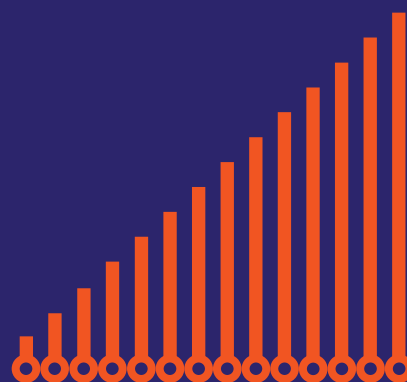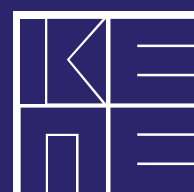# GREEK ECONOMIC OUTLOOK

- ■ **Macroeconomic analysis and projections**

- ■ **Public finance**

- ■ **Human resources and social policies**

- ■ **Development policies and sectors**

- ■ **Special topics**

Contents

Editorial

The 30th Issue of KEPE's *Greek Economic Outlook* is being published at a particularly crucial crossroad for the country. Following the successful completion of the assessment of the economic policy programme and the promise of an immediate disbursement of 7.5 billion euros, it appears that for the first time in almost two years the country is entering a period of economic and political stability. The fulfilment of the remaining conditions –which are prerequisites for the payment of the outstanding 2.8 billion euros of the tranche and the medium term fiscal strategy 2016-2019– is not expected to cause particular difficulties or problems. The refugee crisis, however, continues to present one of the most crucial challenges for the country: despite the tapering off of incoming refugee flows over the past few months, the situation remains critical and unsustainable both for the refugees/migrants themselves and for the local communities.

The journal consists of two sections: Part One is comprised of articles that offer an overview of current issues relating to the Greek economy –such as macroeconomic developments and forecasts, public finances, human resources and social policies, and growth and sectoral policies– while the articles in Part Two impart a deeper and more specialised analysis of important current topics. Specifically, Part One addresses recent developments and prospects in the main demand components and Current Account, the evolution of the Consumer Price Index (CPI) in Greece and the Eurozone, and the factor model forecasts for short-term prospects of GDP. Public finances are examined through an analysis of the first quarter of the 2016 State Budget execution as well as the evolution and structure of public debt. As far as human resources and social policies are concerned, the articles present an analysis of recent developments in key variables of the Greek labour market as well as developments in the ongoing refugee and migrant crisis. Finally, sectoral policies are examined through an analysis of the recent developments in fuel prices, developments in the Greek capital market and external trade of agro-food products.

Part Two of the journal hosts three in-depth and specialised articles that focus on important current topics. The first article presents "The determinants of NPLs during the economic crisis: a panel econometric approach". The second article examines the "Competitive Conditions and Developments in the Banking Sector", while the third article presents "A dynamic analysis of profitability in cultural and creative industries in Greece".

RITSA PANAGIOTOU
Editor

1.1. Recent developments and prospects in the main demand components

Ersi Athanassiou

According to the latest seasonally adjusted data of the quarterly *National Accounts* (ELSTAT, March 2016), the intensity of the recession in the Greek Economy moderated in the fourth quarter of 2015, with the rate of change of the GDP on a y-o-y basis amounting to -0.8%, from -1.7% in the third quarter of the year. The unwinding of the recession, which is related to the gradual normalization of economic conditions from September 2015, contributed to an annual rate of change of -0.2% in the GDP for the year 2015 as a whole.

As evidenced both by the main macroeconomic data displayed in Table 1.1.1, and by Figure 1.1.1, which illustrates developments in the contributions of the main expenditure components to the annual rate of change of the GDP, a decisive factor behind the fallback to negative rates of change of the GDP in 2015 was the change in inventories. During a period of very limited liquidity and serious disruption in the flow of imports due to the imposition of the bank holiday and capital controls, part of the pressing needs of the market for imported goods and raw materials was covered via the consumption of stocks. As a result of this phenomenon, the contribution of the change in stocks to the

TABLE 1.1.1 Main macroeconomic data

	Billion EUR	% change compared to the previous period	
	Current prices	Constant prices	
	2015	2014	2015
Private consumption	123.8	0.5	0.3
Public consumption	35.2	-2.6	0.0
Gross fixed capital formation of which	20.5	-2.8	0.7
Dwellings	1.4	-52.5	-23.1
Domestic demand*	179.5	-0.5	0.3
Exports of goods and services	53.0	7.5	-3.8
Exports of goods	28.5	3.5	3.2
Exports of services	24.5	12.2	-11.4
Imports of goods and services	53.3	7.7	-6.9
Imports of goods	44.9	8.1	-5.2
Imports of services	8.4	5.7	-15.4
Balance of goods & services (% of GDP)	-0.2		
GDP	176.0	0.7	-0.2
Contributions to the change of real GDP			
Domestic demand*		-0.5	0.3
Balance of goods & services		-0.3	1.2
Change in inventories		1.5	-1.7

Source: National Accounts, ELSTAT, (March 2016).

* Excluding inventories.

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

Domestic and net external demand
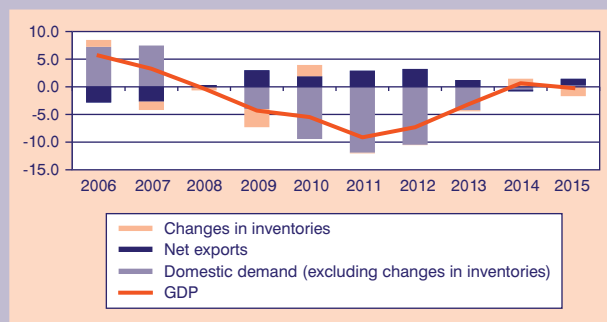
Individual components of domestic demand

Source: National Accounts, ELSTAT, own calculations.

FIGURE 1.1.2
Economic sentiment indicator

Source: EUROSTAT.

rate of change of the GDP amounted to -1.8 percentage points for the year 2015 as a whole.

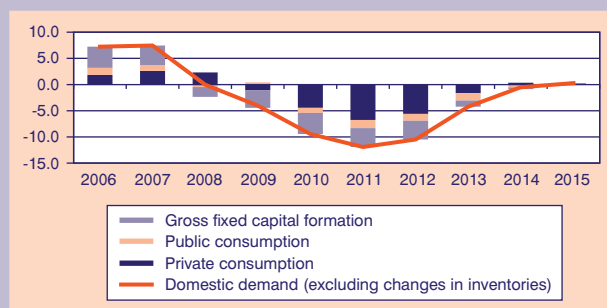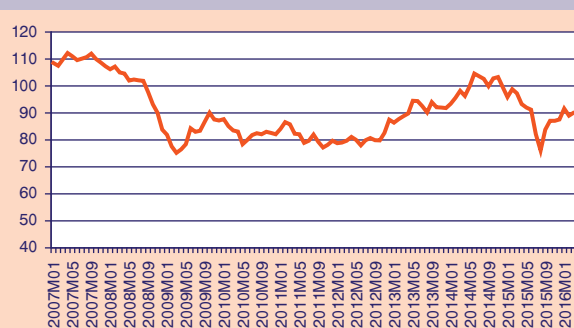Concerning the role of domestic demand components in the evolution of the GDP, private consumption continued to increase until the second quarter of 2015, thereafter recording a return to negative rates of change (-0.3% in the third quarter and -0.9% in the fourth quarter of the year, on a y-o-y basis). Furthermore, the increase recorded in gross fixed capital formation during the first quarter of 2015 was interrupted in the second quarter, with the subsequent course of investment being significantly negative in the third quarter (-11.4%) and again positive in the fourth quarter of the year (5.7%). In parallel, the decline recorded in public consumption during the second and third quarters of 2015 was followed by a significant increase in the fourth quarter of the year (2.8%). These developments induced considerable volatility in the contribution of domestic demand to the rate of change of the GDP, with this contribution finally reaching 0.3 percentage points for the whole year 2015, from -0.5 points in 2014.

With respect to developments in the external sector, in the third and fourth quarters of 2015 the bank holiday and capital controls had major consequences both for exports, where the previously upward trend

was sharply reversed, and for imports, which declined strongly, having already entered a downward path in the second quarter of the year. On the whole, the large positive contribution to the rate of change of the GDP from the decrease in imports outweighed, by a considerable margin, the corresponding negative contribution from the decline in exports. As a result, the overall contribution of the external sector to the rate of change of the GDP amounted to 1.2 percentage points in 2015, from -0.3 points in 2014.

Focusing on the available indications with respect to the course of economic activity during the latest period, the recovery trend followed by the economic sentiment indicator from September 2015 up to January 2016 was not sustained during the period from February to April 2016, a development which is probably related to the course of negotiations in the framework of the first review of Greece's economic adjustment programme (Figure 1.1.2). The recent path of the economic sentiment indicator is consistent with the flash estimate (ELSTAT, May 2016) of the rate of change of the GDP in the first quarter of 2016, which was equal to -1.3% compared to the corresponding quarter of 2015. This estimate indicates that the Greek economy remains in a state of recession, with a moderate acceleration of the decline in the GDP compared to the previous quarter.

Regarding the main factors shaping the aforementioned 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

The annual rate of change of private consumption amounted to 0.3% in 2015 from -0.5% in 2014, and,

as a result, the contribution of private consumption to the rate of change of the GDP reached 0.2 percentage points in 2015, from 0.3 percentage points in 2014. On a quarterly basis, private consumption continued to increase until the second quarter of 2015, thereafter recording, as already mentioned, a marginal decrease in the third quarter and a rather more intense decline in the fourth quarter of the year. Additional indications for a deterioration of conditions in private consumption during the second half of 2015 are provided by the evolution of the monthly volume index in retail trade. Following the exclusively negative monthly percentage changes of the general index during the period from July to October 2015, the rate of change of the index remained negative in November (-4.4%) and was marginally positive in December (0.2%). Negative contributions to the development of the general index came from two out of the three main retail sector categories, namely the *food* sector, with the exception of December, and the *automotive fuel* sector (Figure 1.1.3). In contrast, positive developments were recorded in the case of the index of the *non-food* sector, with the exception of July.

With respect to the relevant developments during the first months of 2016, the general volume index in retail trade recorded a negative percentage change in January (-1.7%), and a further deterioration in February (-6.6%),[1] as compared to the corresponding months of 2015. The respective course of the general index is further mirrored in the developments in the three main retail categories. More particularly, percentage changes during January and February were negative in the case of the *food* sector (-2.4% and -5.0%) and the *automotive fuel* sector (-8.6% and -7.9%), while in the case of the *non-food* sector the relevant changes remained positive in January (3.0%) but recorded a negative turn in February (-6.4%).

With reference to the evolution of the indices in the eight individual retail store sub-categories, it seems that unfavorable developments in the January-December 2015 twelve-month period –as compared to 2014– were mainly related to *furniture-electrical equipment-household equipment* (-3.8%), *department stores* (-3.3%), *food-beverages-tobacco* (-3.3%), *automotive fuel* (-1.6%) and *supermarkets* (-1.7%). On the contrary, positive developments took place over the same period in the indices of the *clothing-footwear* (8.0%) and *books-stationery-other books* (7.1%) sub-categories. It is worth noting that in July 2015 all eight individual sub-categories recorded significant decreases in their indices, while subsequently there were mostly either milder

FIGURE 1.1.3
Percentage changes in the general volume index and the main sector indices in retail trade

Source: ELSTAT, own calculations.
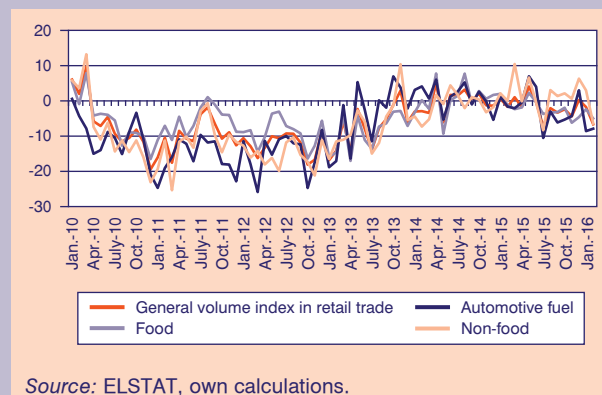
decreases or a return to positive rates of change. With respect to the corresponding developments in early 2016, in January negative rates of change were recorded in four out of the eight sub-categories (*supermarkets*, *automotive fuel*, *furniture-electrical equipment-household equipment*, *books-stationery-other books*), while in February falling trends prevailed in seven out of the eight sub-categories (only departments stores were excluded, recording an increase of 9.4% in the index).

The data and indicators analysed above point to significant negative pressures on private consumption arising from (a) the imposition of the bank holiday and capital controls and (b) the more recent rise in uncertainty and apprehension of consumers with respect to the outcome of negotiations on the first review of the Greek programme and the related additional financial burdens for households. Under these conditions, and given the adverse state of the labour market, the positive dynamics nevertheless observed in certain retail store sub-categories could not spread out, and appear thus far to have been in most cases of a temporary nature.

With respect to the prospects of private consumption, negative effects in the short-term are expected to arise due to the adverse impact on household disposable income, in the framework of implementation of the financial assistance programme. Nevertheless, the smooth progress of the programme will be decisive for the further reduction of uncertainty, and the establishment of the stability and safety conditions required for the definitive recovery of private consumption to viable rates of growth. In any case, on the basis of the con-

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1. The data for February are provisional.

FIGURE 1.1.4
General volume index in retail trade and confidence indicators

% changes, seasonally adjusted general volume index in retail trade
Seasonally adjusted retail confidence indicator (right-hand axis)
Seasonally adjusted consumer confidence indicator (right-hand axis)

Source: ELSTAT, EUROSTAT, own calculations.

FIGURE 1.1.5
Contribution to the rate of change of the GDP
Individual components of investment

Dwellings — Other buildings and structures
Other investment — Gross fixed capital formation

*Source: National Accounts,* ELSTAT, own calculations.

sumer and retail confidence indicators, retailers seem to have improved expectations with respect to the course of private consumption, in contrast to consumers who currently appear less optimistic. More specifically, from August 2015 onwards the retail confidence indicator showed continuous improvement, reaching 5.6 in April 2016, from -31.0 in August 2015. On the contrary, the consumer confidence indicator moved in the opposite direction during the more recent period, falling to -73.7 in April 2016, from -61.1 in December 2015 (Figure 1.1.4).

1.1.2. Investment

The annual rate of change of gross fixed capital formation amounted to 0.7% in 2015, versus -2.8% in 2014, and, as a result, the contribution of investment expenditure to the rate of change of the GDP amounted to 0.1 percentage points in 2015, from -0.3 percentage points in 2014. On a quarterly basis, investment exhibited considerable fluctuations in the course of the year 2015, recording, as already mentioned, an increase in the first quarter, stagnation in the second quarter, a significant decline in the third quarter and a recovery in the final quarter of the year.

More particularly, with regard to investment other than construction, developments in 2015 were mostly positive, with expenditure in all but one category recording, on average, an increase. More specifically, expenditure increased significantly for a second consecutive year, both in the transport equipment expenditure category (23.8%) and in metal products and machinery investment (5.9%), while a marginal increase was also recorded in investment in other products (0.3%), which had declined in the previous year. With respect to investment in products of agriculture-forestry-fisheries, a decrease of -30.3% took
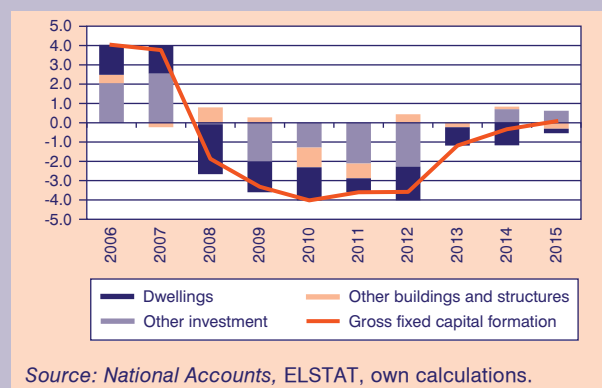
place in 2015, although it should be noted that expenditure in this particular category accounts for a very small share of total investment.

With respect to investment in construction, 2015 was characterized both by a decline in expenditure on other buildings and structures (-7.5%), which increased in the previous year, and by a further sharp decline of investment in dwellings (-23.1%). It is worth noting that the negative contribution to the rate of change of the GDP from the fall in dwellings investment reached -0.5 percentage points in 2015, thus representing a significant recessionary factor (Figure 1.1.5).

The fluctuations in total gross fixed capital formation and the overall positive development of investment other than construction during the year 2015 indicate that the Greek economy exhibits a certain tendency for growth in investment, which, however, is very vulnerable to adverse changes in economic conditions. More particularly, data for the second and third quarter of 2015 reflect clearly both the consequences of the escalating uncertainty regarding the outcome of negotiations with the institutions, and the effects of the imposition of the bank holiday and capital controls. On the other hand, however, data for the final quarter of 2015 mirror the positive effects from the gradual return to more normal economic conditions, following the new agreement for the financing of the country and the completion of the process of national elections in September. With respect to investment in construction, data for the year 2015 suggest that investment in dwellings remains under the negative influence of both the continuing high taxation of real estate property and the uncertainty with respect to the direct effects on the real estate market from the measures aimed at addressing the non-performing loans problem. In parallel, the corresponding data for other constructions reflect, among other factors, the delays in the progress

FIGURE 1.1.6

Estimated residential building activity based on permits

Source: EUROSTAT.

FIGURE 1.1.7

Construction confidence indicator
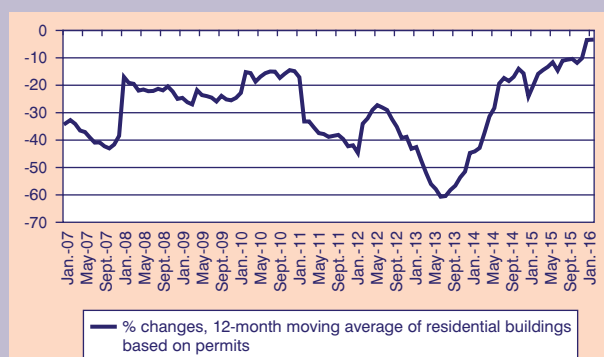
Source: EUROSTAT.

of road works and other construction projects that are partly related to the serious liquidity problems in the course of the year.
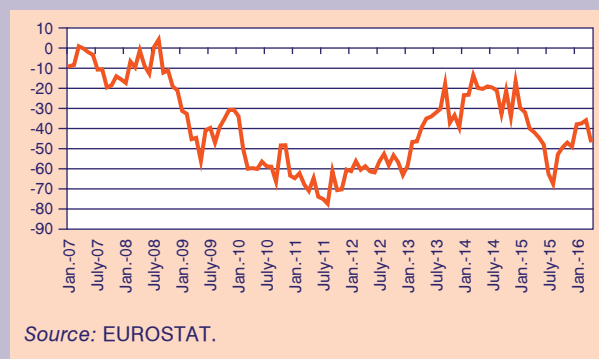
Further indications about recent developments in residential investment are derived from the residential buildings indicator with respect to square meters of useful floor area, based on building permits. Following the considerable weakening of individual monthly observations of both the residential buildings indicator and the estimated private building activity[2] during the period from July to September 2015, the data of the residential buildings indicator exhibited a further decline in October (-9.9%, compared to the corresponding month of 2014), an increase in November and December (6.0% and 3.1%, respectively), and again a significant decrease in January 2016 (-30.3%), while, in parallel, the estimated private building activity continued to decrease, with a gradual deceleration of negative dynamics after October 2015 (-11.8% in October, -10.2% in November, -3.5% in December and -3.4% in January 2016) (Figure 1.1.6).

For the construction sector as a whole, additional information is derived from the available statistical data on the course of the general production index in construction during the fourth quarter of 2015.[3] As it appears, the index declined by -10.1% compared to the corresponding quarter of 2014, thus remaining on the negative path entered in the third quarter of the year. This development was due both to the fall of the sub-index of production of civil engineering (-7.6%), which relates to infrastructure works (e.g. highways,

bridges, tunnels, pipelines, networks and port development), and to the adverse evolution of the sub-index of production of building construction (-13.8%), which reflects developments in the construction of dwellings, industrial and commercial buildings and other buildings.

