terms of volume, on the basis of permits issued, (g) the production index in construction, and the sub-categories of production of civil engineering and building construction, (h) wholesale trade, on the basis of the turnover index, and (i) spreads, which declined significantly. The major macroeconomic component of private consumption expenditure was also characterized by positive developments, even though the recorded rise was rather weak (below unit), while favourable indications are further provided by a number of competitiveness indicators. Positive trends also characterized most of the indicators reflecting business expectations on a sectoral level (except for expectations in construction), as well as some of the indicators incorporating the assessments for new and anticipated orders in industry and exports, and also the economic sentiment indicator for Greece. Of great importance for the domestic economic conditions is the further continuation of the gradual reduction in unemployment (on an aggregate level, as well as for the long-term and the newly unemployed), alongside the preservation of the increasing trend in employment (on an aggregate level, mainly in the primary and tertiary sectors, and a downward course only in the secondary sector), given the adverse situation still characterizing the domestic labour market.

On the negative side,<sup>4</sup> the decrease in the key macroeconomic component of investment stands out, driven by the double-digit negative rate of change in investment in other buildings and structures. Moreover, a fall was recorded in the component of General Government consumption expenditure, while downward trends further characterized: (a) the General Index of the Athens Stock Exchange, (b) some of the sub-indices of the turnover index in industry, in particular for durable consumption goods, and (c) some of the sub-indices of the volume index in retail trade (in particular for the category of department stores and automotive fuel).

The forecasted course of the real GDP in the last quarter of 2018, as well as during the first half of 2019, may evolve according to a more or less favourable –than indicated by the above presented forecasts–scenario, depending on certain critical and decisive developments which concern a wide range of factors. These are associated, on the one hand, with the developments in the major GDP components, which de-

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3. It is worth mentioning that the observed favourable developments, both for the overall and the internal and external markets, seem to be basically driven by the sub-indices for the category of energy.

4. Here again, the ascertainties refer to the course of the variables on a non-seasonally adjusted basis.

termine the degree of the medium-term enhancement and sustainability of the growth dynamics, mainly through the reinforcement of production capacity in crucial sectors of the Greek economy and the creation of new jobs. In particular, they concern the preservation of the general favourable sentiment with regard to exports, but also the absolutely necessary recovery and stabilization in investment and private consumption. On the other hand, they relate to the promotion

of key structural reforms, as well as the provision of smooth financing conditions. Finally, they are linked to any potential relief for enterprises and households from the severe financial burdens they are facing, the elimination or, at least, the limitation of uncertainty and gradual attenuation of the reluctance relating to domestic political developments, and, finally, the dynamics of the growth path of the European and global economies.

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

**Aristotelis Koutroulis**

*The growth rate of global economic activity is expected to slow down amid strong tensions in bilateral trade relations between the world's two largest economies. International trade expansion is expected to register a slowdown as well. High uncertainty among international investors and the large divergence in the growth prospects of national economies around the globe have emerged as the key features of the global economy.*

### 1.4.1. Trends and developments in the global economy

#### *Economic activity*

According to the estimations of international organizations, the growth rate of global GDP was maintained at 3.7% in 2018 (see Table 1.4.1). Compared to 2017, however, the performance of national economies across the globe was synchronized to a lesser degree. In addition, many analysts share the opinion that the global economy has already reached its peak.

In the short term, global economic expansion will continue to receive support from accommodative macro-economic policy and improving labour market conditions in major economies. Nevertheless, global GDP growth is projected to register a marginal decrease in 2019, reflecting: (a) increased trade tensions between China and the US, (b) tighter fiscal and monetary policy in a certain number of countries, (c) lower investment rates due to increased uncertainty, (d) tighter financing conditions, and (e) rising international prices of energy products.

The aforementioned projection relies on the assumption that a series of economic and geopolitical risks surrounding the global economy will not be realized. These risks are related to: (a) an escalation of trade tensions between major economies, (b) an abrupt

withdrawal of accommodative policy measures, (c) the restructuring of international investors' portfolios against emerging economies, (d) a larger than projected slowdown of the Chinese economy, and (e) stronger increases in international oil prices (European Commission, 2018 and OECD, 2018).

Interestingly, all these risks are interconnected with each other. For example, additional increases in US tariffs may cause successively: an increase of the US inflation rate, a hike in US interest rates, turmoil in international financial markets and capital flight from emerging economies to the US economy (European Commission, 2018).

#### *Inflation and unemployment*

In 2018, inflation in advanced economies increased (on average) by 0.3%, reflecting higher international oil prices and stronger domestic demand (see Table 1.4.2). Emerging economies experienced (on average) slightly higher inflation increases, as some of them suffered strong currency devaluations over the same period. For the current year, it is expected that tighter monetary policy will offset inflationary pressures stemming from elevated oil prices and rising labour costs. In this respect, inflation in most advanced and emerging economies will remain close to last year's levels (see Table 1.4.2).

Although inflation rates between advanced and emerging economies are markedly different, inflation changes seem to follow a common trend worldwide. The most plausible explanation offered for this common trend is related to the process of economic integration through the increased participation of national economies in international trade and global financial markets. National central bankers' convergent economic philosophy and policy is a plausible explanation as well (World Bank, 2019).

According to the International Labor Organization (ILO), the world-wide unemployment rate declined to 5.4%<sup>1</sup> in 2018 (see Table 1.4.3). Labour market recovery has been particularly strong in advanced economies, as in many of them unemployment rates dropped below pre-crisis levels. In addition, there are signs of labour shortages, especially for high-skilled labour (OECD, 2018). At the same time, high-routine low-skilled labour

1. See <[http://www.ilo.org/ilostat/faces/oracle/webcenter/portalapp/pagehierarchy/Page3.jspx?MBI\\_ID=2](http://www.ilo.org/ilostat/faces/oracle/webcenter/portalapp/pagehierarchy/Page3.jspx?MBI_ID=2)>.

**TABLE 1.4.1 Real Gross Domestic Product<sup>1,2</sup>**  
(annual percentage changes)

	2017*				2018**				2019**			
	IMF	EC	OECD	WB	IMF	EC	OECD	WB	IMF	EC	OECD	WB
<b>World economy</b>	3.7	3.7	3.6	3.7	3.7	3.7	3.7	3.6	3.7	3.5	3.5	3.5
<b>Advanced economies</b>	2.3	:	:	2.3	2.4	:	:	2.2	2.1	:	:	2
USA	2.2	2.2	2.2	2.2	2.9	2.9	2.9	2.9	2.5	2.6	2.7	2.5
Euro area	2.4	2.4	2.5	2.4	2	2.1	1.9	1.9	1.9	1.9	1.8	1.6
Japan	1.7	1.7	1.7	1.9	1.1	1.1	0.9	0.8	0.9	1	1	0.9
United Kingdom	1.7	1.7	1.7	1.7	1.4	1.3	1.3	1.3	1.5	1.2	1.4	1.4
<b>Developing economies</b>	4.7	:	:	4.3	4.7	:	:	4.2	4.7	:	:	4.2
Brazil	1	1	1	1.1	1.4	1.1	1.2	1.2	2.4	1.9	2.1	2.2
Russia	1.5	1.5	1.5	1.5	1.7	1.7	1.6	1.6	1.8	1.6	1.5	1.5
India	6.7	6.2	6.7	6.7	7.3	7.4	7.5	7.3	7.4	7.5	7.3	7.5
China	6.9	6.9	6.9	6.9	6.6	6.6	6.6	6.5	6.2	6.2	6.3	6.2

Sources: IMF, World Economic Outlook, October 2018, OECD, OECD Economic Outlook (Vol. 2018/2), European Commission, European Economic Forecast, Autumn 2018, World Bank, Global Economic Prospects, January 2019.

\* Estimations, \*\* Projections.

Notes: 1. The observed differences between the available macroeconomic projections partly reflect the differences between the macroeconomic 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 1.4.2 Inflation<sup>1</sup>**  
(annual percentage changes)

	2017			2018*			2019*		
	IMF	EC	OECD	IMF	EC	OECD	IMF	EC	OECD
<b>Advanced economies</b>	1.7	:	:	2	:	:	1.9	:	:
USA	2.1	2.1	2.1	2.4	2.5	2.5	2.1	2.4	2.3
Euro area	1.5	1.5	1.5	1.7	1.8	1.8	1.7	1.8	1.9
Japan	0.5	0.5	0.5	1.2	0.8	1	1.3	1	1.4
United Kingdom	2.7	2.7	2.7	2.5	2.6	2.5	2.2	2	2.3
<b>Developing economies</b>	4.3	:	:	5	:	:	5.2	:	:
Brazil	3.4	:	3.4	3.7	:	3.8	4.2	:	4.6
Russia	3.7	:	3.7	2.8	:	2.9	5.1	:	5
India	3.6	:	3.6	4.7	:	4.5	4.9	:	5
China	1.6	:	1.5	2.2	:	2	2.4	:	3

Sources: IMF, *World Economic Outlook, October 2018*, OECD, *OECD Economic Outlook* (Vol. 2018/2), European Commission, *European Economic Forecast, Autumn 2018*.

\* Projections.

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

**TABLE 1.4.3 Annual unemployment rates**

	2017*		2018**		2019**	
	ILO	OECD	ILO	OECD	ILO	OECD
<b>World economy</b>	5.5	:	5.4	:	5.4	:
USA	4.4	4.3	4	3.9	4.1	3.5
Euro area	:	9.1	:	8.2	:	7.6
Japan	2.8	2.8	2.5	2.4	2.4	2.4
United Kingdom	4.3	4.4	4	4.1	3.9	4
Brazil	13.3	:	12	:	11.6	:
Russia	5.2	:	5.1	:	4.9	:
India	3.5	:	3.5	:	3.5	:
China	4.7	:	4.7	:	4.8	:

Sources: *OECD Economic Outlook* (Vol. 2018/2), International Labour Office, database <[http://www.ilo.org/ilostat/faces/oracle/webcenter/portalapp/pagehierarchy/Page3.jspx?MBI\\_ID=2](http://www.ilo.org/ilostat/faces/oracle/webcenter/portalapp/pagehierarchy/Page3.jspx?MBI_ID=2)>.

\* Estimations, \*\* Projections.

suffers low productivity growth and enjoys low rewards. As wages of low- and high-skilled workers follow divergent paths, economic and social inequality increases, thereby threatening social cohesion.

In terms of unemployment rates, the general picture of labor markets in the developing world does not seem to differ significantly from that of advanced economies. However, unemployment rate statistics may hide important qualitative differences. One such difference relates to the ratio of workers in vulnerable jobs. According to the World Bank, the informal economy in emerging and developing economies generates 1/3 of GDP and employs 70% of employees (World Bank, 2019). In other words, 70% of people who are not registered as unemployed are employed in economic activities with no formal work arrangements, lacking decent working conditions and adequate social security.

### 1.4.2. Economic developments across the globe

#### *Advanced economies*

GDP growth in major advanced economies remained strong at 2.3% in 2018 (see Table 1.4.1 above). This development is linked to favorable economic policy, the high rates of new job creation, and the positive business climate that prevailed over the last two years. In 2019, growth in the advanced world is set to moderate slowly and align with the production potential of the countries.

**USA:** In the course of 2018, economic activity remained solid with the growth rate reaching 2.9%. The unemployment rate has reached historically low levels, perhaps the lowest levels over the last 50 years, as every month 200,000 new jobs are created (World Bank, 2019). The economy received support from favorable tax reforms, increased government spending, high confidence on the part of businesses and households, and improved labor market conditions. In the short term, the same factors are expected to continue supporting the economy. However, the impact of some factors will begin to fade. Against this background, the annual growth rate of the US GDP is expected to slow down by 0.3 percentage points in 2019.

**Eurozone:** After an excellent year in terms of economic expansion, Eurozone GDP growth rates in 2018 returned to 2016 levels (around 2%). The economy's slowdown partly reflects the lower growth rate of exports due to the appreciation of the euro and the general slowdown of international trade growth over the same period. For 2019, GDP growth is expected to remain close to 2%. Of course, the actual performance of the economy will depend on its resilience to weak-

ening external demand, less favourable financing conditions and low rates of new job creation.

**Japan:** Due to the natural disasters that hit the country and the extremely unfavorable weather conditions that prevailed over the past year, the rate of change of the Japanese GDP fell to 1% in 2018. Supported by an accommodative monetary policy and a new package of public expenditures that is expected to offset the negative impact of a rise in value added tax, economic expansion is projected to remain around 1% in 2019.

**United Kingdom:** Amid high uncertainty regarding the United Kingdom's exit from the European Union, the growth rates of private consumption and investment declined significantly over the previous year. Exports registered a slowdown as well. Against this background, the rate of economic expansion fell to 1.3% in 2018. Under the assumption that the British government and European Union officials reach an agreement in the spring, GDP growth is set to remain around 1.3% in 2019.

#### *Developing economies*

In the course of 2018, economic activity in emerging and developing economies has been under strong pressure from international money and capital markets, foreign exchange markets, increasing international oil prices and rising trade protection. As one would expect, the challenges that each country faces depends on the production structure and the macroeconomic fundamentals of the country under consideration. For example, countries featuring chronic macroeconomic imbalances or high ratios of borrowing in foreign currencies seem to be more vulnerable to international capital market pressures. By the same token, increases in international oil prices have produced negative (positive) economic effects for countries that are net oil importers (exporters).

Regarding the four major emerging economies, GDP growth over the past year accelerated in Brazil, Russia and India. By contrast, economic expansion slowed down in China (see Table 1.4.1). For 2019, it is estimated that GDP growth will be faster in Brazil and remain almost unchanged in Russia and India. Given the tensions characterizing US-China trade relations, China's economic expansion is expected to slow down further and settle at 6.2%.

### 1.4.3. World trade and commodity prices

Amid trade tensions, rising trade protection and the efforts of countries to deal with current account deficits

**TABLE 1.4.4 World trade volume***(annual percent changes, goods and services)*

2017*			2018**			2019**		
IMF	OECD	WB	IMF	OECD	WB	IMF	OECD	WB
5.2	5.2	5.4	4.2	3.9	3.8	4	3.7	3.6

Sources: IMF, *World Economic Outlook, October 2018*, OECD, *OECD Economic Outlook (Vol. 2018/2)*, World Bank, *Global Economic Prospects, January 2019*.

\* Estimations, \*\* Projections.

through measures that restrict imports, international trade lost momentum in 2018 (see Table 1.4.4). In line with the perception that trade tensions will not be resolved in the short term, international trade expansion is expected to be particularly weak this year and settle around 4%.

Regarding commodity prices, China's slowdown is expected to exert a downward pressure on prices of basic metals. On the contrary, prices of basic food products are expected to increase due to adverse weather conditions that prevailed recently in a certain number of countries. As for oil, international oil prices are projected to fluctuate around USD 76 per barrel.

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## 2. Public finance

KEPE, *Greek Economic Outlook*, issue 38, 2019, pp. 23-26

### 2.1. Evolution of the State Budget 2018

*Elisavet I. Nitsi*

The 2018 State Budget execution, according to the most recent data of the General Accounting Office,<sup>1</sup> on a modified cash basis, shows a deficit of 2,316 million euros or 1.25% of the Gross Domestic Product (GPD),<sup>2</sup> against 4,268 million euros or 2.37% of GDP in 2017, as well as the targets for a deficit of 1,911 million euros or 1.03% of GDP set by the 2019 State Budget and 3,381 million euros or 1.85% of GDP according to the Medium-Term Fiscal Strategy (MTFS) 2019-2022 (Table 2.1.1). It should be noted that the initial target set for 2018, by the 2018 State Budget, was 943 million euros or 0.5% of GDP, while of the MTFS 2018-2021 was 1,096 million euros or 0.58%. Accordingly, the primary surplus reached 3,237 million euros or 1.74% of GDP, against 1,940 million or 1.08% in 2017 and a target of 3,604 million or 1.94% of GDP based on the 2019 State Budget and the MTFS 2019-2022 (Table 2.1.1). Note that the original target by the 2018 State Budget was 4,257 million euros or 2.24%, while that of the MTFS 2018-2021 was 4,804 million euros or 2.56%. These figures do not include the impact of the program for past years' arrears and pending retirement claims. If included, the primary outcome of the 2018 State Budget would show a deficit of only 68 million euros or 0.04% of GDP, while the State Budget Balance would exhibit a deficit of 183 million or 0.1%.

In addition, net revenues of the 2018 State Budget are lower compared to the corresponding period of the previous year, as they amounted to 53,682 million euros, up by 2,260 million euros or 4.4%, while they lag behind the target set for revenues from both the

2019 State Budget, which amounted to 55,164 million euros, that is a loss of 1,482 million euros or 2.69%, as well as the 2018 State Budget which projected revenues to reach 54,244 million euros, reduced by 562 million euros or 1.04%, but also of the MTFS 2018-2021 at 55,008 million euros, down by 1,326 million euros or 2.41%. On the contrary, these revenues are higher than those projected by the MTFS 2018-2021 revenues at 52,820 million euros, up by 862 million euros or 1.63%. The increased revenues are mainly due to the rise of the ordinary revenues, especially from indirect taxes, as well as of the Public Investment Program (PIP).

More specifically, net Ordinary Budget revenues of 2018 amounted to 51,042 million euros, increased by 2,069 million euros compared to 2017, while they are lower by 267 million euros compared to the 2019 State Budget target. They also lag behind the target set by the MTFS 2018-2021 by 231 million euros. On the contrary, revenues are higher by 1,957 with respect to the MTFS 2019-2022 and 533 million euros of the 2018 State Budget. It bears noting that the significant reduction in revenues from privatizations that reached only 234 million euros are lower than any target previously set. Noteworthy is also the reduced amount paid in interest, reaching 5,554 million euros, lower by 654 million euros or 10.53% compared to the previous year.

On the other hand, the 2018 State Budget is fairly stable in its expenditures, as they amounted to 55,998 million euros, increased by just 308 million euros or 0.55% compared to 2017, while they are clearly less than the target set by both the 2018 Budget, which was projected to rise to 57,075 million euros, down by 1,077 million euros or 1.89%, and the MTFS 2019-2022, which was projected to rise to 56,201 million euros, down by 203 million euros or 0.36%, and the MTFS 2018-2021, with a projection of 56,104 million euros, less by 106 million euros or 0.19%. Only the 2018 State Budget displayed lower expenditures, in

1. The State Budget Execution Bulletin, December 2018, Ministry of Finance, January 2019.

2. According to the GDP projections for 2018 from the 2018 State Budget.

**TABLE 2.1.1 State Budget 2018, million euros on a modified cash basis**

	2017		2018			Budget 2019 Estimates
	Outcome	Outcome	Budget 2018 Provisions	MTFS 2018-2021 Provisions	MTFS 2019-2022 Estimates	
<b>State Budget</b>						
Net Revenue	51,422	53,682	54,244	55,008	52,820	55,164
Expenditures	55,690	55,998	55,188	56,104	56,201	57,075
<b>Ordinary Budget</b>						
Net Revenue	48,973	51,042	50,509	51,273	49,085	51,309
- Recurring revenue	52,329	53,801	52,429	52,938	52,627	53,915
Direct taxes	20,622	20,887	20,766	21,453	20,870	20,970
Indirect taxes	26,942	27,966	27,390	27,502	27,078	27,861
Earnings from EU	388	322	331	321	444	444
Total non-tax revenues	4,378	4,626	3,942	3,662	4,235	4,639
- Non-recurring revenue	708	687	304	283	643	670
- Revenues from privatizations	1,296	234	1,110	1,121	1,103	1,366
- Revenue refunds <sup>1</sup>	5,360	3,680	3,648	3,383	5,289	4,642
Expenditures	49,740	49,761	48,438	49,354	49,451	50,325
- Primary expenditures	43,532	44,207	43,238	43,454	44,301	44,810
Salaries & Pensions	10,256	11,291	12,660	12,540	10,780	11,727
Grants to social security funds, Medical care, Social protection	21,331	20,899	19,438	19,649	19,713	20,120
Operational and other expenditures	5,388	5,281	5,333	5,295	6,022	5,758
Attributable resources	3,049	3,212	3,262	3,395	3,253	3,220
Reserve	472	500	1,000	1,000	498	498
- Interest payments	6,208	5,554	5,200	5,900	5,150	5,515

<b>Public Investment Program (PIP)</b>						
Net Revenue	2,449	2,639	3,735	3,735	3,735	3,855
Expenditures	5,950	6,237	6,750	6,750	6,750	6,750
<b>Cash base State Budget primary balance<sup>2,3</sup></b>	<b>1,940</b>	<b>3,237</b>	<b>4,257</b>	<b>4,804</b>	<b>3,604</b>	<b>3,604</b>
% GDP	1.08	1.74	2.24	2.56	1.97	1.94
<b>Cash base State Budget balance<sup>2,3</sup></b>	<b>-4,268</b>	<b>-2,316</b>	<b>-943</b>	<b>-1,096</b>	<b>-3,381</b>	<b>-1,911</b>
% GDP	-2.37	-1.25	-0.50	-0.58	-1.85	-1.03
<b>GDP</b>	<b>180,218</b>	<b>185,658<sup>4</sup></b>	<b>189,743</b>	<b>187,745</b>	<b>182,959</b>	<b>185,658</b>

Sources: Government Budget Report 2018 and 2019, Ministry of Finance,  
Medium-Term Fiscal Strategy 2018-2021, Ministry of Finance, May 2017,  
Medium-Term Fiscal Strategy 2019-2022, Ministry of Finance, June 2018,  
State Budget Execution Monthly Bulletin December 2018, Ministry of Finance, General Accounting Office, January 2019.

Notes:

1. Excluding refunds from the program for settling arrears.
2. Deficit (-)/Surplus (+).
3. The figures do not include the impact of the program for past years areas and pending retirement claims.
4. Budget 2019 estimates.

the range of 55,188 million euros, less by 810 million euros or 1.47%. This increase is owed to an increase in salaries and pensions due to the payment of the retrospectives to the special wage regime after the decision of the Council of State.

More specifically, 2018 State Budget expenditures amounted to 49,761 million euros, the same level of the previous year, while they were less by 564 million euros or 1.12% against the targets set with the 2019 State Budget. On the contrary, expenditures are higher in comparison with the targets set by MTFS 2019-2022 (310 million euros or 0.63%), the MTFS 2018-2021 (407 million euros or 0.82%), and the 2018 State Budget (1,323 million euros or 2.73%). It's worth noting that the increase in salaries and pensions was offset by the decrease in PIP. Primary expenditures amounted to 44,207 million euros, and rose in comparison to 2017 by 675 million euros or 1.55% of GDP and 969 million euros or 2.24% against the 2018 State Budget, while it was decreased by 96 million euros or 0.21% of GDP in comparison the MTFS 2019-2022 target and 603 million euros or 1.35% versus the MTFS 2018-2021 target. On the contrary, interest payments, which amounted to 5,554 million euros, decreased by 654 million euros or 10.53% of GDP versus 2017, as against the target set by MTFS 2018-2021 by 346 million euros or 5.86%.

From the above it is clear that the State Budget of 2018, on a cash basis, diverts slightly from the targets set for expenditure and revenue. Moreover, the surplus, which far exceeds the country's initial commitments to the economic adjustment program, enabled the Greek government to legislate apart of the program. The government chose to implement policies that will relieve citizens in great need, over policies reducing the tax burden and/or other development policies. Additionally, court decisions granting retroactive returns to employees and pensioners, the amount of which has not yet been determined, and relative decisions of compliance, are an important issue that may jeopardize the country's economic policy. An even more important problem may prove to be the emerging political uncertainty within the government's majority in the Parliament, which may lead to a more general mistrust from the international markets, especially after the issuance of the five-year bond that could form the preconditions for Greece's return to the markets. Another very important issue that needs to be addressed is easing the bank's assets from non-performing (red) loans. Finally, particular attention should be given to the fact that the Greek economy is entering an electoral cycle, with great political competition that can lead to political parties' commitments, contrary to the existing economic policy, sending contradictory messages to investors and markets.

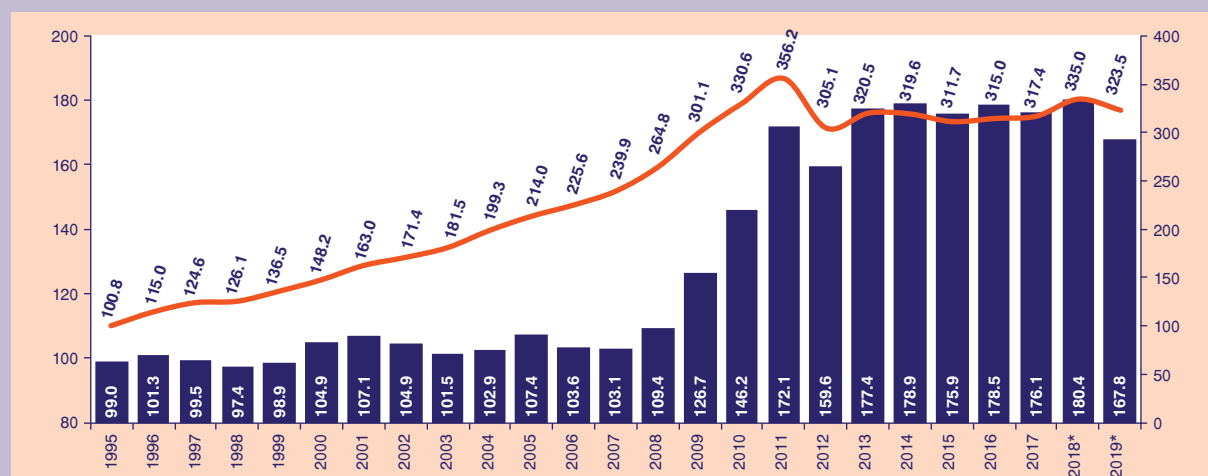
## 2.2. The evolution and structure of public debt

*Christos Triantopoulos*

The public debt in 2018, apart from the fiscal balance, was significantly affected by the country's treasury management policy, which aimed at creating a "safety net" –in terms of liquidity– for the country's financial needs, following the end of the fiscal and economic adjustment program in August 2018. Thus, according to the State Budget of 2019 (November 2018), the General Government debt of 2018 is estimated at 335 billion euros (or 180.4% of GDP), as a result of an increase of about 18 billion euros compared to the levels of 2017, when it stood at 317.4 billion euros (or 176.1% of GDP). This is the country's highest historical public debt level in relation to the GDP; however, it is projected to decline in 2019. In particular, according to the State Budget 2019, General Government debt will be set at 323.5 billion euros (or 167.8% of GDP) in 2019, as, in parallel to the outcome of the fiscal policy and the utilization of part of the "safety net", an increase of nominal GDP is projected (Figure 2.2.1).