Regarding the short-term prospects for fixed capital investment, the recovery of investment expenditure in the fourth quarter of 2015 was most likely reversed from February 2016 onwards, mainly due to the uncertainty with respect to the outcome of negotiations on the first review of the Greek programme. This assessment is in accordance with the most recent developments in the construction confidence indicator, which returned to a downward course after January 2016 (Figure 1.1.7). Nevertheless, the prospect of the smooth implementation of the programme following the agreement with the institutions, combined with the dynamics already exhibited by investment in the recent period of decline in uncertainty, justify a certain degree of optimism for a significant recovery in investment, especially during the second half of the year.

1.1.3. External balance of goods and services

As already mentioned, the recent course of the main external sector aggregates was heavily affected by the critical developments in the Greek economy, and more particularly by the bank holiday and capital controls.

More particularly, concerning imports, the year 2015 was characterized by a significant decline in the case of goods (-5.2%) and major decrease in the case of services (-15.4%), the result being a positive contribu-

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

3. Note that the reference concerns the indicator adjusted for the number of working days while data for the third quarter of 2015 are provisional.

Source: National Accounts, ELSTAT, own calculations.
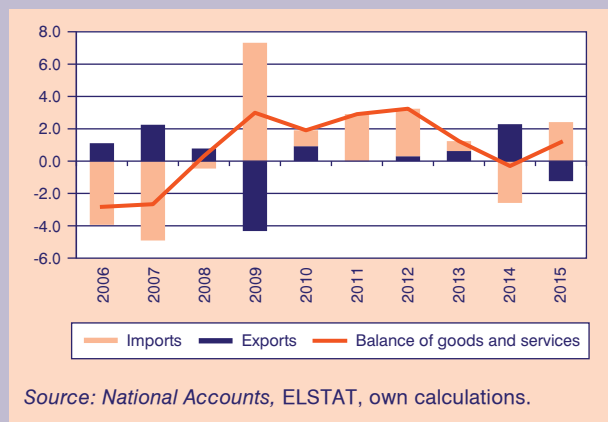
tion of 2.4 percentage points to the rate of change of the GDP (see Figure 1.1.8). In parallel, with respect to exports, their contribution to the rate of change of the GDP amounted during the same period to -1.2 percentage points, as a significant decline in services exports (-11.4%) was combined with an increase in goods exports (3.2%). It is worth noting that the decline in services exports was a result of the dramatic decline of receipts in the categories of transportation and other services (by -24.1% and -15.5%,, respectively, according to Bank of Greece data), which was, however, mitigated to a certain degree by the continuing increase in tourism receipts (by 6.0% according to Bank of Greece data).

Overall, the large fall in imports in the course of year 2015 resulted in a decrease of the total deficit of the balance of goods and services to -2.5 billion euro, from -5.6 billion euro in 2014, according to *National Accounts* data.

Concerning the prospects of the external sector, in the field of imports, downward trends are initially expected to continue, due the weakness in demand associated with the overall recessionary conditions. In parallel,

with respect to exports, the indications thus far available for the first half of 2016 point to a preservation or a possible improvement of receipts from tourism, but at the same time to a further deterioration of receipts from transportation services and a decline in goods exports. Further along, during the second half of 2016, developments in the main external sector aggregates will depend to a significant extent upon developments in domestic demand and liquidity and financing conditions in the economy, as well as upon international factors related to geopolitical developments and the evolution of ocean shipping freight rates.

1.1.4. Conclusions and prospects

On the basis of the above analysis of main demand components, the main aggregates of the Greek economy remain under the influence of the adverse factors related, first, to the critical developments that took place in the country in the course of year 2015 and, second, to the more recent rise in uncertainty with respect to the outcome of negotiations on the first review of the Greek programme and the related additional financial burdens for households. In the short term, the negative pressures on the GDP from the side of private consumption are expected to continue, while, in parallel, the positive contribution to the rate of change of the GDP from the side of the external sector is expected to decline. Further along, however, the prospect of smooth implementation of the programme justifies a certain degree of optimism for a stabilization in consumption and a recovery of investment, as it will contribute progressively to the stabilization of the economy, the reduction of uncertainty and the resolution of the serious difficulties in the liquidity and financing of businesses. Consequently, and according to the forecasts provided by the KEPE dynamic factor model (see Section 1.4), Greece's GDP is expected to move downwards until mid-2016, thereafter exhibiting a slight recovery in the second half of the year.

1.2. Recent Current Account developments

Ioanna Konstantakopoulou

The Greek economy showed a marginal balance in the Current Account in the previous year. This is a positive sign for the Greek economy. As a percent of GDP, it stood at -0.06% compared to -2.12% of GDP in the 2014. This positive development (see Tables 1.2.1 and 1.2.2) comes from the improvement of the result of the trade balance. In the first quarter of 2016, the positive development of the Current Account continues. In particular,

there is a further decline in the deficit of the Current Account, against €0.96 billion, a change rate of -28.9%. As a percent of GDP, the deficit rate stood at 5.34%, compared with 7.52% in the corresponding period of 2015.

1.2.1. Trade balance

The goods balance deficit as a percentage of GDP stood at 17.25% compared with 22.28% in 2014 (see Figure 1.2.1). In absolute terms, the deficit amounted to €17.25 billion compared with €22.28 billion, in 2014.

The reduction in the trade deficit in 2015, compared to 2014, is the result of several factors (see Figure 1.2.1)

TABLE 1.2.1 Current Account *(as percent of GDP)*

	CA	Goods	Exports	Imports	Sevices	Primary income	Secondary income
2009	-12.37	-13.97	7.46	21.43	4.84	-2.84	-0.4
2010	-11.44	-13.49	9.3	22.8	5.36	-2.53	-0.78
2011	-10.01	-12.7	11.52	24.21	6.57	-3.15	-0.73
2012	-3.83	-11	14.2	25.2	7.24	0.43	-0.5
2013	-2.05	-11.52	14.91	26.43	8.73	-0.25	1.00
2014	-2.12	-12.55	15.09	27.63	10.29	0.32	-0.19
2015	-0.06	-9.80	14.08	23.88	9.62	0.42	-0.30
2015, a´ quarter	-7.52	-11.67	14.24	25.91	3.04	1.30	-0.19
2016, a´ quarter	-5.34	-9.75	13.12	22.87	1.73	2.47	0.21

Source: Bank of Greece and ELSTAT.

TABLE 1.2.2 Current Account *(in EUR billions)*

	CA	Goods	Exports	Imports	Sevices	Primary income	Secondary income
2009	-29.37	-33.19	17.72	50.91	11.50	-6.74	-0.95
2010	-25.85	-30.49	21.03	51.53	12.12	-5.71	-1.76
2011	-20.72	-26.29	23.84	50.13	13.61	-6.53	-1.51
2012	-7.33	-21.03	27.15	48.18	13.84	0.82	-0.95
2013	-3.69	-20.78	26.90	47.68	15.75	-0.46	1.80
2014	-3.77	-22.28	26.79	49.07	10.29	0.57	-0.33
2015	-0.10	-17.25	24.79	42.04	16.93	0.74	-0.52
2015, a´ quarter	-3.21	-4.99	6.08	11.07	1.30	0.56	-0.08
2016, a´ quarter	-2.25	-4.12	5.54	9.66	0.73	1.04	0.09

Source: Bank of Greece.

Source: Bank of Greece.

banking, and c) shrinking the trade deficit excluding oil and ships by €1.24 billion. In the first quarter of the year, the trend is maintained for these three components of the goods deficit, namely the oil trade, the ship balance and the balance of goods excluding oil and ships, with a rate of change -53.7%, -55.1% and -3.2%, respectively, compared to the same period of 2015.

1.2.2. Services balance

The surplus in the services balance expressed as a percentage of the GDP was 9.6% in 2015, compared to 10.3% of GDP in 2014. In absolute terms, the surplus stood at €16.93 billion, down by €1.34 billion, compared with 2014. This negative development is attributable to the decrease in net transport receipts by €2.33 billion compared to 2014. As regards the net travel receipts, this increased by €0.77 billion, compared with 2014, thus not affected the tourist flow from the imposition of capital controls.

Finally, the primary income balance and secondary income balance did not show any significant change between the two years.

such as: a) the reduction of the oil balance deficit by €2.07 billion, mainly due to the sharp decline in oil prices, b) the reduction of the ship balance deficit, due to buying and selling ships made outside Greek

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

Yannis Panagopoulos

Although the end of deflation was expected in Greece a few months ago (February 2016), the recently observed trend (April 2016) of the Consumer Price Index (CPI) data lead us to believe that this evolution had been cancelled or at least postponed for the future. More specifically, as we can see from Table 1.3.1 and from Diagram 1.3.1, both the headline inflation, in April 2016, and its core, in March 2016, are now moving to higher negative price changes (-1.3%, for the CPI and -0.5% for its core). The same picture appears for the harmonized inflation rates –both core and the headline– which are also moving to slightly negative price changes (see also Table 1.3.1).

Additionally, according to the Hellenic Statistical Authority (ELSTAT), the aforementioned headline deflation rate (-1.3%, y-o-y, in April 2016) can be mainly attributed to subsequent price decreases in six (6) main sub-categories, namely: (a) the "Housing" category (by 4.8%) due to reductions in the prices of house rents as well as due to reductions in the prices of residential heating, natural gas and electricity,[1] (b) the "Transportation" category (by 4.5%) mainly due to decreases in the price of cars, in gasoline prices, in residential heating prices and in the prices of the combined public transports,[2] (c) the "Clothing and Footwear" category (by 2.2%) due to price decreases on these products, (d) the "Miscellaneous goods and services" category (by 1.5%) basically due to reductions of the prices of personal care products as well as the prices for car and motorcycle insurance, (e) the "Household equipments" category (by 1.4%) mainly due to decreases in some household textile products and (f) the "Recreation and culture" category (by 1.4%) mainly due to decreases in the prices of optical and visual equipment for PCs and in the prices of leisure services and equipment.[3]

Part of the aforementioned deflation process was offset by the increase in the prices mainly of three (3) sub-categories, namely: (a) the "Health" category (by 3.6%) especially due to price increases in pharmaceutical products and private medical services,[4] (b) the "Restaurants-Hotels-Cafés" category (by 2.7%) mainly due to increases in their prices and (c) the "Alcoholic, drinks and tobacco" category (by 1.4%) basically due to price increases of cigarettes.

Concerning now the headline harmonized inflation rate of the Eurozone, we can say that in the last months it has been steadily moving around the zero line (ranging

Table 1.3.1 Inflation in Greece & in the Eurozone

	Headline inflation (Greece)	Core inflation (Greece)	Harmonized inflation (Greece)	Core Harmonized inflation (Greece)	Harmonized inflation (EU19)	Core Harmonized inflation (EU19)
2015M9	-1.7	-1.4	-0.8	0.5	-0.1	0.8
2015M10	-0.9	-0.7	-0.1	0.8	0.1	1.0
2015M11	-0.7	-0.6	-0.1	0.6	0.1	0.9
2015M12	-0.2	-0.3	0.4	0.8	0.2	0.9
2016M1	-0.7	-1.1	-0.1	0.4	0.3	1.0
2016M2	-0.5	0.5	0.1	1.2	-0.2	0.8
2016M3	-1.5	-0.5	-0.7	0.6	0.0	1.0
2016M4	-1.3	NA	-0.4	NA	NA	NA

Source: ELSTAT, EUROSTAT.

1. Part of this reduction was offset by increases in the prices of solid fuels.

2. Part of this reduction was offset by increases in the prices of the airplane tickets and toll prices.

3. Part of this decrease was offset by increases in the prices of cultural activities.

4. Part of this increase was offset by decreases in the prices regarding medical, dental and paramedical services.

around -0.2% to +0.3%). At the same time, its core was moving around small positive price changes (ranging around 0.8% to 1.0%). Therefore we observe a steady difference, during these last months, of almost 1%, among the harmonized inflation rate and its core.

Finally, concerning the core harmonized inflation rates in Greece and the Eurozone, we observe that both are gradually moving towards a small positive price change (usually less than 1%). However –as it can be observed in Diagram 1.3.2– there is a steady difference regarding the headline harmonized inflation rate of the Eurozone and Greece. More specifically, in the case of the Eurozone, the headline harmonized inflation rate from the middle of 2015 onwards converges towards zero from the positive side of the diagram without any serious volatility, while, in the case of Greece, high level volatility around the zero line with small positive and negative changes is observed.

DIAGRAM 1.3.1
CPI, % change relative to the respective month of the previous years
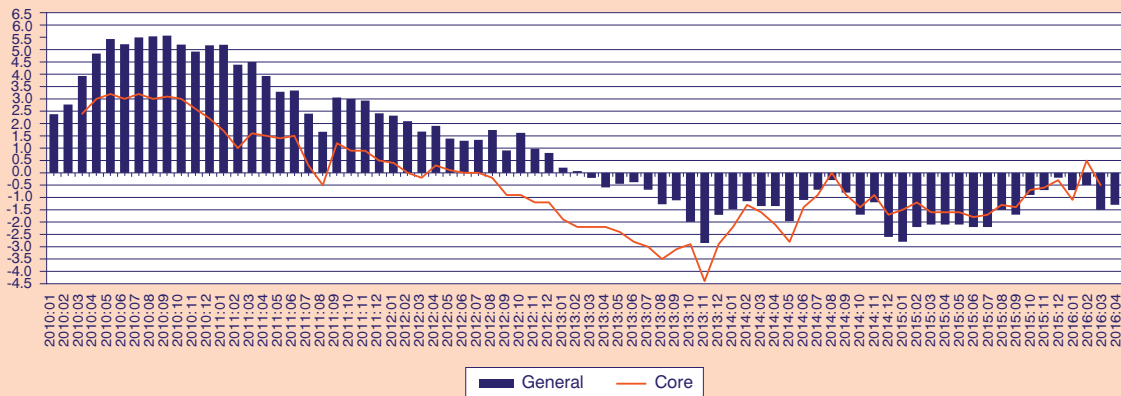
Source: ELSTAT, EUROSTAT.

DIAGRAM 1.3.2
Harmonized indices of consumer prices, % change relative to the respective month of the previous years
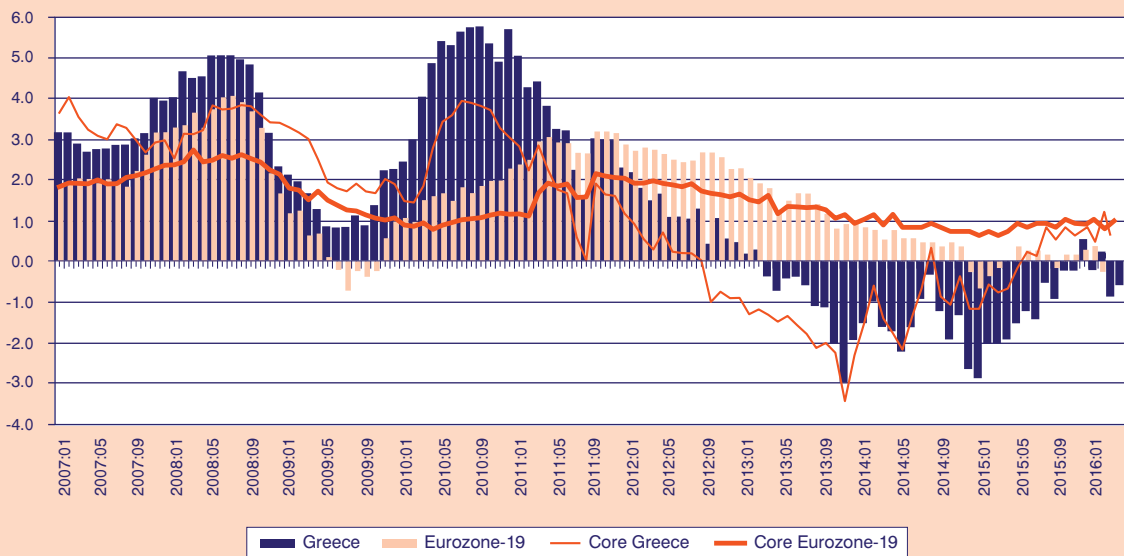
Source: ELSTAT, EUROSTAT.

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

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

The current section presents the updated short-term forecasts of KEPE concerning the evolution of the rate of change of real GDP in Greece for 2016. 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 encompasses the main aspects of economic activity in the country on a quarterly basis, spanning the time period from January 2000 up to December 2015. 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 use of the Demetra+ software, which is freely available from Eurostat.[1]

According to the econometric estimates presented in Table 1.4.1 and based on published seasonally adjusted GDP data up to the end of 2015, the mean annual rate of change of real GDP for 2016 is predicted around -0.4%. The respective forecast points to a further, albeit moderate, worsening of economic conditions, as compared to the previous year (-0.2% for 2015). At the same time, the mean rate of change of real GDP for the first half of 2016, estimated at -0.9%, constitutes a minor improvement relative to the preceding factor model forecast (-1.1%) for the same period. In addition, the prediction for the second half of 2016, ranging at 0.2%, mirrors a stabilization and recovery tendency, as indicated further on the basis of the individual quarterly forecasts. More particularly, according to the estimated quarterly rates of change of real GDP, as compared to the respective quarters of the previous year, negative percentage changes are expected to be maintained at -0.6% in the first quarter (-1.2% according to the previous forecast) and escalate to -1.3% in the second quarter of 2016 (-0.9% according to the previous forecast). Nevertheless, the forecasts indicate a shift to positive rates of change of real GDP in the second half of 2016, with the corresponding quarterly rates lying at 0.3% and 0.1% in the third and fourth quarter, respectively.

The above presented forecasts of the rates of change of real GDP for 2016 reflect the main aspects of the most recent developments in the Greek economy, taking into account the inclusion of economic data for the last quarter of 2015. In other words, the prediction that recessionary conditions will continue to prevail in the first half of 2016 and the economic situation will turn around and stabilize in the second half is to be interpreted as a consequence of the exceptional

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TABLE 1.4.1 Real GDP rate of change *(%, y-o-y)*

	2016			
Quarters	2016Q1	2016Q2	2016Q3	2016Q4
Quarterly rate of change	-0.58 [-0.64, -0.51]	-1.31 [-1.43, -1.19]	0.31 [0.14, 0.48]	0.08 [-0.15, 0.31]
Mean rate of change, 1st and 2nd half of 2016	-0.95 [-1.04, -0.85]		0.20 [-0.01, 0.40]	
Mean annual rate of change	-0.38 [-0.52, -0.23]			

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

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

developments which prevailed, particularly up to the third quarter of 2015. Despite the fact that in the last quarter of 2015 there have been signs of recovery in a number of variables, as compared to the preceding quarter, the negative shock that occurred, in combination with the sustained uncertainty, seem to impair the upturn process in crucial sectors of the economy in the short to medium term. These underlying conditions impede and delay the establishment of a favorable domestic economic environment, especially regarding the dynamic enhancement of investment and exports, the sustainable recovery of consumer confidence, the sustained retention of balance in the major fiscal aggregates, but also the definitive normalization of conditions in the financial sector. The related chain of effects now becomes visible in the forecasts for the whole of 2016, as compared to 2015, influenced to a significant degree by the expectations and the economic sentiment shaped by businesses and households.

Examining in greater depth the additional information included in the data for the last quarter of 2015, the relative deterioration (on a non-seasonally adjusted basis) in a large number of variables, as compared to the corresponding quarter of 2014, becomes evident. More particularly, it is indicative that variables such as private consumption expenditure, services exports, goods and services imports, as well as indicators like the general turnover index in industry, the general volume index in retail trade, the turnover index in wholesale trade, transport receipts, travel receipts, as well as several indicators from the construction sector moved into negative territory. In addition, all indicators reflecting expectations and assessments and/or displaying leading features (e.g. sectoral business expectations' indicators, indicators concerning assessments on order-book levels in manufacturing and exports, as well as export expectations' indicators), including the over-all Economic Sentiment Indicator for Greece, followed a downward course.

Among the major exceptions, as they recorded an upward trend, as compared to the previous year, were macroeconomic variables such as total investment and goods exports, and also indicators such as the General Industrial Production Index, several competitiveness indicators, but especially the key labour market aggregates (i.e., employment and unemployment), which continued to record a gradual course of positive adjustment in the last quarter of 2015, albeit on a small scale and despite the overall, still dominating, particularly adverse conditions.

Greek real GDP as well as the overall domestic economic environment may evolve towards a more or less favorable direction during 2016, depending upon specific crucial and decisive developments with regard to a wide range of factors. These developments relate, on the one hand, to the outcome of the negotiations and the cooperation with the country's financial partners concerning the financial assistance programme for Greece and the issue of the Greek debt. As a result, they refer to the implementation of the necessary structural reforms, the provision of adequate financing conditions as well as the establishment of a domestic environment characterized by reliability and confidence in the ability of the Greek economy to move to a period of viable economic expansion on a more permanent basis. On the other hand, any developments are intertwined with a range of interventions and economic measures which are expected to directly affect business and investment activity, but also household incomes. At the same time, the critical role to be played by international economic and political developments should not be disregarded, in particular with reference to the issue of the refugee and migrant flows which are definitely impacting the Greek and European economy and society on multiple levels.

2.1. State Budget execution, first four months of 2016

Elisavet I. Nitsi

The execution of the State Budget in the first four months of 2016, according to the most recent data retrieved from the General Accounting Office,[1] on a modified base, does not deviate compared to the corresponding period of 2015, but it does deviate from the monthly targets set, as they were reflected in the executive summary of the State Budget for the fiscal year 2016, as higher revenues were expected as well as higher public expenditures.

According to the data shown in Table 2.1.1, the State Budget had a deficit in the balance amounting to €494 million in the period January-April 2016, against a deficit of €510 million in the corresponding period of 2015, and a target for deficit of €2.28 billion. The State Budget Primary Balance had a surplus of €2.38 billion in comparison to a primary surplus of €2.10 billion for the same period in 2015 and a primary deficit target for €566 million.

More specifically, net revenues amounted to €15.67 billion, showning a decrease of €141 million or 0.89% compared to the revenues of the first four months of 2015 and €488 million or 3.02% against the targets set by the 2016 Budget. The Ordinary Budget revenues amounted to €14.11 billion and are reduced by

TABLE 2.1.1 State Budget Execution first four months of 2016 (million €)

	Jan.-Apr. 2015 Outcome	Jan.-Apr. 2015 Outcome	Jan.-Apr. 2015 Targets[1]	2015 Outcome[2]	2016 Budget[3]
State Budget					
Net Revenue	15,815	15,674	16,162	51,421	53,527
Expenditures	16,324	16,167	18,446	54,951	55,751
Ordinary Budget					
Net Revenue	14,290	14,107	13,782	46,589	49,107
Expenditures	15,503	15,249	17,326	48,545	49,001
- Primary expenditure	12,410	12,321	14,137	41,298	41,861
- Interest payments (on a cash basis)	2,612	2,869	2,850	5,800	5,930
Public Investment Program (PIP)					
Revenue	1,525	1,567	2,380	4,832	4,420
Expenditures	821	919	1,120	6,406	6,750
State Budget Primary Balance[4]	2,103	2,376	566	2,270	3,706
State Budget Balance	-510	-494	-2,284	-3,530	-2,224

Source: General Accounting Office, Greek Ministry of Finance.

1. Targets as they were reflected in the executive summary of the State Budget for the fiscal year 2016.
2. The total revenue and expenditure outcome is preliminary and will be finalized after the vote of the 2015 annual Budget report (for both revenue and expenditure).
3. Annual estimates as depicted in the executive summary of 2016 Budget.
4. + surplus, - deficit.

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1. Based on preliminary data published in the State Budget Execution Monthly Bulletin: April 2016, General Accounting Office, May 2016.

€183 million or 1.28% in comparison to last year's corresponding period, while they are higher, by €325 million or 2.36%, compared to the targets. The Public Investment Program (PIP) revenues reached €1.57 billion, remaining at the same level as the same period in 2015, but falling short compared to the budget target of €813 million or 34.16%.

On the opposite side, the State Budget expenditures decrease by 0.96% compared to the corresponding period of 2015, shows a significant reduction against the target set by the 2016 State Budget. This reduction can be attributed both to the restriction of the Ordinary Budget expenditures (1.64% compared to the corresponding period in 2016 and 11.99% against the Budget's target) as well as the PIP (11.94% and 17.95%, respectively), given the liquidity limitations of the Greek economy to meet the General Government's obligations for the period needed to complete the assessment of the fiscal adjustment program and get the installment from the European Support Mechanism (ESM). In particular, the Ordinary Budget expenditures amounted to €15.25 billion, showing a decrease of €254 million over the expenditures of the corresponding quarter of 2015 and €2.08 billion against the target,

while the primary expenditures amounting to €12.32 billion show a reduction of €89 million or 0.72% and €1.82 billion or 12.85%, respectively. Finally, the Public Investment Budget shows a surplus of €648 million against a deficit target of €1.26 billion.

In sum, the execution of the State Budget in the first four months of 2016 was clearly better than expected, due to a reduction in public expenditures. This can be attributed to the limited payments against the accumulated liabilities of the General Government coupled with the pending completion of the assessment of the fiscal adjustment program and the expected disbursement of the tranche from the ESM, resulting in inflated arrears, while the Greek economy is in a period of stagnation. Therefore, the assessment should immediately be completed and, with the disbursement, the refinancing of the market should advance both with the payment of the arrears, as well as the tax returns owed by the government to legal entities and persons. Economic revival, with the simultaneous promotion of the new plan for the country's development, as well as the privatization program, can constitute the levers that will drive the economy out of recession.

2.2. Evolution and structure of public debt

Triantopoulos Christos

The evolution and structure of public debt reflects the developments in both the economy and public finances, as well as the implementation of the economic policy program of the EU/ECB/IMF support mechanism. In particular, recent data from the European Commission confirmed the assessment made in the corresponding analysis of Issue 29 of *Greek Economic Outlook*[1] that the level of public debt in 2015 would be well below that of 2014, and also below the estimation included in the 2016 State Budget. This is a one-off development which is based, along with the positive effects on the fiscal balance, on the one hand, on the developments in the first half of 2015 (i.e. return of capital from the Hellenic Financial Stability Fund [HFSF], non-completion of the second economic policy program, short-term loans from European partners, etc.) and, on the other hand, on the lower –than the originally foreseen– financing needs of the recapitalization of 2015 (i.e. great private participation and public share restriction) during the last quarter of the year.

Thus, according to the European Commission,[2] in 2015 the General Government debt was €311.5 billion (or 176.9% of GDP), compared to the 2016 Budget estimation for €316.5 billion (or 180,2% of GDP) and €319.7 billion (or 180.1% of GDP) in 2014 (Figures 2.2.1 and 2.2.2). Of course, the inability of the country to return to –high– positive growth rates in 2015 had a negative effect on the debt ratio as a percentage of GDP (however, not as great as during the years of recession); as a result, the cumulative effect of negative change in nominal GDP for the period 2009-2015 stands at 50 percentage points, as opposed to the situation prior to 2009, when the contribution of the change in nominal GDP to public debt was positive and "covered" the increase of public debt in absolute figures (Figure 2.2.1). Additionally, in 2015 the downward trend of interest expenditure –which started in 2012 (following the restructuring of public debt)– was maintained, reaching €6.7 billion, which represents 3.8% of GDP or 2.1% of the public debt of the previous year. It is estimated that these low levels will be maintained in the years 2016 and 2017 (Figure 2.2.1).

FIGURE 2.2.1
General Government debt and interest payments
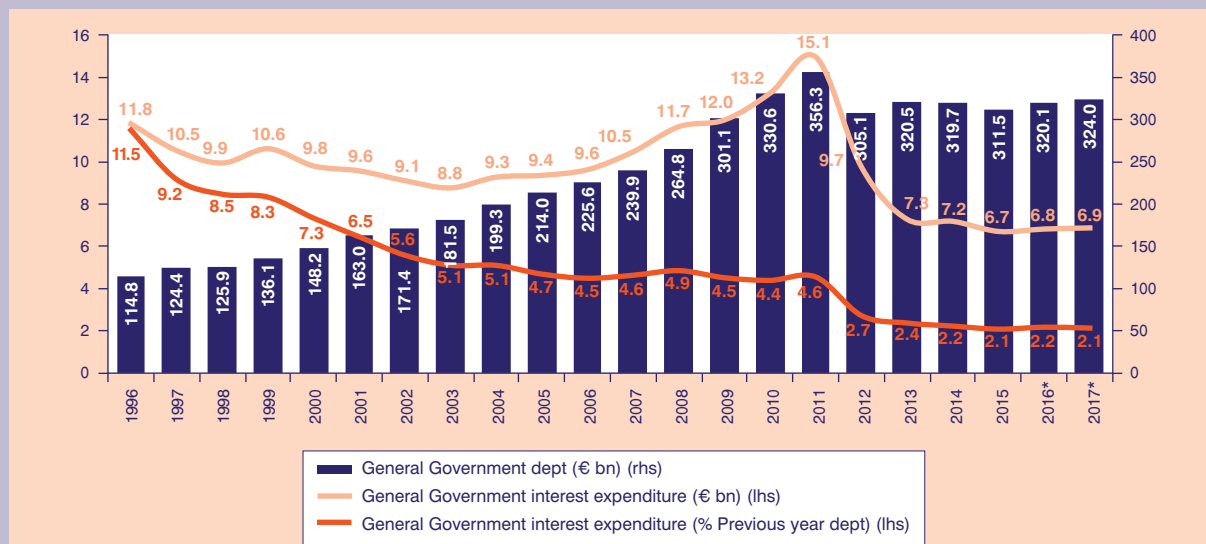
Source: European Commission (May 2016).
Note: *Estimations.

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1. For further information see: http://www.kepe.gr/images/oikonomikes_ekselikseis/oikonomikes_ekselikseis_gr_29_full.pdf

2. For further information see: http://ec.europa.eu/economy_finance/eu/forecasts/2016_spring_forecast_en.htm

FIGURE 2.2.2
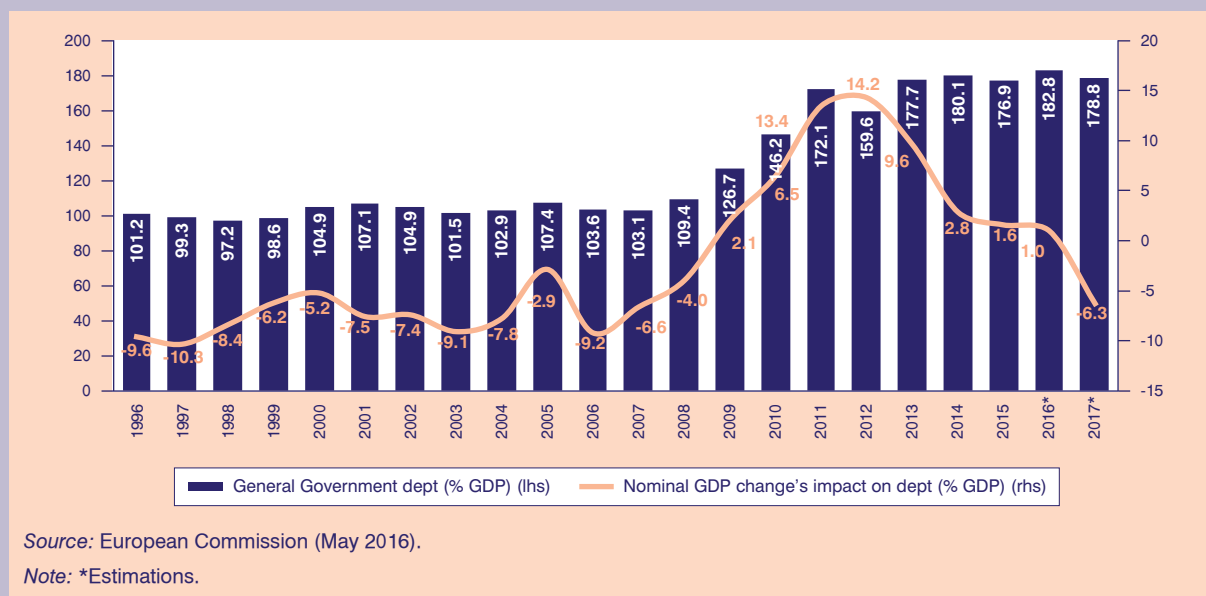## General Government debt and effect on nominal GDP

| General Government dept (% GDP) (lhs) | Nominal GDP change's impact on dept (% GDP) (rhs) |

Source: European Commission (May 2016).

Note: *Estimations.

TABLE 2.2.1 Budgetary Central Government debt by major categories

	2011		2013		2015		February 2016	
	€ million	% of debt	€ million	% of debt	€ million	% of debt	€ million	% of debt
A. Bonds	**259,774.18**	**70.6**	**76,296.25**	**23.7**	**59,818.00**	**18.6**	**59,760.00**	**18.6**
Bonds issued domestically	240,940.37	65.5	73,415.28	22.8	57,112.00	17.8	57,112.00	17.8
Bonds issued abroad*	18,833.81	5.1	2,880.97	0.9	2,706.00	0.8	2,648.00	0.8
B. T-Bills	**15,058.63**	**4.1**	**14,970.82**	**4.7**	**14,880.00**	**4.6**	**14,878.00**	**4.6**
C. Loans	**93,145.19**	**25.3**	**230,210.90**	**71.6**	**236,633.00**	**73.6**	**236,361.00**	**73.5**
Bank of Greece	5,683.99	1.5	4,734.61	1.5	3,792.00	1.2	3,794.00	1.2
Other domestic loans	836.71	0.2	115.50	0.0	110.00	0.0	293	0.1
Financial Support Mechanism loans	73,210.36	19.9	213,152.48	66.3	220,431.00	68.6	219,976.00	68.4
Other external loans**	13,414.13	3.6	12,208.31	3.8	12,300.00	3.8	12,298.00	3.8
D. Short-term loans*	**0.00**	**0.0**	**0.00**	**0.0**	**10,001.00**	**3.1**	**10,427.00**	**3.2**
Total (A+B+C+D)	**367,978.00**	**100.0**	**321,477.97**	**100.0**	**321,332.00**	**100.0**	**321,426.00**	**100.0**

Source: Public Debt Bulletin (December 2011, December 2013) and General Government Bulletin (February 2016).

Notes: * Including securitization issued abroad.

      ** Including special purpose and bilateral loans.

      *** Including repos.

In terms of Central Government debt, that is when the intergovernmental debt (i.e. the short-term loans through repos agreements with General Government entities) is not included, the debt at the end of 2015 stands at €321.5 billion, decreased by approximately €5 billion compared to the 2016 State Budget estimation, while according to the data of February 2016 it is configured to €321.4 billion (Table 2.2.1). Regarding the structure of the debt of the Central Government, according to data of February 2016, it consists of about €220 billion of loans under the EU/ECB/IMF support mechanism, continuing the upward trend of recent years (following also the agreement on the third economic policy program) covering 68.4% of the total debt of the Central Government (Table 2.2.1). To the

contrary, the share of debt reflected in bonds is reducing. In February 2016 the Central Government debt in bonds was reduced to €59.7 billion, constituting only 18.6% of the total Central Government debt (Figure 2.2.3).

FIGURE 2.2.3
Central Government Debt (February 2016), (million Euros; % debt)

Bonds issued domestically — Other domestic loans
Bank of Greece loans — Short-term loans (repos)
Other external loans — T-Bills
Bonds issued abroad — Financial Support Mechanism loans
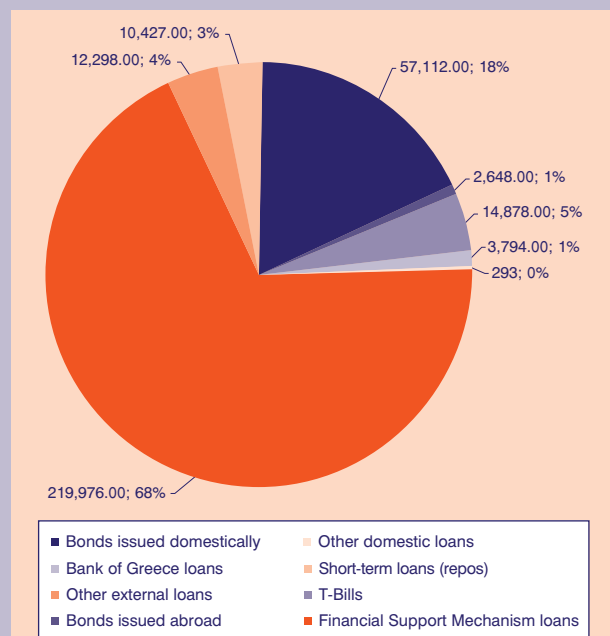
Source: Ministry of Finance, General Government Bulletin (February 2016).

Finally, Central Government loans still remain at significant levels through both T-bills and the wide use of repos agreements with General Government entities, as these two funding tools cover 7.8% of the Central Government debt. In particular, short-term loans through the repos scheme increased to €10.4 billion, constituting 3.2% of the Central Government debt. At the same time, Central Government loans through T-bills in 2015 and the first months of 2016 were at the same level as in previous years (€14.9 billion), albeit at more expensive levels, further burdening the public finances. Specifically, according to the Ministry of Finance, the 13-week yield of the T-bills amounted to 2.7% in April 2016 from 1.7% in November 2014, an increase of approximately 60%, while the 26-week yield of the T-bills ranged from 2% in November 2014 to 2.97% in May 2016, an increase of almost 50%.[3]

Additionally, a change is observed also in the characteristics of the Central Government debt in recent years, since in December 2015 the largest part of the debt is non-tradable (76.8%) and at floating interest rate (69.1%), reversing in both cases the relative figures compared to 2011, but also increasing them compared to the previous year (Table 2.2.2). As noted again, this development in the composition of debt is due to the country's funding from the EU/ECB/IMF support mechanism, which is based on non-tradable and floating rate loans. Also, the developments in funding from the EU/ECB/IMF support mechanism in

TABLE 2.2.2 Composition of Budgetary Central Government Debt

	December 2011	December 2012	December 2013	December 2014	December 2015
A. Rate					
Fixed rate[1]	62.0%	32.7%	28.5%	33.2%	30.9%
Floating rate[1,2]	38.0%	67.3%	71.5%	66.8%	69.1%
B. Trade					
Tradable	74.7%	34.3%	28.4%	25.0%	23.2%
Non-tradable	25.3%	65.7%	71.6%	75.0%	76.8%
Γ. Currency					
Euro	97.5%	96.7%	95.9%	95.7%	96.5%
Non-euro area currencies	2.5%	3.3%	4.1%	4.3%	3.5%

Source: Public Debt Bulletin (December 2011, December 2012, December 2013, December 2014, December 2015).

Notes: 1. Fixed/floating participation is calculated including Interest Rate Swap transactions.
2. Index-linked bonds are classified as floating rate bonds.

3. For further information see: http://www.minfin.gr/sites/default/files/financial_files/gr_ent.gram_d%2013%20week_15_4_2016_0.pdf and also: http://www.minfin.gr/sites/default/files/financial_files/gr_%20ent.gram_d%2026%20week%206_05_2016%20A.pdf

2015 affected the share of the currency in which the Central Government debt is expressed; as a result, in December 2015, 96.5% of this debt is expressed in euros compared to 95.7% in December 2014 and 95.9% in December 2013.