As far as the Central Government debt is concerned, according to the State Budget of 2019, it is estimated in 2018 to stand at 357.2 billion euros, which is well higher than that of the General Government. This picture is due to intergovernmental debt, which includes the short-term borrowing through repos agreements with General Government entities. According to the data of the General Government Monthly Bulletin, the Central Government debt in November 2018 stood at 354.5 billion euros, increased by 25.8 billion euros compared to the end of 2017, while in 2019 –according to the estimations of the State Budget of 2019– it is expected to reach 346.2 billion euros. This development is mainly due to the increase in funding –until the end of the fiscal adjustment program– from the European Stability Mechanism (ESM) as well as to the large increase in short-term borrowing. Thus, according to data of November 2018, compared to December 2017, loans from the financial support mechanism increased by 20.5 billion euros –the last installment of the program (August 2018) standing at 15 billion euros– and reached 253.5 billion euros. These loans now account for 71.5% of Central Government debt, while in November 2018 the corresponding share of debt in bonds was 14.5% of debt (51.6 billion euros) (Table 2.2.1). Also, there was no significant change in Central Government funding through short-term securities and,

**FIGURE 2.2.1**  
**General Government debt (1995-2019)**



Source: European Commission (1995-2015) and State Budget 2019 (2016-2019).

Note: \*Estimation.

**TABLE 2.2.1 Structure of Central Government debt**

	2011		2013		2017		November 2018	
	Million euros	% debt	Million euros	% debt	Million euros	% debt	Million euros	% debt
<b>A. Bonds</b>	<b>259,774.18</b>	<b>70.6</b>	<b>76,296.25</b>	<b>23.7</b>	<b>50,457</b>	<b>15.4</b>	<b>51,548</b>	<b>14.5</b>
Bonds issued domestically	240,940.37	65.5	73,415.28	22.8	48,681	14.8	49,779	14.0
Bonds issued abroad*	18,833.81	5.1	2,880.97	0.9	1,776	0.5	1,769	0.5
<b>B. T-Bills</b>	<b>15,058.63</b>	<b>4.1</b>	<b>14,970.82</b>	<b>4.7</b>	<b>14,943</b>	<b>4.5</b>	<b>15,279</b>	<b>4.3</b>
<b>C. Loans</b>	<b>93,145.19</b>	<b>25.3</b>	<b>230,210.90</b>	<b>71.6</b>	<b>248,373</b>	<b>75.6</b>	<b>268,052</b>	<b>75.6</b>
Bank of Greece	5,683.99	1.5	4,734.61	1.5	2,849	0.9	2,379	0.7
Other domestic loans	836.71	0.2	115.50	0.0	247	0.1	229	0.1
Financial Support Mechanism loans	73,210.36	19.9	213,152.48	66.3	232,959	70.9	253,555	71.5
Other external loans**	13,414.13	3.6	12,208.31	3.8	12,318	3.7	11,889	3.4
<b>D. Short-term loans***</b>	<b>0.00</b>	<b>0.0</b>	<b>0.00</b>	<b>0.0</b>	<b>14,931</b>	<b>4.5</b>	<b>19,630</b>	<b>5.5</b>
<b>Total (A+B+C+D)</b>	<b>367,978.00</b>	<b>100.0</b>	<b>321,477.97</b>	<b>100.0</b>	<b>328,704</b>	<b>100.0</b>	<b>354,509</b>	<b>100.0</b>

Source: Public Debt Bulletin (December 2011, December 2013) and General Government Bulletin (November 2018).

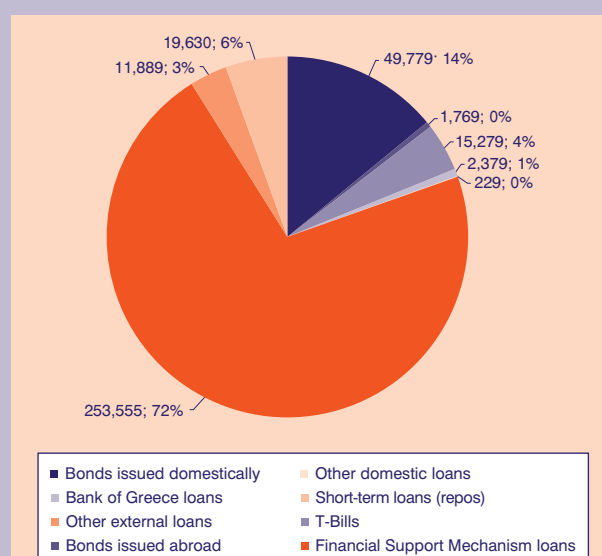
Notes: \* Including securitization issued abroad.

\*\*Including special purpose and bilateral loans.

\*\*\* Including repos.

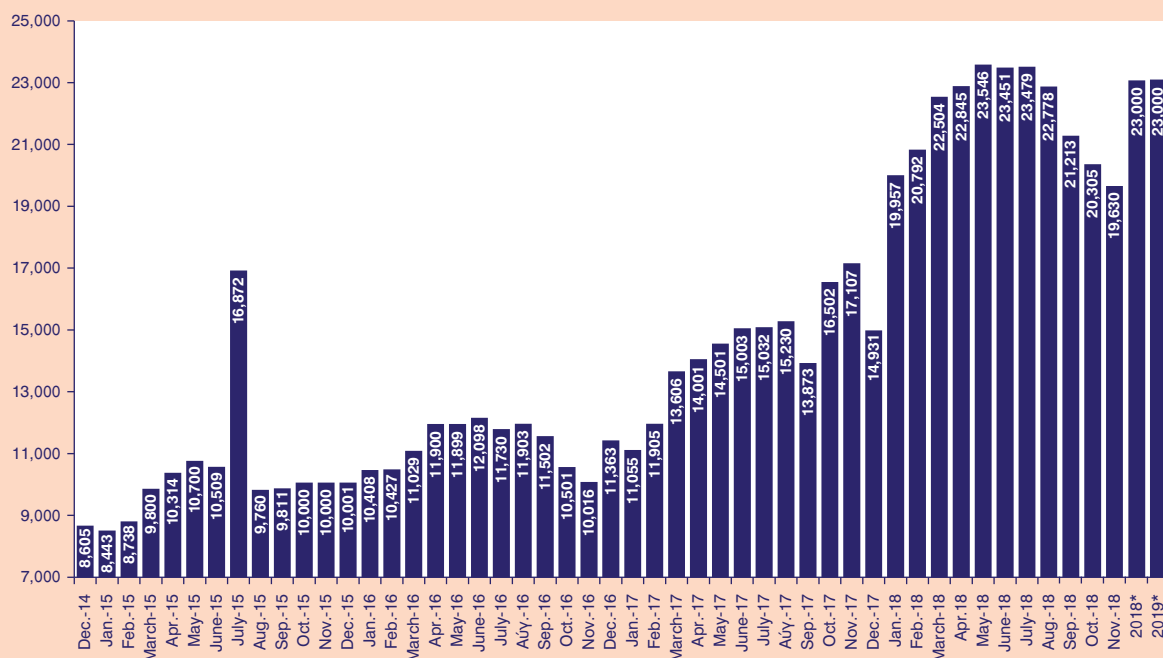
in particular, Treasury bills, which stood at 15.3 billion euros (Figure 2.2.2).

Along with the funding from the support mechanism, another significant (in terms of its relative share) source of funding –that turned out to be a liquidity-providing tool– is the short-term borrowing through the repos agreements with General Government entities, which increased compared to December 2017. More particularly, in November 2018, intergovernmental borrowing through repos amounted to 19.6 billion euros, that is 4.7 billion euros higher than in December 2017, but also 3.9 billion euros lower than in July 2018 –before the collection of the large last installment of the Support Mechanism (Figure 2.2.3). Thus, according to November 2018 data, this source of funding constitutes 5.5% of the Central Government debt (Figure 2.2.2), and could reach –according to the State Budget 2019 data– the amount of 23 billion euros (Figure 2.2.3). In the event that exposure to intergovernmental repos increases, the General Government debt will be reduced, as the Central Government intergovernmental debt, which is not “captured” by the General Government, will increase.

**FIGURE 2.2.2**  
**Central Government debt (November 2018),**  
**(million €; % debt)**


Source: Ministry of Finance, *General Government Bulletin* (November 2018).

**FIGURE 2.2.3**  
Central Government short-term loans (repos)



Source: Ministry of Finance, General Government Bulletin (various months).

Notes:

(a) State Budget 2019 Estimate.

(b) The July 2015 performance is widely diverted as it includes the short-term "bridge" loan of €7.16 billion from the European Financial Stability Facility that Greece received during the period between the second and third adjustment programs.

**TABLE 2.2.2 Composition of Central government debt**

	December 2011	December 2012	December 2013	December 2017	September 2018
<b>A. Rate</b>					
Fixed rate <sup>1</sup>	62.0%	32.7%	28.5%	48.1%	85.4%
Floating rate <sup>1,2</sup>	38.0%	67.3%	71.5%	51.9%	14.6%
<b>B. Trade</b>					
Tradable	74.7%	34.3%	28.4%	19.9%	18.8%
Non-tradable	25.3%	65.7%	71.6%	80.1%	81.2%
<b>C. Currency</b>					
Euro	97.5%	96.7%	95.9%	97.4%	97.8%
Non-Euro area currencies	2.5%	3.3%	4.1%	2.6%	2.2%

Source: Public Debt Bulletin (December 2011, December 2012, December 2013, December 2017, September 2018).

Notes: 1. Fixed/floating participation is calculated including Interest Rate Swap transactions.

2. Index-linked bonds are classified as floating rate bonds.

As far as the structural characteristics of the Central Government debt are concerned, there were changes in 2018 as a result of the promotion of short-term measures aiming at strengthening the long-term sustainability of public debt. In particular, the structure of the Central Government debt was mainly affected by the stability or instability of the interest rate. Thus, in September 2018, the share of the Central Government debt at fixed-rate stood at 85.4% of the debt, against

48.1% of the debt in December 2017 and 28.5% of the debt in December 2013 (Table 2.2.2). The result is, therefore, the strengthening of the country's public debt against the risks associated with interest rate fluctuations and changes in monetary policy. With regard to the other characteristics, in September 2018 the non-negotiable debt remained at 81.2% of the debt, while the share of the debt expressed in euros increased to 97.8% (Table 2.2.2).

# 3. Human resources and social policies

KEPE, *Greek Economic Outlook*, issue 38, 2019, pp. 31-38

## 3.1. Recent developments in key labour market variables

*Ioannis Cholezas*

### 3.1.1. Introduction

This article draws upon data up to the third quarter of 2018 from the Labour Force Survey (LFS) conducted by ELSTAT. Labour market variables improved in most cases in the first nine months of 2018. In the third quarter, the number of the employed reached 3,894.2 individuals and the number of the unemployed shrank to 871.8 thousand people. There are differences in the composition of those changes with respect to gender, age, education and region of residence. Moreover, there are differences traced in employment across various industries of economic activity and occupations. Underemployment, i.e., involuntary part-time employment, continues to score double digit rates, at least for some population groups. Paid employment, on the other hand, continues to expand, coupled with an increase in the number of, mostly small, firms.

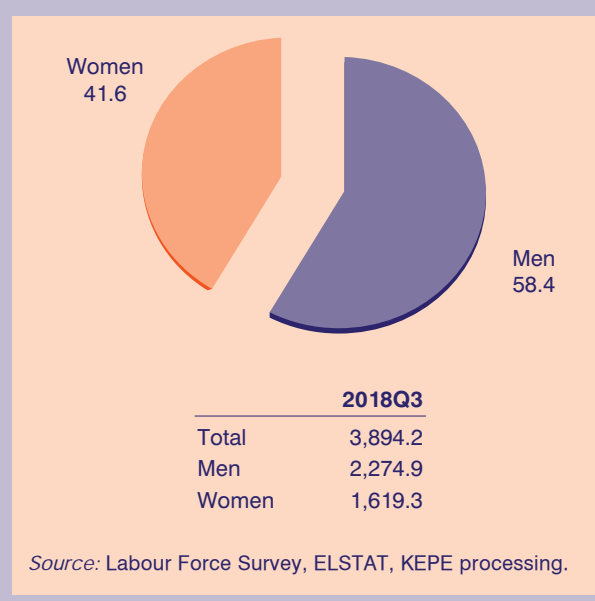
### 3.1.2. Employment

There were 3,894.2 thousand people employed in the third quarter of 2018. Six out of ten were men (Graph 3.1.1). Their number increased in the first nine months of 2018 by 68 thousand people or 1.8% compared to the respective period in 2017 (Graph 3.1.2). The number of employed men increased faster (2.5% or 54.6 thousand) than the number of employed women (0.9% or 13.5 thousand). Consequently, approximately 80% of newly employed individuals were men. On the other hand, the increase in the number of the employed involves primarily age group 45-64 (86.3% of the total increase), while almost 70% of those are men. The second fastest-growing group of the employed consists of youth aged 25-29, which increased by 2.4% in total (or 8.1 thousand). In that case, though, there are considerable variations between genders. In particular, the number of employed men aged 30-44 ex-

hibited the second strongest increase (8.2 thousand or 0.9%), while the number of employed women aged 25-29 exhibited the fastest increase (8.4 thousand or 6.1%). Moreover, despite the general increase in the number of employed men and women, the number of employed men aged 20-29 and the number of employed women aged 15-24 and 30-44 actually decreased. Those facts support the view expressed in previous issues of the *Greek Economic Outlook* that it is primarily the employment of men that has been recovering lately and, in particular, mature men, since 60% of the newly employed are men aged 45-64, followed by women of the same age group (25.6%). That could be strongly related to the industries and occupations recovering faster than others, which are discussed in the following pages.

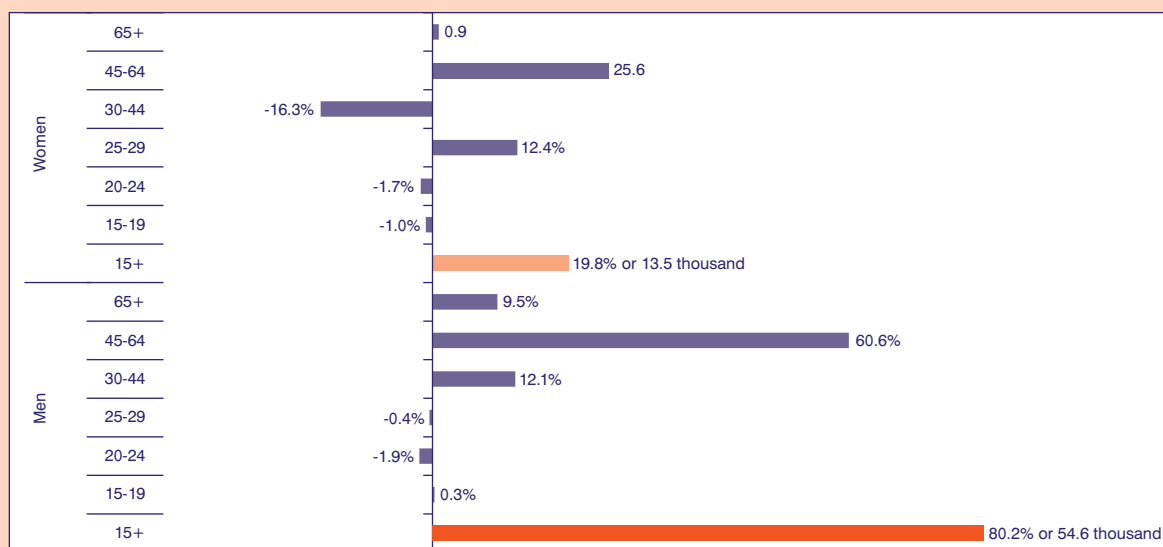
The result of the changes that took place in the number of the employed and the population is the increase in the employment rate by 0.9 percentage points for the entire population over 15 years of age; the rate reached 41.8% in the first nine months of 2018, 1.4 percentage points higher for men and 0.4 percentage points higher for women. The employment rate is typically bigger

**GRAPH 3.1.1**  
The composition of the employed in the third quarter of 2018 (%)



**GRAPH 3.1.2**

**The composition of the change in employment, 2017-2018 (%)**



Source: Labour Force Survey, ELSTAT, KEPE processing.

for men than women, while in the past year the differential expanded from 16.1 to 17.1 percentage points, which reflects the fastest recovery in male employment. Note that the employment rate is bigger for both genders in the age group 15-64<sup>1</sup> and, in particular, it is close to 66% for men and 46% for women. The widening of the differential is still bigger than before and has been expanding, reaching 19.7 percentage points in the third quarter of 2018.

Bringing education into the analysis adds another parameter of variation. Technical and vocational education graduates reported the biggest increase in the number of the employed, which came close to 44.9 thousand individuals. However, in terms of percentage change, the biggest increase was recorded amongst those holding a Master's degree or a PhD; it stood at 19.4% on a year-on-year basis. Note also that on an annual basis, the increase in the number of the employed was 24.6% for the third quarter of 2018 alone (compared to 2017Q3). Undoubtedly, that observation seems a little out of context, since data so far suggests that new jobs involved primarily low skilled labour. It could be, though, that this finding reflects the slowing down of *brain drain*, admittedly without an obvious ex-

planation, since one would probably involve structural changes first, which did not take place (social security regime, tax regime, etc.). On the other hand, improving employment opportunities for technical and vocational education graduates has always been a policy target, and it is expected to reinforce student flows towards it.<sup>2</sup>

On the contrary, the number of employed lower secondary or less graduates decreased and so did the number of employed university graduates. Therefore, the increase in the number of the total employed involves primarily technical and vocational education graduates (66.1% of the total increase) and then holders of a Master's degree or a PhD (51%), followed by upper secondary education graduates (23.3%). Thus, there is no clear picture, since it is difficult to conclude without any doubt that there was an increase in the employed graduates of a specific level of education.

It is indicative, though, that the rate of employment increased primarily for technical and vocational education graduates (by 2.4 percentage points), getting close to 63% in 2018 on average (9-month figure), while it decreased considerably for primary educa-

1. This is expected since individuals over 64 years of age usually do not participate in the labour force; they are retired.

2. Recall that technical and vocational education includes both upper secondary vocational education (EPAL) graduates and technical tertiary education (TEI) graduates. Moreover, students choose the level and type of education to attend after considering employment opportunities first, among other things.

tion (or less) graduates (by 6.5 percentage points). Note also that the employment rate generally increases with the level of education; for example, holders of a Master's degree or a PhD have the biggest employment rate in 2018 at almost 80%, nearly six percentage points above 2013, but still lower than 2008. Compared to 2008, it seems that primary education (or less) graduates suffer the biggest losses (20.6 percentage points lower) along with university graduates (13.4 percentage points lower).

There was a very strong increase in the number of the employed in the region of West Macedonia; the number of the employed increased by 16.3 thousand in the first nine months of 2018 compared to the respective period in 2017, representing approximately 24% of all newly employed individuals. The second biggest contribution in employment came from Crete, where the number of the employed increased by 10.9 thousand, representing 16% of the total increase. East Macedonia and Thrace follow with a two-digit contribution (12.1%). In relative terms, i.e., considering the initial number of the employed in the region, employment increased considerably in the Ionian Islands (6.5%), Crete (4.6%), Epirus (4.2%) and East Macedonia and Thrace (4%). However, the employment rate is still bigger in the South Aegean islands, Crete and the Ionian Islands, where it increased by more than 3.1 percentage points. Crete follows with an increase of two percentage points. In Attica, the biggest region in terms of the number of residents, the number of the employed increased by nearly 3.2 thousand, representing 4.7% of the newly employed country-wide. It is no accident that the employment rate in Attica stands almost nine percentage points lower than 2008, but still two percentage points above the country average.

### **Employment composition**

Typically, the greatest share of the employed are paid workers, i.e., employees. That share reached 67% of the total employed in the third quarter of 2018, following an increasing path; self-employed with no personnel was the second group (around 22%) and self-employed with personnel was the third biggest group (7.6%). Those employed as assistants in family businesses constitute the smallest group of employed individuals. The latter, along with the self-employed with no personnel, exhibited the biggest decrease in their number in the first nine months in 2018 compared to the respective period in 2017, i.e., 7.5 thousand and 6.5 thousand, respectively. On the contrary, both the

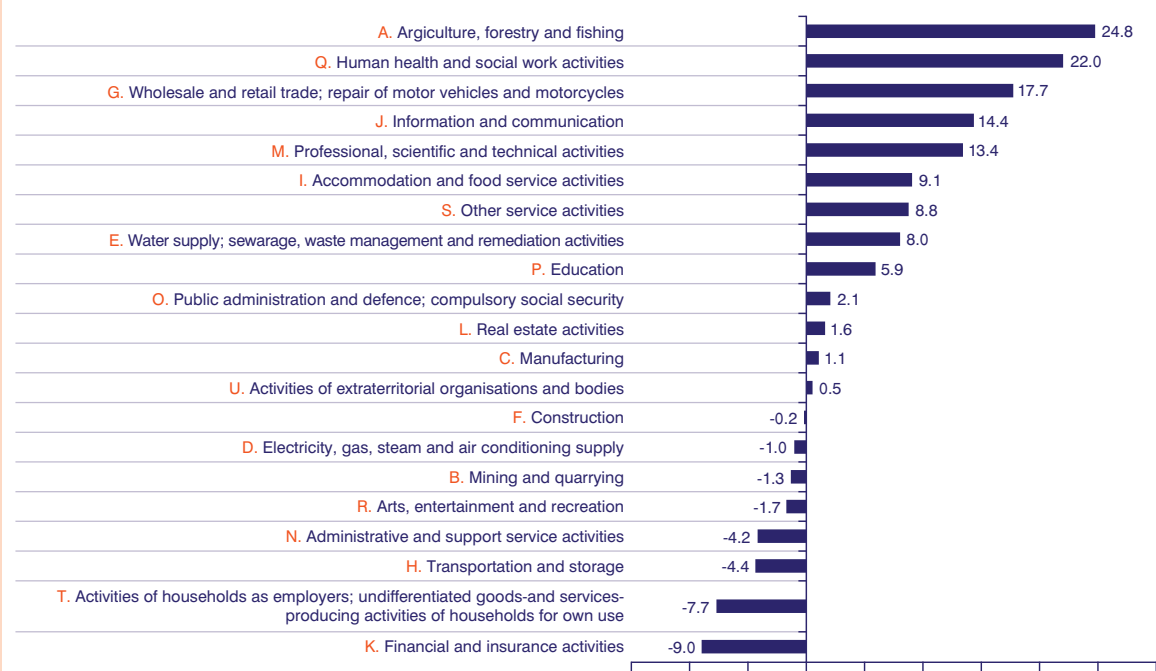
number of employees and that of self-employed with personnel increased. In relative terms the number of assistants in family businesses decreased the most (4.4%), while the number of self-employed with personnel increased the most (7.1%). As a result, 92.2% of the increase in the number of the employed involved employees. That seems to justify views expressed in previous issues of the *Greek Economic Outlook* that changes in employment favour paid employment and businesses, perhaps also fuelled by reforms introduced in the social security regime.

There were 68 thousand newly employed individuals during period 2017-2018, but they were not equally distributed across industries (Graph 3.1.3). Approximately one out of four new jobs was created in agriculture, forestry and fishery, one out of five new jobs was created in the health industry and approximately two out of eleven new jobs were created in wholesale and retail trade. In relative terms, the biggest increase in the number of the employed was reported in real estate activities (a near 30% increase) and in water provision, sewerage, etc. (a near 20% increase). Nevertheless, it should be mentioned that those industries are relatively small, i.e., they employ only a small share of the total employed. For instance, in the former, there was an increase of 1.1 thousand employed; in the latter, the increase involved 5.5 thousand new jobs. On the other hand, employment decreased in some industries. The biggest decrease was reported in financial and insurance activities; some 6.1 thousand jobs were lost or 6.5% of the total employment in the industry. Households as employers followed with a decrease of 5.2 thousand jobs or 14.6% of total employment in the industry. Generally speaking, the latter industry is one of those that reported the biggest employment losses during the past few years. Despite the fact that employment has been recovering lately, the number of the employed is 60% smaller than 2008. Only construction had equally big losses. On the contrary, in 2018 there were more employed individuals in tourism than there were in 2008. That is also true for smaller industries, which seem to have recovered fully, such as information and communication or administrative and other support services, amongst others.