Finally, the level of the General Government debt is estimated, according to the European Commission, to increase by €8.5 billion in 2016 and stand at €320.1 billion, and to increase further in 2017, reaching €324 billion. In relative terms and with respect to the Gross Domestic Product (GDP), General Government debt is estimated to reach 182.8% of GDP and 178.8% of GDP in 2016 and 2017, respectively. These levels are lower than the European Commission estimates of Autumn 2015 according to which the public debt would reach 199.7% of GDP in 2016 (mainly due to the lower, for the time being, cost of recapitalization of banks in relation to the initial estimates of €25 billion).[4] These levels, however, are, at the same time, higher than the European Commission estimates of Autumn 2014, which projected the General Government debt to stand in 2016 at 157.8% of GDP.[5] Therefore, the large deviation in assessments for the level of the General Government debt –as percentage of GDP– within a relatively short time, underlines the great sensitivity of this indicator in both the state of economic and productive activity (denominator side), and in the course of public finances (numerator side) within the framework of single space the economic policy program followed by the country in recent years.

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4. For further information see: http://ec.europa.eu/economy_finance/publications/eeip/pdf/ip011_en.pdf

5. For further information see: http://ec.europa.eu/economy_finance/eu/forecasts/2014_autumn/el_en.pdf

3. Human resources and social policies

3.1. Developments in key labour market variables

Nikolaos C. Kanellopoulos

The Greek labour market in 2015 continues to show signs of improvement, which began in 2014. Employment in 2015 grew by 2.1% against an increase of 0.6% last year, recording a positive growth rate for the second consecutive year. The unemployment rate fell to 24.9% in 2015 from 26.5% the previous year. In January 2016 the seasonally adjusted unemployment rate was 24.4%, recording a decrease compared to last year (January 2015: 25.7%). The number of unemployed decreased by 6.5% in 2015 and fell to 1,169.1 thousand people in January 2016. The decrease of the unemployed is combined with an equal increase of the employed, so the size of the labour force was left almost unchanged. Also noteworthy is the reduction of the non-active population, which suggests emigration. Increases in the private sector's paid employment in the last three years are also observed in the data from the ERGANI information system. This improvement also continues during the first quarter of 2016. The recent favourable labour market developments seem to be related to the GDP growth in the corresponding period, the increase of economic activity in specific sectors (predominantly those of tourism and trade), the expansion of flexible forms of employment and the restraint of labour costs at the lower levels which were formulated in previous years.

3.1.1. Employment

Employment continues to rise for the second consecutive year since 2013, when it recorded its smallest size (3,510 thousand employees). Employment in 2014 increased marginally to 3,540 thousand and in 2015 increased to 3,610 thousand. However, it continues to significantly fall short of its highest performance of 4,610 thousand employees in 2008 (Figure 3.1.1). Indicative of the severity of the economic crisis and of the labour market dysfunctions, which did not allow the adaption to the reduced aggregate demand, is the fact that during the decade up to 2008 almost
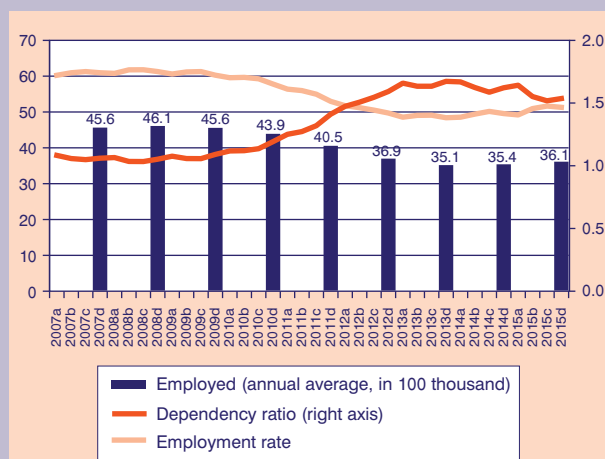
500 thousand new jobs were created, while during the seven years from 2008 to 2015 almost one million jobs were destroyed.

Employees of the fourth quarter of 2015 are reduced by 20.8%, i.e. 956 thousand compared with the same quarter of 2008, and by 0.8% or 29.4 thousand compared with the previous quarter of 2015. However, when the comparison, as it is reasonable, is made with the same quarter of 2014, an increase of 106 thousand or 3% is recorded. Of these, 60 thousand are men and 46 thousand women. The increase is recorded in those older than 25 and, in particular, in the age group 45-64; while workers aged 15 to 24 continue to decline. Analogous is the picture in the employment rate, which, while being reduced by 9.3 points between the fourth quarter of 2015 and the respective of 2008, has increased by 1.3 points compared with 2014.

The prolonged decline in employment also creates serious problems in public revenues, since social security and health care contributions are reduced, while the needs for social protection increase. Employees, who produce and contribute to social security funds, have been reduced, while the unemployed and inactive who normally neither produce nor pay contributions, have been increased. The economic dependency ratio measures the number of people who do not produce relatively to those employed and is defined as the ratio of unemployed and inactive to employees. Obviously, the smaller the ratio, the healthier an economy can be considered. In Greece, this indicator, as shown in Figure 3.1.1, recorded values close to unity, while from 2012 onwards is higher than 1.5. In other words, for each worker there are 1.5 persons who do not work, either involuntarily or voluntarily. This means further burden for employees as they are asked to provide living expenses for additional people.

An alternative source of information on the positive evolution of employment is the Ergani Information System, which records in detail the flows of paid employment in the private sector. In 2015, for the third consecutive year, recruitments exceed separations significantly, recording a positive balance of almost 100 thousand. During the first quarter of 2016 the positive balance between recruitments and separations amounted to 33.8 thousand, increased by 20.1% compared to the corresponding quarter of 2015. A similar

FIGURE 3.1.1
Evolution of the employment rate (15-64)

Source: Labour Force Surveys, ELSTAT, KEPE calculations.

ment. The very low employment rate of people over 65, which in recent years has greatly decreased, contrary to what happens in other European countries, seems impressive. This reduction probably stems from the recent reforms in the social security system and the fear of entrapment in the labour market due to stricter conditions to retire as well as the fear of receiving a lower pension under the new rules. The decrease in employment between 2008 and 2013 has been concentrated mainly among those aged 30-44 and secondarily those aged 25-29 and 45-64. Thus, it seems that the present crisis has affected demographic groups, which were traditionally considered largely protected against any economic fluctuation. Finally, it is interesting that the increase in employment, particularly between 2014 and 2015, is found for people aged 45-64.

The structure of employment in the Greek labour market is also interesting, as it is characterized by a relatively high informal sector, since it has many self-employed individuals and entrepreneurs and many small companies prevail, while private sector employees, who are the most vulnerable in times of economic recession, account diachronically for a relatively low proportion of those in employment, close to 40%. Table 3.1.2 shows the occupational status of those employed and the type of employment. The evidence suggests that, over time, one third of employees are self-employed, either with or without staff, while about 148 thousand (2008: 267 thousand) are helpers in the family businesses. It is noteworthy that between 2008 and 2015, employment declined for all categories, however, this was more pronounced for self-employed individuals with staff. In particular, between 2008 and 2015 employers decreased by

picture emerges in March 2016 with a positive balance of 29.4 thousand new jobs (149 thousand hires and 119.7 thousand layoffs), the best performance for March since 2001. Noteworthy is the fact that flexible forms of employment amounted to 54.1% of new hires in March 2016 (March 2015: 51.7%), with a significant increase in rotated jobs to 15.8% of new hires (March 2015: 14.9%), while 38.3% are part-time jobs (March 2015: 33.4%).

The employment rate by age group in the last quarter of the selected years and the absolute change in employment between those years are presented in Table 3.1.1. In all examined years, people aged 30-44 have the highest employment rate, while youngsters (15-19 and 20-24) record substantially lower employ-

TABLE 3.1.1 Employment rate and change in employment by age

	2008d	2013d	2014d	2015d	Employment change (in thousands)		
	(1)	(2)	(3)	(4)	(2)-(1)	(3)-(2)	(4)-(3)
15-19	6.1%	2.2%	3.1%	1.8%	-24.4	4.1	-6.4
20-24	39.7%	22.8%	23.7%	24.0%	-128.8	8.3	-3.6
25-29	72.5%	47.5%	50.2%	53.4%	-276.8	7.2	11.1
30-44	78.9%	64.1%	66.2%	68.5%	-440.1	23.8	25.3
45-64	58.6%	49.1%	49.1%	51.1%	-217.6	11.6	70.5
65 +	4.2%	2.5%	2.5%	2.9%	-30.3	0.5	9.4
Total	48.7%	37.4%	38.1%	39.4%	-1,118.0	55.4	106.4

Source: Labour Force Surveys, ELSTAT, KEPE calculations.

32.6%. This is doubly worrying since this reduction is accompanied by a decrease in the employment of employees who worked in businesses which closed. However, although the downward trend in employment for self-employed without employees and helping members in the family business continued without interruption from 2008 to 2015, the employers and employees have recorded a recovery since 2014. Indeed, between 2014 and 2015 employers increased by around 30 thousand, while the corresponding increase in employees was about 140 thousand. Since recruitment in the public sector has been drastically reduced, the increase in paid employment comes from the private sector, which is also confirmed by the data of IKA-ETAM. However, the reduction of the self-employed without employees between 2008 and 2015 by 12.8% is probably underestimated. Some, in order to be able to exercise their profession (doctors, engineers, lawyers), must remain active, i.e. appear as employed (registered in the respective chambers and social security funds) regardless of whether or not they actually work.

Part-time employment in Greece still remains relatively low, although in recent years it increased significantly in absolute and relative terms. In particular, while in 2008 part-time workers were 266.5 thousand or 5.8% of total employment, the corresponding figures for 2015 is 300.4 thousand and 9.4%. However, in the period before the crisis, 43% of part-time workers could not find a full-time job, while in 2015 this percentage rose to 69.5%. Thus, part-time employment increased mainly because no full-time jobs were available, and because of the recent institutional changes, which facilitated its use. It should be noted that internationally and in Greece, the part-timers have lower poverty and social exclusion risk compared to the unemployed, while even their loose relationship with the labour market prevents the complete depreciation of their skills and offers better future prospects.

Recent developments in employment vary along the sector of economic activity regarding their direction (increase-decrease), their intensity and their recovery rate. To substantiate this we look at the evolution of employment by sector of economic activity for the last quarter of 2008 (the beginning of the economic crisis), 2012 (the peak of the economic crisis) and the three most recent years available (2013, 2014 and 2015). Data in Table 3.1.3 show that from the beginning of the crisis only three sectors, with prominent that of the tourism industry (Accommodation and food service activities), have increased their employment, while eight sectors have had a negative change of less than the national average, partially retaining their employment. The largest losses are recorded in construction (245 thousand), where more than 60% of jobs were destroyed, in manufacturing (206 thousand or 40% decrease) and in trade (178 thousand or 21% decrease).

TABLE 3.1.2 Structure of employment

	2008d	2012d	2013d	2014d	2015d	2008d-12d[1]	2012d-13d[1]	2013d-14d[1]	2014d-15d[1]	2008d-15d[1]
Self-employed	390.6	246.9	224.7	231.7	263.2	-36.8	-9.0	3.1	13.6	-32.6
Employers	959.9	896.2	886.8	879.3	836.9	-6.6	-1.0	-0.8	-4.8	-12.8
Employees	2,980.1	2,274.8	2,203.9	2,255.1	2,393.8	-23.7	-3.1	2.3	6.2	-19.7
Helpers in family business	267.1	179.1	164.5	169.2	147.9	-32.9	-8.2	2.9	-12.6	-44.6
Total	4,597.9	3,597.0	3,479.9	3,535.3	3,641.7	-21.8	-3.3	1.6	3.0	-20.8
Type of employment										
Full-time	4,331.3	3,285.7	3,179.5	3,185.3	3,299.3	-24.1	-3.2	0.2	3.6	-23.8
Part-time[2]	266.5	311.4	300.4	349.9	342.4	16.8	-3.5	16.5	-2.1	28.5
	5.8%	8.7%	8.6%	9.9%	9.4%					
Could not find a full-time job[3]	114.7	198.7	195.1	241.9	238.1	73.3	-1.8	24.0	-1.6	107.6
	43%	63.8%	64.9%	69.1%	69.5%					

Source: Labour Force Surveys, ELSTAT, KEPE calculations.

1. Annual change.

2. Percentage of total employment.

3. Percentage of total part-time employees.

TABLE 3.1.3 Employment distribution per sector of economic activity

	2008d (1)	2012d (2)	2013d (3)	2014d (4)	2015d (5)	(6): (2)-(1)	(7): (3)-(2)[1]	(8): (4)-(3)[1]	(9): (5)-(4)[1]	(10): (5)-(1)[1]	(11) %: (5)-(1)[2]
Agriculture. forestry and fishing	11.1	13.2	13.8	13.6	12.4	-37.3	**3.7**	**1.5**	-27.6	-59.7	**-11.6**
Mining and quarrying	0.3	0.3	0.3	0.3	0.3	-4.6	-1.8	**3.0**	0.0	-3.4	-22.4
Manufacturing	11.7	9.4	9.2	9.0	9.2	-199.7	-21.2	-0.7	**15.7**	-205.9	-38.2
Electricity. gas. steam and air conditioning supply	0.7	0.7	0.8	0.7	0.8	-5.3	**2.6**	-3.2	**1.8**	-4.1	**-12.9**
Water supply; waste management	0.7	0.6	0.7	0.5	0.6	-8.5	**0.9**	-4.4	**4.1**	-7.9	-25.2
Construction	8.4	5.0	4.4	4.3	3.9	-206.6	-28.1	-1.5	-8.6	-244.8	-63.1
Wholesale and retail trade; repair of motor vehicles and motorcycles	18.4	17.9	17.7	17.7	18.3	-202.2	-26.7	**10.1**	**41.0**	-177.8	-21.0
Transporting and storage	4.7	4.8	5.0	4.8	4.7	-44.7	**2.5**	-6.3	**1.4**	-47.1	-21.7
Accommodation and food service activities	6.8	7.2	7.2	8.5	9.0	-53.5	-8.7	**49.6**	**26.2**	**13.6**	**4.3**
Information and communication	1.8	2.1	2.2	2.2	2.0	-4.5	-0.1	**2.6**	-4.1	-6.1	**-7.6**
Financial and insurance activities	2.5	2.8	3.0	2.4	2.5	-14.6	**3.5**	-20.8	**6.5**	-25.4	-21.9
Real estate activities	0.2	0.1	0.1	0.1	0.2	-3.6	-1.8	**1.9**	**1.3**	-2.2	-25.6
Professional. scientific and technical activities	5.4	6.0	5.6	5.8	5.8	-34.0	-20.0	**9.5**	**6.0**	-38.5	**-15.4**
Administrative and support service activities	1.6	1.7	1.9	2.4	2.4	-12.3	**3.9**	**20.3**	-0.5	**11.4**	**15.4**
Public administration and defence; compulsory social security	8.2	9.4	9.4	8.4	9.1	-40.0	-11.0	-31.4	**33.9**	-48.5	**-12.8**
Education	7.1	7.6	8.1	8.4	8.2	-51.4	**8.8**	**12.9**	**3.4**	-26.3	**-8.1**
Human health and social work activities	5.1	6.1	6.0	6.0	6.0	-12.5	-11.6	**2.2**	**5.7**	-16.2	**-6.9**
Arts. entertainment and recreation	1.3	1.1	1.3	1.4	1.3	-19.9	**6.3**	**2.6**	-0.5	-11.5	**-19.4**
Other services activities	2.0	2.1	1.8	2.1	2.0	-17.3	-12.8	**8.8**	**1.6**	-19.7	-20.9
Activities of households as employers	1.8	1.5	1.4	1.4	1.2	-28.4	-5.9	-0.3	-2.9	-37.5	-45.2
Activities of extraterritorial organisations and bodies	0.0	0.0	0.0	0.0	0.1	0.0	0.0	-0.5	**1.7**	**1.2**	**75.0**
Total	100	100	100	100	100	-1,000.9	-117.1	**55.4**	**106.4**	-956.2	-20.8

Source: Labour Force Surveys, ELSTAT, KEPE calculations.

1. Bold font indicates sectors where employment increased.

2. Bold font indicates sectors with employment growth rate greater than national average.

Examining the sub-period between 2008 and 2012, employment fell in all sectors with the most jobs losses in construction (207 thousand), trade (202 thousand) and manufacturing (200 thousand). These three sectors account for 60% of job destruction between 2008 and 2012. It should, however, be mentioned that in 2013 some sectors began to record an employment recovery. In particular, from the twenty-one sectors of economic activity, between 2012 and 2013, eight increased their employment, between 2013 and 2014 the corresponding figure was twelve, while between 2014 and 2015 fourteen sectors record a positive

growth rate. Thus, it seems that some sectors, since 2013, have developed a recovery momentum, which is necessary to assist. Therefore, it is important, as we will see later, to improve the overall economic climate and to restore normalcy and liquidity, while it would be beneficial to avoid out-of-the-blue additional expenses in the financial planning of businesses.

3.1.2. Unemployment

The prolonged economic crisis in the Greek economy has increased the overall unemployment rate, which began in early 2009 and continued until the second quarter of 2014, when it recorded a decrease of more than one percentage point. According to data from the Labour Force Survey (LFS), the total number of unemployed in the fourth quarter of 2015 amounted to 1,174.7 thousand, increased by 14.2 thousand in the previous quarter, but decreased by 105.4 thousand over the corresponding quarter of 2014. Figure 3.1.2 shows the average annual number of unemployed since 2007, the year with the highest GDP; in 2008 it was 390 thousand, in 2013 it reached its maximum value of 1.330 thousand and thereafter it declined to reach 1,200 thousand in 2015, a similar level to that of 2012. Women, even during the economic crisis continue to record a higher unemployment rate than the national average. The number of unemployed women in the fourth quarter of 2015 is 610.2 thousand (2008d: 243.7 thousand) and men 564.5 thousand (2008d: 158.5 thousand).

At the same time, the number of long-term unemployed (over 12 months of continuous unemployment) and the

new unemployed (unemployed with no previous work experience) has increased significantly. In particular, the long-term unemployed, from 178.1 thousand in the fourth quarter of 2008, are estimated at 872 thousand the corresponding quarter of 2015. This means that more than half of the unemployed or one-fifth of the labour force has been looking for work for at least 12 months. Also, the unemployed who have not worked at all are estimated at 137.4 thousand in 2008d and at 265 thousand in 2015d. The increase of the long-term unemployed follows a path almost parallel to that of total unemployment, showing that the phenomenon of unemployment has now received a more permanent character. The longer workers stay out of employment the greater the depreciation of their human capital (knowledge, skills, etc.), which is closely linked with the problem of poverty and social exclusion, since unemployment is the strongest determinant of poverty. However, even during the deep recession, the participation rate in the workforce has not declined, which over time is around 67%. This basically means that the unemployed do not seem to be discouraged and give up trying to find work. There is, however, a decrease in male participation in the workforce which is counterbalanced by a corresponding increase in women's participation.

With regard to the relationship between unemployment and age, like other European countries, an inverse relationship is observed. Table 3.1.4 records the unemployment rate for specific age groups. Although the unemployment rate has increased in all age groups, even before the onset of the economic crisis, the youngest age group seems to record highest unemployment. Notably, and rather disturbing, is the fact that the increase in unemployment between the fourth quarter of 2008 and the corresponding quarter of 2015 is mainly found in the most productive age groups. In particular, from 772.5 thousand new unemployed, 43% or 332.5 thousand are aged between 30-44 and 36% or 278.3 thousand belong to the 45-64 group, while there are no significant gender differences. It seems that this economic crisis affects young people, since they record the highest unemployment rates, but largely affects mature ages, since they are the main reservoir of the new unemployed. It seems that many workers, in their most productive and mature age, who lose their job due to the closure or restructuring of the enterprise in which they were working, are unable to find a new job and remain unemployed, while the limited new hires mainly involve relatively younger ages, perhaps due to their lower labour cost.

As we mentioned before, a high percentage of the unemployed are long-term unemployed and a significant part of the unemployed have not worked at all in

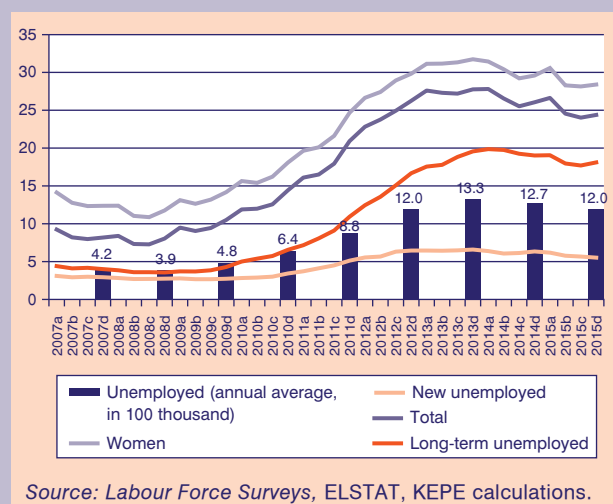### FIGURE 3.1.2
Intertemporal evolution of the unemployment rate

Source: Labour Force Surveys, ELSTAT, KEPE calculations.

TABLE 3.1.4 Age and unemployment

	Unemployment rate				Number of unemployed		Percentage constitution		Change in number of unemployed
	2008d	2013d	2014d	2015d	2008d	2015d	2008d	2015d	
15-19	29.1	71.4	53.0	61.5	15.0	15.8	3.7	1.3	0.8
20-24	21.8	54.4	51.3	47.6	70.0	115.6	17.4	9.8	45.6
25-29	12.9	44.5	41.1	37.4	87.0	195.5	21.6	16.6	108.5
30-44	7.2	26.5	24.7	23.2	156.4	488.9	38.9	41.6	332.5
45-64	4.3	19.5	19.3	19.0	73.2	351.5	18.2	29.9	278.3
65 +	0.7	9.7	10.9	10.0	0.6	7.3	0.1	0.6	6.7
Total	8.0	27.8	26.1	24.4	402.2	1,174.7	100.0	100.0	772.5

Source: Labour Force Surveys, ELSTAT, KEPE calculations.

the past. Table 3.1.5 shows that the proportion of the long-term unemployed even before the onset of the economic crisis was not insignificant, since more than 40% of the unemployed searched for work for more than twelve months, while in 2015 the corresponding figure stood at 74%. However, it is noteworthy that in 2008 two out of ten unemployed people sought employment for one to two months, while in 2015 this was only 7%. A similar picture emerges for the other categories of unemployment duration. Therefore, over the economic crisis the average unemployment duration has increased. The percentage of the unemployed who have not worked at all is quite high, although during this crisis it retreats. Thus, while in 2008 one in three unemployed had no previous work experience, in 2015 the corresponding ratio is one in five.

The fact that three out of four unemployed individuals look for work for more than one year and that 22.6% of the unemployed have never worked before can have multiple adverse consequences. To begin, it may lead to a gradual depreciation of the human capital of the unemployed, whose skills may have been acquired at high financial and personal cost. In addition, prolonged unemployment is associated with painful consequences on one's psychology (depression, anxiety, etc.). Long-term unemployment also has future consequences, as long gaps in insurance contributions of persons necessarily lead to lower pensions in the future. However, the most fundamental problem is the deprivation of income necessary for the survival of the unemployed and their family, and to cover their fixed needs. In Greece

unemployment benefits are provided under the condition of previous employment, so new unemployed are excluded.[1] Until recently unemployment benefits were given only to paid employees. Also, the long-term unemployment benefits, in addition to being very low (200 euros per month and not more than 12 months) had very strict (age) requirements excluding a large number of the unemployed. Finally, although contributions for unemployment insurance are a percentage of salary, the unemployment benefit is fixed for everybody.

TABLE 3.1.5 Unemployment duration

	2008d	2013d	2014d	2015d
Just started looking for a job	0.94	0.67	0.45	0.56
Less than 1 month	6.99	2.45	2.14	2.85
1 - 2 months	18.40	7.19	7.02	6.98
3 - 5 months	13.03	7.67	8.03	6.23
6 - 11 months	16.31	11.52	9.35	9.12
12 months and over	44.28	70.50	73.00	74.25
Total	100	100	100	100
Percentage (%) of new unemployed	34.2	23.7	24.3	22.6
Percentage (%) of long-term unemployed	44.3	70.5	73.0	74.3

Source: Labour Force Surveys, ELSTAT, KEPE calculations.

1. There is a benefit for newcomers in the labour market, which is funded by ESPA and involves young people aged 20-29, who are already unemployed for one year and will receive 73.37 euros per month for five months.

3.1.3. Wages and labour cost

In Greece, even after the outburst of the crisis, wages continued to rise, as in 2009 an increase of 3.9% was recorded. Since then, the country has recorded a significant decrease in average nominal wages. It is characteristic that between 2001 and 2008 the average nominal wages rose, on average, in Greece by 5.8% per year, when in the Eurozone the corresponding figure was less than half, at 2.7%. At the same time similar high wage growth is estimated in Ireland (5.8%) and in Spain (4.1%), while the other countries which entered into a fiscal consolidation program recorded increases higher than the average of the Eurozone (Cyprus: 3.8%, Portugal: 3.4%). In contrast, Germany had scant growth of nominal wages by only 1.1%.

TABLE 3.1.6 Average wages and unit labour cost: Annual changes

Year	Average nominal wages						
	Greece	Germany	Spain	Portugal	Ireland	Cyprus	Eurozone
2001	5.5	1.9	3.7	4.2	7.9	3.7	2.7
2002	10.6	1.3	3.5	3.6	5.4	4.8	2.7
2003	6.3	1.5	3.5	3.6	6.4	7.9	2.7
2004	4.2	0.2	3.3	2.8	5.2	2.2	2.3
2005	9.1	0.2	3.7	4.7	5.6	2	2.3
2006	2.7	1	3.9	1.8	4.4	3.2	2.5
2007	4.7	0.9	4.7	3.5	5.9	2.8	2.7
2008	3.3	2.1	6.8	2.6	5.2	3.4	3.5
2009	3.2	0.2	4.4	2.4	-1	2.6	1.9
2010	-2.6	2.6	1.1	2.1	-3.8	2.6	2.2
2011	-2.3	2.9	0.9	-1.8	1.2	2.5	2.2
2012	-2	2.5	-0.6	-3.1	0.8	-0.8	1.8
2013	-7.1	1.9	1.7	3.8	2	-6	1.7
2014	-1.6	2.5	-0.2	-1.4	3.8	-4.7	1.3
2015	0.1	3	0.3	0.5	3.2	-0.3	1.3
2016	1.7	2.7	0.4	1.1	2.8	1.1	1.5
2001-08	5.8	1.1	4.1	3.4	5.8	3.8	2.7
2009-16	-1.3	2.3	1.0	0.5	1.1	-0.4	1.7
	Unit labour cost						
2001	2.2	-0.1	3.2	4.0	5.6	2.2	1.9
2002	9.7	0.8	3.1	3.2	1.2	3.7	2.6
2003	1.2	1.2	3.3	3.6	5.2	8.7	2.4
2004	1.7	-0.6	2.9	0.2	4.0	1.8	0.9
2005	9.1	-0.5	3.5	3.4	4.9	1.7	1.6
2006	-1.1	-1.8	3.4	0.6	3.5	0.5	1.0
2007	2.4	-0.6	4.2	0.9	5.3	1.3	1.5
2008	5.1	2.4	5.8	2.8	7.4	1.8	3.8
2009	7.3	6.3	1.7	2.7	-2.6	4.2	4.5
2010	0.3	-1.2	-1.7	-1.3	-7.4	1.0	-0.6
2011	-0.2	0.6	-1.1	-2.0	-3.2	2.7	0.5
2012	-3.3	3.3	-2.9	-3.2	0.4	-2.6	1.8
2013	-7.0	2.4	-0.4	2.5	4.2	-5.9	1.4
2014	-1.6	1.8	-0.5	-0.9	0.8	-4.4	1.0
2015	0.1	1.8	0.3	-0.5	1.3	-0.1	0.8
2016	1.7	1.5	0.3	0.0	0.9	0.9	0.6
2001-08	3.8	0.1	3.7	2.4	4.6	2.7	2.0
2009-16	-0.3	2.1	-0.5	-0.3	-0.7	-0.5	1.2

Source: European Economy 2015, Statistical Annex, Tables 29 and 33.

In the period 2009-2016, the situation reversed and Greece recorded a significant decrease in average wages by -1.3% per year, which is by far the highest decrease among the examined countries, while average wages in the Eurozone increased by 1.7%. Similar are the conclusions if we examine labour costs per unit, as between 2001 and 2008 the average annual change was 3.8% for Greece and 2% for the Eurozone (Spain, 3.7%, Portugal 2.4%, Ireland, 4.6%, Cyprus: 2.7% and Germany 0.1%), while during the period 2009-2016 for Greece there is a weak reduction and the Eurozone records an increase of approximately 1.2%. Using real wages we reach comparable conclusions.

It is reasonable that wages affect production costs, which in turn is negatively correlated with the international competitiveness of a country. Therefore, the aforementioned developments in wages are probably linked to the development of Greece's international competitiveness, a small and open economy exposed to European and international competition. The successive wage reductions, in both the private and the public sector, have resulted in a decrease of imports and a fall in prices, as since March 2013 negative inflation is recorded, and have contributed to the recovery of lost competitiveness. The unacceptably high and persistent unemployment, the highest in the Eurozone, and the immediate need to decrease it, suggests that initially one needs to find/create jobs at the current wage levels and then consider wage increases. Indeed, certain export-oriented industrial branches, which increased their employment during the crisis, have also recorded increases in their average wages.

3.1.4. Employment prospects

The very sharp decline in employment and the consequent surge in unemployment make forecasts for the labour market, even in the short term, quite risky. Although it seems that unemployment, in absolute terms, steps down and employment is recovering, economic theory predicts and international experience has shown that the restoration of the effects of the recession, especially in economies experiencing chronic structural problems, is time consuming and a multidimensional process. In particular, developments in the labour market are strongly affected by: the economic activity (GDP development), the steady economic climate in general (expectations of businesses, consumers, households and workers, which have deteriorated, albeit temporarily with the imposition of capital controls in June 2015) and also by the institutions that relate to the functioning of the economy and the labour market.

The strong correlation observed between the Gross Domestic Product (GDP) and the evolution of employment is characteristic. As shown in Figure 3.1.3 in expansion periods, as measured by GDP growth, employment increased. Conversely, in times of recession employment shrinks, with a slight lag. This results in the correlation coefficient between these two variables being 0.86 and statistically significant. In that regard, the very large decline in GDP that occurred in the previous years resulted in a dramatic drop in employment. On the other hand the positive development of GDP that began in 2014 and the first half of 2015 is related to the recent positive employment growth. If this rule continues to apply, and taking into account the time lag that exists between the two, probably GDP should grow significantly, obviously through investments, and for an extended period before we see substantial employment increases.

Labour market performance depends not only on economic factors but also on the institutions that govern it. For example, the dramatic decrease in employment between 2008 and 2015 by about one million is largely due to the slowdown of hiring in the public sector. The State, in 2010, did not renew ongoing fixed-term contracts (the so-called stage) and committed to limit recruitment by the application of the rule of one recruitment for every five retirements. Therefore, it is doubtful that employment will be restored by the State, as this would mean substantial extra taxation. Also, in recent years significant structural changes took place in the labour market, with a main objective to make it competitive and more flexible. Possibly, part of the recently observed improvement is associated with these institutional changes. In this context, until the Greek labour market balances at a higher level of employment, it is appropriate to avoid any changes which would dis-

FIGURE 3.1.3
Quarterly changes of Gross Domestic Product and employment 2002-2015
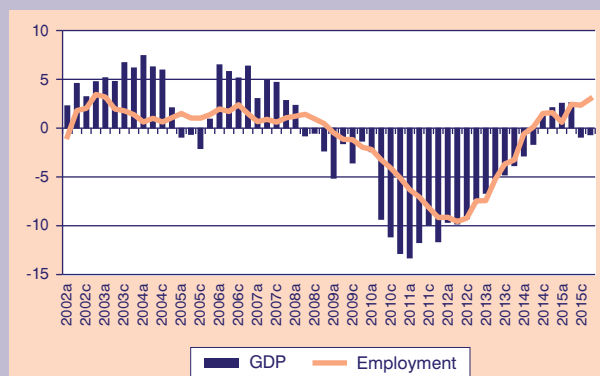
Source: National Accounts, ELSTAT, KEPE calculations.

turb the increase of employment and the decline of unemployment. Also, active labour market policies and training that have already been designed and launched for the forthcoming period and approximately 150 thousand new jobs are expected to positively influence prospects in the labour market.

Moreover, the activity of the State authorities responsible for controlling compliance with the existing labour and insurance legislation, is expected to improve the working conditions in specific sectors, eliminate uninsured work, increase revenues of social security funds and prevent unequal competition between businesses. Finally, the recent liberalization of certain regulated professions seem to have already brought a positive impact on employment in these professions, as it restrained their employment reduction during the period of crisis. Moreover, many of the professions that were deregulated are input to other activities and, therefore, positive effects in the rest of the economy are expected.

3.2. Developments in the refugee and migrant crisis

Jennifer Cavounidis-Springer

3.2.1. Introduction

The massive flows of refugees and migrants to Europe since the spring of 2015 have created unprecedented challenges for countries of reception and transit while Greece has shouldered, more than any other country of the European Union (EE), the burden of the crisis. Arrivals of refugees and migrants in Greece have decreased greatly since April 2016, subsequent to the EU-Turkey agreement concerning the restriction of flows from Turkey's shores to the Greek islands. Nonetheless, the flows have not been completely halted while thousands of refugees and migrants have been trapped in Greece after the unilateral closing of the borders of various countries along the "Balkan route" that leads from Greece to countries of northern Europe. As a result, Greece continues to face great challenges with respect to management of the refugee crisis and of the population of refugees and migrants currently in its territory.

At the same time, many of the parameters of the project that Greece must undertake remain unknown. Specifically, the effective implementation of the EU-Turkey agreement in the near future is in doubt, as is the effective implementation of the program recently approved for the relocation of refugees from Greece and Italy to other countries of Europe. Likewise, it is unclear what shape the new EU common asylum policy will take after the reform of the Dublin regulation, which is to be replaced by a new division of responsibilities among member-states with respect to asylum-seekers arriving in EU countries.

In this article, first the focus will fall briefly on recent developments concerning flows of refugees and migrants to Greece and the size of the relevant population in Greek territory. Next, the agreements recently concluded by the EU in its attempt to manage the refugee crisis will be examined, as well as the progress in their implementation. Developments with respect to the Schengen Treaty and its temporary suspension will then be discussed, while the policy dialogue currently underway in the EU concerning the refugee crisis and the new policy framework will be commented upon. A conclusion follows.

3.2.2. Evolution of refugee and migrant flows to Greece and accumulated population

In 2015, important changes were noted with respect to the routes refugees and migrants took to reach Europe (Frontex 2015). Specifically, the Eastern Mediterranean route, from Turkey to Greece, became the main gateway into Europe, with the Central Mediterranean route, from countries of Northern Africa to Italy and Malta, dwindling in significance. This shift in routes was due not only to the increased importance of Syria as a country of origin but also to political instability in Libya, which had been the principal point of embarkment for the Central Mediterranean route. In addition, human smuggling had become an important business activity in Turkey, while the relaxation of visa requirements for those entering Turkey from various countries facilitated arrival in Turkey by those seeking passage to EU countries.

According to data of the United Nations High Commission on Refugees (UNHCR), 857,000 refugees and irregular migrants arrived in Greece in 2015, or twenty times the number that arrived in 2014. Approximately 56% of those arriving in 2015 were from Syria, 24% from Afghanistan, and 10% from Iraq. In the first months of 2016, flows remained at high levels compared to the same months of 2015. However, they exhibited a large decline from April 2016, subsequent to the EU-Turkey agreement concluded the previous month. Indicatively, 124,000 refugees and migrants had arrived in January and February of 2016, compared to "only" 31,800 the following two months. On average, 115 individuals arrived per day in April 2016, and about 77 daily in the first days of May (until May 5). The island of Chios emerged as the primary destination, instead of Lesvos as previously. In the first part of 2016, the share of Syrians in the flows diminished, falling to 49%, while the share of Afghanis and Iraqis increased. In the same period, an increase in the share of women and children in the flows was also observed.

As far as the size of the population of refugees and migrants on Greek territory is concerned, it began to increase steeply in the fall of 2015, as various countries along the "Balkan route" adopted new border control practices, causing a chain of reactions which resulted in the entrapment of thousands of refugees and migrants in Greece. According to the governmental body encharged with management of the refugee crisis, on May 10, 2016, there were 54,347 refugees and migrants on Greek territory. Of these, 29,291 were in northern Greece (and of these, 9,682 were in Idomeni), 14,435 were in Attica (2,880 on the Skaramanga pier and 2,135 in the port of Piraeus, 1,810 at Schisto, and 1,624 at Elaiona), while 8,359 were on islands of the Eastern Aegean (4,239 in

Lesvos, 2,254 in Chios and 1,068 in Samos), 1,924 in central Greece and 338 in southern Greece.

Considerable progress has been noted with respect to creation of the 50,000 places in temporary hospitality centers for refugees foreseen by the agreement forged at the EU-Western Balkans summit of October 25, 2015, of which 20,000 will be undertaken by the UNHCR. It should be noted that large numbers of refugees and migrants remain outside the official centers (with Idomeni and the Piraeus port forming primary examples), despite efforts by the authorities to direct them to such centres. It appears that many refugees and migrants maintain doubts as to the conditions that prevail in the centres, while many remain hopeful that they will manage to cross the borders soon, often believing the assurances of smugglers, who aim to make further profits from moving people. Indeed, at many official hospitality centres, basic needs are not always covered. For example, food is sometimes inadequate or unsuitable, while access to basic hygiene facilities, such as running water, can be problematic.

Furthermore, due to lack of infrastructure, rapid access to the asylum procedure continues to be difficult, despite important improvements that have recently been achieved by the Asylum Service. The numbers of prospective applicants are so great that the asylum offices and services are overwhelmed. At the beginning of May 2016, discussion was underway of a programme for "pre-registration" of all those present in Greek territory desiring to submit applications for asylum, which was to be completed in the space of 6-8 weeks. Pre-registration would afford scheduling of an appointment concerning the asylum application, the submission of which constitutes a prerequisite for participation in the relocation programme. The goal of the European Asylum Support Office (EASO), according to declarations by Z.P. Skebri at the end of April 2016 (*Kathimerini* 30.4.2016), was that by mid-May 2016, it would be feasible to examine and process about 200 asylum applications on a daily basis. It should be noted that EASO had requested that 472 asylum officers and 400 interpreters from various EU countries be sent to Greece for support of the asylum-processing effort, but by the end of April only about 200 individuals of both specialties had arrived in Greece.

3.2.3. The EU-Turkey Agreement and evaluation of its implementation

From the autumn of 2015, the EU had placed achievement of a deal with Turkey high on its agenda, recognizing the country's key role in achieving the EU goal of containment of flows to its external borders. In October 2015, the EU and Turkey agreed on an action plan to

this effect but only two months later, at an EU summit meeting in December, Turkey was heavily criticized for not delivering the expected results in reducing the flows.

In March 2016, an EU-Turkey agreement was ratified. Among its main points are: a) the return to Turkey of all irregular migrants arriving on the Greek islands after March 20, 2016, b) the resettlement from Turkey to the EU of one Syrian refugee for each Syrian refugee sent back to Turkey from the Greek islands, c) the prevention of the opening of new sea and land routes of irregular migration from Turkey to the EU, d) the acceleration of the process of lifting the visa requirement for Turkish citizens who travel to the EU, with the aim to abolish it completely by the end of June 2016, e) the acceleration of the disbursement of the 3 billion euro already allocated for the management and care of refugees in Turkey and commitment to allocate another 3 billion euro by the end of 2018, f) the re-energising of the accession process, and g) the collaboration for the improvement of humanitarian conditions in Syria, especially close to its border with Turkey, such that populations residing there can remain there with security. It should be noted that immediately after the conclusion of the agreement, concerns were expressed by various analysts (e.g. Collett 2016) and organizations (such as Amnesty International) regarding the legality of returns from the Greek islands to Turkey, given doubts that respect for the right to claim asylum by those arriving in Greece would not be guaranteed.