There was a considerable increase in the number of those employed as plant and machine operators and assemblers on an annual basis;<sup>3</sup> the increase involved 19.2 thousand new jobs, and it represented 28.2% of total new jobs (Graph 3.1.4). The number of members of parliament and managers also increased fast, both in relative (19.7%) and absolute terms (17.7 thou-

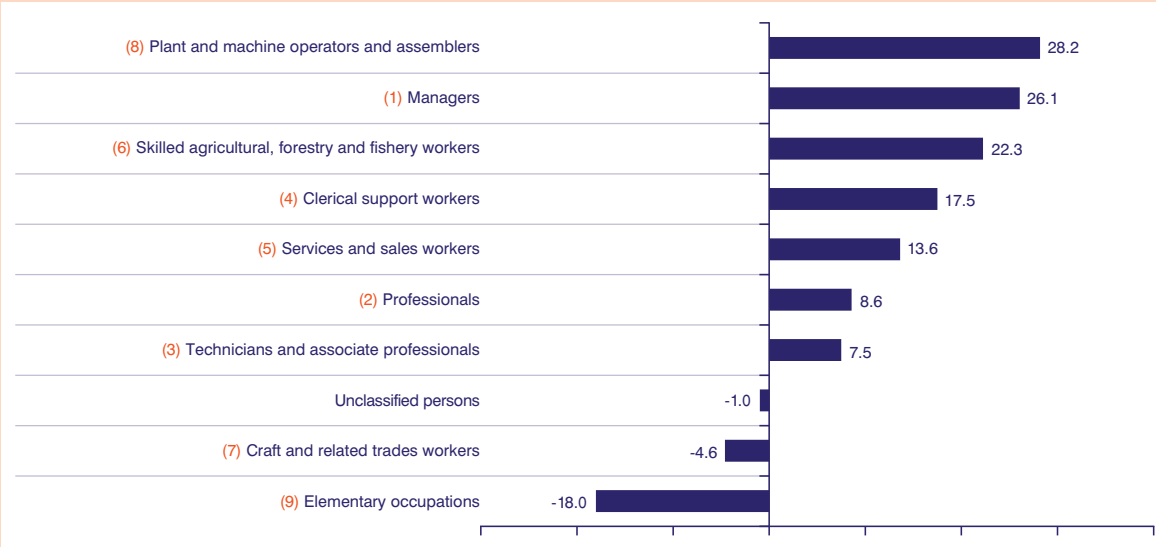
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3. Unclassified employed individuals include primarily members of the armed forces.

**GRAPH 3.1.3****The composition of the change in employment by industry, 2017-2018 (%)**

Source: Labour Force Survey, ELSTAT, KEPE processing.

Note: The change refers to the first nine months of 2018 compared to the first nine months of 2017.

**GRAPH 3.1.4****The composition of the change in employment by occupation, 2017-2018 (%)**

Source: Labour Force Survey, ELSTAT, KEPE processing.

Note: The change refers to the first nine months of 2018 compared to the first nine months of 2017.

sand) and was the occupation with the second largest increase (26.1% of the total). On the other hand, there were only two occupations which reported a decrease in the number of the employed. Namely, elementary occupations (4.5%) and craft and related trades workers (0.9%).

### **ERGANI**

The most recent available report at the time this article was written referred to November 2018. In November there was a negative sign in the flow of paid employees as a result of seasonal fluctuation. Nevertheless, the performance from January until November 2018 was better than the one in 2017, since 6.8 thousand more new jobs of paid employment were created; net new jobs amounted to 135 thousand, which is the biggest figure since 2001. Almost 46% of new hires involved full-time jobs, while another 41.6% involved part-time jobs. Compared to 2017 (11-month period), the share of work-in-shifts job contracts decreased by one percentage point.

Additional data on paid employment collected by the information system ERGANI and reported in the special report in December 2018 paint a positive picture of the labour market.<sup>4</sup> The number of employees increased to approximately 1,908 million, a figure which is 4.6% bigger than the respective one in 2017. Note that the LFS for the first nine months of 2018 shows a smaller increase in paid employment, equal to 2.5% (but also a bigger number of paid employees, i.e., 2.5 million). More than half of those are men (54%); they exhibited a faster increase over the past year compared to women. Nearly seven out of ten employees were working more than 35 hours a week, approximately 60 thousand more compared to 2017. On the other hand, 4% of the employees or 120 thousand persons continued to work fewer than 10 hours a week. The share of that group has remained constant over the past two years at 6%. This has everything to do with underemployment, discussed next. In particular, the number of employees with part-time or work-in-shifts job contracts increased by 8.8 thousand or 2.2% compared to 2017.<sup>5</sup>

The increase in paid employment can come either from current businesses that grow or from the establishment of new businesses. In 2018 approximately 10 thousand

new businesses operated compared to 2017, most of which were very small (8,473), i.e., business that employ 1-10 individuals. Another 1,357 new businesses were small (11-50 individuals) and 206 businesses were medium (51-250 individuals). At the same time, the number of big businesses (2,501-3,000 individuals) decreased by two. As a result, all types of businesses kept their share almost constant. The share dropped a little for businesses employing 1-10 individuals, while the share of businesses employing 11-50, 51-250 and 251-500 increased marginally. It is likely that some businesses have grown and moved from one class to the other due to the increase in the number of their personnel. These facts suggest that the size of Greek businesses did not change much. Approximately 89% of businesses continued to be very small (1-10 persons) and employ 28.6% of all employees in 2018. On the other hand, 0.2% of businesses employ more than 250 persons each; that figure corresponds to 25.6% of total paid employment.

With respect to gross earnings from work, the total budget increased by 9.4% or approximately €175.3 million. This does not represent an increase in wages for those already employed, but wages also paid to the newly employed. A careful look at the wage distribution reveals that there have not been important rearrangements in the shares of the employed by class of gross wages. Admittedly, there was an increase in the share of those who are low paid. In particular, the number of those paid €501-€600 increased by 7.7%, those paid €601-€700 increased by 6.8% and those paid €801-€900 increased by 6.5%. The number of those paid €1,501-€2,000 exhibited the smallest increase. These facts seem to suggest that the market is moving towards a new equilibrium with lower wages.

### **3.1.3. Underemployment<sup>6</sup>**

Assuming that the employed are the most strongly attached to the labour market, then the underemployed would be in the second position, the unemployed in the third and the economically inactive in the fourth position, i.e., the most weakly attached to the labour market.<sup>7</sup> Structural reforms that were introduced in the labour market over the past years and the difficult economic circumstances contributed to the ex-

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4. The data refer to October 2018.

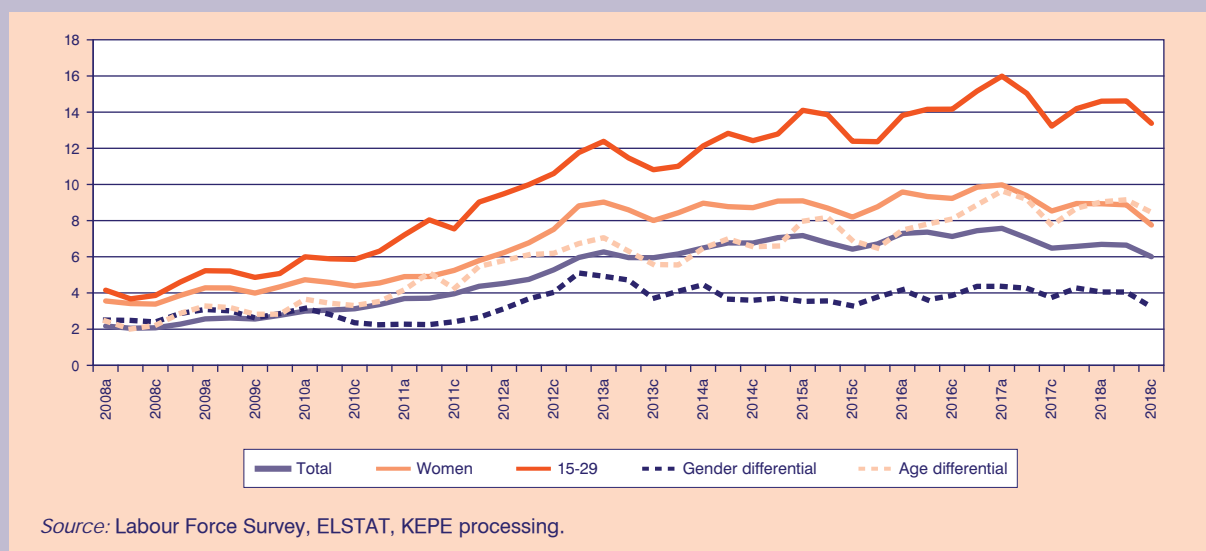
5. The information originates in Table IB3, page 13 of the report, which refers to wages.

6. According to ELSTAT's official definition, the underemployed consist of the part-time employed who would prefer working full-time and are immediately available to do so, but cannot find such a job.

7. Obviously, one could propose more distinct groups with respect to their attachment to the labour market, depending on the criteria used, e.g., the duration of the unemployment spell.

**GRAPH 3.1.5**

**The evolution of the underemployment rate over time, 2008-2018 (%)**



pansion of underemployment, which is reflected in flexible forms of employment, e.g., part-time employment, work-in-shifts, etc.

When someone is employed and paid for at least one hour a week, he/she is classified as employed. Admittedly, a line has to be drawn at some point. However, one of the main reasons for working is to ensure a decent living. A job that pays too little, as is surely the case with jobs that involve only a few working hours a week, is probably unable to ensure a decent living and allows for the definition of the employed to be seriously questioned. As often discussed in previous issues of the *Greek Economic Outlook*, due to the economic troubles of the past years, flexible forms of employment expanded, e.g., part-time jobs and work-in-shifts contracts, although not always in accordance with the will of the workforce. Currently and while unemployment has been decreasing lately, the share of those who report that they are employed part-time because they cannot find a full-time job has been also decreasing from 10% in the end of 2014 and beginning of 2015 to approximately 9% in 2018.

Since 2014 and onwards it seems that the size of underemployment has been stabilising around 6.5%. Over the past year the number of the underemployed decreased by 17.5 thousand or 6.6%. The total number of the underemployed reached 246.5 thousand in the first nine months of 2018. Women represented 54% of

those and one out of three were young, aged 15-29. The decrease came primarily from the reduction of the underemployed aged 45-64, a figure that corresponds to approximately 70% of the total decrease. On the contrary, the number of the underemployed aged 15-19 increased a lot,<sup>8</sup> while the same happened with the number of the underemployed aged over 60. Consequently, the share of the underemployed in the total employed decreased from 7% to 6.4%. That means that, *ceteris paribus*, the utilisation of labour improved. The decrease in the underemployment rate was bigger for women and especially for youth aged 15-29. It should be noted, though, that, within youth, there was a big increase in the number of the underemployed aged 15-19, which may be attributed to data anomalies.<sup>9</sup> It is interesting that the differential between men and women with respect to underemployment has been almost stable since 2014 and onwards, with only small fluctuations, while the differential between youth and mature individuals (aged over 30) has been steadily widening (Graph 3.1.5). That does not seem to be circumstantial and, therefore, it should be treated with caution and deserves further investigation.

### 3.1.4. Unemployment

The increase in the number of the employed documented in the previous sections was accompanied by the

8. Note that the data show an unusually large decline in the number of the underemployed youth aged 15-19 in 2017. Therefore, the increase in 2018 leads closer to the numbers reported in 2016.

9. See Footnote 8.

reduction in the number of the unemployed and the unemployment rate. In the third quarter of 2018, the unemployment rate for people over 15 years of age stood at 18.3%, lower than the respective quarter in 2017 (20%) and following the seasonal downward trend that is common in the third quarter. The average reduction in the first nine months reached 2.1 percentage points.<sup>10</sup> The unemployment rate fell a little faster for men (2.4 vs. 1.7 percentage points for women). The unemployment rate for youth, on the other hand, also decreased, but it still stands several percentage points above the unemployment rate for people over 30 in the third quarter of 2018: 30.2% vs. 16.2%. Note, though, that the differential in the unemployment rate with respect to age narrowed by 1.3 percentage points in 2018, while the differential with respect to gender widened by 0.7 percentage points. Consequently, the share of unemployed women over all the unemployed increased to 55.5%.

In accordance with the increase in the number of the employed, the number of the unemployed decreased from 1.034 million individuals in the first nine months in 2017 to 926.3 thousand unemployed in the respective period of 2018. The number of unemployed men decreased by approximately 65 thousand or 13.6% and the number of unemployed women by 42.5 thousand or 7.6%. Moreover, during the same period, the number of unemployed youth, i.e., aged 15-29, decreased by 32 thousand or 12.1%. As a result, nearly six out of ten unemployed persons who got a job were men and one in three was youth. To give a proper perspective, it is useful to note that the number of the unemployed aged 30-64 decreased during the same period of time by 9.9%. A more thorough investigation of the data reveals that the faster de-escalation of the number of unemployed men is due to the more than double reduction of the number of the unemployed men aged 30-64 compared to women of the same age group. The decrease in the number of unemployed is bigger than the increase in the number of the employed; therefore, one must assume that the labour force declined between 2017 and 2018.

The de-escalation of the unemployment rate over the past year is evident in almost every region. The islands of the North and South Aegean are the exceptions to the rule. The unemployment rate decreased faster in East Macedonia and Thrace and Epirus (4.3 percentage points), while Crete followed closely (3.9 percentage points). In relative terms, though, the number of the unemployed decreased over 22% in the first and the third regions mentioned above. The performance of Attica is quite disappointing; the region had the third

smallest decrease in the number of the unemployed, doing better only compared to West Macedonia and the North Aegean islands. The biggest unemployment rate in the third quarter of 2018 was reported in West Macedonia (27.6%) and West Greece (23.8%). Those two regions, along with the North Aegean islands, are further away from their minimum unemployment rates recorded in 2008. Since employment started to recover in 2014, the fastest de-escalation of the unemployment rate is reported in West Macedonia and Thrace and Crete; at the same time, there seems to be no change in the North Aegean islands. At this point it seems that the North Aegean islands stand out in a negative way with respect to unemployment. Perhaps the refugee crisis and the accompanying blow in tourism have something to do with it.

### 3.1.5. Conclusions

The situation in the labour market continued to improve in the first nine months of 2018. The number of the employed increased and that of the unemployed decreased. Employment is recovering especially for mature men, since most of the newly employed are men aged 45-64; women of the same age group follow closely. However, the imbalance reported in previous quarters persists; technical and vocational education graduates benefit the most from the increase in employment and university graduates the least. The best performance with respect to expanding employment was reported in West Macedonia, Crete and East Macedonia and Thrace, while other regions such as the Ionian Islands and Epirus did well too. Moreover, the number of employees and self-employed with personnel increased at a faster rate, which suggests that employment is transforming. Agriculture, health and trade created most of the new jobs, while financial and insurance services and households as employers exhibited the strongest decrease in the number of the employed. It seems that employment is recovering lately due to the establishment of new, mostly small sized, businesses.

The news for paid employment is also encouraging. The increase in net flows of paid employment shows that it is recovering, while the share of full-time hires was almost steady. However, the share of those with flexible forms of paid employment (i.e., part-time and work-in-shift contracts) also remained stable, which indicates that the market has a stable preference towards such forms of employment; this may impact living conditions negatively though. Moreover,

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10. The average unemployment rate in the first nine months of 2018 was 19.5% compared to 21.6% in 2017.

the share of the underemployed seems to stabilise, but the divergence between age groups persists. Gross earnings from work increased, but new hires involve mainly a lower level of wages. Last but not least, the unemployment rate dropped faster for men and youth. Unemployed women aged 30-64 seem to face the greatest difficulties in finding a job compared

to men of the same age. Since the beginning of the de-escalation in the unemployment rate in 2014, East Macedonia and Thrace, along with Crete, exhibit the fastest rate of decrease, while there does not seem to be a noteworthy change in the unemployment prospects in the North Aegean islands, a fact that should cause concern.

## 3.2. Foreigners in the Greek labour market

*Ioannis Cholezas*

This article describes the evolution of foreigners<sup>1</sup> in Greece, most of which come from non-EU countries, i.e., third countries, and the changes that took place in the labour market over the past few years, especially since 2008. Before the recent economic turbulences, Greece was an attractive destination for immigrants coming from mostly neighbouring countries, such as Albania and Bulgaria, but also from Asian countries. Since then a lot has changed regarding economic prospects affecting the migration plans of immigrants who are considering migration, but also of immigrants who are already here.

### 3.2.1. Foreigners in Greece and the EU

It is often mentioned in public discourse that the European countries are taking in a large number of foreigners, which may cause problems with the social cohesion of the host countries. The data from Eurostat, however, seems to suggest that such concerns are difficult to support. At the European Union level (EU-28), the share of people aged 15-64 with a foreign national origin ranged from 4.4% to 8.4% for the period 2002-2017, while the average share for the past ten years did not exceed 7.5%. Although it is highly probable for the density of migrant populations in specific areas within a country to be much bigger than the country average, at the country level any concerns seem unjustified. On the other hand, the concentration of immigrants in specific regions or areas within regions may, to some extent, be a rational choice they themselves made<sup>2</sup> and, to some extent, may be a choice of the host country.<sup>3</sup>

The choice of the destination country is the outcome of a complicated decision process during which a num-

ber of different factors are taken into consideration, such as the proximity to the country of origin, cultural ties, the presence of an ethnic community in the destination country, the economic situation of the destination country, employment opportunities for foreigners, the immigration policy applied, etc. As a result, there are more and less attractive countries and, therefore, not all countries attract migrant flows equally.

There are wide divergences between EU-28 member states, for example. In 2017 there were countries with an almost zero share of foreigners (e.g., Bulgaria, Romania), and other countries in which the share of foreigners exceeded 15% (e.g., Ireland, Austria, Malta and Cyprus). At the same time, there are also countries in which the share of foreigners is considerably bigger: Switzerland, for instance, with a share of foreigners equal to 27.2% or Luxembourg with a respective share of 54.1%. Considering that one of the main reasons for immigrating during peace time is to improve living conditions through getting a better job, both in terms of working conditions and rewards, it becomes clear why countries with a high per capita GDP, like Switzerland and Luxembourg, face a much higher flow of foreigners than poorer countries.

Those who migrate are more often men, which probably has to do with social norms in the country of origin. It also has to do with employment opportunities available for immigrants in the receiving countries, which sometimes are not gender neutral. However, there is considerable divergence in the share of male foreigners between countries. For instance, in Denmark half of the foreigners are men, while in Slovenia men account for approximately 70% of foreigners. Another difference is more pronounced though: that of ethnic origin. In Luxembourg, for example, which has the biggest share of foreigners in the population, during the past ten years only 8.7% of them come from third countries. In Switzerland, on the other hand, approximately one out of three foreigners is not an EU-28 citizen. Moreover, almost half of the foreigners in Germany come from third countries and in France the share climbs even higher, to six out of ten. Differences in labour

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1. The term “foreigners” refers to immigrants who plan to stay in Greece for a short or longer period of time.

2. Reasons for choosing to settle in a specific area may involve more and better employment opportunities, the presence of an ethnic community already living there, the proximity to the country of origin, etc.

3. There are cases in which the host country chooses certain areas for the accommodation of immigrants, such as the accommodation centres for refugees, in order to avoid unwanted reactions by the local population. Moreover, insufficient care for foreigners and inadequate actions to facilitate their integration into the receiving country may force them to concentrate in specific areas or regions.

demand, which are directly affected by a country's production structure, combined with the immigration policy applied, have an undoubtedly strong impact on the composition of foreigners in a country. Therefore, European citizens are more likely to move to wealthier EU countries in search of better living conditions, while immigrants from third countries are more likely to move to countries which have less strict rules and offer more jobs that require unskilled or low skilled labour.<sup>4</sup>

The case of Greece is not very different than that of the other European countries. In particular, the share of foreigners living in the country has hardly exceeded 8.3% over the past ten years. That puts Greece in the 13<sup>th</sup> place behind Austria, Cyprus, Ireland, Spain and Italy, but in front of Portugal, Sweden, Finland, etc. Over the last few years that share has dropped even more. In 2017 the share of foreigners aged 15-64 dropped further to 6.2%, more than two percentage points lower compared to the EU-28 average. During period 2008-2017, the share of foreigners dropped by 2.1 percentage points, which corresponds to approximately 114 thousand fewer foreigners.<sup>5</sup> The greatest drop was recorded in Spain, which continues to have twice the share of Greece nevertheless, and Portugal, where the share is one-third compared to the one in Greece. Adverse economic conditions facing those countries may have contributed to the drop in the number of foreigners. However, it should be noted that the share of foreigners has increased in most countries over the past years.

Another interesting fact is that the majority of foreigners in Greece come from third countries (83% in 2017). The same is true for about half of the foreigners in the EU-28, on average. Therefore, Greece seems to be less attractive as a destination country to Europeans, but not to third-country nationals. To some extent that is the result of the refugee flows of the past years which have boosted the population of foreigners in the country, many of whom are here only temporarily. Nevertheless, looking at the data on foreigners between 2008 and 2017, it turns out that the share of third-country nationals increased by less than one percentage point, despite the decrease in their absolute number

by 91 thousand. That is obviously due to the fastest decrease of foreigners overall, as already discussed. In the EU-28 the respective share decreased considerably (>8 percentage points), despite the increase in the number by almost 659 thousand persons, since foreigners overall increased by 3.8 million. Given refugee flows, it is easily understood that foreigners have been leaving Greece over the past years.

### 3.2.2. The population of foreigners in Greece and their status in the labour market

The inflow of immigrants in Greece began at the end of the 1980s, after the end of the cold war. Until then Greece was an immigrant sending country, but was quickly converted to an immigrant receiving country. The majority of immigrants came from neighbouring countries and especially Albania. Being mostly unskilled by Greek standards and without any knowledge of the Greek language, men used to work in the construction business and in agriculture, while women offered their services in households, either looking after young children or helping out the elderly. The problematic residence status involved, which often led to informal stays, coupled with inadequate state measures to protect immigrants against abuses, allowed for the undeclared work phenomena to expand. In any case, the fast-growing economy at the beginning of the 2000s allowed for the quick integration of immigrants into the labour market, since they proved to be supplements to their Greek counterparts and contributed to the parallel increase of their employment too.<sup>6</sup>

Graph 3.2.1 shows the evolution of the share of foreigners in the country over time. In 2004 almost 5.5% of the population did not have Greek nationality. That share increased until 2009-2010 to reach approximately 8%; it then started to drop and ended up at 5% in 2017. The share of foreigners aged 15+ in the labour force is also shown in the same graph. It exhibits a similar path; the only difference is that it lays 1.5-2.0 percentage points lower than the share of foreigners in the population. Thus, it ranges from 6.3% to 10%. The

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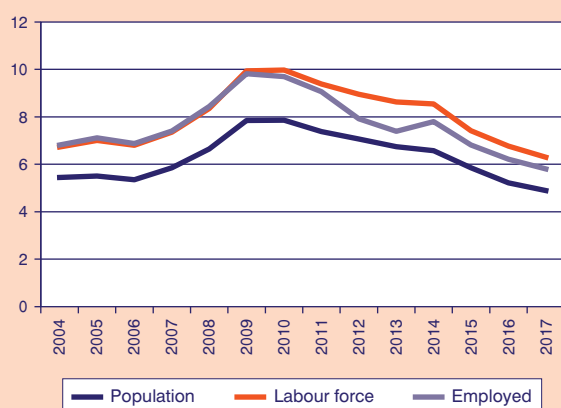
4. Obviously, there are other reasons for moving, as already mentioned. However, it is hard to think of a Greek doctor moving to Bulgaria to look for a job (with relatively low rewards) and not Sweden. The distance, in terms of welfare, between EU-28 member states is shorter than the distance between EU and third countries. Therefore, immigrant flows move towards comparatively richer countries that offer better employment and welfare prospects (or at least they are expected to do so).

5. At the same time, the population overall decreased by 210 thousand. A plausible explanation is that Greeks left the country due to the adverse economic conditions to look for a job abroad. Note also that the population in the EU-28 aged 15-64 increased by approximately 5 million.

6. See Hatziprokopiou, P. (2005), Immigrants' Integration and Social Change: Greece as a Multicultural Society. Paper presented at the 2nd LSE Symposium on Modern Greece, Current Social Science Research in Greece, LSE, European Institute, Hellenic Observatory.

minimum value was recorded in 2017 and the maximum in period 2009-2010. The share of employed foreigners over the entire employed population aged 15+ followed a similar path. The only difference is that it has been dropping faster since 2010 to end up one percentage point lower than the 2004 level, when the increase started.

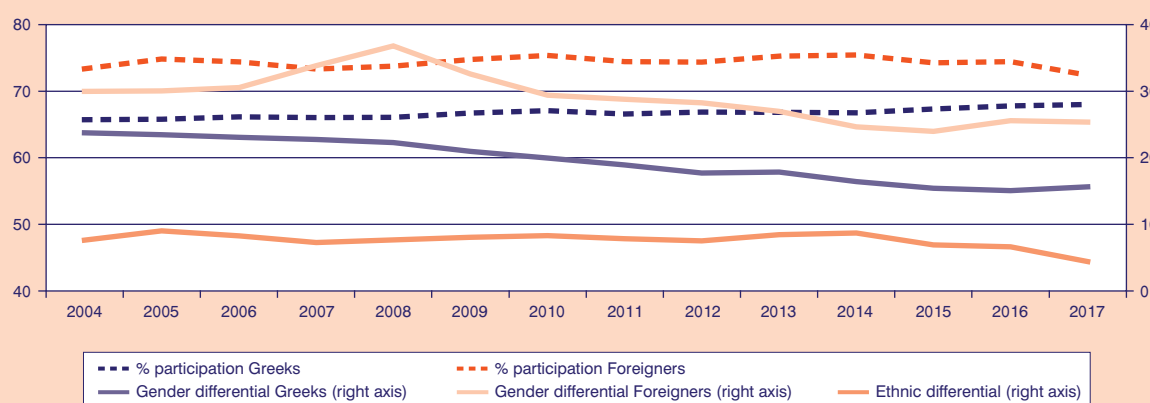
**GRAPH 3.2.1**  
Share of foreigners in Greece (%), 2004-2017



Source: Labour Force Survey, ELSTAT, primary data, KEPE processing.

The difference between the share of foreigners in the population and their share in the labour force is due to the different “behaviour” of the two groups in the labour market. For example, foreigners aged 15-64 participate in the labour force much more often compared to Greeks (Graph 3.2.2). That is no surprise since the main reason for migrating is finding a job and improving living conditions through it,<sup>7</sup> at least according to earlier surveys.<sup>8</sup> However, there is a big difference in men. In period 2004-2017 the participation rate in the labour market for foreign men was, on average, approximately twelve percentage points higher than the one for Greeks, while for women that difference was lower than three percentage points. Therefore, the behaviour of men seems to be dependent on their nationality (Greek or non-Greek), but the same does not hold for women. Two additional observations are interesting. First, until 2010 the participation rate had been increasing for both foreigners and Greeks. That is probably the result of increasing wages (or rewards in general) that attract people to the labour market as they exceed the reservation wage of more and more people.<sup>9</sup> The second thing is that after 2010 the participation rate for Greeks stayed almost constant, while it decreased for foreigners. Consequently, the gap between the two groups shrank from 8.3 percentage points in

**GRAPH 3.2.2**  
Participation rate (%) for individuals aged 15-64, 2004-2017



Source: Labour Force Survey, ELSTAT, primary data, KEPE processing.

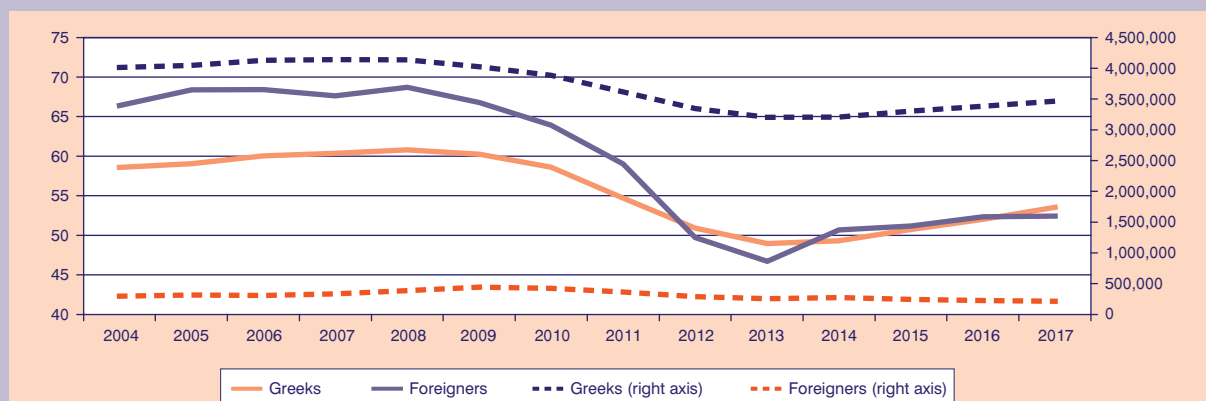
7. Refugee flows are a special case, since survival is probably the strongest reason for migrating –especially when these flows originate from regions at war.

8. A discussion of the Greek case can be found at Cholezas, I. and Tsakloglou, P. (2009), The economic impact of immigration in Greece: taking stock of the existing evidence, *Southeast European and Black Sea Studies* 9: 1-2, pp. 77-104.

9. According to the evolution of the wage index estimated by ELSTAT, wages went up in 2010 on a quarterly basis, with the exception of the first quarter when wages always fall due to the Christmas benefit paid in the last quarter.

**GRAPH 3.2.3**

**Employment rate (%) and number of employed aged 15-64, 2004-2017**



Source: Labour Force Survey, ELSTAT, primary data, KEPE processing.

2010 to 4.4 percentage points in 2017. Thus, foreigners appear to be more vulnerable to the reduction of wages that followed 2010 (and speeded up in 2012 and 2013) and decide not to participate in the labour market.

An interesting observation is that the difference in the participation rate between men and women is wider amongst foreigners, obviously because of the much higher participation rate of foreign men, since the difference between foreign and native women is small. Another interesting observation is that the gender participation gap has been decreasing amongst Greeks; that seems to suggest an increasing participation rate for Greek women over time. On the other hand, the gender participation gap had been increasing up to 2008, but has started to narrow since. The diminishing gender participation gap for both groups could be explained as a change in the participation decision of women, in order to support household income, which is independent from ethnic origin. Nevertheless, considering the changes that have taken place since 2014 and onwards, when the slow recovery of employment started, Greek women increased their participation rate faster than foreign women.

The employment rate for foreigners aged 15-64 was also higher than that of Greeks, at least until 2011. A plausible explanation is that foreigners are more flexible than Greeks, since the latter are more likely to have alternative sources of income, perhaps through their wider family or some real estate property. That may allow them to be more selective, i.e., have a higher reservation wage regarding the job offers they accept. The maximum employment rate for the entire period 2004-2017 is traced in 2008 for both groups (68.7% for foreigners and approximately 8 percentage points

lower for Greeks) and the minimum in 2013 (49% for foreigners and 46.7% for Greeks).

There are two more interesting facts. First, the typically bigger employment rate for foreigners seems to diminish while, since 2014, when the slow recovery began, the difference has almost disappeared. It seems, then, that lately it has been easier for Greeks to get a job, probably due to the nature of the jobs offered, which may fit less well the attributes of human capital embodied by foreigners. However, since the employment rate is calculated using the number of the population in the denominator, parallel changes in those two variables (employed and population) may blur the picture. It is often mentioned in public discourse, for example, that one of the consequences of the economic recession the country faced over the past ten years is immigrants leaving the country and well educated Greeks migrating to mostly European countries in search of a job (*brain drain*). A closer look at the data on population aged 15-64 reveals that the number of Greeks had been decreasing even before 2008. On the contrary, the number of foreigners in the country continued to increase until 2009, when it reached 666 thousand, and has been decreasing ever since. Apparently, the problems caused by the economic recession forced people to leave the country, an argument which seems particularly strong in the case of foreigners. Note that less developed social networks for foreigners, as well as their mentality (they have migrated at least once in the past), may induce them to migrate again. The fact that immigrants are leaving the country at a faster rate may interpret the reduction in their share on the population already discussed in Graph 3.2.1. In this context, the increase in the employment rate of foreigners is not accompanied

by a similar increase in the number of the employed, since that number decreased and has not been recovering, despite the general increase in employment. On the contrary, the number of employed Greeks has been increasing steadily since 2014. Among others, the concentration of foreigners in specific industries, which are not recovering yet in terms of employment, such as construction activities and households as employers, may be responsible for that.

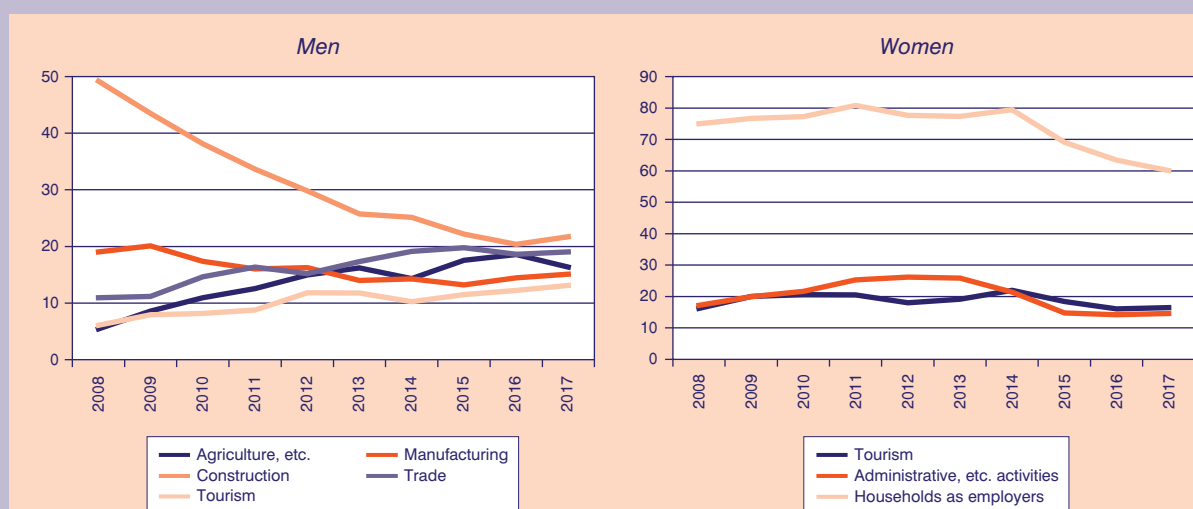
There are two key questions regarding foreigners' employment. The first one involves the industries in which they are usually employed, and the second one is the degree to which a given industry relies on foreigners' employment. Given that job preferences differ between men and women, these questions must be answered for each gender separately.

Employed foreigners are distributed across industries. That distribution is presented in Graph 3.2.4 which addresses the most important industries, in terms of the number of employed foreigners. As expected, important industries differ for men and women. Foreign men are more often employed in construction, trade, agriculture, manufacturing and tourism. Despite the generalised decrease in employment over the past years, the distribution of employed foreigners has not changed dramatically. It is also interesting that while the employment of foreign men decreased in construction (half were foreigners in 2008 vs. one fifth in 2017) and in manufacturing it is still five percentage points lower compared to its maximum value, the share of

foreigners working in tourism, agriculture and trade increased. Especially in agriculture, the increase is approximately 10 percentage points higher. Likewise, almost 60% of foreign women continue to be employed in households, despite the general decline since 2008. It should be noted that the share of foreign women employed in tourism has increased by approximately 11 percentage points, while they also increased their share in manufacturing and agriculture. Note that changes in shares do not necessarily reflect an increase in the number of the employed, since they may result from the slower decrease in employment in the specific industry.

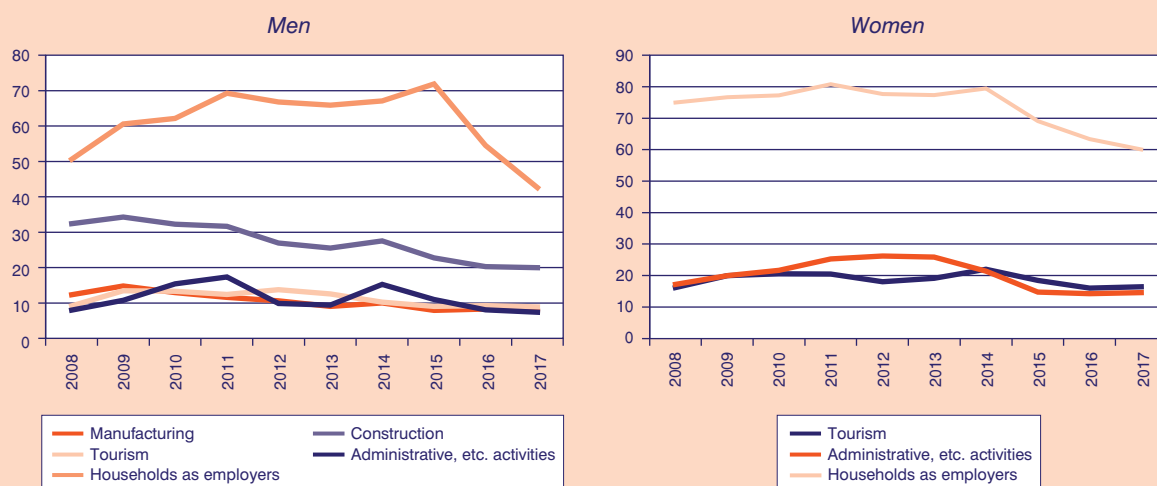
The second interesting question is answered in Graph 3.2.5 which depicts the share of employed foreigners in total employed in selected industries for men and women separately. The bigger the share of employed foreigners in an industry, the more that industry depends and is affected by foreigners and their decisions. The industries that rely most on a foreign male workforce include households, manufacturing, construction activities, administrative and other activities and tourism. Note that the share of foreign men employed in households is very small (check Graph 3.2.4), but three out of four men employed in the particular industry are foreigners. The share declined sharply over the past two years, due to a decrease in foreign employment and an increase in employed Greek nationals. At the same time, construction activities seem to be much less dependent on a foreign workforce than in

**GRAPH 3.2.4**  
**The distribution of foreigners by gender in selected industries (%)**



Source: Labour Force Survey, ELSTAT, primary data, KEPE processing.

Note: Industry codes are based on STAKOD-08 classification used by ELSTAT (based on NACE Rev2).

**GRAPH 3.2.5****Share of employed foreigners by gender in selected industries (%)**

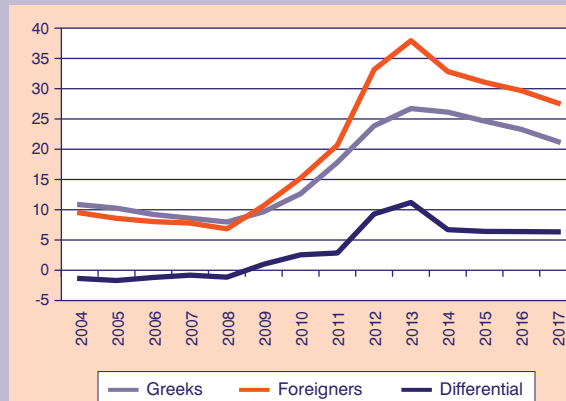
Source: Labour Force Survey, ELSTAT, primary data, KEPE processing.

Note: Industry codes are based on STAKOD-08 classification used by ELSTAT (based on NACE Rev2).

the past. As far as women are concerned, six out of ten foreigners are employed in households, although their importance has decreased over the years. The two other industries most dependent on a foreign female workforce, i.e., tourism and administrative and other related activities, seem to be relatively stable over the past few years.

Concluding, employed foreigners are still concentrated in the same industries as they were in the past, which are not the same for men and women. In some industries the concentration has been getting stronger over the past years, but in others it is diminishing. *Ceteris paribus*, the dependence of industries on a foreign workforce seems to decrease as employment increases.

The other side of employment is, of course, unemployment, which reflects all the difficulties in finding a job that often lead people to leave a country in search of a job abroad. In the case of Greece, employment prospects for foreigners used to be more favourable than those for Greeks until 2008 and the beginning of the country's economic troubles (Graph 3.2.6). The unemployment rate reached 6% for the former in 2008 and approximately 8% for the latter. From 2008 until 2013, the employment increased faster for foreigners than for Greeks. The following year, when employment started to recover, this differential dropped between six and seven percentage points. It is interesting that despite the almost parallel movement of the unemployment rate for both foreigners and Greeks, the number of un-

**GRAPH 3.2.6****Unemployment rate (%) for individuals aged 15-64, 2004-2017**

Source: Labour Force Survey, ELSTAT, primary data, KEPE processing.

employed foreigners started to increase in 2006, two years before the number of unemployed Greeks started to increase also. Therefore, it could be argued that the number of unemployed foreigners was a sign of the difficulties ahead. On the contrary, the maximum number of the unemployed was reached in 2013 for both groups. The second interesting fact is that the reduction of the unemployment rate since 2014 has been faster for foreigners. Just to get a picture of this, note that in period 2014-2017 the unemployment rate went down

by 10.3 percentage points for the latter compared to 5.5 percentage points for Greeks, while the number of unemployed foreigners dropped by 47.6% vs. 19.9% for Greeks during that period. Nevertheless, the number of foreigners in Greece has been dropping, as already noted above.

Another interesting fact is that the unemployment rate differential between men and women is similar for the two groups; in both cases women face more difficulties in getting a job. The widest gender unemployment differential does not exceed ten percentage points for foreigners and eleven percentage points for Greeks. However, comparing the same gender shows that the unemployment rate differential is bigger amongst men.

Young people have always been a special population group for the Greek labour market. During the economic turbulences youth were faced with more severe problems compared to older individuals. The term 'youth' refers to people aged 15-29, a slightly wider definition than the usual one because of the Greek peculiarity involved, i.e., many prolong their studies beyond the statutory period. Until 2011, foreign youth had better employment chances than Greek youth; the unemployment rate they were facing was always lower, although the differential had been gradually diminishing since 2004. In 2013 the unemployment rate for youth reached 48.4% for Greeks and 50.8% for foreigners. That was the first year for which the unemployment rate for foreign youth exceeded that for Greeks. Ever since, the difference does not have a stable sign. The reduction in the unemployment rate, which started in 2014, favoured foreign youth. Moreover, the unemployment rate dropped by 17.5 percentage points (vs. 12.6 percentage points for Greeks) and the number of the foreign unemployed youth also dropped by approximately 62% (vs. 36% for Greeks). However, it seems that the advantage of foreign youth in terms of a lower unemployment rate has vanished over the past few years.

### 3.2.3. Conclusions

Over the past ten years approximately 8% of the population in Greece has consisted of foreigners, i.e., they do not have Greek nationality. Lately, probably because of the economic troubles, both the number and the share of foreigners have been decreasing. Most foreigners come from third-countries; this is a fact that distinguishes Greece from many other, mostly advanced, EU-28 countries.

The situation of foreigners in Greece has changed for the worse over the past few years, most likely due to the economic troubles the country faced. The unemployment rate was lower for foreigners before 2008; it increased faster in period 2008-2013, but it has also been decreasing faster ever since, both for the foreigners in total and for foreign youth. It is important that this is happening despite the fact that industries that typically employed foreigners in the past are far from the high employment levels recorded in 2008. That could signal the expansion of the presence of foreigners in other industries. For instance, the share of foreigners working in tourism and trade increased for both men and women. There are bigger differentials amongst men of a different nationality than women in labour market variables, like the labour force participation rate. In any case, those differentials have been decreasing over the past years, while the presence of women in the labour market was reinforced, probably in an effort to compensate for the decrease in household income.

Employment prospects have been improving for everyone in Greece and, consequently, for foreigners also. The increase in the number of employed foreigners seems to perpetuate their concentration in specific industries, meaning that they continue to be employed in the same industries as they were in the past, despite the fact that they have a stronger presence lately in other industries as well. In some industries, indeed, the concentration has been getting stronger over the years. Nevertheless, the dependence of industries on a foreign workforce seems to decrease with the expansion of employment. Although employment opportunities seem to improve since 2014 for everyone, but particularly for foreigners, they seem to continue to migrate to other countries. That is verified by the decrease in their share in the population and the labour force. Moreover, the increase in the employment rate of foreigners is not accompanied by an increase in the number of the employed, which suggests that their population has been shrinking.

As long as the Greek state recognises the positive role of foreigners in the Greek economy, primarily but not only through the relief of the demographic problem, it should do more to facilitate their smooth integration into the Greek labour market and society. Ensuring a field of equal opportunities for all and protection against malpractices in the labour market should be amongst the top priorities in that process.

# 4. Development policies and sectors

KEPE, *Greek Economic Outlook*, issue 38, 2019, pp. 46-54

## 4.1. Sharing economy-Collaborative economy: Use of services in Greece

*Ersi Athanassiou*  
*Agapi Kotsi*

### 4.1.1. Introduction

The terms “sharing economy” and “collaborative economy” encompass various activities which have been emerging and developing rapidly in recent years via online collaborative platforms. In the present article, we first consider the meaning of these and other related terms that are frequently used in the literature and public dialogue. Furthermore, as a next step, we examine recent trends in the use of collaborative platforms in Greece and in the European Union (EU-28), focusing on general and more specific characteristics concerning the profile of users (gender, age, education, etc.), the kind of services used, and the main advantages and disadvantages of the collaborative economy versus the traditional trade of goods and services. The data employed in this analysis originate mainly from the recently published survey of the European Commission on the use and supply of services via collaborative platforms (European Commission, 2018), as well as from the earlier corresponding survey published for the first time in 2016 (European Commission, 2016).

### 4.1.2. Conceptual approaches

The term “sharing economy” was first used in 2009 (Demary, 2015) and since then it has spread globally, without there being a commonly accepted definition or notion of its content. Depending on the point of view or the objectives of each user, the term can be used in a narrow or a broader sense. A common denominator of the different conceptual approaches is usually the mediation of an internet platform connecting users and suppliers of services, with the aim to achieve a more efficient use (sharing) of natural or human resources.

On the basis of a commonly used definition, the sharing economy is identified as a phenomenon by which *consumers grant other consumers temporary access to under-utilised assets (“idle capacity”), possibly for money* (Frenken et al., 2015). In a sense, this definition may be characterised as being precise, since it does not detract significantly from the idea of temporary sharing, e.g., of a residence or car ride, a practice that in the past took place mainly among friends and relatives and is now possible between strangers via an online platform. On the other hand, this definition may be regarded as being fairly restrictive (Maselli, Lenaerts and Beblavý, 2016), as it excludes similar forms of transactions which are currently placed within the framework of collaborative activities. More particularly, on the basis of this definition, the concept of the sharing economy covers solely consumer-to-consumer or peer-to-peer transactions, thus excluding similar business-to-consumer transactions. Furthermore, the definition does not include activities that refer purely to the supply of services. Thus, according to this particular definition, the sharing economy includes, e.g., the rental of a residence under-utilised by its owner through platforms such as Airbnb, or the sharing of a journey with a private car (carpooling) through platforms such as BlaBlaCar. It does not include, e.g., activities referring to the on-demand satisfaction of requests for services, such as taxi orders through platforms such as Uber, or the satisfaction of needs for domestic services, through platforms such as TaskRabbit.

Towards a less restrictive conceptual approach of the sharing economy, other definitions are offered in the literature, which limit the spectrum of transactions covered by the term without excluding collaborative activities widely regarded as part of the sharing economy. Depending on the case, such definitions may not encompass, e.g., business-to-business transactions or the transfer of ownership of products among consumers through platforms such as E-bay. On the other hand, these definitions may incorporate notions that are close to that of the sharing economy, such as the *collaborative economy*, the *on-demand economy*, or the *product-service economy*.

- The *collaborative economy* is a term often regarded as synonymous to the sharing economy, in a wider

sense than that of Frenken et al. (2015). According to the definition of the European Commission (2016), which shows preference to this particular term when referring to collaborative forms, the collaborative economy refers to business models where activities are facilitated by online platforms. Collaborative platforms create an open marketplace for the temporary use of goods or services often provided by private individuals. The collaborative economy involves: (i) service providers who share assets, resources, time and skills; these can be private individuals offering services on an occasional basis ('peers') or professional service providers, (ii) users of these services and (iii) collaborative platforms that connect providers with users and facilitate transactions between them. Generally speaking, collaborative economy transactions do not involve a change of ownership and can be carried out for profit or not for profit.

- The *on-demand economy* is a term employed mainly to describe the mediation of online platforms to create open markets through which workers can freely be assigned to cover the demand for personal or professional services. A key feature of the on-demand economy is that the mediation of the platform concerns the supply of some form of labour. This labour may cover needs for local/manual tasks (on-demand work), or can be offered online from a distance, through the so-called crowdsourcing platforms.
- The *product-service economy* is a term used less frequently in the literature compared to the terms mentioned above. It is used mainly to describe the mediation of platforms for the execution of transactions between businesses and consumers.

The less restrictive definitions of the sharing economy are usually quite close to the notion of the collaborative economy, and hence may cover, apart from the activities included in the definition of Frenken et al. (2015), other transactions belonging to the on-demand economy and the product-services economy. Within a conceptual framework of this kind, a pertinent approach is that of Dølvik and Jesnes (2017). The authors define the sharing economy as a phenomenon according to which an intermediary company, in the form of a digital platform, helps to connect providers and consumers/clients to perform transactions such as the provision of services and the sharing of assets/property, skills or

labour. On the basis of such a definition, the sharing economy includes peer-to-peer transactions for the sharing of under-utilised assets, business-to-consumer transactions, as well as activities that concern purely the provision of services, subject to the condition that all these transactions are performed via an online platform. According to this definition, the sharing economy includes, for example, both transactions through Airbnb and BlaBlacar, and the activities of Uber and TaskRabbit.