As already mentioned, in April 2016 a steep decline was indeed noted in the numbers arriving on Greek islands from Turkey, although arrivals were not entirely halted. The return of irregular migrants to Turkey commenced on April 4. By April 20, 325 irregular migrants who arrived in Greece after March 20 had been returned to Turkey. The first resettlements of Syrians directly from Turkey to the EU were carried out on April 4-5 and by April 20, 103 Syrians had been resettled as part of the plan 1:1.

On May 4, 2016, the European Commission submitted a proposal to the European Parliament and the EU Council concerning waiver of the visa requirement for Turkish citizens, which was the main goal of Turkey during negotiations of the EU-Turkey deal. It should be noted that with the proposed waiver, Turks can travel without visas to all EU countries except the United Kingdom and Ireland, while some of the countries participating in the Schengen Treaty will also form exceptions (Switzerland, Iceland, Lichtenstein, and Norway). The Commission's proposal was accompanied by a progress report regarding the EU-Turkey agreement, which ascertained the impressive progress made by Turkey with respect to the prerequisites that had been agreed upon. At the same time, it warned that further progress would need to be made if the visa require-

ment were to be lifted by the end of June 2016, as provided in the agreement.

Nonetheless, on May 10, 2016, Turkey's President R.T. Erdogan announced that he expected the visa requirement to be abolished by October, thereby reducing pressure to meet the criteria by the June deadline. Among the new points of contention and disagreement was the Turkish anti-terrorist law. The EU had requested an amendment to the law changing the definition of "terrorist" in order that the law no longer be used to incarcerate journalists, academics and others who criticized the government (*Kathimerini* 11.5.2016).

However, the following day, the EU-Turkey agreement was shaken once again when the President of the European Parliament, M. Schultz, decided to freeze lifting of the visa requirement because the prerequisites were not being honored. In the joint press conference of Schultz with Turkey's Minister of European Affairs, N. Bozkir, the minister stated that Turkey could not change its anti-terrorist legislation and that "the freedom of the press had not been included in the road map towards the lifting of the visa requirement" (*Kathimerini* 12.5.2016) while circles close to the Turkish President threatened that if the European Parliament made the wrong decision, the refugees in Turkey would be sent towards Europe.

3.2.4. The Relocation Agreement and evaluation of its implementation

In September 2015, President of the European Commission J.C. Juncker proposed a new package of measures to confront the refugee crisis, including an emergency mechanism to relocate 120,000 refugees. This proposal, providing for the obligatory redistribution of 120,000 refugees among the member-states, met fierce objections at the EU meeting of Ministers of Homeland Affairs on September 14 and an agreement was not achieved. Countries of Central Europe were those that presented the stiffest resistance and specifically the Czech Republic, Hungary, and Slovakia. After the failure of the summit, various Commission officials let it be known that member-states that refused to participate in the relocation programme were bound to experience cuts in the subsidies they received from the EU (Cavounidis 2015).

Soon after, on September 17, the European Parliament voted in favor of the proposal for the relocation of 120,000 refugees, paving the way for its approval by the new summit of Ministers of Home Affairs which had been scheduled for September 22. At this summit and at the informal summit of EU heads of governments on September 23, agreement was reached on relocation.

Nevertheless, the way in which the agreement was ratified at the summit of Ministers of Homeland Affairs on September 22 was exceptionally divisive, given that instead of the usual unanimity, four countries voted against the imposition of quotas for the distribution of the 120,000 refugees among member-states. Specifically, negative votes were cast by the Czech Republic, Slovakia, Hungary, and Romania. Likewise, the rifts among member-states with respect to the refugee crisis were also very evident at the summit meeting of heads of state on September 23, leading observers to comment that rarely had Europe been so divided (*The Guardian* 24.9.2015).

The intense reactions triggered by the relocation programme could perhaps be considered "prophetic" with respect to the results the programme was to subsequently bring. By April 2016, the results were meager, with very few relocations having been carried out compared to the goals of the programme.

More particularly, by April 11, 2016, only 615 refugees had been relocated to EU countries from Greece, of whom 242 went to France, 111 to Finland, 89 to Portugal and 48 to the Netherlands. From Italy, 530 refugees had been relocated. The total number of individuals relocated from Greece and Italy was 1,145, while the goal had been to relocate 6,000 from these two countries by the specific date.

On the basis of these disappointing results, the EU Commissioner responsible for migrant affairs, D. Avramopoulos, made public statements criticizing the member-states and emphasizing that they must immediately fulfill their political and legal commitments. According to a press report of May 5, 2016 (*The Economist Espresso* 5.5.2016), the EU, recognizing the failure of the relocation programme, had just completed a plan to impose a fine of 250,000 euro on member-states for each refugee that they refused to accept despite their agreed quota.

3.2.5. Developments with respect to the Schengen Treaty and border controls

At the EU summit in December 2015, the future of the Schengen Treaty was discussed, after the open borders it provides for had been compromised from the autumn of 2015 due to unilateral border closings by the authorities of various member-states, in their attempt to prevent the entrance and transit of refugees and migrants. The leaders of the 28 member-states agreed that, in order to preserve the treaty's accomplishments, control of the external borders must be regained.

As is well known, in recent years all the governments of Greece, along with those of other countries of

Southern Europe such as Italy, have exerted pressure on the EU to make a much greater contribution to the protection of their borders, which are also EU borders and therefore subject to intense migration pressure. Recent EU decisions recognize this reality and foresee greater community solidarity in border protection, for example, with border patrols by FRONTEX and NATO.

Nonetheless, Greece continues to bear the brunt of criticism for inadequate control of its borders. On April 19, 2016, the European Commission released its evaluation of the action plan submitted by the Greek authorities to address the deficiencies that were observed with respect to the management of external borders. According to the evaluation, Greece had made important progress but needed to further improve its action plan and its implementation in order to confront the gaps in control. This evaluation constituted one of the concrete steps of the procedure that had been specified by the Commission in its roadmap towards the restoration of the Schengen area and the end of temporary controls that had been introduced, with the goal of achieving normal functioning of the Schengen area by the end of 2016.

On May 10, 2016, an official of the European Commission announced that Greece had made further progress with respect to control of its external borders, but that additional improvements were necessary, including the speedier use of EU funds that had been earmarked for the better management of refugee and migrant flows towards Greece. In the case that it is ascertained in the near future that Greece has not fulfilled the requirements set out for the control of its borders, the Commission may decide to continue border controls in the Schengen area for two additional years.

3.2.6. Development of a new institutional framework

The European Council that met in Tampere in 1999 specified four areas through which a common EU policy for asylum and migration was to be developed. Specifically, these were: a) cooperation with sending countries, b) European Asylum Support Office, c) fair treatment of third-country nationals, and d) management of migration flows. Nevertheless, progress in these areas remains limited (Kegels 2016). To date, the EU only partially regulates asylum procedures in its member-states. There is substantial variation among states, for example with respect to which countries of origin are considered safe, which type of assistance is provided to asylum seekers, and the speed with which access to the labour market is granted.

The main dimension of common policy pertains to the European Asylum Support Office and especially the Dublin regulation (from which Denmark, Ireland, and the United Kingdom acquired the right to abstain). According to this system, in order to avoid the submission of multiple applications in various countries, asylum seekers are required to submit their application in the first country of entry in the EU. The fingerprints taken by the authorities in the first country of entry are considered proof as to the entry point, and those subsequently proceeding to other EU countries are to be returned to their first country of entry.

For many years, Greece and other countries on the external borders of the EU had repeatedly reported to EU officials the serious problems they faced due to the existing common asylum policy and the Dublin regulation. They continuously requested the shaping of a new institutional framework with a fairer sharing of the burden resulting from the pressure exerted by refugee and migrant flows on the EU's external borders.

The common asylum policy and the Dublin regulation were overthrown in practice under the weight of the massive flows of refugees and migrants to the EU witnessed in the second quarter of 2015. In the meantime, however, valuable time and a precious opportunity to undertake reform of the asylum system under "normal circumstances" had been lost. With the unprecedented crisis that was underway and the rise of anti-migrant political forces in many countries of the EU, rigid divisions had developed among member-states with respect to the means to be used to confront the crisis, rendering attempts at reform of the institutional framework even more difficult.

On April 6, 2016, the European Commission published a text (COM[2016] 197 final) concerning the reform of the common asylum policy which recognized that the existing policy had serious weaknesses that had become starkly evident once the refugee crisis began to unfold. Specifically, the announced goal was to move from a system which, due to faulty design or implementation, placed an unfair burden on certain member-states and encouraged irregular migration flows to a fairer system which would provide legal and safe channels to the EU for individuals deserving international protection or who could contribute to the economic development of the EU. In the text, the problems resulting from the Dublin regulation are also recognized, such as proof of the responsibility of a specific country for the asylum claim.

In the same text, five priorities are designated for the improvement of the existing institutional framework. These are:

1) adoption of a sustainable and fair system for determining the member-state responsible for specific asylum applicants,

2) strengthening of the Eurodac system,

3) achievement of greater convergence among member-states with respect to the asylum procedure,

4) the prevention of secondary movements within the EU («asylum shopping"), and

5) the securing of a new mandate for the EU's asylum agency so that it can play a new policy-implementing role and a strengthened operational role, thereby facilitating the proper functioning of the Common European Asylum System.

Furthermore, on May 4, 2016, the Commission submitted a proposal to the European Parliament and the European Council concerning criteria and mechanisms for the determination of the member-state that has the responsibility for examining a specific asylum claim. This was a first package of proposals for the reform of the asylum system.

3.2.7. Conclusions

The landscape in which Greece has been called upon to design and implement policies for the management of refugee and migrant flows and for the care of those presently on Greek territory is characterized by great uncertainty. Many crucial parameters of the situation that Greece must confront remain unknown, such as the extent to which the agreement with Turkey for the constraint of flows to Greece will bring results, the extent to which the agreement for relocation of refugees within Europe will be implemented, which provisions of the previously agreed Common Asylum System will remain in place, as well as the shape it will take in the future after present discussions on its reform are concluded.

The radical reform of the current, problematic European asylum policy is particularly urgent given the assessments of many observers that the present refugee crisis, which has been evolving since the spring of 2015, is probably not a unique, rare event, but perhaps the first event in a new phase of global reality in which such phenomena will be observed on a regular basis. As has been characteristically noted (Papademetriou 2016), the present situation is in all likelihood not a "black swan" but rather the "new normal". The current situation in many countries of the world, such as Egypt, Libya and Nigeria, could lead to similar, massive refugee flows, just as today's flow from Syria.

In the meantime, Greece should promote, within the framework of the EU but also beyond, the creation of effective partnerships with countries in the developing world that will contribute to alleviating of the factors that push people to leave their countries of origin. Particularly urgent are the overcoming of ethnic divisions and civil conflicts raging today, and ensuring economic development and social welfare.

With respect to the refugee and migrant crisis currently underway, Greece should exert pressure for the effective implementation of the two recent agreements concluded by the EU. To date, the agreement for the relocation of refugees has presented negligible results compared to its targets, while the agreement of the EU with Turkey is in danger of derailment, which would undoubtedly result in a steep increase in the refugee flows toward Greece.

At the same time, Greece must push for the creation of suitable conditions for the refugee populations now resident in countries such as Turkey, Lebanon and Jordan, in order that they can continue their lives there with dignity and have less incentive to move onwards. Among other necessary measures, they should be afforded access to the labour market, and for children, access to education.

As for the population of refugees and irregular migrants already in Greek territory, it is crucial that they be provided quick access to the asylum procedure. Furthermore, the authorities must intensify their efforts to improve their living conditions and also to design policies for their integration into the labor market, and for children, integration into the educational system from the new school year that starts in September 2016. The preservation and strengthening of social cohesion in the local communities where they reside is also of utmost importance.

The challenges placed on Greece by the current refugee and migrant crisis are immense. The stakes of successfully meeting these challenges are of similar magnitude.

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4.1. Recent developments in fuel prices

Vassilis Lychnaras

4.1.1. Introduction

The Greek energy sector is characterized by specific features that increase the role of petroleum products. As known, our country is characterized by high energy dependence, which, according to the latest figures of Eurostat, was 62.1% in 2013. Nevertheless, it is significantly reduced compared to previous years, as, for example, in 2008 when it reached a maximum of 73.3%. In this context, the petroleum products have a significant share in the gross domestic consumption of the country, and more specifically, in 2013 their share reached 46.6%. This share is decreased in recent years, since before 2010 the share was higher than 50%. As a result, Greece is characterized by high import dependence on petroleum products, which reached 94.2% in 2013.

Greece has four refineries in operation with significant refining capacity. However, the country is mainly dependent on imports of crude oil and it acts as a price recipient of the international oil market. Consequently, changes in international oil prices have a direct impact on the prices of the domestic market. On the other hand, another important factor that determines the final fuel prices in our country is taxation, and mainly the excise duty. The downtrend of international crude oil prices over the last two years caused a significant decrease in selling prices and had positive effects for the consumers and the market of liquid fuels. At the same time, because of the fixed taxes, the share of total taxation in the final prices increased. As a result, the positive effect of the decreased international prices for the consumer is reduced. The purpose of this work is to record the evolution of prices and the impact of taxation on the final prices of basic liquid fuel of the domestic market, and more specifically, unleaded petrol, automotive diesel and heating oil.

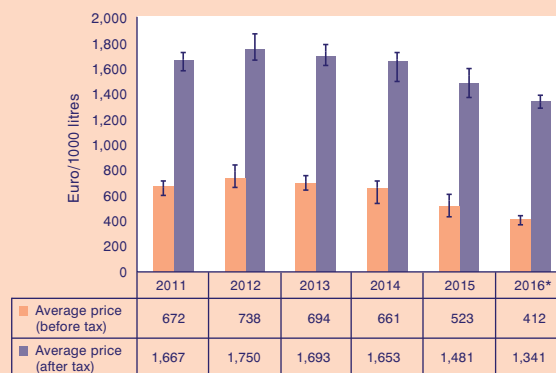### 4.1.2. The evolution of liquid transport fuels prices

This section records the evolution of the prices of liquid fuels for the period 2011-2015, as well as for the

first quarter of 2016, where the data was available. The analysis presents the annual average prices, before and after taxes, in euro per kilolitre (€/1000 litres), as well as the price variance during the year. Figures 4.1.1 (a) and (b) present the average prices and their variance for unleaded petrol and diesel, respectively.
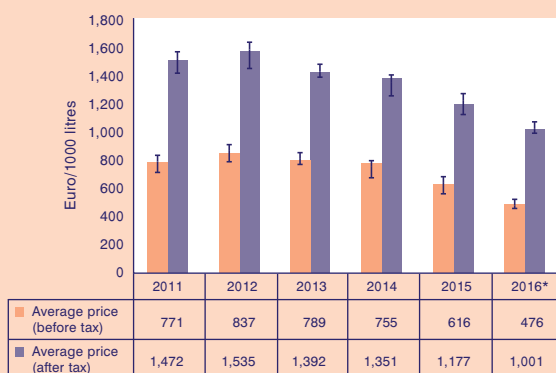
From the first figure we notice the difference between the prices before and after tax. Additionally, there is a continuous downtrend in the price of unleaded petrol, both before tax and after taxes, from 2012 onwards, mainly due to the decline in international prices. How-

FIGURE 4.1.1
Development of transport fuel prices, 2011-2016 (in euro/1000 litres)

(a): Average annual prices and variance of unleaded petrol

	2011	2012	2013	2014	2015	2016*
Average price (before tax)	672	738	694	661	523	412
Average price (after tax)	1,667	1,750	1,693	1,653	1,481	1,341

(b): Average annual prices and variance of automotive diesel

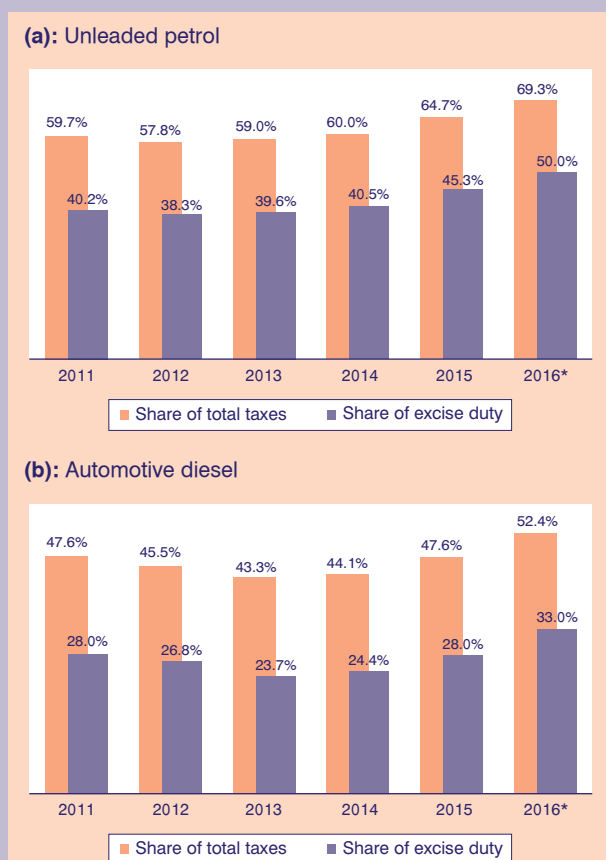|	2011	2012	2013	2014	2015	2016*
Average price (before tax)	771	837	789	755	616	476
Average price (after tax)	1,472	1,535	1,392	1,351	1,177	1,001

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

* Data for 2016 cover the period from January to April.

ever, the level of the fixed taxes had a negative result on the final prices that decreased slower than the pre-tax prices. Regarding automotive diesel, presented at the second figure, the difference between prices before and after taxes is smaller. The evolution of the prices is similar to unleaded petrol, but the decrease rate of final prices after 2012 is higher, due to the lower levels of fixed taxes. Another important finding is that, because of the difference in taxation between the two types of fuels, and despite the fact that the price of unleaded petrol before tax is lower than that of automotive diesel, the final prices act exactly opposite. Finally, we note that the relatively high price variance, especially for the years 2014-2015, is due to the downtrend of prices. On the contrary, the prices for the first quarter of 2016 are stable.

More specifically, regarding taxation, Figures 4.1.2 (a) and (b) show the share of total taxes, as well as the share of excise duty, in the final prices of fuel. For un-
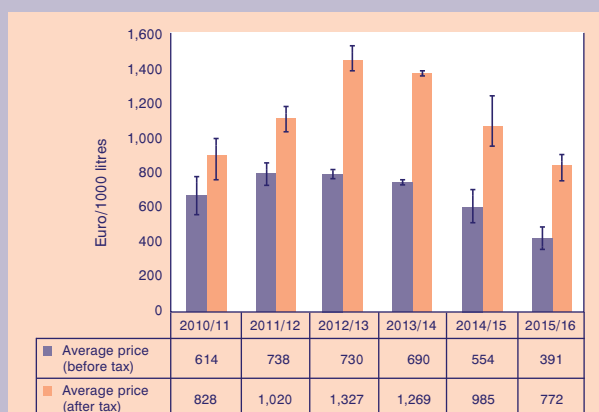
leaded petrol, we see that there is a constant increase of the tax share from 2012 onwards. It is important to notice that for the first quarter of 2016, the total taxes reached 70% of the final price, while the excise duty accounted for 50% of the price. In contrast, the share of taxation in diesel is considerably lower, despite the continuous increase since 2013.

4.1.3. The evolution of heating oil prices

The data for heating oil prices cover the winter period from October to April, when heating oil is available in the market. This also ensures that the excise duty remained stable during each period. Figure 4.1.3 presents the evolution of average prices for the above periods from 2010/11 to 2015/16.

In terms of prices before taxes, there is a continuous increase until 2011/12. The same happens for the final prices but the rate of the increase is much higher. Especially for 2012/13, where there was also a sharp increase in the excise duty (from 60€/1000 litres to 330€/1000 litres). However, since 2014/15, there is a substantial decrease in the price before taxes because of the fall of international crude oil prices, while, there was also a simultaneous reduction of the excise duty (at 230€/1000 litres) that led to an even greater decrease of the final prices. It is also interesting to see the variance of prices in each period. We notice that for some periods, e.g. for 2014/15, the prices fluctuate considerably, mainly due to the continuous fall in the international prices of crude oil. On the other hand, for 2013/14 the prices were much more stable.

FIGURE 4.1.2
The share of taxes at the selling price of transport fuels, 2011-2016

(a): Unleaded petrol

(b): Automotive diesel

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

* Data for 2016 cover the period from January to April.

FIGURE 4.1.3
Development of heating oil prices, 2011-2016 (in euro/1000 litres)

	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16
Average price (before tax)	614	738	730	690	554	391
Average price (after tax)	828	1,020	1,327	1,269	985	772

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

FIGURE 4.1.4

The share of taxes at the selling price of heating oil, 2011-2016
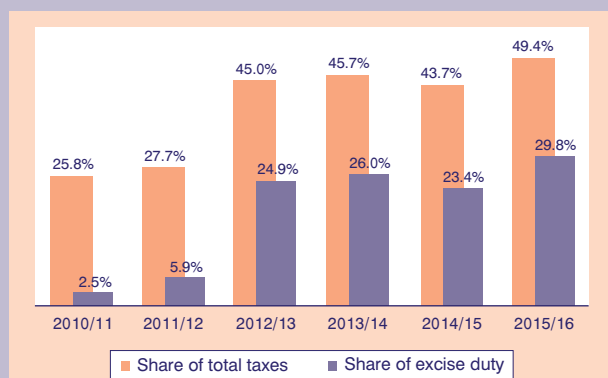
Source: Own processing of data from the European Commission, Energy, Market observatory & Statistics, *Oil bulletin* (http://ec.europa.eu/energy/observatory/oil/bulletin_en.htm).

At the same time, it is clear that there is an important difference between the pre-tax price and the final price. The difference increased for the periods 2012/13 and 2013/14, when the excise duty rate was at its highest level of 330€/1000 litres. It is also increased for the last two periods because of the decrease in the international prices. Figure 4.1.4 records the share of the taxes in the final price of the fuel. The data shows that for the first two periods, the excise duty is just a small percentage of the final price, while the main tax burden is due to VAT. On the contrary, for the latest periods, the increased excise duty accounts for a high percentage of the final price. During the last period, the total share of taxes has increased significantly, reaching the levels of 50%, while the excise duty accounts for about 30% of the final price.

4.1.4. Comparison between EU28 member-states

Another interesting issue is the status of Greece compared to the other EU countries. Figure 4.1.5 presents selected EU28 prices recorded for the last week of April and, in particular, for April 24, 2016. As shown, the level of the recent prices of unleaded petrol in Greece is among the highest between EU countries. The value recorded for Greece was 1,378€/1000 litres, while the average for the EU28 was 1,302€/1000 litres.

On the contrary, automotive diesel prices in Greece are a little lower than the European average. The price recorded at the end of April was 1,027€/1000 litres, while the corresponding EU average was 1,102€/1000 litres. In regard to heating oil, the price of our country (755€/1000 litres) is above the average of the EU28 member-states (572€/1000 litres), however, as illustrated in the figure, there are several countries with fairly higher prices than ours.

Respectively, we record the status of Greece among the other EU member-states regarding the share of total taxes and charges in the final price of fuels (Figure 4.1.6). As stated, Greece has one of the highest shares of taxes in the price of unleaded petrol. On the other hand, the recent prices record that our country has the lowest tax share in automotive diesel final price. However, we should bear in mind that these comments are based on current prices and do not illustrate the average status of the countries during long periods. Finally, in terms of heating oil, we see a great diversity in tax share among the European countries. Greece is placed among the countries with a medium to high share of taxation in the final price.

4.1.5. Brief conclusions

The record of the prices of liquid fuels in the framework of this work showed that the current favorable conjuncture of reduced international oil prices has positive effects for the customers due to the reduction of the local prices. However, as it turned out from the analysis of the data, in recent years, there is an increase of the share of taxes and charges in the formation of the final price. In particular, for unleaded petrol, the total taxes reach 70% of the final price, while the excise duty alone counts for 50%. On the contrary, with regard to automotive diesel and heating oil, the tax has a lower effect on final prices. As known, the government recently decided to increase the excise duty rates in order to achieve higher state revenues. However, one should be skeptical before deciding, as a thorough impact assessment analysis should precede. It is important to note that the continuous economic recession, along with the high share of taxes in the final price of certain fuel categories, as well as the possibility of a new rise in the international crude oil prices, may lead to a reduction in consumption. This might lead to unexpected results for the state revenues.

FIGURE 4.1.5
Fuel prices on 24/4/2016 for EU28 member-states

(a): Unleaded petrol
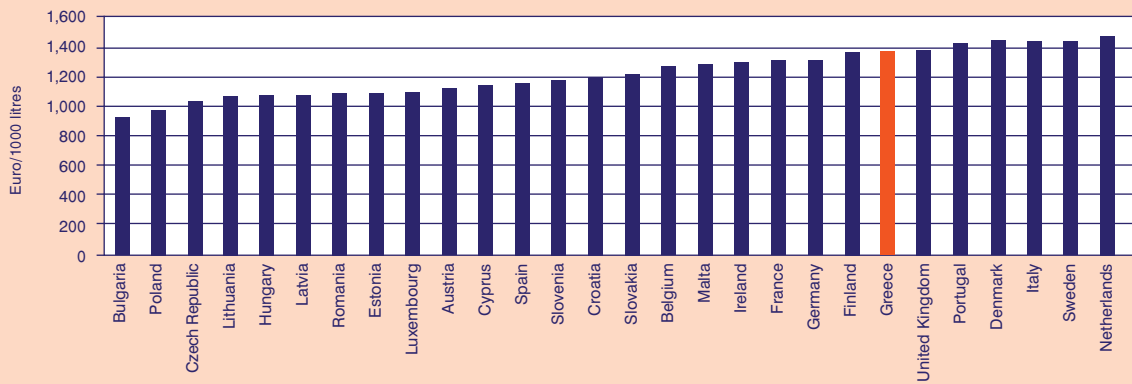
(b): Automotive diesel
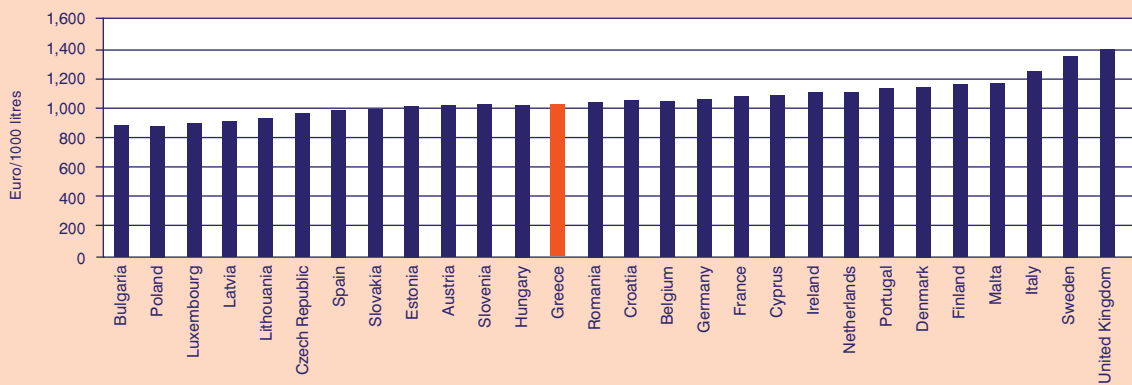
(c): Heating oil
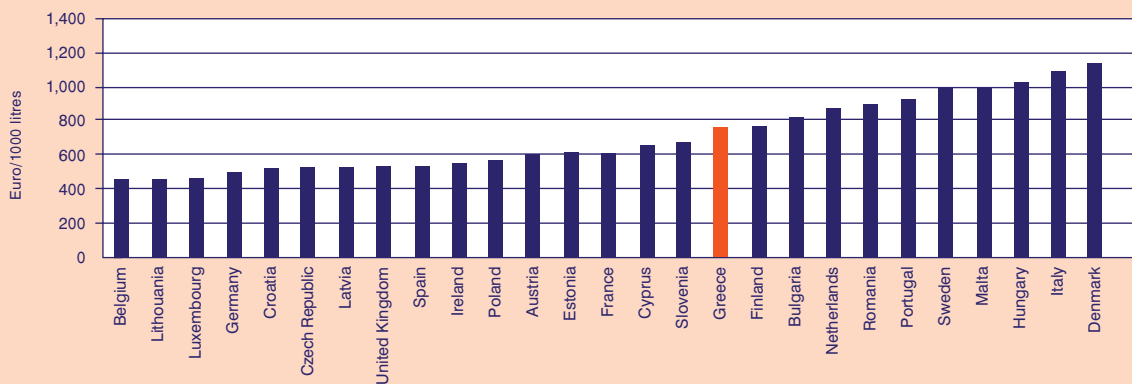
Source: The European Commission, Energy, Market observatory & Statistics, *Oil bulletin* (http://ec.europa.eu/energy/observatory/oil/bulletin_en.htm).

FIGURE 4.1.6
The share of taxes for fuel selling prices on 24/4/2016 for EU28 member-states

(a): Unleaded petrol

(b): Automotive diesel

(c): Heating oil

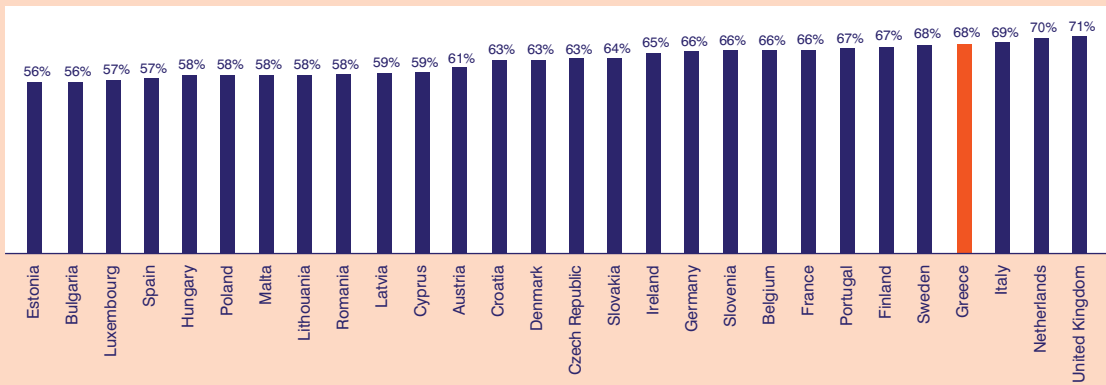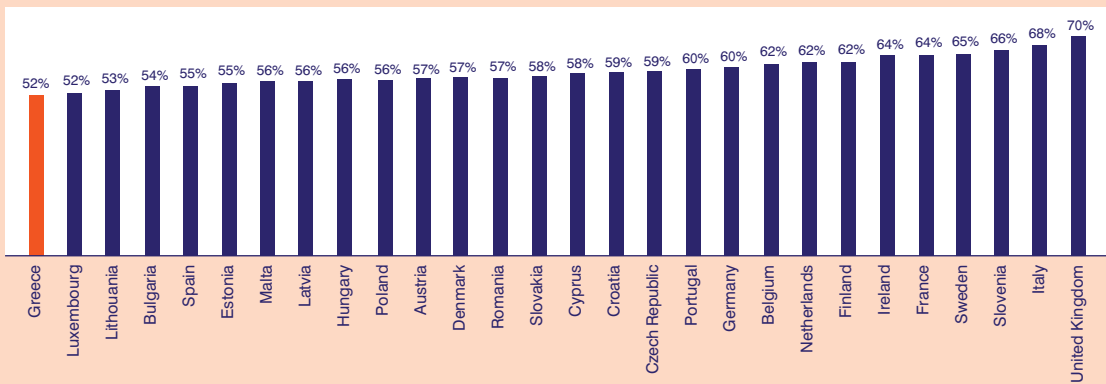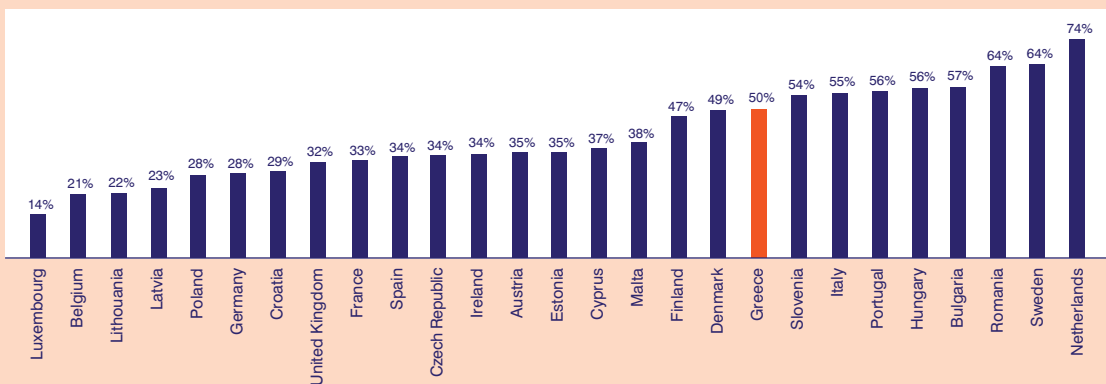*Source:* Own processing of data from the European Commission, Energy, Market observatory & Statistics, *Oil bulletin* (http://ec.europa.eu/energy/observatory/oil/bulletin_en.htm).

4.2. Developments in the Greek capital market

Fotini Economou

4.2.1. Introduction

The year 2015 was undoubtedly difficult for the Greek capital market, which was characterized by high volatility and uncertainty. The imposition of capital controls and the suspension of share trading in June 2015, following the bank holiday, affected market and investor confidence.

Even though capital controls on stock market transactions were lifted in December 2015 and the systemic banks' recapitalization was successfully completed, the stock market has not recovered yet, being affected by the general economic climate.

This article attempts an overview of recent developments (spanning the first four months of 2016) in the Greek capital market by looking into the main stock market indices and related data, the 10-year government bonds spreads and the institutional management sector.

4.2.2. Developments in the stock market

The Athens Stock Exchange (ASE) is a small market,[1] with high volatility and low trading volume. Understandably, the adverse economic conditions are reflected in the course of the main stock market indices and equity valuations.

Consequently, by the end of April 2016 the General Index of the ASE featured a -7.56% decrease compared to the beginning of 2016 and a -29.07% decrease compared to the end of April 2015 (see Figure 4.2.1). Most ASE indices exhibited a similar decline. For instance, the blue chip index (FTSE/ATHEX LARGE CAP) and the banking sector index (FTSE/ATHEX BANKS) exhibited a -11.92% decrease and a -22.79% decrease, respectively, vis à vis the beginning of the year. On the other hand, positive performance was recorded by the ATHEX Alternative Market Price Index (+2.77%) and specific sectoral indices (trading +4.16%, construction and materials +8.58%, personal and household goods +15.92%, health +39.25%, chemicals +5.43%, financial services +4.11%).

FIGURE 4.2.1
Major ASE indices for the period 3/1/2011-28/4/2016

Source: Thomson Reuters Datastream.
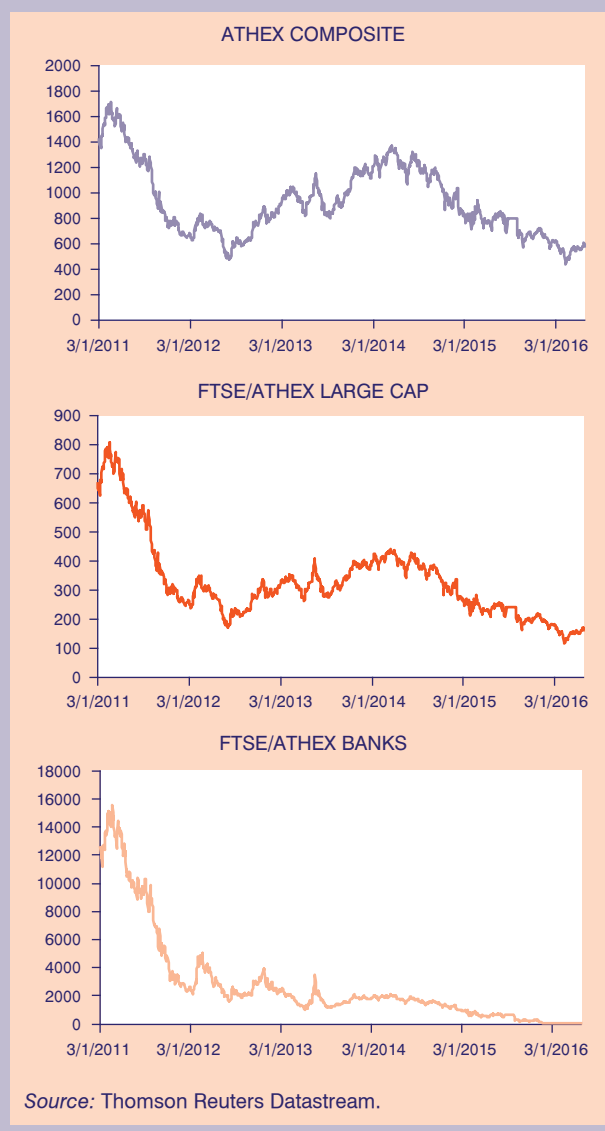
During the first four months of 2016,[2] the total market capitalization of the ASE decreased by -9.18% to €35.6 billion from €39.2 billion compared to December 2015 and by -13.9% compared to the end of April 2015.

It should also be mentioned that the participation of international investors in the ASE capitalization at the end of April accounted to 59.8%, if HFSF (Hellenic Financial Stability Fund) participation is included, while if HFSF participation is not included the percentage would reach 63.2%. At the end of April 2015, international investors' participation was 48.0% with HFSF participation, and 58.6% without HFSF participation.

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1. The market capitalization of the ASE in March 2016 was only 0.06% of global market capitalization (in dollar terms), according to the World Federation of Exchanges members.

2. See the AξIΑnumbers monthly publication, ASE, May 2016 (in Greek).
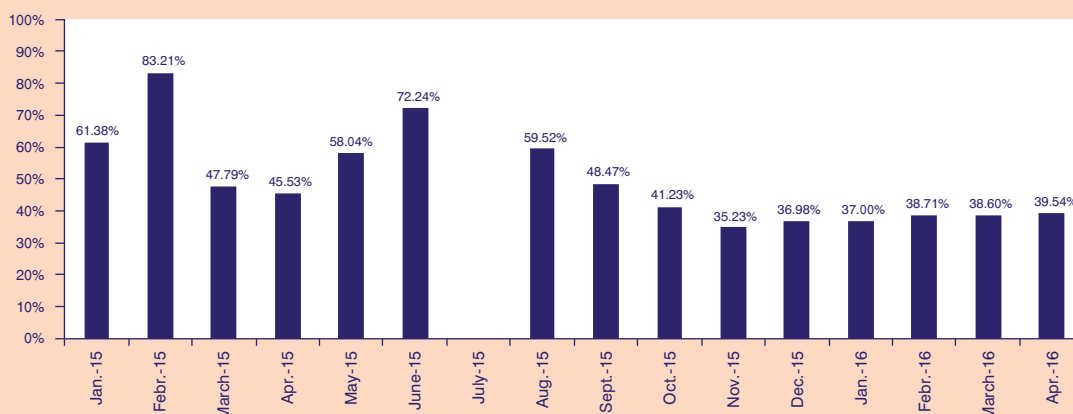
Source: Centre of Planning and Economic Research, May 2016.