#### 4.1.3. Use of services offered via collaborative platforms

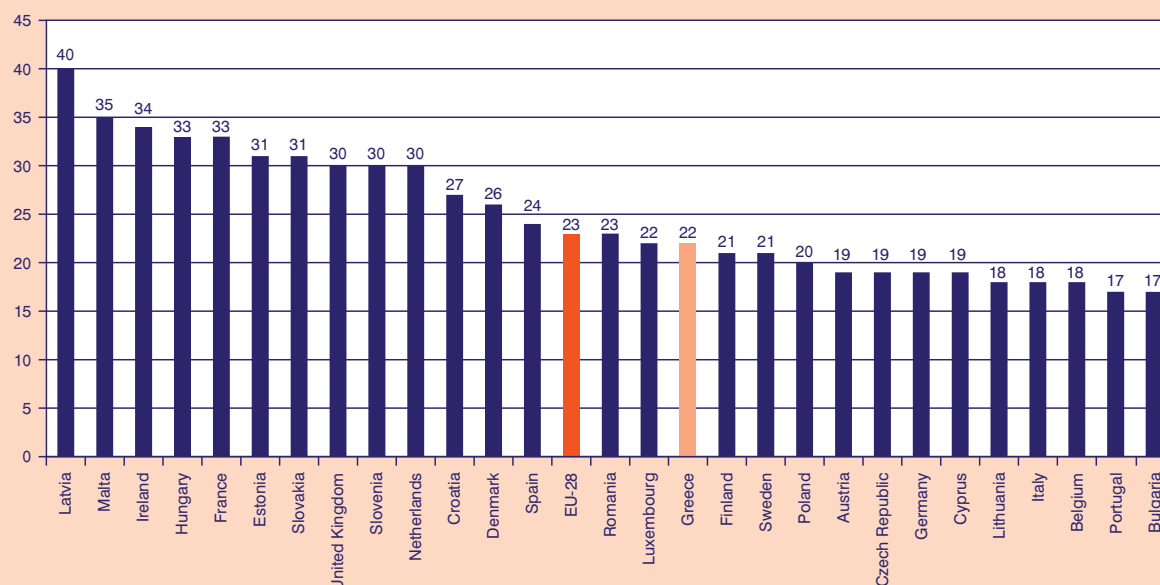
The evolution of technology and high-speed networks, the growth of social networks and the increasing access of Greek citizens to the internet have played an important role in the development of the sharing economy and related digital platforms and applications in Greece over recent years (Athanassiou & Kotsi, 2018). The awareness of citizens about the sharing economy, its use and the characteristics of users in Greece and Europe are recorded in two relevant studies performed in 2016 and 2018 on a representative sample of the population of the EU-28 aged 15 years and over (European Commission, 2016, 2018).<sup>1</sup> According to the results of these surveys, in 2018 a share of 22% of Greek respondents stated that they have used services offered via collaborative platforms. This share is considerably higher compared to the corresponding figure for Greece in 2016 (9%), and is also very close to the average of EU-28 member states for 2018 (23%), with the corresponding shares for other countries ranging from 17% in Portugal to 40% in Latvia (Figure 4.1.1). With respect to the frequency of use, in Greece, 10% of respondents stated that they have used these services once or a few times (versus 2% in 2016 and 9% on average for the EU-28 in 2018), 7% stated that they have used the services occasionally-once every few months (versus 5% and 10%, respectively) while 5% reported frequent use-once a month or more often (versus 1% and 4%, respectively).

Those who responded that they have not used services via collaborative platforms mentioned more frequently as a reason the lack of knowledge about what collaborative platforms are (36% of non-users in Greece and, on average, in the EU-28). Other reasons offered

1. The survey of 2018 was carried out via phone interviews on a representative sample of 26,544 persons from the 28 member states of the EU, including 1,000 persons in Greece during the period 23-30/4/2018. The survey of 2016 was carried out on a sample of 14,050 and 500 persons, respectively, during the period 15-16/3/2016.

**FIGURE 4.1.1**

**Total use of services offered via collaborative platforms (% of respondents), 2018**



Source: European Commission, 2018.

as explanations for non-use of these services were a preference for services offered via traditional channels (e.g., with direct personal contact) (27% of non-users in Greece and 34% on average in the EU-28), a lack of trust in the services offered (20% and 17%, respectively), a lack of technical knowledge about how to use collaborative platforms (18% and 14%), concerns about sharing personal data on the platform or the internet (16% and 20%), and, finally, poor internet access (6% of non-users in both Greece and the EU-28 average).

In all EU-28 countries, 2018 was characterized by increases in the awareness and use of the relevant services as compared to 2016. At that time, 35% of respondents had heard about collaborative platforms, while 17% had used a service at least once (the relevant percentages ranged from 2% in Cyprus to 36% in France). In Greece, the corresponding shares for 2016 amounted to 25% and just 9%, with these figures being slightly higher than those recorded for the first time in a relevant survey conducted in 2015 by MRB Hellas on behalf of the mobile-phone company Cosmote (MRB Hellas, 2015).<sup>2</sup> According to this survey, 24% of respondents stated that they were aware of the

concept of the sharing economy, while 8% stated that they had made use of a relevant service.

#### 4.1.3.1. Profile of users

The use of services via collaborative platforms seems to differ depending on the profile of users. Starting with gender, in 2018 females exceeded males in the use of services via collaborative platforms in Greece (24% of females versus 20% of males), in contrast to the average of the EU-28 where males presented slightly higher shares of use compared to females (25% versus 23%, respectively) (Table 4.1.1). With respect to age, users of the relevant services belong primarily to age groups below 40 years. More particularly, in Greece, the higher shares of use appear in the age groups of 15-24 years (38%) and 25-39 years (33%), while in the EU-28, the higher shares of use appear on average in the age groups of 25-39 years (38%) and 15-24 years (37%). In Greece, the share of users has increased considerably compared to 2016 for both genders and in all age groups, with the most notable increase in use for the age group of 15-24 years (from just 5% in 2016 to 38% in 2018). These

2. The survey was conducted through phone interviews in February 2015, on a sample of 500 mobile phone subscribers in Athens and Thessaloniki, in parallel with online interviews of 160 mobile phone subscribers in Athens and Thessaloniki who had made use of sharing economy services.

**TABLE 4.1.1 Profile of users of services via collaborative platforms in Greece and the average of the EU-28, 2018, 2016**

Characteristics	Categories	2018		2016	
		Greece	EU-28	Greece	EU-28
Gender	Total	22%	23%	9%	17%
	Male	20%	25%	9%	21%
	Female	24%	23%	8%	15%
Age	15-24	38%	37%	5%	18%
	25-39	33%	38%	17%	27%
	40-54	24%	26%	13%	22%
	55 +	9%	11%	2%	10%
Education (years)	15-	5%	5%	0%	4%
	16-19	11%	16%	4%	13%
	20+	26%	32%	14%	27%
	Still studying	40%	39%	7%	21%
Employment status	Self-employed	27%	37%	14%	26%
	Employee	32%	34%	22%	25%
	Manual workers	14%	15%	0%	14%
	Not working	17%	16%	3%	11%
Urbanisation	Rural village	13%	19%	5%	
	Small/mid size town	20%	22%	9%	
	Large town	25%	34%	10%	
Region	Northern Greece	20%		10%	
	Central Greece	13%		7%	
	Attiki	27%		7%	
	Aegean Islands, Crete	29%		17%	

Source: European Commission, 2018, 2016.

figures confirm the initial indications provided by the survey of MRB Hellas (2015). According to this survey, despite the fact that awareness regarding the concept of the sharing economy was, at the time, still limited, the interest of the public seemed to be quite high, with the most dynamic age group of the new economic model being the population of youths aged between 18 and 24 years.

In relation to the educational level of users, students and persons with more years of education present higher shares of use of services via collaborative platforms in both Greece and the EU-28 average. More particularly, in 2018, in the category of students, the

share of users amounted to 40% in Greece and 39% on average in the EU-28. In the category of persons with a higher educational level (20+ years of education) the share of users amounted to 26% in Greece and 32% in the EU-28. For persons with fewer years of education (up to 15) the share of users was low both in Greece and in the EU-28 average (5%).

In terms of employment status, employees were the group with the highest share of users of services via collaborative platforms in Greece in 2018 (32% versus 22% in 2016), in contrast with the EU-28 where, on average, the self-employed presented a higher share of use (37% in 2018 from 26% in 2016). In

terms of urbanization, residents of large towns presented higher shares of use both in Greece and in the EU-28 (25% and 34%, respectively). In 2018 all geographical regions of Greece presented considerable increases in use as compared to 2016, with the highest shares of users in 2018 being recorded in the Aegean Islands and Crete (29%), followed by Attica (27%).

#### 4.1.3.2. Type of services used

Among the services offered via collaborative platforms, the ones presenting the highest frequency of use among users relate to accommodation (e.g., renting an apartment) and transport (Figure 4.1.2). In 2018, 67% of users in Greece stated that they used accommodation services, with the corresponding EU-28 average amounting to 57%. In parallel, in the same year, the corresponding frequency of use in Greece

and the EU-28 amounted to 35% and 51% for transport services (e.g., car sharing), 28% and 33% for food-related services, 15% and 14% for household services (child care, repairs, gardening, etc.), 10% and 9% for professional services (IT services, accounting, etc.) and 5% and 8% for collaborative finance (e.g., crowd funding).

With reference to responses from the entire sample, it seems that in Greece 15% of those asked used accommodation services, (versus 14% on average in the EU-28), 8% used transport services (versus 12%, respectively), 6% used food-related services (compared to 8%, respectively), 3% used household services and 2% used professional services as on average in the EU-28, and 1% used collaborative finance (versus 2%, respectively).

In 2015, the most recognizable services of the sharing economy among the Greek population (MRB Hellas, 2015) were home exchange (25% of the

**FIGURE 4.1.2**

**Use of services offered via collaborative platforms in Greece and the EU-28 by sector, 2018**



general population and 67% of users), the rental of housing in Athens for exchange students (17% and 33%, respectively), the exchange of books (16% and 64%), the online market for crafts (14% and 58%), carpooling (13% and 50%), orders via the internet for ready meals cooked by others (13% and 43%) and bike sharing (13% and 28%). Among users, the most popular services were the exchange of books (40%), carpooling (37%), the online market for crafts (14%), housing rentals (12%), home exchange (11%) and orders via the internet for ready meals cooked by others (11%).

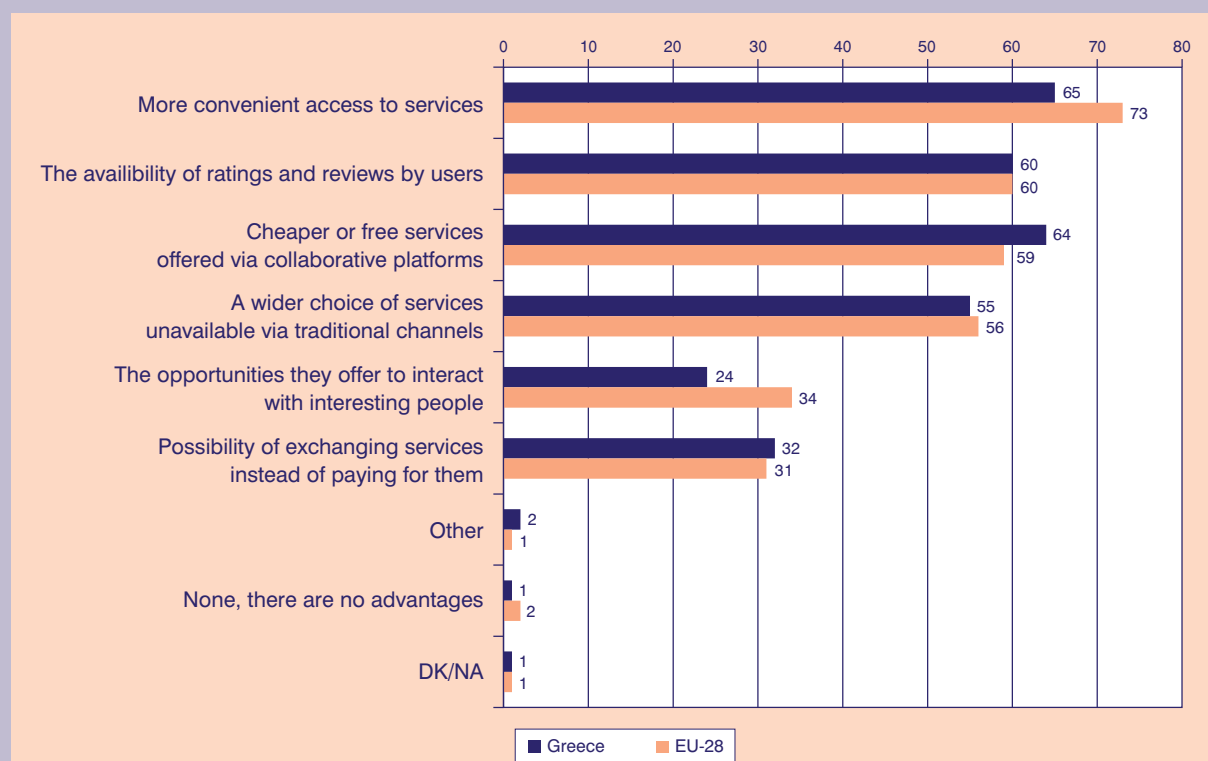
#### 4.1.3.3. Advantages

On the basis of the responses of users of services via collaborative platforms, the most important advantages of platforms compared with traditional channels, for Greece in 2018, were more convenient access to services (65% versus 42% in 2016) and cheaper or free services (64% versus 36% in 2016). The corresponding figures for the EU-28 average were 73% and 59% (versus 41% and 33% for 2016) (Figure 4.1.3). Other key reasons for the use of platforms

were the availability of ratings and reviews by users, reported by a share of 60% of users for both Greece and the EU-28 on average, wider choice (55% and 56%, respectively), the possibility of exchanging services instead of paying for them (32% and 31%) and opportunities to interact with interesting people (24% and 34%).

In the case of Greece, the advantages reported by users differ depending on the type of services used (see Table 4.1.2). More particularly, for users in Greece, the most important advantage is reported to be cheaper or free supply in the case of transport services (79%), more convenient access in the case of food-related services, accommodation and household services (76%, 69% and 66%, respectively), wider choice in the case of professional services (79%) and the availability of ratings and reviews in the case of users of collaborative finance (67%). On the other hand, in the EU-28, on average, more convenient access is reported as the most important advantage by users of all kinds of services (by a share ranging from 75% for accommodation and professional services to 89% for collaborative finance).

**FIGURE 4.1.3**  
**Advantages of using collaborative platforms compared with traditional channels, Greece, EU-28, 2018**



Source: European Commission, 2018.

**TABLE 4.1.2 Advantages of using collaborative platforms compared with traditional channels, Greece, EU-28, 2018**

Advantages	Sectors						
	Total	Transport	Accommodation	Food-related services	Household services	Professional services	Collaborative finance
Greece							
Cheaper or free services offered via collaborative platforms	64%	79%	69%	77%	64%	77%	55%
A wider choice of services unavailable via traditional channels	55%	58%	57%	70%	51%	79%	51%
More convenient access to services	65%	74%	69%	76%	66%	76%	46%
The availability of ratings and reviews by users	60%	72%	67%	71%	63%	74%	67%
The opportunities they offer to interact with interesting people	24%	25%	22%	30%	30%	37%	39%
Possibility of exchanging services instead of paying for them	32%	31%	34%	29%	42%	32%	38%
EU-28							
Cheaper or free services offered via collaborative platforms	59%	68%	64%	59%	57%	53%	76%
A wider choice of services unavailable via traditional channels	56%	58%	61%	65%	62%	60%	72%
More convenient access to services	73%	76%	75%	85%	79%	75%	89%
The availability of ratings and reviews by users	60%	62%	66%	68%	67%	58%	74%
The opportunities they offer to interact with interesting people	34%	40%	33%	34%	32%	37%	46%
Possibility of exchanging services instead of paying for them	31%	35%	31%	33%	29%	32%	54%

Source: European Commission, 2018.

#### 4.1.3.4. Main disadvantages

The main disadvantages reported by users of collaborative platforms as compared with traditional channels were, in the case of Greece for 2018, the lack of clarity about who is responsible in the event of a problem (48% versus 49% in the EU-28 average), misleading ratings and reviews from users (44% versus 38%, respectively), the misuse of personal data (39% versus 37%, respectively) and less trust in the providers of services offered (37% versus 34%, respectively) (Figure 4.1.4). Smaller shares of users were concerned about problems with the online booking process or payments (20% and 22%, respectively) and with services offered via collaborative platforms being not as expected (17% and 24%, respectively). Similar problems were reported by users in 2016, with first in rank for Greece being the lack of trust (39%); second, the lack of clarity about who is responsible (34%) and, third, disappointment in the services offered (29%).

The lack of clarity about who is responsible in the event of a problem was reported as the most common disadvantage by users of all types of services used, both in Greece (at a share ranging from 44% for col-

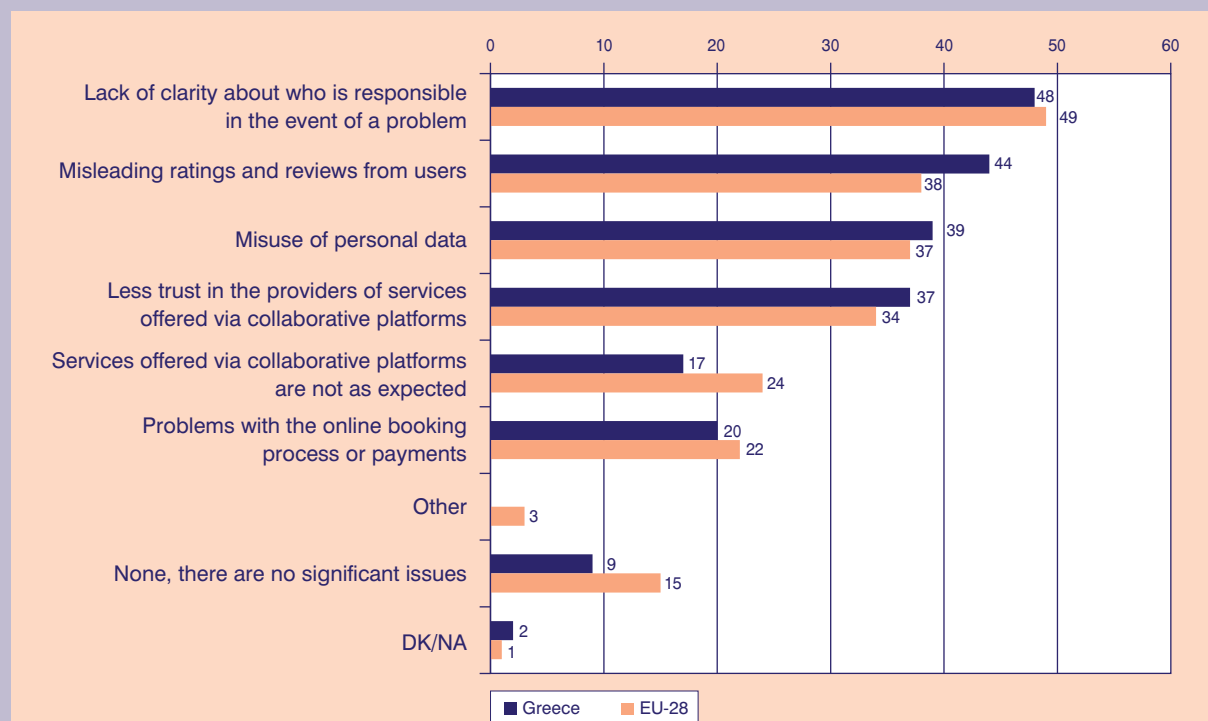
laborative finance to 73% for professional services) and in the EU-28 average (at a share ranging from 50% for transport and accommodation services to 56% for food-related services).

#### 4.1.3.5. Complementarity and substitution

A share of 37% of users in Greece reported that they have substituted services offered via traditional channels with services via collaborative platforms, versus a respective share of 32% in the EU-28 average. On the other hand, 57% of users in Greece reported that they use the services of collaborative platforms as a complement, with the respective share in the EU-28 average amounting to 60%.

More particularly, in Greece, 39% of users declared that they use, in about the same degree, the services offered via traditional channels, while also using the services offered via collaborative platforms; 24% reported that they have partially substituted the services via traditional channels; 18% mentioned that they started using the relevant services only when they started to be offered via collaborative platforms;

**FIGURE 4.1.4**  
**Disadvantages of using collaborative platforms compared with traditional channels, Greece, EU-28, 2018**



Source: European Commission, 2018.

and 13% stated that they have fully substituted some types of services which they obtained in the past via traditional channels. Moreover 91% of users in Greece recommend the services offered via collaborative platforms (40% totally and 51% to some extent), while 7% do not recommend them. In the EU-28 average, the corresponding share of users recommending services via collaborative platforms is slightly lower than that of Greece, standing at 88% (35% totally and 53% to some extent), while the share of users that do not recommend them is similar to that of Greece.

#### 4.1.4. Conclusions

The terms “sharing economy” and “collaborative economy” encompass various activities that have been emerging and developing rapidly in recent years via online collaborative platforms. A common feature of these activities is the mediation of online collaborative platforms connecting users and suppliers of services, with the aim to achieve a more efficient use (sharing) of natural or human resources.

Greece follows the international trends in the growth of the use of collaborative platforms, presenting, according to the relevant survey of the European Commission, a large increase of the share of users in the population (from 9% in 2016 to 22% in 2018). As a result, Greece has now converged to the corresponding EU-28 average (23% in 2018), from which it lagged behind by 8 percentage units in 2016. Growth in the use of collaborative platforms in Greece is observed in all categories of users in terms of gender, age, education and other characteristics, with particularly notable features the higher participation of females in the total use of services via collaborative platforms (something that is not observed in the EU-28 average), and the rapid rise of the share of users in the age group of 15-24 years (from just 5% in 2016 to 38% in 2018). As to the type of services used, the main sectors in Greece and the EU-28 average are accommodation and transport, with Greece exceeding the EU-28 average in the first sector and lagging behind in the second sector. The perceptions of users with respect to the advantages and disadvantages of using services via collaborative

platforms seem to converge in Greece and the EU, with the most frequently reported advantages identified in terms of the availability of ratings, the cheaper or free services offered and the wider choice. The most common disadvantages mentioned refer to the lack of clarity about who is responsible in the event of a problem, the misleading ratings and reviews, the misuse of personal data and the lack of trust in the provider of services. The majority of users in Greece and the EU employ the services offered via collaborative platforms as a complement to those offered via traditional channels (57% and 60%, respectively), while a large share of users have substituted services via traditional channels with services via collaborative platforms (37% in Greece versus 32% in the EU).

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## 4.2. Competitiveness of the Greek economy

*Athanasios Chymis*

While the Greek economy seems to be exiting the crisis, growth remained weak at 1.4% in 2017 and is expected to be just above 2% in 2018. Comparatively, the rate of growth of the other economies, like Cyprus, Ireland, Portugal and Spain, that also went through a severe economic crisis and had economic supervision was at 3.1%, 7.8%, 2.7% and 3.6% respectively.<sup>1</sup>

Economics supports that the rate of growth is directly correlated with competitiveness because the latter affects significantly the level of productivity of the economy (WEF, 2015). Despite the fact that Greece is leaving the crisis behind, its ranking is still at low levels and has been worsening over the last few years.

According to the annual Global Competitiveness Reports (GCRs) of the World Economic Forum (WEF), the Greek economy lost another 4 places in global ranking and ranks 57th in 2018 from 53rd in 2017.<sup>2</sup> It should be noted that the latest GCR, published last October, has applied a new method which takes into consideration the new global economic and social conditions, namely, the 4th Industrial Revolution (4IR). Human capital, innovation, resilience and flexibility play significant roles in an environment of rapid technological change and accelerating developments in artificial intelligence (WEF, 2018). Accordingly, the WEF decided to publish a new Index, the GCI 4.0 which grades economies on a scale of 0-100 where 100 is the ideal score (WEF, 2018).

The total number of subindices is now 98 compared to 114 of previous reports, while the Pillars remain at 12, with some minor changes compared to the Pillars of previous years' reports. Specifically, the new Pillars are the following: Institutions, Infrastructure, ICT adoption, Macroeconomic stability, Health, Skills,

Product market, Labour market, Financial system, Market size, Business dynamism and Innovation capability (WEF, 2018).

As in previous reports, many subindices are calculated based on secondary data from international organizations such as the OECD or the World Bank. However, many other subindices are calculated based on primary data collected from the Executive Opinion Survey conducted each year. WEF reports are internationally recognized and the Index is widely used by academics as well as practitioners, policy makers and governments. GCRs offer useful information and benchmarking countries can use this in order to decide what measures and policies are best for them to improve competitiveness (WEF, 2018).

Tables 4.2.1 and 4.2.2 present the score and the ranking, respectively, of the Greek economy compared to the other four economies that also went through an economic crisis and also signed memoranda of understanding. Note that for Table 4.2.1 –the scoring table– the higher the score, the higher the competitiveness of the economy, while for Table 4.2.2 –the ranking table– the higher the number of ranking, the lower the competitiveness. The global average is close to 60, which shows the long way countries have to go to get closer to 100 and improve their competitiveness. GCR 2018 includes 140 countries.

The Greek economy is compared with countries of the group 'Europe and North America.' The last column of Table 4.2.1 presents the average score of this group. It is clear that Greece lags considerably behind not only the regional average, but also the four economies which had a similar economic crisis and fiscal supervision. The only Pillars in which Greece scores comparatively satisfactorily are Health (the index measures healthy life expectancy), Infrastructure and Skills.

Regarding Market size (*i.e.*: essentially the country's GDP size, taking also into consideration the GDP of trading partner countries and the size of investments), Greece is close to the average simply because Europe has many small economies. It is worth noting that Ireland has less than half of

1. <<https://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG>>.

2. It is explained in the next paragraphs that the method of calculating the index has changed. Consequently, while the Greek economy ranked 87th in 2017 (see last year's article), based on the new method, it ranked 53rd.

**TABLE 4.2.1 Competitiveness Score based on the Global Competitiveness Index 2018**

	Greece	Cyprus	Ireland	Portugal	Spain	Average*
<b>General score</b>	<b>62</b>	<b>66</b>	<b>76</b>	<b>70</b>	<b>74</b>	<b>71</b>
1. Institutions	50	63	73	64	64	64.5
2. Infrastructure	76	75	77	83	89	78.7
3. ICT adoption	59	69	66	67	74	68.0
4. Macroeconomic stability	74	79	99	85	90	91.8
5. Health	96	94	95	95	100	90.7
6. Skills	70	73	80	70	71	74.2
7. Product market	57	63	64	62	62	62.0
8. Labour market	52	67	77	65	59	66.2
9. Financial system	49	53	69	68	75	69.5
10. Market size	59	39	64	60	77	59.6
11. Business dynamism	58	67	77	70	66	68.3
12. Innovation capability	45	45	67	53	63	58.1

Source: Global Competitiveness Report 2018 (WEF, 2018).

\* It is the average of the group 'Europe and North America' of which Greece is a part.

**TABLE 4.2.2 Ranking based on the Global Competitiveness Index 2018**

	Greece	Cyprus	Ireland	Portugal	Spain
<b>General Rank</b>	<b>57</b>	<b>44</b>	<b>23</b>	<b>34</b>	<b>26</b>
1. Institutions	87	37	17	30	28
2. Infrastructure	38	43	34	19	10
3. ICT adoption	57	33	41	37	21
4. Macroeconomic stability	83	63	37	58	43
5. Health	21	26	24	23	1
6. Skills	39	33	15	41	37
7. Product market	63	26	23	35	34
8. Labour market	107	28	7	35	68
9. Financial system	114	95	37	38	27
10. Market size	58	110	44	52	16
11. Business dynamism	72	34	10	27	36
12. Innovation capability	44	45	21	32	25

Source: Global Competitiveness Report 2018 (WEF, 2018).

**TABLE 4.2.3 Selected Indices for the Greek economy based on the Global Competitiveness Report 2018 (2017 data)**

Index / Country	Greece	Cyprus	Ireland	Portugal	Spain
Unemployment rate %	21,5%	11,0%	6,4%	8,9%	17,2%
FDI inflows (5-year average) (% GDP)	1,2%	40,5%	23,8%	2,7%	1,9%
Environmental footprint (gha/capita)	4,3	3,3	4,7	3,7	3,8
Inclusive development (1-7, 7 best)	3,7	-	5,4	4,0	4,4
Income Gini (0-100)	36,0	34,0	31,8	35,5	36,2

Source: Global Competitiveness Report 2018 (WEF, 2018).

Greece's population but more than double its per capita GDP (as well as much larger trade volumes with other economies and investments), thus a larger market size than Greece. Similarly, Portugal has a slightly smaller population than Greece but a slightly larger per capita GDP as well as larger trade volumes with other economies.

It is interesting that despite the reforms that took place during the years of the crisis, the Greek economy still suffers from a non-competitive and rigid labour market which ranks far behind most European countries. This is evidence that reducing wages is not the most appropriate policy to boost competition. The Greek labour market needs reforms that include incentives for hard work and innovative thinking and policies that align pay with productivity. Another Pillar that needs major reforms based on the GCI data is Institutions. Part of Institutions is the judicial system, which is very time consuming in Greece. According to the *Doing Business* report the World Bank publishes every year, it takes 1,580 days (approximately 4 years and 4 months) for the Greek judicial system to resolve an average case, while the average time in the rest of the developed OECD member countries is around 600 days (WB, 2018).

The Financial system is another Pillar that needs amendments. Specifically, on the subindices 'financing of SME's', 'soundness of banks' and 'non-performing loans', Greece ranks 137th among 140 countries, far behind any European economy. Weak Institutions and the financial system are two major factors that explain why Greece had and still has very limited Foreign Direct Investments (FDI) inflows. As Table 4.2.3 shows,

FDI in Greece for the 5-year period 2013-2017 was a meager 1.2% of GDP.

Table 4.2.3 presents some socio-economic and environmental performance indices that are included for the first time in the WEF competitiveness report. These indices are presented separately from the Pillars that affect competitiveness in order to give a more informed view of each economy. The inclusive development index tries to capture a more social aspect of growth while the income Gini indicates the level of inequality within the economy. The environmental footprint is defined as the biologically productive area needed to provide for everything people use: fruits and vegetables, fish, wood, fibers, absorption of carbon dioxide from fossil fuel use as well as space for buildings and roads. It is measured in global hectares (gha) per capita.

Regarding inclusive development, the higher the number, the more inclusive the development. It seems that the other economies that went through a similar crisis perform much better in achieving development that does not exclude most groups of people. The Gini coefficient takes values from 0 (perfect equality) to 100 (perfect inequality). It is worth noting that Ireland, a country which is highly competitive, attracts large quantities of FDI each year and, consequently, has achieved high rates of growth after leaving the crisis, but, at the same time, manages to keep the inequality at low levels compared to the other four economies. The lesson for Greece is clear: improve institutions, reform the labor market and amend the financial system in order for FDI to increase and give the necessary boost to inclusive growth, creating opportunities for all.

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## 4.3. Developments in the Greek capital market

*Fotini Economou*

### 4.3.1. Introduction

Financing is crucial for business growth and efficiency, and the role of the capital market is critical in providing ways to raise capital, apart from traditional bank lending.

In this context, the Greek capital market faces significant challenges in order to affect and promote economic growth. Despite the conclusion of Greece's memorandum programmes and the country's upgrades by international rating agencies, 2018 was a year of negative returns for the domestic stock market, following the negative course of international markets, while domestic developments in 2018 highlighted the critical role of corporate governance.

This article attempts a brief overview of developments in the Greek capital market during 2018, focusing on the stock market, the bond market, and the institutional management sector.

### 4.3.2. Developments in the stock market

The year 2018 saw the Greek stock market decline sharply, following the downturn in international stock markets. According to Athens Stock Exchange (ATHEX) data (2019a), the Athex Composite Share Price Index recorded a significant decrease of -23.56%, similar to the one reported in 2015 (-23.58%), after two consecutive years of positive returns (1.95% in 2016 and 24.66% in 2017). By the end of 2018, the Athex Composite Share Price Index was near its one-year minimum levels (613.30 points), with a three-year (2016-2018) cumulative return of -2.86% and a five-year (2014-2018) cumulative return of -47.25%. Taking a closer look at the volatility of the index, the standard deviation of the daily returns of the Athex Composite Share Price Index was 1.26% in 2018 from 1.07% in 2017.

As presented in Table 4.3.1, almost all ATHEX stock indices reported negative returns, with the exception

of the ATHEX Mid & SmallCap Price Index (14.44%) and the FTSE/ATHEX Mid & Small Cap Factor-Weighted Index (13.37%). Despite the overall negative market trend, this positive performance indicates that there were also companies that achieved positive returns. The individual sectoral indices also reported negative returns, with the exception of the FTSE/Athex Oil & Gas which exhibited a positive return (7.30%). The sectors that reported the worst performance were retail (-97.85%) and banks (-49.82%). In fact, the banking sector reported new historical minimum levels at some point in 2018, with a negative return of -54.53%.

Overall, in 2018, the market was significantly affected by domestic factors as well as by the international conjuncture. Focusing on the domestic market, the negative returns can be largely attributed to the banking sector. In fact, MSCI shifted three of the four Greek systemic banks (National Bank, Piraeus Bank and Eurobank) from the MSCI Standard Greece index to the MSCI Small Cap index in November 2018. In addition, Folli Follie's case has shaken investor confidence, highlighting the critical issue of corporate governance. It should also be noted that the ATHEX experienced a significant decline in trade activity during the second half of the year (see Figure 4.3.1).

According to ATHEX (2019a) data, the total market turnover decreased by -6.1% in 2018, from €14.76 billion in 2017 to €13.86 billion in 2018, with an average daily value of transactions at €55.67 million from €58.81 million in 2017 (-5.3%). Over the same period, the ATHEX total market capitalization decreased by -19.1%, from €43.54 billion on 29/12/2017 to €35.21 billion on 31/12/2018 (see Figure 4.3.1). Without the participation of the Hellenic Financial Stability Fund (HFSF) in total capitalization, the decrease was -17.2%, from €41.66 billion on 29/12/2017 to €34.50 billion on 31/12/2018. The participation of international investors in the total market capitalization decreased by -0.5%, from 63.5% on 29/12/2017 to 63.3% on 31/12/2018. Without the participation of the HFSF, the decrease was -2.8%, from 66.4% on 29/12/2017 to 64.6% on 30/12/2018. The participation of international investors in the ATHEX has remained above 60% (without the participation of the HFSF) since December 2015. Also note that foreign investors constituted 57.5% of total turnover in December 2018, from 64.3% in December 2017.

**TABLE 4.3.1 Prices and returns for selected indices of the ATHEX in 2018**

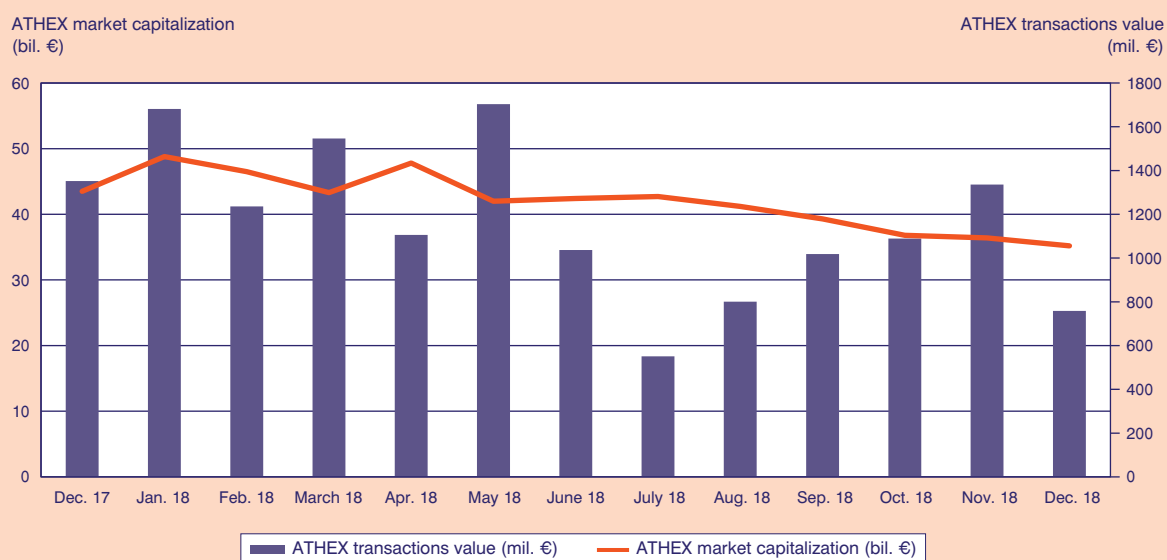
	31/12/2018	29/12/2017	Year min	Year max	Year change(%)
ATHEX Mid & SmallCap Price Index	3,962.08	3,462.23	3,459.89	4,442.84	14.44%
FTSE/ATHEX Mid & Small Cap Factor-Weighted Index	2,215.20	1,953.87	1,953.64	2,464.88	13.37%
Athex All Share Index	158.02	190.26	152.89	209.09	-16.94%
FTSE/Athex Mid Cap Index	975.09	1,198.22	911.71	1,417.74	-18.62%
FTSE/Athex Large Cap	1,608.40	2,083.22	1,548.58	2,275.91	-22.79%
Athex Composite Share Price Index	613.30	802.37	592.70	895.64	-23.56%
FTSE/Athex Oil & Gas	4,860.12	4,529.60	4,087.64	5,396.31	7.30%
FTSE/Athex Food & Beverage	10,110.82	10,153.19	9,316.14	11,879.29	-0.42%
FTSE/Athex Construction & Materials	2,582.29	2,818.18	2,457.94	3,244.17	-8.37%
FTSE/ATHEX Real Estate	3,020.04	3,408.70	2,706.93	3,587.02	-11.40%
FTSE/Athex Utilities	1,758.98	1,992.30	1,727.30	2,508.45	-11.71%
FTSE/Athex Personal & Household Goods	6,878.36	8,000.46	6,088.80	8,843.95	-14.03%
FTSE/Athex Industrial Goods & Services	1,909.50	2,246.15	1,779.28	2,717.62	-14.99%
FTSE/Athex Telecommunications	2,620.45	3,165.46	2,587.42	3,526.04	-17.22%
FTSE/Athex Basic Resources	3,280.77	4,032.43	2,919.09	4,731.18	-18.64%
FTSE/Athex Technology	709.21	910.73	668.53	1,116.72	-22.13%
FTSE/Athex Travel & Leisure	1,323.07	1,829.76	1,313.92	1,962.01	-27.69%
FTSE/Athex Chemicals	8,175.81	11,472.39	7,778.54	12,117.06	-28.73%
FTSE/Athex Financial Services	780.26	1,125.44	737.75	1,309.27	-30.67%
FTSE/Athex Banks	439.63	876.19	398.39	1,042.30	-49.82%
FTSE/Athex Retail	59.91	2,782.06	51.91	2,921.52	-97.85%

Source: Daily official list of trading activity of the ATHEX (31/12/2018 and 29/12/2017).

Looking at the derivatives market, according to ATHEX (2019b) data, there were 35,406 active investor accounts in December 2018, from 37,189 in December 2017, of which 2,041 (5.8% of the total active investor accounts) traded, from 2,194 (5.9% of the total active investor accounts) in December 2017. The total number of open interest was 249,183 from 407,518 at the end of 2017, and the participation of international

investors in the total open interest of the derivatives market was 5.25%, from 2.90% at the end of 2017. The total trading volume decreased from 2,124,308 contracts in December 2017 to 1,323,543 contracts in December 2018.

Looking at the evolution of the KEPE GRIV implied volatility index, which reflects the uncertainty of the derivatives market participants for the expected short-term

**FIGURE 4.3.1****ATHEX market capitalization and transactions value in 2018**

Source: Athens Exchange Group, (2019a). Monthly Statistics Bulletin AXIANumbers, Securities Market, December 2018.

direction of the Greek market and is calculated on the basis of the FTSE/ATHEX Large Cap options' prices, provides useful insight for the market. The KEPE GRIV index reached 15.61% at the end of December 2018, remaining below its historical average (34.07%). However, the average daily value of the index for 2018 increased to 24.63% from 22.97% in 2017, displaying significant variability in the daily observations.

### 4.3.3. Developments in the bond market

According to Bank of Greece data, five-year, ten-year and fifteen-year bond yields were lower at the end of 2018 compared to the end of 2017. The largest decline was observed in the Greek five-year bond (from 3.75% to 3.28%), while a small increase was observed in the twenty-year and thirty-year bond yields (see Table 4.3.2). It should also be noted that the ten-year bond yield was over 4% at the end of 2018. In addition, a seven-year bond was successfully issued in February 2018 (€3,000 million) at a fixed rate of 3.375%. Over the same period, the cost of borrowing through Greek Government Treasury bills (T-bills) was significantly decreased compared to 2017 at 1.09% for 12-month (September 2018), 0.90% for 6-month (December 2018) and 0.65% for 3-month T-bills (October 2018). Note that 12-month T-bills were successfully issued in March 2018 (with

a 1.25% rate) for the first time in the last eight years (from April 2010 with a 4.85% rate). Moreover, according to Bank of Greece data, the total nominal value of transactions in the Electronic Secondary Securities Market (HDAT) on the Greek government securities in 2018 witnessed a significant increase at €5,002 million, from €555 million in 2017 (9 times higher).

ATHEX (2019a) data indicate increased interest in corporate bonds of the Organized and Alternative Market in 2018. Trading activity had a significant increase (18.3%) compared to 2017. The total value of bonds transferred due to settlement reached €163.70 million, from €138.41 million in 2017. The total number of bonds transferred significantly increased as well, at 27,125,596 items from 14,929,668 items in 2017. The average daily value of transactions reached €657,424 from €551,425.81 in 2017 (+19.2%), with an average daily number of bonds transferred due to settlement at 108,938 items, from 59,481 items in 2017 (+83.2%).

Finally, the Hellenic Corporate Bond Price Index, which is based on the net price of each bond, declined by -4.09%, at 95.86 points in 2018, while during the same period the Hellenic Corporate Bond Index, which is based on the net price, accrued interest and the value of the payments of each bond recorded a small decrease of -0.47%, at 116.39 points.

**TABLE 4.3.2 Government benchmark bond prices and yields for maturities of 5, 7, 10, 15, 20 and 30 years**

Maturity (Years)	Price						Yield %					
	5	7	10	15	20	30	5	7	10	15	20	30
January 2018	101.85	-	99.64	96.41	96.09	96.17	3.10	-	3.79	4.23	4.31	4.46
February 2018	100.46	96.07	96.90	91.81	90.73	90.84	3.40	4.03	4.14	4.68	4.76	4.86
March 2018	99.94	96.58	95.88	91.40	88.44	88.38	3.51	3.95	4.27	4.72	4.96	5.05
April 2018	101.47	98.24	97.68	93.66	91.57	91.62	3.16	3.67	4.04	4.50	4.68	4.80
May 2018	100.73	96.76	95.81	91.30	88.69	88.66	3.33	3.93	4.29	4.74	4.94	5.03
June 2018	99.49	96.31	95.04	90.22	87.94	87.92	3.62	4.02	4.39	4.85	5.01	5.09
July 2018	102.34	99.72	98.97	93.86	91.32	91.31	2.94	3.42	3.88	4.48	4.71	4.82
August 2018	101.30	97.68	96.69	90.87	86.87	86.86	3.18	3.78	4.18	4.79	5.12	5.18
September 2018	101.13	97.85	96.76	90.58	86.31	86.28	3.22	3.76	4.17	4.82	5.17	5.23
October 2018	100.34	96.38	95.35	90.26	86.19	86.13	3.41	4.03	4.37	4.86	5.19	5.24
November 2018	100.39	96.08	95.03	89.49	85.72	85.55	3.40	4.10	4.42	4.95	5.23	5.30
December 2018	100.84	96.75	96.08	91.30	87.48	87.35	3.28	3.98	4.28	4.76	5.07	5.15

Source: Bank of Greece.

*Note:* Monthly average observation. The bond prices given are the clean prices per €100 nominal, while the respective yields are expressed in percentages.

#### 4.3.4. Institutional management sector

The year 2018 was quite bad for the institutional management sector as well. Hellenic Fund and Asset Management Association data report a decrease of -8.97% in the total Collective Investment Schemes' (UCITs) assets, at €6,059.9 million at the end of 2018, from €6,656.9 million at the beginning of the year. Of these assets, 31.27% are bond UCITs, 21.81% balanced, 14.37% equity, 16.44% funds of funds, 12.93% money market, 2.89% specialist, and the remaining 0.30% are index funds. Note that 87.4% of the total assets is managed by five out of the fourteen existing Mutual Fund Management Companies.

In the year 2018, UCIT returns followed the negative performance of stock markets. Only four UCIT categories managed to record small positive returns (on average<sup>1</sup>): Global Bond Funds (1.28%), Money Market Funds 1.20%, Specialist Funds-Absolute Return (0.72%) and Government Bond Funds-Developed

Countries (0.54%). The worst performing categories were the ones that invest in the Greek stock market: Index Equity Funds (-22.63%) and Equity Funds-Greece (-16.21%).

Over the same period, total net outflows decreased by -45.98%, at €256.5 million from €474.8 million in 2017. The largest net outflows were recorded for short-term money market funds (€230.5 million) and money market funds (€169.5 million), while Greek bond funds and balanced funds of funds recorded the largest inflows (€147.8 million and €109.2 million, respectively).

Finally, Hellenic Fund and Asset Management Association (2019) data report a decrease of -1.76% in the total amount of funds under management in the institutional management sector in 2018, at €14.52 billion on 31/12/2018. These assets are 41.7% UCITs, 38.2% Asset Management sector, 19.7% Real Estate Investment Companies (REICs), and 0.4% Alternative Investment Funds (AIFs).

1. Including UCITs activated within the year 2018.

### 4.3.5. Conclusions

Domestic developments and the international environment adversely affected investors' expected returns in 2018. The Greek stock market experienced significant losses, with the banking sector having a key role for another year. Despite the continuous interest of foreign investors (as reflected in their participation in the ATHEX in recent years), negative returns, reduced transactions value and capitalization of both the banking sector and the ATHEX, along with the specific characteristics of the domestic economy, create a difficult situation to deal with. At the same time, the corporate bond market provides an alternative form of business financing that attracted increased interest in 2018.

It seems that the evolution of the Greek capital market in the near future will be largely determined by developments in the banking sector as well as by the ability of companies to respond and effectively implement corporate governance rules so as to eliminate suspicion concerning Greek companies, which inevitably shakes investor confidence. In this context, a joint initiative of the Hellenic Federation of Enterprises (SEV), the Athens Stock Exchange and the Hellenic Bank Association for the reorganization of the National Corporate Governance Council was launched last November by providing proposals in order to improve and strengthen corporate governance on the part of companies, auditing authorities and of the state. The key objective is to restore the credibility of Greek companies and to strengthen the corporate governance culture in both listed and non-listed companies.

Furthermore, given the strong relationship of the Greek capital market with the domestic economy, the promotion of economic growth by the capital market remains a challenge. An important step in this direction is the Roots program, which commenced in December 2018, and is an initiative of the Athens Stock Exchange carried out in cooperation with the American-Hellenic Chamber of Commerce, with the support of the Global Federation of Competitiveness Councils and the Greek Ministry of Foreign Affairs. The program aims to improve the growth prospects of innovative small and medium-sized enterprises as well as to facilitate their access to investment funds by familiarizing companies with rules and best practices applied internationally. A key element of the program is to guide the participating companies, employing the Greek capital market ecosystem.

Similar actions and initiatives could enhance the credibility of Greek companies and provide new financing opportunities that facilitate economic growth via the capital market.

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## The special purpose vehicle (SPV) as a mechanism of banks' relief from the NPLs through securitization

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*Ioannis Peletidis\*\*\**

### Abstract

*The purpose of this article is to reveal the importance of the special purpose vehicle (SPV) for the implementation of the necessary securitizations of the banking system. In particular, an overview of the functioning of the mechanism of the securitization of bank loans, through an SPV, is attempted. Additionally, the normative approach to the concept of securitization and SPV, according to the mandates of the European Union (EU), is also described. Then, using an example of linear programming (LP), we estimate the necessary costs and the structure of the bonds of such a vehicle to ensure the viability of a mechanism that can relieve banks from their non-performing loans. Finally, in the conclusions, the long-run impact of the implementation of such a policy tool for the Greek banking system is discussed.*

**Classification:** G28, G33

**Key words:** Non-performing loans (NPLs), special purpose vehicles (SPVs), securitization.

### 1. Introduction

The issue of the non-performing loans (NPLs) of the systemic Greek banks, as indicated in our previous articles (e.g., Mouzoulas et al., 2017 & 2018), was and still remains one of the most critical matters for the growth of the Greek economy. In mid-2018 NPLs stood at very high levels, as a percentage of the total loans of systemic banks.<sup>1</sup> This evidence creates: a) a negative impact on both the issue of banks' credit policies, in the process to cover the financial needs of viable enterprises and b) a serious problem for the formation of a reliable capital adequacy of banks, from the perspective of Basel III (2011, 2017) mandates, in order to boost the credibility of the Greek banking system.

In this context, both the institutions (and especially the European Central Bank-ECB) and the Greek government are seeking some alternative as well as complementary ways to deal effectively and immediately with the specific problem of the high percentages of the banks' NPLs (Stournaras, 2018). So, apart from the possible arrangements of claims or write-offs of bank provisions, the possibility of creating a special purpose vehicle (SPV) is discussed, targeting the securitization of the NPLs (Pantelias, 2018). Thus, the creation and the adequate funding of such a vehicle, which could effectively assist with a partial recovery from the NPLs claims, is one of the most important mechanisms in the effort to relieve the systemic banks from the NPLs burden until 2021, as is also recommended by the ECB.

In Section 2, below, a brief presentation of the mechanism of bank assets' securitization, through the creation of an SPV, is discussed. In Section 3, a regulatory

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

1. According to the recent estimates from the Bank of Greece, NPEs reached 48% of the total loans of the banking system (see Pantelias, 2018).

approach to the concepts of securitization and SPV, as they are applied at the EU level, is presented. Then, in Section 4, a linear programming (LP) example is implemented, in order to estimate the necessary costs and bond structure of such a vehicle that can ensure its long-run sustainability, fulfilling the systemic banks' target, which is their relief from "problematic loans". Finally, in the last section of the article, some conclusions are recorded which are essentially related to the impact of the implementation of such a policy tool for the Greek banking system.

## 2. Securitization and the special purpose vehicle (SPV)

### 2.1. Securitization

"Securitization is the process of converting cash flows arising from underlying elements or debts (receivables) due to the originator into a smoothed repayment stream, thus enabling the originator to raise asset-backed finance through an issue of debt securities –generally known as asset-backed securities or ABS– which is limited resource in nature to the credit of the receivables rather than that of the originator as a whole, and with the finance being self liquidating in nature" (Deacon, 2004:1). Alternatively, in accordance with Diamond & Dybvig (1983), securitization is a process through which the bank is converted into an intermediary between lenders and capital market borrowers, allowing this way the greatest possible issue of loans.<sup>2</sup>

In the international literature, the securitization of the banks' assets became acknowledged for different reasons, though the main one was the desire to cast off the burden of NPLs, which constitutes a problem not only for banks' profitability, but also for their expansion into the area of new credit (see Gambacorta et al., 2004; Bonner et al., 2016, etc.). Theoretically, we can also say that NPLs' securitization reduces new funding costs for the banks (see Buchanan, 2016), releases banks from the corresponding capital adequacy for these "problematic" loans (see Jassaud & Kang, 2015; BCBS, 2016), "transfers" [to the SPV] any

credit risk (Cardone-Riportella et al., 2010) and also significantly assists in producing liquidity for banks (Buchanan, 2016).<sup>3</sup> The specific institutional function of securitization is implemented through the sale of these selected loans (mainly NPLs, but not exclusively) of the banks to the SPVs, which then are "converted" to some tranches (titles), appealing next to perspective investors.

Securitization may include some categories of the main asset claims of banks (BCBS, 2009). For example, mortgages, credit cards, corporate loans, student loans, car loans, accounts payable, etc.

Often, securitizations are made from homogenous asset claims of banks. In this context, it is possible to securitize separately different categories of loans (e.g., mortgages, business, consumer, etc.) and to issue, for each category, a different title (tranche). Similarly, the securitization can be carried out, by issuing different titles, depending on the classification of the loans. This operation is carried out by some financial rating agencies, with whom the particular bank cooperates (see Gorton & Souleles, 2007).

As regards the type of securitization, two basic categories are recognized: traditional (classical) and synthetic securitization.<sup>4</sup>

In accordance with the method of traditional securitization, which is internationally known as a "true sale securitization", the assets for securitization (loans) are transferred to the vehicle, which will issue the corresponding financial instruments (bonds). The cash flows of those securitized loans are used for servicing the bonds issued by the specific SPV. Through these bonds, which are bought by the investors, the SPV finances the initial payment for the transfer of the "problematic" loans. This transfer of loans to the vehicle also implies the transfer of risks associated with these loans (NPLs), mainly the credit risk (i.e., the risk of non-repayment of loans). Thus, if a transferred banking asset (e.g., like the NPLs) is led to a default, the accompanied credit risk will essentially be spillover to the lenders/investors of the bonds issued by the SPV. In Figure 1, a simple schematic presentation of classical or traditional securitization is drawn.

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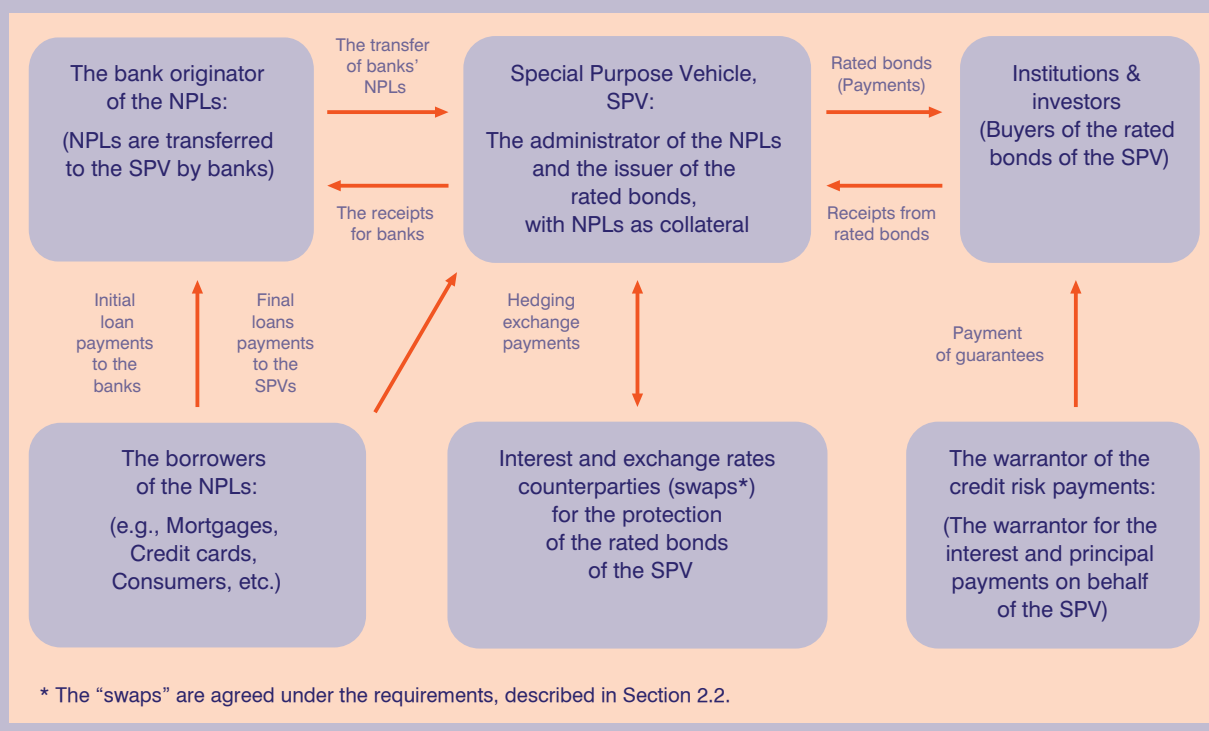
2. The securitization is also known as "Originate to distribute Model" (see Gorton & Souleles, 2007 & Buchanan, 2016).

3. There are, of course, some problems associated with securitization, such as, for example, the existence of distortions in the classification of the NPLs tranches, which are mainly related to the business cycle (Bolton et al., 2012), but also associated with the "moral hazard" issue that can be derived from the insufficient control of the borrower, from the bank, due to the potentiality of a future securitization of the loan (Petersen & Rajan, 2002). Additionally, as Casu et al. (2013) claims, the merits of a securitization in the US were questioned, especially with respect to the future expansion of credit.

4. In BCBS (2009) a number of alternative forms of securitization are presented in detail, which is not our concern here.

**FIGURE 1**

**A schematic description of the traditional securitization of the NPLs**



However, the transfer to the vehicle of simply the risk from the loan without any actual loan transfer (NPLs) cannot be ruled out, according to the model of synthetic securitization. With this second method of securitization,<sup>5</sup> the results that would lead to the sale of NPLs to the vehicle are now reproduced in a "synthetic" way. Additionally, the vehicle invests its reserves, basically, in reduced risk bonds (usually with AAA ratings), which can produce some secure yield to it. This securitization is achieved through a credit derivative (credit default swap), which operates both as a means of funding and as a means of protection against certain risks arising from the loans. In particular, the credit derivative is a financial contract where an agent provides protection against a predetermined premium (usually the SPV) and is obliged to pay a certain amount to another agent (usually a bank), which provides "protection", which is activated in the case that some risks have been realized in accordance with the terms and the time of the contract.<sup>6</sup>

The model of synthetic securitization may be funded or unfunded. In the first case, the vehicle issues rated

bonds, and the amounts it receives are used to obtain low-risk bonds. With the amounts received from these bonds, the vehicle will be able to fulfill its financial obligations against the bank, stemming from the derivative, but also to repay the funds being paid by the investors for the acquisition of the titles. Consequently, the bank, which enjoys "protection", is not exposed to the risks covered by this "protection". On the contrary, when the synthetic securitization is unfunded, the bank is exposed to credit risk against the vehicle which provides "protection", just because this "protection", by the vehicle, is not financed by investments in financial securities.<sup>7</sup>

It is also noted, as mentioned by Maroulis (2004), that in traditional securitization we have an immediate improvement of the bank's financial position through the increasing liquidity, while in synthetic securitization, we only have an indirect improvement of the bank's financial position through the improvement of the credit rating results concerning its assets (which implies a reduction of the capital charges in the equity of the "transferring bank").

5. For the distinction between classical and synthetic securitization, see Quiquerez (2018), p. 32 and Sekfali (2018), p. 529.

6. In practice, for the transfer of risk, other derivative financial products are also used, such as total return swaps, while the issuance of titles, which are associated with the risk, is also possible (Credit linked notes). See also Sekfali (2018), p. 529.

7. See Quiquerez (2018), pp. 36-37.

The distinction between the traditional and the synthetic securitization model is not absolute. Intermediate models, more typical of securitization based on a secured loan, are also met in practice. Especially, in such a model, the SPV provides the credit institution with a loan, secured by tangible security on its assets. There is no transfer of the bank's assets to the SPV, so it is not a traditional securitization, as stated above. The asset is safely pledged and transferred only if the credit institution fails to meet its obligation to pay an amount against the SPV. On the other hand, the SPV is exposed to credit risks arising from NPLs that are securitized, as long as it is exposed to the credit risk of the impairment of these assets at the time of their possible forced sale. However, unlike synthetic securitization, there is no transfer of the cover from the risks, but a funding act is carried out.<sup>8</sup>

## 2.2. The special purpose vehicle (SPV)

The SPVs are thinly capitalized special purpose companies, which buy the receivables from the originators and sell rated bonds (or other instruments) to the investors. They will usually be set up as bankruptcy remote, orphan companies with their shares being held by charitable trusts (Burns, 2012). These vehicles occurred some 30 years ago, often used as securitization mechanisms of claims of assets of various large companies and commercial banks,<sup>9</sup> which were mostly covered by insurance and were usually financed with ABS (Asset backed securities).<sup>10</sup> The international crisis of 2008 highlighted further, also via the international literature,<sup>11</sup> the contribution of such vehicles during the crisis, but also made obvious their structural problems.<sup>12</sup>

There are several factors involved in the formation and operation of SPVs aiming to the aforementioned securitization. The main factors are the following (BCBS, 2009):

The *transferring bank* (seller or originator) initially owns the assets and then transfers them to the created SPV for the purposes of their securitization. Due not only to its structure, but also to marketing issues, the transferring bank often involves an investment bank as well to

assist in setting up the structure of the SPV and then in the subsequent issuing and selling of the rating bonds.

The *administrator* is the entity that collects the payments of the transferred assets to the SPV and also provides regular information services (e.g., monthly) about the performance of the assets. The administrator may be the transferring bank, but it may also be a third party that undertakes the safeguarding of the bank's assets.

The *issuer* is the SPV itself, which holds as an entity the assets of the transferring bank and then securitizes them through the issuance of bonds. At the same time, the issuer is in contact with the two above-mentioned agents. Additionally, there is a bank account that provides all payment services for the SPV, as, for example, the safeguarding of any reserve account of the "vehicle".

In addition, there is a *counterparty* agent (for the principal or for a third party, e.g., a financial institution) which provides exchange contracts (e.g., foreign exchange swaps, swap interest rates, etc.) to the SPV. Such swaps are encountered when the interest rate or currency of assets (e.g., fixed interest rate and mortgage loans denominated in dollars) does not match the type of interest rate or currency of the existing liabilities (e.g., floating interest rate and euro bonds).

There are also the *institutional* and *other investors* of the rated bonds issued by the SPV. Usually the investors appear mainly in the regulated market where these securities are traded.

The SPV, for the purchase of any NPL package from the transferring bank, issues a (often rated) bond, which is targeted to the investors, so to be in the financial position to purchase these assets (see Figure 2). The general idea here is that the proceeds of the SPV from the transferred –with some discount– assets are expected to be greater than the initial purchasing amount. The SPV is expected to be directly funded from the proceeds of selling rated bonds to the potential investors/buyers. This way, some benefits [from the spread] derived from the operation (and management) of the SPV will be produced, as will an immediate liquidity inflow for the "transferring bank". And in

8. See Quiquerez (2018), pp. 37-38.

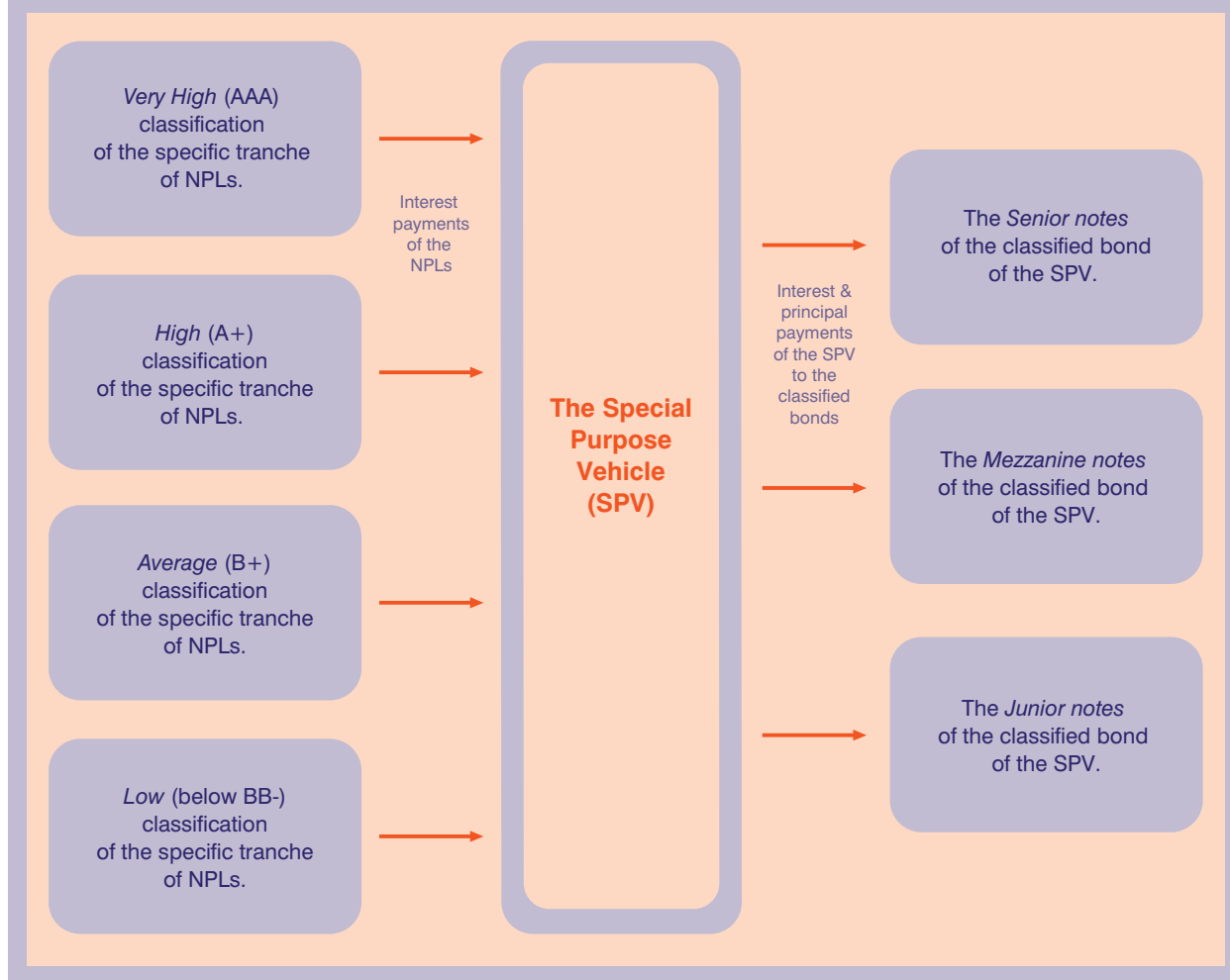
9. An interesting presentation and analysis that relates to the extensive use of the SPVs are given by Feng et al. (2009).

10. There are, of course, other categories of funding like the CDOs (Collateralized Debt Obligations), the CDSs (Credit Default Swaps) and repo rates (see Gorton & Metrick, 2012).

11. See also Schäfer & Zimmermann (2009), Gorton & Metrick (2010), Godfrey et al. (2015), etc.

12. An extensive institutional analysis of the positive and the negative views concerning the SPVs and the securitizations are given by Pearce II & Lipin (2014).

**FIGURE 2**  
A schematic description of the the SPV



this case, as with the tranches of NPLs, we have about the same rating process with high-quality bonds carrying a low risk and a low-level yield (Senior notes), the medium-quality bonds carrying an average level of risk and yield (Mezzanine notes) and the low quality bonds with high levels of risk and yield (Junior notes).

### 3. The regulatory approach to the concept of securitization and SPV in the EU

#### 3.1. Securitization

The regulatory approach to the concept of securitization by the various texts is not uniform, although a common core is maintained in every case. At the level of

the European Union, several texts provide definitions of the term for the purposes of their implementation.

In particular, EU Regulation 575/2013 on prudential requirements for credit institutions defines securitization as a transaction or scheme whereby the credit risk associated with an exposure or pool of exposures has the following characteristics: (a) payments under the operation or program depend on the return of the exposure or the pool of exposures; and (b) the classification of the securitization tranches determines the breakdown of losses during the operation or the program.<sup>13</sup> This definition, in order to cover securitization in all its forms, does not specify how exposure to credit risk is concerned, and only takes into account the securitization with more segments.<sup>14</sup>

13. Article 4 (61) of the Regulation.

14. See Quiquerez (2018), p. 41.

Differences in the definition of securitization in Regulation 575/2013 could be found in the corresponding definition of Regulation 2017/2402, which establishes a general regulatory framework for securitization. In particular, Article 2 (1) of the Regulation defines as securitization the transaction or scheme whereby the credit risk associated with an exposure or a pool of exposures is tranching and has all of the following characteristics: a) payments in the transaction or scheme are dependent upon the performance of the exposure or the pool of exposures, b) the subordination of tranches determines the distribution of losses during the ongoing life of the transaction or scheme, c) the transaction or scheme does not create exposures which possess all of the characteristics listed in Article 147(8) of Regulation (EU) 575/2013.

Regulation 24/2009 of the European Central Bank sets another definition, to which Directive 2011/61/EU for Alternative Investment Fund Managers also refers. Pursuant to this last definition, securitization means the transaction or the scheme whereby an asset or pool of assets is transferred to an entity that is separate from the originator and is created for or serves the purpose of the securitization and/or the credit risk of an asset or pool of assets, or part thereof, is transferred to the investors in the securities, securitization fund units, other debt instruments and/or financial derivatives issued by an entity that is separate from the originator and is created for or serves the purpose of securitization with the following results, in each case: a) the transfer of credit risk is achieved either by transferring the ownership of the assets to the separate entity or through a sub-participation, or by recourse to a credit derivative, guarantees or other similar mechanism; and (b) securities, shares or derivatives of financial derivatives do not represent an obligation on the original beneficiary of the asset to be paid. This latter definition is more accurate than the previous one; it is also characterized by flexibility,<sup>15</sup> and it occupies the securitization regardless of whether or not it is carried out in parts.

The term 'sub-participation', also mentioned in Regulation 24/2009 of the ECB, in the definition of securitization, has no strict legal meaning, since it is a technique based on banking practices that are specified by the conclusion of agreements of different natures and are often confidential. Actually, through a contract, the bank acquires a "participation" in a loan originally provided by another credit institution.

The sub-participation may be funded sub-participation when the first-ranked bank (participant) enters into a contract with another, a second-tier bank (a sub-participant), on the basis of which the latter provides with the first the funds needed in order to participate in a credit operation, and thus, the two banks undertake the relevant credit risk. This translates risk without the transfer of assets (in the case of bank loans). However, it may also be unfunded sub-participation when the sub-participant bank agrees to provide funds to the first-ranked credit institution solely in the case where the original obligor fails to meet its obligations.<sup>16</sup> Instead of the second credit institution (sub-participating), there may be an SPV, with the conditions specified by the legislation governing it. It is also possible that sub-participation is transferred from the sub-participating credit institution to an SPV, e.g., an investment fund.<sup>17</sup>

Regulation 2017/2402 of the European Parliament and of the Council, which establishes a general regulatory framework for securitization, distinguishes between classical (traditional) and synthetic securitization.<sup>18</sup> The former entails the transfer of the financial interest to the securitized assets through the transfer of ownership from the original holder to the special purpose vehicle (SPV) or through a sub-participation of the SPV, which issues securities that do not represent an obligation to the transferring entity.<sup>19</sup> In the second, the transfer of the risks is effected by the use of credit derivatives or guarantees, while the assets and the related report remain with the holder of the securitized assets.

The Basel Committee on Banking Supervision<sup>20</sup> also distinguishes between traditional and synthetic secu-

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15. See Quiquerez (2018), p. 42.

16. In particular, see Quiquerez, (2018), p. 207. From the Greek bibliography Venieris (2005), pp. 166-168, who adopts the term «sub-participation», in line with the corresponding English and French term, and points out the fact that this form of funding was not chosen by the authors of Law 3156/03.

17. Especially for these cases, see Quiquerez (2018), pp. 209-210.

18. See Article 2 (9) and (10).

19. Greek Law 3156/03 contains regulation solely for this form of securitization and not for the synthetic one. See, relatively, Lekkas (2005), p.104 in fine-105, Venieris (2005), p. 511. In addition, Koulouridas (2017), p.1022.

20. See, relatively, BSBC (2016).

ritization. In fact, the Commission considers as an element that defines traditional securitization as a concept the fact that the cash-flow from the underlying pool of assets is used to serve at least two different risk positions or tranches, which reflect a different degree of credit risk. Similarly, the definition of synthetic securitization, as given by the Basel Committee on Banking Supervision, requires at least two different stratified risk positions or tranches that reflect different degrees of credit risk where the credit risk of an underlying pool of exposures is transferred, in whole or in part, through the use of funded or unfunded credit derivatives or guarantees that serve to hedge the credit risk of the portfolio.<sup>21</sup>

### 3.2. The special purpose vehicle (SPV)

An SPV is an ad hoc legal entity, which has some autonomy and whose purpose is to achieve a specific objective, in this particular case, securing the securitization.<sup>22</sup> Such an SPV may act as a company, as a collective investment undertaking without a legal personality or as a trust. It is distinguished from the institution, usually an investment bank, which deals with the design and implementation of the individual transactions where the securitization is achieved and brings the participants<sup>23</sup> into contact with the latter. The asset autonomy of the SPV against the bank does not allow the creditors of the SPV to pursue their exposures against the SPV. From this perspective, the exposure of the SPV is limited. Similar limitation is also achieved by limiting the SPV's activity solely to issues relating to the securitization of the assets it acquires or the risk to which it is exposed.<sup>24</sup>

EU Regulation 575/2013<sup>25</sup> defines as an SPV for securitization a corporation trust or other entity, other than an institution, organized for carrying out a securitization or securitizations, the activities of which are limited to those appropriate to accomplishing that objective, the structure of which is intended to isolate the obligations of the SPV from those of the originator institution, and in which the holders of the beneficial interests have the right to pledge or exchange those interests without restriction.

However, this definition is not identical to the corresponding definition contained in Regulation 2017/2402. In Article 2 (2) of the Regulation, a special purpose entity for securitization is a company, trust or other entity, other than a transferring entity or a sponsor, set up for the purpose of securing one or more securitizations, while its activities are limited to appropriate steps to achieve this purpose and its structure aims to separate the obligations of the SPV from those of the transferring entity.

## 4. A computational estimation for a sustainable operation of the SPVs

The purpose of the following section is to calculate, *ceteris paribus*, the maximum<sup>26</sup> cost of issuing rated bonds of an SPV to ensure its sustainable operation as part of an effective mechanism which will relieve the systemic banks from their NPLs.

### – The problem

The SPV will issue different types of bonds in order to finance the buyout of the transferred receivables from the existing group of NPLs. Those bonds, based on the credit risk which would be incorporated, will be nominated as Senior, Mezzanine & Junior (see Figure 2).

Each category of bonds will carry a different coupon. The coupon which expresses the yield of each bond should be determined in a way to avoid mispricing. At the same time, the value of each coupon determines the buying interest among investors. In the case that the coupon series of bonds are determined higher than the risk and therefore the payable cash flows associated to it, derived from the NPLs portfolio management of the SPV, then this would imply a transfer of value from the issuer to the bondholders. In addition, the annual cost to the issuer, from the payments of coupons, would be significantly higher.

If the coupon is determined to be at a level that does not reflect the actual risk attached to it, then buying interest from potential buyers would be reduced. Consequently, this would lead to selling them [bonds] at a lower value than the face value, resulting in either

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21. Ibid.

22. See Quiquerez (2018), p. 29.

23. Ibid., 29 in fine-30.

24. BSBC (2009).

25. Article 4 (66).

26. We seek the maximum of the optimization problem because we refer to the upper boundary of the bearable cost that the SPV could afford to pay under specific performance scenarios.

a lower selling price of the transferred NPLs portfolio, which would raise a possible need for additional capitalization for the originator [bank], or reduce the expected amount of purchased NPLs by the SPV, which implies a rather non-effective mechanism of NPL clearance from the systemic banks' balance sheets. The bonds can be differentiated on the basis of maturity. So bonds of same expiration date will bear the same coupon, which would be determined on the basis of other benchmark bonds with coupons, e.g., Greek government bonds of similar maturities, bonds of other trustworthy publishers, etc.

In this approach, we seek out the appropriate mix of various types of bonds which would not lead to increasing costs for the SPV and would also be served from the expected cash flows that would result from the asset portfolio management from the transferred banks (i.e., the NPLs). Additionally, a proper mix of obligations from the coupon and principal payments of bonds is sought that would timely coincide with the corresponding estimated receipts of cash flows that emerge from the portfolio management of the NPLs.

Other issues addressed and resolved through the development of our problem are the following:

- a) Finding the bonds' mixture (based on their characteristics) whose obligations are covered in time from the allocation of the resulting yields derived from the management of the loans. This answers the question of the allocation of bonds per maturity date in accordance with the purchased portfolio yields of the NPLs (a choice between front or back-loaded yields),
- b) Investigating the way the mixture of rated bonds are diversified in accordance with the annual estimated portfolio performance of loans (NPLs),
- c) Determining the required minimum loans' yield in order to satisfy every possible combination of the bond yields,
- d) Presenting how management mechanisms operate in the case where the loans' yields are smaller than the yields required by the plan to repay issued bonds (a possible default),
- e) Presenting the margins for the different selected mixture of bonds under different assumptions concerning the determinants of the model (*sensitivity analysis*).

#### *– The method of approach*

The method of approaching the problem, as stated above, is linear programming (LP) optimization (see Boyd & Vandenberghe, 2004).

According to this method, the optimization of a function is attempted based on the elements of the problem that must be solved. In this case, the magnitude, which is minimized here, is the weighted cost of bonds that the SPV will issue. The cost of such an issue will be weighted on the basis of the participation (%) of each bond category in the total portfolio of potentially issued bonds.

The optimization problem, as any such problem, contains some constraints. In this case the main constraint, faced by the SPV, is its repay obligations whenever they arise. So the yields of the potentially transferable NPLs should be at a level that they can cover annual interest and principal repayments of the issued bonds.

#### *– The hypotheses of the problem*

It is assumed here that three (3) series of bonds of different maturities are to be issued: more specifically, debt securities of 5 (bond 1), of 10 (bond 2) & of 15 years (bond 3). These bonds are expected to pay a coupon once a year. On the expiration date the principal will also be paid off.

In the case of the issuance of different seniority bonds, we set the assumption that they will have the same maturity date of, say, 15 years and that the three (3) series to be issued will be graded, according to the incorporated credit risk, as Senior, Mezzanine, & Junior.

The bonds' coupons are differentiated according to the duration of the respective debt securities. In that sense, the longer the time period, the greater the risks included (assuming an ascending interest rate curve). The placing of all series, regardless of the duration, is carried out simultaneously for reasons of simplification. Also, the pricing in the bond market is set at 100% of their nominal value, which implies that up to the expiration date, their yield is equal to their coupon.

In the first columns of Table 1 some elements regarding every bond appear. More analytically, the coupon of each series, the hypothetical date of issue and expiration, the duration, the yield to maturity and the payment frequency are presented. In the subsequent columns the recovery time (duration) is calculated for each series according to the initial data of each bond and under the assumption that all series have the same weight. Additionally, the total recovery time period of the three weighted bonds' portfolio is calculated, as well as the total annual interest cost of all bond series.

In the columns that follow, numbered from 1-15 (Table 1), we calculate the annual cost of the bonds' portfolio that the SPV should issue in order to purchase the NPLs of all or of individual systemic banks. It is obvi-

**TABLE 1 Bond characteristics and payouts**

**Bond characteristics which will cover the cost of NPL's buyout**

	Coupon	Expiration year	Maturity date	Time	Coupon	Frequency	Duration	Weights	Weighted time period for recovery	Weighted cost of bonds	Annualized interest rate amount per €1,000 of bonds
Bond 1	5.00%	1/1/2020	1/1/2025	5	5%	1	4.546	33.33%	1.52	1.667%	16.67
Bond 2	7.00%	1/1/2020	1/1/2030	10	7%	1	7.515	33.33%	2.50	2.333%	23.33
Bond 3	10.00%	1/1/2020	1/1/2035	15	10%	1	8.367	33.33%	2.79	3.333%	33.33
								100%	6.81	7.333%	73.33

**The interest rate and principal payments per €1,000 of bonds**

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Bond 1	16.67	16.67	16.67	16.67	349.97	-	-	-	-	-	-	-	-	-	-
Bond 2	23.33	23.33	23.33	23.33	23.33	23.33	23.33	23.33	23.33	356.63	-	-	-	-	-
Bond 3	33.33	33.33	33.33	33.33	33.33	33.33	33.33	33.33	33.33	33.33	33.33	33.33	33.33	33.33	366.63
	73.33	73.33	73.33	73.33	406.63	56.66	56.66	56.66	56.66	389.96	33.33	33.33	33.33	33.33	366.63

ous here that, except for the annual coupons in years 5, 10, 15, the issuer of bonds (in this case the SPV) would be obliged to repay and the corresponding face value (principal). This is the reason why during those specific years the amounts of the corresponding outflows, in Table 1, appear exceptionally high.

The last row of every part of Table 1 contains the total amount of each series of bond participation (%) in the total bonds' portfolio (which, for simplicity reasons, is initially assumed as equally weighted), the weighted average of the recovery time period for the portfolio and the weighted average of its interest rate cost. In columns 1-15, we calculate the annual interest payments per bond and overall, as well as the total annual outflows for every bond and for the entire bonds' portfolio to be issued (in euro amount terms).

In Table 2, we attempt an adaptation of the cost elements of the total bond portfolio, which would be issued in terms of the total asset value of the SPV; in this example, it is assumed to be €1,000. The SPV's assets consist of one or more of the systemic bank's NPLs. In our example, the nominal value of NPLs before provisions is counted because this is the maximum amount of the asset that would be transferred to the SPV and the maximum amount that would be requested to be recovered by each of the transferred loans.

A cost adjustment of the bonds' series is attempted in Table 2. More specifically, the percentage (%) of the nominal value of the NPLs, which the SPV would buy from banks, would operate as a weighted index for issuing an equal amount of bonds. It is therefore obvious that the smaller the discount, with respect to the nominal value of the market portfolio of the NPLs, the higher the value of bonds that should be issued by the SPV. Then this amount of money would be spent for the buyout of the "problematic" loans from the banks. Conversely, the greater the discount of the NPLs, the lesser the value of bonds that should be issued by the SPV and, *ceteris paribus*, the smaller the total cost to be paid to the bonds' investors.

More specifically, in the first row and in each column (1-15) of Table 2, the annual weighted average cost of the issued bonds is presented after their conversion to a percentage rate (%) of their nominal value (this value is assumed as €1,000). In the second row of Table 2, the remaining value after discount of the NPLs portfolio buyout, from the SPV, appears with respect to its nominal value (assumed, for the sake of

simplicity, to be €1,000). This value here is assumed to be 51%.<sup>27</sup> This percentage essentially means that if the market rate of the NPLs portfolio's value is set at 51% of the nominal value that it contains (as hypothesized above), then for each €1,000 of nominal "problematic loans" the SPV will need to issue €510 in bonds.

By multiplying the percentage (%) of the annual cost of bonds –which was previously calculated on their nominal value– with the buyout rate of the NPLs, as discussed above, essentially we transform the annual cost of the bonds, as a percentage (%) of the nominal value of NPLs acquired by the SPV. This process transforms the annual cost of bonds into a percentage (%) of the SPV total assets. Those transformations take place in the two rows of Table 2, which are named "Cost of bond financing per €1,000 nominal value of the acquired NPLs" and "Least required percentage (%) yield by the NPLs portfolio per €1,000 nominal value for financing the issued bonds".

In the next row of Table 2, we estimate the average annual real return of the NPLs portfolio after taxes but before interest with respect to its nominal value. As mentioned above, the nominal value of the NPLs would actually compose the assets of the SPV. So the average annual return which the SPV would accomplish, by managing this NPLs portfolio, is in essence its actual return on assets (ROA). It is understood that we speak for the SPV yield after taxes but before interest because part of this performance will be used to repay the cost of its issued bonds. Additionally, we should mention that we are talking about yields after subtracting the operational costs and expenses of the SPV payable to companies managing the NPLs (management fees).

The yield of the NPLs portfolio, owned by the SPV, is actually unknown. It is obvious that it will not be constant and will vary from year to year. It is assessed that this yield would be high in the first years of the portfolio management but would gradually be reduced. This is because in the initial years of the SPV operation, proceeds would occur from the sale of collaterals of the borrowers, which would supplement the revenues that would result from the legal regulations, as well as capital and interest pay offs. In the subsequent years, however, the receipts from the legal regulations are expected to prevail. This, of course, cannot be verified in practice if the real estate market delays in responding to the increased supply of assets (mortgages),

27. The 51% value was selected here due to the coverage ratio of the NPLs from the accumulated provisions of the four systemic banks. In mid-2018, this indicator was at 49% (Source: Bank of Greece, November 2018).

**TABLE 2 Cost adjustments data for the SPV's yields relative to the bonds' yields**

	year	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Annual weighted yields per €1,000 of bonds (coupon + principal)		7.3%	7.3%	7.3%	7.3%	7.3%	5.7%	5.7%	5.7%	5.7%	39.0%	3.3%	3.3%	3.3%	3.3%	36.7%
Market buyout of the NPLs portfolio (%) with the issuance of bonds per €1,000 nominal value of NPLs	51%															
Cost of bonds financing per €1,000 nominal value of the acquired NPLs		37.4	37.4	37.4	37.4	207.4	28.9	28.9	28.9	28.9	198.9	17.0	17.0	17.0	17.0	187.0
Least required percentage (%) yield by the NPLs portfolio per €1,000 nominal value for financing the issued bonds		3.74%	3.74%	3.74%	3.74%	20.74%	2.89%	2.89%	2.89%	2.89%	19.89%	1.70%	1.70%	1.70%	1.70%	18.70%
The average annual NPLs real yield per €1,000 of its nominal value		6.60%	6.60%	6.60%	6.60%	6.60%	6.60%	6.60%	6.60%	6.60%	6.60%	6.60%	6.60%	6.60%	6.60%	6.60%
The difference between the NPLs portfolio's annual yield and the required bonds' yield per €1,000 of the nominal NPLs value		2.9%	2.9%	2.9%	2.9%	-14.1%	3.7%	3.7%	3.7%	3.7%	-13.3%	4.9%	4.9%	4.9%	4.9%	-12.1%
Accumulated yield surplus (%)		2.9%	5.7%	8.6%	11.4%	-2.7%	1.0%	4.7%	8.4%	12.1%	-1.1%	3.8%	8.7%	13.6%	18.5%	6.4%
Interest rate re-investment profits (%)	0.5%															

Note: The average annual percentage of an NPL portfolio's performance, in Table 2, is considered for reasons of simplicity as constant, and the same is assumed for the annual growth of the country. If, however, the growth of the GDP increases, this would imply an analogous increase in the performance of NPLs and vice versa.

which are considered as collaterals to the “problematic loans”. Also, if GDP growth faces a rapid increase in the forthcoming years, then it is probable that we will have a more balanced distribution of the NPL portfolio’s yield throughout the management period. However, as already mentioned, the NPL portfolio’s yield is a great unknown. In our example (Table 2), we vary this yield in order to investigate its impact on the selection on the bonds’ portfolio mixture, which should be issued in order to acquire these “problematic loans”.

In the next row of Table 2, we calculate the difference of the NPL portfolio’s yield of the SPV with respect to the required yield of the mixture of bonds issued. It is obvious that the difference between these two yields is required to be positive because, this way, the SPV will fully meet the obligations that are basically derived from its issued bond portfolio. It is also obvious that this “spread” in the yield depends both from the performance of the NPLs and the cost of bonds to be issued. This cost, in turn, depends on both the individual coupons and their mixture in the total bond portfolio. Bonds issued with a short-term expiration date have the advantage of a lower coupon, but also the disadvantage of a quick pay off of the principal, which requires either exaggerated NPL yields in the initial years or over-yields in the years of the final repayment of the bonds.

Notice that any excess NPL yield must be maintained and be reinvested mainly in money market instruments with a yield, as appears in the last row, that today is not expected to exceed 0.5% (“a reinvestment rate of profits”).

#### – Function optimization

A bond mixture, with the characteristics presented in Table 2, is sought here, which is expected to minimize the total cost of its repayment. This function is essentially the sum of coupons (and the principal at the expiration time) for each bond series weighted with the percentage (%) of participation of the particular series in the overall bond portfolio.

#### – Restrictions

- a) The sum of the percentage (%) of each bond series in the total portfolio should be equal to the unit,
- b) The individual participation rates of each bond series should be positive numbers less than or equal to the unit,
- c) The annual accumulated return on surplus, by managing the NPLs, should be at least equal to

the annual returns required by the bond holders. In other words, from the management of the NPLs, the obligations derived from the bond series should at least be met. The yield includes also the repayment of the principal of each series of bonds on their expiration date.

#### *Empirical results when the SPV issues bonds with different maturities*

In the following Tables we present the results from the LP of the optimization problem. More specifically, in columns 2-4 of Table 3, the percentage (%) solutions from the different maturity bonds’ participation are presented, based on the average annual yield of the NPLs portfolio.

More analytically:

- a) As long as the expected average annual yield of the NPLs portfolio remains high (e.g. > 13%) and in order to minimize the cost of servicing the SPV borrowing, the issuance of bond 1 is only selected, in Table 3, with the lowest coupon (5.0%). This can also be read in a different way. When, from the management of the NPLs portfolio, some very high annual revenues are expected and the overall default risk and the corresponding anticipated losses for the investors are low, then the “recipe” of debt securities (bonds) with the lowest risk might be selected. As the expected yields of the NPLs portfolio decrease, and so their default risk increases, it is more likely that some higher yields and risk-rated bonds will be selected. The model essentially confirms the positive relationship between risk and yield regarding to the investors’ behavior in fixed income securities products.
- b) There is also a trade-off relationship between time and yields. More specifically, as the yields from the NPLs management become smaller and are realized later on, i.e., at a later time period, the participation of longer-term bond series becomes unavoidable. Additionally, the belief that the high yields of the NPLs portfolio will be realized later on in time advocates for selecting long-term bonds. In practice, as long as the yields derived from the NPL portfolio’s management improve, as the time goes by, through the macroeconomic expectations concerning the increase of GDP growth and/or the aggregate unemployment decline, then the bonds’ pay-off option later on in time will be selected.
- c) Investors with a preference for riskier debt securities and a long-term duration would benefit from

**TABLE 3 The results from the optimization method concerning bonds of different maturities**

SPV, Annual average yield	(%) participation			Weighted interest rate	Weighted time period for recovery (duration)
	Bond 1	Bond 2	Bond 3		
13%	100%	0%	0%	5.0%	4.55
12%	93%	7%	0%	5.1%	4.76
11%	82%	18%	0%	5.4%	5.09
10%	71%	29%	0%	5.6%	5.41
9%	60%	40%	0%	5.8%	5.74
8%	49%	51%	0%	6.0%	6.07
7%	34%	42%	24%	7.0%	6.72
6.6%	27%	33%	40%	7.7%	7.07
6%	No solution which can satisfy the restrictions				

a shorter recovery time period of the principal (in our example it is assumed that the coupon and yield to maturity of each bond series are equivalent). So if the bondholders of bond 1 recover their capital, invested in the SPV, in 4.55 years, with an overall title duration of 5 years, investors in longer-term bonds (e.g., 15 years) would recover their invested capital in 8.37 years. This characteristic “protects” and subsidizes investors in such kinds of bonds, which are sensitive to (increasing) changes of interest rates.

- d) Any anticipated yield of the SPV that is less than 6.6%, concerning the bonds’ coupons, which are expected to finance the NPLs purchases in our example (Table 3), does not provide any algebraic solution to the aforementioned optimization problem. More specifically, any yields that are smaller than the above minimum percentage (6.6%) are considered as not sufficient to meet the required pay-off obligations (coupons) imposed by the bonds issued. Because of the uncertainty regarding the actual yields that the NPLs portfolio is expected to produce, a mechanism of liquidity recovery should be established, on behalf of the SPV account, in order to confront any potential negative shocks. Such a mechanism could, for

example, contain some additional terms/mandates on the bonds’ series that would ensure, for some limited number of cases, the capability for temporal postponement of coupons and/or principal payments and their realization at a later time period (of course with some additional cost).

This, of course, creates some problems of the bonds’ valuation by the investors, during the IPO process. More analytically, such kinds of options subtract value from the bonds and the outcome is that the SPV fails to absorb the required funds. As a consequence, the buyout of the NPLs portfolio takes place at lower market prices, resulting in the need to fill, on behalf of the systemic bank, the produced difference in value (accounting and sales price) from their equity (or deposits). A supplementary solution can also be the holding of some of the issued debt securities (bonds) from the transferring banks, which provide their problematic loans to the SPV and the capability, for these bonds’ series, to “absorb” any of their negative shocks (yields). This last point creates, of course, some problems of how we will value those holding titles as assets on the balance sheet of the banks and what provisions we should create in the banks’ equity.<sup>28</sup>

28. If a bank decides to hold, in its balance sheet, a rated bond from the SPV in which it participates, the Basel II (& III) clarifies that it should also hold the corresponding regulatory capital in its equity (securitization exposure).

### Sensitivity analysis (of different bonds' maturity)

In Table 4 the margins for reaching a viable solution for the funding of the SPV are demonstrated in accordance to the variations of the coupons of each series of bonds.

It is important to notice here that the potential changes of each coupon are treated separately from all other factors (including the coupons of other series), unchanged in their initial values. Also, we present only scenarios that operate at the breakeven level for the SPV yield (minimum required yield to cover the liabilities) and not for higher yields.

**TABLE 4 Sensitivity analysis concerning bonds of different maturities (SPV yield, 6.60%)**

Coupon	Bond 1	Bond 2	Bond 3
Central price	5.0%	7.0%	10.0%
Potential increase	1.1%	0.5%	0.3%
Potential decrease	5.0%	7.0%	10.0%

It is assumed here that all series of bonds allow for a reduction of the coupons' level up to 100%. Also the limits for any viable solution are greater in bonds with smaller coupons, while in the long-term titles there is less space for maneuvering.

Table 5 shows, in a simplified form, the minimum average annual SPV yield in order to fully meet its obligations derived from the issued bonds, under different market scenarios, with respect to the buyout scenarios of the NPLs portfolio from banks.<sup>29</sup>

It is evident from Table 5 that as long as the discount rate of the NPLs portfolio increases (decreases), the minimum required yield, arising from the management of the portfolio, decreases (increases). This means that the cheaper the purchase value of the NPLs portfolios is (as a percentage of their nominal value), the smaller the required NPLs' yield will be in order to meet the SPV's obligations and, consequently, the more secure the repayment of the principal and interest of the issued bonds (*ceteris paribus*).

The participation rate of each issued bond remains approximately constant for all sizes of the market discount rate of the NPLs portfolios studied. This happens because, based on the assumptions of the problem, we always look here for the minimum percentage rate of the NPLs portfolio's yield that is capable of satisfying the prolonged viability of the SPV.

**TABLE 5 NPLs' buyout price with respect to the minimum required yields by the SPV**

Buyout price with respect to the NPLs' nominal value through bond issuance (%)	Minimum required yields by the NPLs portfolio of the SPV for paying off the issued bonds	(% Mixture of bonds' participation		
		Bond 1	Bond 2	Bond 3
51%	6.60%	26.63%	33.358%	40.01%
50%	6.40%	25.35%	31.757%	42.89%
45%	5.80%	26.16%	32.765%	41.08%
40%	5.20%	27.17%	34.025%	38.81%
35%	4.50%	25.87%	32.405%	41.72%
30%	3.90%	27.17%	34.025%	38.81%
25%	3.20%	25.35%	31.757%	42.89%
20%	2.60%	27.17%	34.025%	38.81%

29. Footnote 27 applies here also.

### Empirical results when the SPV issues bonds with different seniorities

In this section we study the impact from issuing, on behalf of the SPV, different type of bonds. We mean here the bonds which differentiate on the priority of repayment in case of default (the question of seniority).

Such bonds are differentiated in the coupon and in the extent of acceptance of any possible losses. Specifically, the issuance of three (3) different types of bonds is examined here, that is: *Senior* notes, *mezzanine* notes & *junior* notes. The *senior* notes pay their contribution equal-proportionally at the end of each year, and for this reason, it is assumed that they are attractive debt instruments with a coupon, e.g., 5.5%. The *mezzanine* notes bear a coupon equal to 8%, while those of the *junior* notes bear a coupon equal to 11%. We also assume that *junior* notes do not exceed 20% of the total value of bonds, while they may absorb some part of the losses in case of an unsatisfactory performance of the portfolio assets of the SPV, which on aggregate cannot exceed 30% of its total value. Both the *mezzanine* and the *junior* notes are set to pay the face value of their titles at their expiration date.

The duration of all categories of bonds, for simplicity reasons in our example, are set up at 15 years, and this coincides with the estimated recovery period of claims from the NPLs portfolio of the SPV (*ceteris paribus*).

In Table 6, the results from the participation of the rated bonds in the SPV are presented.

Based on the results of Table 6, we end up with the following conclusions:

- a) Compared to the previous example of different maturity bonds, the case of issuing different rating bonds (seniority) requires smaller yields by the NPLs portfolio, which should be managed by the SPV. This happens because the likelihood for actual losses, mainly from the *junior* notes, is accepted. The overall weighted average servicing costs of the issued bonds is also lower here.
- b) As long as the yield, arising from the NPLs portfolio's management, decreases, the participation of the *junior* notes in the total issued bonds' portfolio increases. Consequently, the weighted average cost and time of capital recovery follow an opposite path.
- c) The probability of default concerning the capital repayment creates concerns with respect to the realized losses mainly from the *junior* notes of the investors during the IPO period and, subsequently, during the pricing period at secondary bond markets. A lower (than the nominal) offering price of such debt securities –when issued– will result in a failure to raise the necessary funds for the purchase of NPLs from systemic banks and thus their buyout in smaller values. This event can generate oppressive conditions in the equity of banks and may raise the need for new forms of capital (e.g., cash injection, haircut on deposits, new bank mergers & acquisitions, etc.).
- d) Some concerns regarding the true yields of the NPLs and the probability of an incomplete coverage of the SPV obligations arising from the different categories of bonds bear the need for some

**TABLE 6 Results concerning bonds with different seniorities**

SPV, Annual average yield	(%) participation			Weighted interest rate	Weighted time period for recovery (duration)
	Senior notes	Mezzanine notes	Junior notes		
6.00%	75.95%	4.05%	20.00%	6.7%	10.01
5.90%	71.25%	8.75%	20.00%	6.8%	9.95
5.82%	67.48%	12.52%	20.00%	6.91%	9.9
5.80%	No solution which can satisfy the restrictions				

*Note:* Any average annual return of the SPV over 6.0% leads to the participation of *senior* and *junior* notes –with rates of 80% and 20%, respectively– in the bonds' mixture and therefore are not analytically presented in Table 6.

**TABLE 7 Least potential losses from Junior notes and required yields of the NPLs portfolios**

Junior notes: potential losses (%)	Least required yield of the NPLs portfolio
0%	5.92%
10%	5.88%
20%	5.85%
30%	5.81%
40%	5.78%
50%	5.75%
60%	5.71%

kind of coverage or guarantee that the SPV could use in case of insolvency. We refer to some sort of guarantees or the usage of other financial products that could be used in case of some economic hardship. This factor could provide the necessary assurances to the prospective investors for a full recovery of their capital as well as the recognition of lower issuing costs (rate of coupons) for all bond series.

Finally, Table 7 analytically presents the inverse relationship that exists between the required annual NPLs portfolio's yields of the SPV and the losses that the *junior* notes could potentially absorb.

## 5. Conclusions

The purpose of this article is to present the contribution of setting and organizing a special purpose vehicle (SPV) in an attempt to relieve and reconstruct the loan portfolios of the systemic banks. The creation of an SPV, for the securitization of the receivables from bank loans, contains the merit that the management of the loans is implemented by the same entity that has initially acquired them. In this sense, the existence of two companies, one that would acquire the NPLs while the other would take over the management of these "problematic" loans is not required, as specifically defined in Greek Law 4354/15, which is valid today. Consequently, with the establishment of a single entity (SPV), economies of scale are achieved.

It is also important that an SPV, as a mechanism for managing NPL portfolios, is differentiated from the

so-called "bad bank", where the "problematic" assets of a credit institution are transferred. In principle, the SPV has a specific and exclusive purpose which, in this case, is the securitization of bank loans, while the "bad bank" has the advantage of engaging in any activity connected with the management of any estate that would be transferred to it. In addition, the SPV is chosen as the entity which is detached from the possibility of bankruptcy, while the risk of insolvency of a "bad bank" is always high. The two cases should be distinguished from each other, something that is not always the case.

One of the key elements of our approach is to show, with the help of a linear programming (LP) exercise, the mechanism through which such a vehicle would remain viable for several years, in order to fulfill its key role, which is to "relieve" the banking system of the NPLs. This would, consequently, allow the banking system to perform its traditional role, which is to support, through credit expansion, the Greek economy.

Based on our financial analysis, some critical factors, which are important for achieving a prolonged viability of an SPV, are addressed. Specifically, the anticipated yields of the NPLs portfolio appear to affect the participation and the selection of the rated bonds. More analytically, as long as the NPLs portfolio's yields increase, we will lead to the selection of *senior* notes with a short-term duration. Otherwise, long-term bonds will prevail with a greater participation of *junior* & *mezzanine* notes.

Furthermore, the initial purchase price of the NPLs portfolios will play an important role both for the viability of the SPV and the future robust behavior of the transferring bank. More specifically, the bigger the sale price of NPLs from the banks (the smaller the discount), the smaller the possibility for the long-term survival of the SPVs due to the need for higher value of bonds issuance and, therefore, high future cash flow servicing payoffs. In addition, the sale of NPLs at a high price (and therefore low discount) removes any fears of a new capitalization of the systemic banks. In the opposite case, i.e., a low selling price of the NPLs portfolios, which means a high discount rate, implies that both banks and the SPVs will move in opposite directions. More specifically, positive implications for the SPVs' sustainability are expected, but, simultaneously, so are major problems concerning the capitalization needs of the banking system. Hence, this opposite (trade off) relationship will be solved at the point where the two parties –banks and SPVs– agree that no problem of viability will be raised for both sides.

There is, however, an additional factor which may help in the development of the whole project: the macroeconomic situation of the country, as will be expressed through the increase of the GDP and the total employment in the coming years. This point is underlined because it is estimated that a good course of the Greek economy will positively affect the portfolio performance of the SPV, which will further facilitate the long-term sustainability of this vehicle.

Finally, the State should proceed with other necessary actions, including the improvement of the institutional framework for the insolvency issue as well as the incentives (see, for example, the issue of deferred tax as it has already been suggested) which will support the project. This support could take the form of tax incentives and/or the form of guarantees, in relation to the notes of the classified bonds of the SPV. This is expected to further facilitate the relief of the systemic banks from the “debt burden” of the NPLs, and, to a considerable extent, to prevent the possibility of new banks’ equity requirements.

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# *Greek Economic Outlook*