Note: There is no data for the period 29/6/2015-31/7/2015 due to the suspension of trading of all derivatives on the ATHEX Derivatives Market following the bank holiday.

Likewise, the transactions value was also significantly reduced, by -70.45%, between December 2015 and April 2016 or -17.1% compared to April 2015, to €1,164.82 million.

The increased uncertainty of the participants in the derivatives market regarding the short-term expectations of the Greek stock market is reflected in the implied volatility index KEPE GRIV,[3] which is calculated based on the FTSE/ATHEX Large Cap options prices. Figure 4.2.2 reports the monthly prices of the index from early 2015 to the end of April 2016. The index increased slightly in April 2016, to 39.54%, and maintained levels higher than the historical average (36.12%), with significant variability in daily observations. The relationship between the KEPE GRIV index and the underlying stock market index is negative and asymmetric. This means that KEPE GRIV, the so-called "fear" index, rises when the market is declining and its sensitivity is higher in the downward rather than in the upward market returns and that a positive change in the stock market causes a smaller reduction of uncertainty compared to the induced increase of uncertainty that comes from an equal, in absolute terms, negative change in the stock market (see Economou and Siriopoulos, 2015).[4]

4.2.3. The 10-year Greek government bond spread

The spread of the 10-year Greek government bond over its German counterpart reflects by and large the country risk. Figure 4.2.3 presents the relevant data for five Euro area countries, including Greece. The Greek spread gradually decreased in April, reaching 866 basis points (bps) on 28/4/2016 from 1,145 bps on 11/2/2016. These levels are still higher compared to those of the other European countries under examination, with the corresponding spread on 28/4/2016 at 121 bps for Italy, 290 bps for Portugal, 70 bps for Ireland and 133 bps for Spain.

4.2.4. Institutional management

According to data supplied by the Hellenic Fund and Asset Management Association,[5] the total amount of funds under management in the institutional management sector also dropped by -3.76% in the first quarter of 2016 to €13.80 billion on 31/3/2016 from €14.34 billion on 31/12/2015. Of these funds, 49.1% belonged to Collective Investment Schemes (UCITs), 33.6% to the Asset Management sector, 17.1% to Real Estate

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3. The index was created by KEPE in collaboration with the University of Patras and Prof. C. Siriopoulos.

4. Economou, F. and Siriopoulos, C. (2015), "Implied volatility index KEPE GRIV: evolution and reaction to elections", *Greek Economy*, KEPE, 15: 29-35 (in Greek).

5. Hellenic Fund and Asset Management Association, Press release 18/4/2016 9525 (in Greek).

FIGURE 4.2.3

The 10-year Greek government bond spread of selected Euro area countries relative to the German bond (Jan. 2011 - Apr. 2016)

Source: Thomson Reuters Datastream.
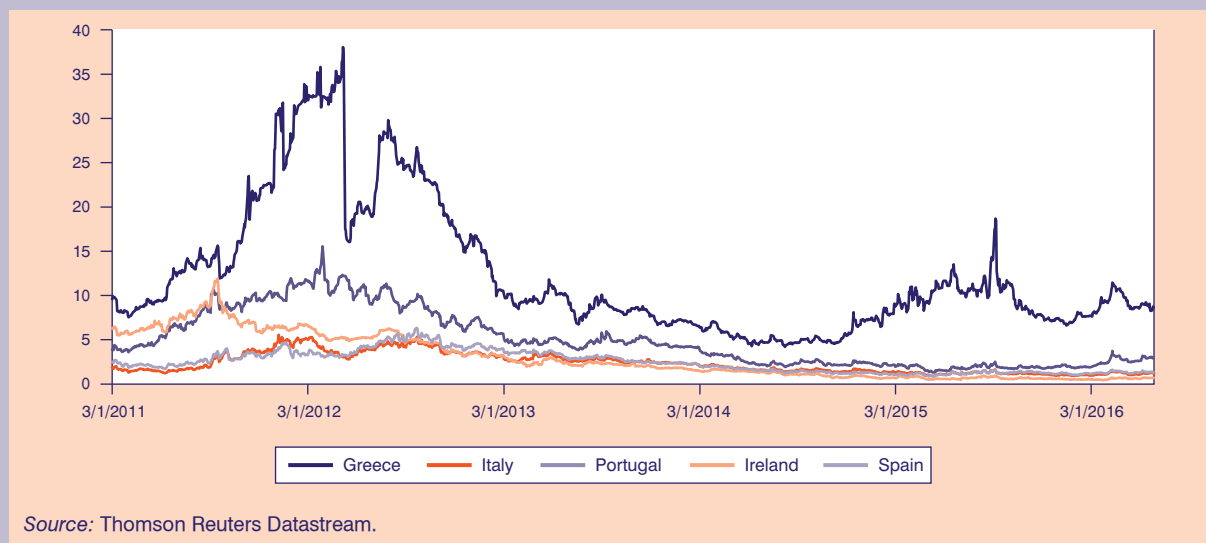
Investment Companies (REIC) and 0.1% to Portfolio Investment Companies.

UCITs assets have shrunk from €7,238 million to €6,776 million since the beginning of the year (-6.4%): 29% of these assets are money market UCITs, 21% bond, 15% balanced, 14% equity, 14% Funds of Funds and the remaining 7% are specialist UCITs. These funds are managed by 14 Mutual Fund Management Companies. It should also be noted that during the first three months of 2016 the outflows decreased from €612 million to €292 million compared with the previous quarter.

4.2.5. Conclusions

The first four months of 2016 witnessed negative returns for the majority of stock indices in the ASE, while the implied volatility index, KEPE GRIV, remained at higher-than-average levels. At the same time, the capitalization of the Greek market was reduced, mostly on account of the reduced capitalization of the banking industry. Although the Greek spread declined, it remains higher compared to other Eurozone countries under examination, which also experienced macroeconomic

imbalances in recent years. Likewise, the institutional management sector declined in terms of assets under management.

Investors uncertainty and high market volatility clearly make it difficult to attract capital from domestic and foreign investors, as well as raise funds from capital markets. Our review of recent developments in the Greek capital market highlights the need to raise investor confidence, especially given its significant positive expected effects on stock market depth and liquidity (see Ng *et al.*, 2016).[6]

The role of the Hellenic Capital Market Commission (HCMC) in all this is quite crucial. The HCMC's actions aim to promote new financial instruments and markets in order to enhance business financing and ensure a properly functioning capital market. In this context, the HCMC promotes the development of a competitive corporate bonds market as well as the development of a suitable institutional framework to develop crowdfunding, which will enable the participation of small domestic and foreign investors in order to raise capital by SMEs. Institutional changes aimed at the development of the market, paving the way for economic growth, can stimulate the market by facilitating access to financing for businesses.

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6. Ng, A., Ibrahim, M. H., & Mirakhor, A. (2016), "Does trust contribute to stock market development?" *Economic Modelling*, 52, 239-250.

4.3. External trade of agro-food products

Athanasios Chymis

4.3.1. Introduction

The year 2015 was positive regarding external trade in general and the trade of agro-food products[1] in particular, the deficit of which halved (-55%) and fell below €1 billion for the first time for decades.

Total imports (including mineral fuels-petroleum) decreased by 10.75% to €42.60 billion, down from €47.73 billion in 2014, mainly due to the substantial decrease of petroleum imports, which fell from €16.07 billion to €11.36 billion following the rapid fall of the world oil prices. Total exports (including mineral fuels-petroleum) decreased by 6.22% and reached €25.50 billion, down from €27.19 billion in 2014. Again, this fall was due to the decrease in the value of oil exports to €7.6 billion from €10.35 billion in 2014. A direct result of this development was a significant decrease in the total deficit by 16.8% to €17.10 billion, down from €20.55 billion in 2014. This level is almost 60% down from its peak of €43.36 billion in 2008.

Oil trade is a large part of Greek total trade (26.7% of total imports and 29.8% of total exports) and, consequently, it distorts the picture of the trade sector. This is why the statistical authorities always make a distinction between trade including and trade excluding mineral fuels. The rest of the article refers to external trade excluding mineral fuels.

4.3.2. Agro-food trade in comparison to total trade

Table 4.3.1 shows the evolution of agro-food trade in comparison to total trade (now excluding mineral fuel-petroleum) for the period 2008-2015. It is clear that total external trade as well as agro-food trade had a very positive performance in 2015. Specifically, total imports had a slight decrease, by 1.3% (€424 million in value), while total exports increased by 6.3% (€1,055 million in value). The positive outcome of these developments directly reflects the deficit decrease by the same amount (€424 + €1,055 = €1,479 million), that is, a 10% decrease. It is also very positive that the rate of total exports increase was well above the annual rate for the period 2008-2014 (1.4%).

TABLE 4.3.1 Total trade and agro-food products trade (in billion €)*

	2008	2010	2011	2012	2013	2014	2015	% annual change rate 2008-2014	% change 2014-2015
Imports									
Total	48.60	36.49	31.66	30.21	29.64	31.66	31.24	-6.9	-1.3
Agro-food	**7.05**	**6.30**	**6.46**	**6.34**	**6.54**	**6.49**	**6.31**	**-1.4**	**-2.7**
Agro %	*14.5*	*17.3*	*20.4*	*21.0*	*22.1*	*20.5*	*20.2*		
Exports									
Total	15.46	14.46	15.88	16.73	16.67	16.84	17.90	1.4	6.3
Agro-food	**4.01**	**4.41**	**4.50**	**5.24**	**5.42**	**5.18**	**5.72**	**4.3**	**10.5**
Agro %	*25.9*	*30.5*	*28.4*	*31.3*	*32.5*	*30.7*	*31.9*		
Deficit									
Total	33.14	22.04	15.77	13.48	12.98	14.82	13.34	-12.6	-10.0
Agro-food	**3.04**	**1.89**	**1.96**	**1.09**	**1.12**	**1.31**	**0.60**	**-13.1**	**-54.6**

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

* Excluding mineral fuels-petroleum.

1. The term "agro-food products" includes agricultural products and food stuffs and its definition is based on the classification followed by the Ministry of Rural Development and Food, which is aligned with the SITC (Standard International Trade Classification) of the OECD. According to this classification, agro-food products include the following codes: 0 (food and live animals), 1 (beverages and tobacco), 21 (hides, skins), 22 (oil seeds), 231 (natural rubber), 24 (cork and wood), 261-265 & 268 (natural textile fibers), 29 (other agricultural raw material), 4 (animal and vegetable oils), 59211/12 (wheat and corn starch).

Agro-food products trade had an even better perfor-mance. Agro-food imports declined by 2.7% (€175 million in value), a rate faster than the average annual rate for the period 2008-2014 (1.4%), while agro-food exports increased by 10.5% (€541 million in value) –again, a much higher rate than the average annual rate (4.3%). Consequently, the agro-food trade deficit shrank by an astonishing 54.6% (€716 million in val-ue), thus, pushing the deficit below €1 billion for the first time in decades! As this column has repeatedly ar-gued, the potential of the Greek agro-food sector (farm production and food industry) is such that it allows not only for an increase in farm production but also for a significant increase in value added at the processing and food industry level.

4.3.3. Geographical distribution of agro-food trade

Table 4.3.2 presents agro-food trade among the two basic geographic categories, the European Union countries (EU) and all other countries (non-EU). It is interesting that during the last year Greece decreased its agro-food imports from and increased its exports to

the EU. As the relevant percentages indicate, Greece has strong economic and trade bonds with the EU. However, it is good for external trade to be diversified as well as flexible so that in case of a crisis, such as the political turmoil and trade restrictions between the EU and Russia, producers and exporters always have alternatives and are not highly depended on specific countries.

The drastic decrease of the agro-food trade deficit is en-tirely due to trade with the EU member-states. The neg-ative change of imports (-5.1%) and the simultaneous significant positive change of exports (14.8%) —both numbers well above the average annual change rate for the period 2008-2014— resulted in the drastic decline (50.1%) of the deficit from trade with EU countries. On the contrary, trade with non-EU countries, that is, the rest of the world, resulted in a decline of the trade sur-plus by 26.3%. Specifically, imports from non-EU coun-tries increased by 6.3% while exports increased only by 1.3%. Nevertheless, the overall agro-food trade deficit, as already mentioned, considerably shrank to just €596 million, 80% below the level it was just before the crisis in 2008 (more than €3 billion).

TABLE 4.3.2 Geographical distribution of agro-food trade (in million €)

	2008	2010	2011	2012	2013	2014	2015	% annual change rate 2008-2014	% change 2014-2015
Imports									
Total	7,054	6,299	6,461	6,335	6,537	6,488	6,313	-1.4	-2.7
EU	5,295	4,947	4,983	4,903	5,082	5,102	4,841	-0.6	-5.1
Non-EU	1,758	1,352	1,478	1,432	1,455	1,385	1,472	-3.9	6.3
% EU	75.1	78.5	77.1	77.4	77.7	78.6	76.7		
% Non-EU	24.9	21.5	22.9	22.6	22.3	21.4	23.3		
Exports									
Total	4,011	4,406	4,504	5,241	5,415	5,176	5,717	4.3	10.5
EU	2,783	2,954	3,175	3,424	3,692	3,539	4,061	4.1	14.8
Non-EU	1,228	1,452	1,329	1,817	1,723	1,636	1,657	4.9	1.3
% EU	69.4	67.1	70.5	65.3	68.2	68.4	71.0		
% Non-EU	30.6	32.9	29.5	34.7	31.8	31.6	29.0		
Balance									
Total	-3,043	-1,893	-1,957	-1,094	-1,122	-1,312	-596	-13.1	-54.6
EU	-2,513	-1,993	-1,808	-1,479	-1,390	-1,563	-780	-7.6	-50.1
Non-EU	- 530	100	- 149	385	268	251	185	*	-26.3
% EU	82.6	100.0	92.4	100.0	100.0	100.0	100.0		
% Non-EU	17.4	0.0	7.6	0.0	0.0	0.0	0.0		

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

* Due to changes in the sign, calculation of the rate of change is not possible.

4.3.4. Structure of agro-food products trade

Tables 4.3.3 and 4.3.4 illustrate imports and exports of the most important agro-food categories. Meat products and Dairy compose the largest part of agro-food imports (29.6%). The significant decrease in dairy imports was mostly due to the fall of their prices rather than any change in the quantity imported. Considering the magnitude of Meat and Dairy imports (€1,869 million) relative to the agro-food trade deficit (€596 million), it becomes clear that developing the sector of livestock production could considerably reduce the deficit and transform it to a surplus.

The imported value of Fruits and Vegetables holds steadily in third place (11.6%), increasing its share and value from 2014. Tobacco imports also increased significantly and the rise of the import value was due both to the quantity increase as well as to the price. No other significant changes in imports are observed between 2014 and 2015 except a large decline in the value of Hides and Skins due to the drastic price de-

cline. It should be noted that given the broad product categories it is not easy to say if the reduced per unit price is due to a world price decline or a shift to less expensive substitutes.

Regarding exports, what attracts the attention in Table 4.3.4 is the impressive increase (122% comparatively to 2014) of the value of Oils and Fats (which is mostly olive oil). This brought Oils and Fats to the second position after Fruits and Vegetables, which are the main pillar of Greek agro-food exports with a share of more than 30% during the 2008-2015 time period. It is commonly known that olive oil production varies significantly from year to year. Exports in 2015 reflect the high production levels of the previous year. Besides the increase in production there is an effort to increase the value added of olive oil processing. Indeed, Greece has considerable room to increase the value added of the olive oil processing sector given that most of the production is exported in bulk as raw material without any serious processing, thus, not capturing the value added of a final product export.

TABLE 4.3.3 Imports of agro-food products categories in million € (M €)

	2008		2010		2011		2012		2013		2014		2015	
	M €	%	M €	%	M €	%	M €	%	M €	%	M €	%	M €	%
Meat products[a]	1,211	17.2	1,160	18.4	1,171	18.1	1,199	18.9	1,179	18.0	1,162	17.9	**1,117**	**17.7**
Dairy	808	11.5	770	12.2	812	12.6	772	12.2	847	13.0	842	13.0	**752**	**11.9**
Fruits-Vegetables	786	11.1	672	10.7	702	10.9	635	10.0	642	9.8	663	10.2	**731**	**11.6**
Cereals	681	9.7	541	8.6	655	10.1	560	8.8	595	9.1	532	8.2	**554**	**8.8**
Coffee, tea, etc.	365	5.2	376	6.0	409	6.3	411	6.5	404	6.2	442	6.8	**472**	**7.5**
Feeding stuff	406	5.8	371	5.9	355	5.5	345	5.4	400	6.1	403	6.2	**401**	**6.4**
Fish	428	6.1	384	6.1	414	6.4	373	5.9	351	5.4	378	5.8	**375**	**5.9**
Various foodstuff	344	4.9	356	5.7	331	5.1	333	5.3	346	5.3	367	5.7	**352**	**5.6**
Tobacco	335	4.7	310	4.9	247	3.8	234	3.7	234	3.6	236	3.6	**301**	**4.8**
Oils and fats	290	4.1	232	3.7	255	3.9	286	4.5	264	4.0	274	4.2	**264**	**4.2**
Beverages	436	6.2	370	5.9	308	4.8	267	4.2	257	3.9	248	3.8	**255**	**4.0**
Oil seeds	224	3.2	173	2.7	175	2.7	219	3.5	238	3.6	220	3.4	**211**	**3.3**
Sugars	225	3.2	220	3.5	259	4.0	295	4.7	278	4.3	227	3.5	**207**	**3.3**
Wood	262	3.7	148	2.3	121	1.9	128	2.0	113	1.7	118	1.8	**124**	**2.0**
Raw materials	130	1.8	111	1.8	112	1.7	111	1.8	116	1.8	121	1.9	**123**	**1.9**
Hides-skins	93	1.3	76	1.2	97	1.5	146	2.3	147	2.2	116	1.8	**56**	**0.9**
Total	7,054[b]		6,299		6,461		6,335		6,537		6,488		6,313	

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

a. Includes live animals and meat products.

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

TABLE 4.3.4 Exports of agro-food products categories in million € (M €)

	2008		2010		2011		2012		2013		2014		2015	
	M €	%	M €	%	M €	%	M €	%	M €	%	M €	%	M €	%
Fruits-Vegetables	1,346	33.6	1,485	33.7	1,519	33.7	1,771	33.8	1,856	34.3	1,826	35.3	1,846	32.3
Oils and fats	333	8.3	287	6.5	299	6.6	393	7.5	580	10.7	322	6.2	714	12.5
Fish	449	11.4	541	12.3	604	13.4	613	11.7	562	10.4	556	10.7	590	10.3
Dairy	275	6.9	301	6.8	322	7.1	372	7.1	416	7.7	483	9.3	561	9.8
Tobacco	416	10.4	374	8.5	370	8.2	428	8.2	392	7.2	386	7.5	450	7.9
Cereals	315	7.9	292	6.6	311	6.9	330	6.3	270	5.0	338	6.5	303	5.3
Cotton	236	5.9	391	8.9	251	5.6	442	8.4	377	7.0	310	6.0	299	5.2
Various foodstuff	124	3.1	161	3.7	188	4.2	191	3.6	206	3.8	221	4.3	236	4.1
Beverages	163	4.1	166	3.8	195	4.3	202	3.9	192	3.5	198	3.8	209	3.7
Oil seeds	76	1.9	64	1.5	66	1.5	78	1.5	79	1.5	86	1.7	96	1.7
Meat products[a]	76	1.9	67	1.5	87	1.9	78	1.5	74	1.4	84	1.6	84	1.5
Coffee, tea, etc.	30	0.7	34	0.8	43	1.0	54	1.0	64	1.2	60	1.2	78	1.4
Sugars	54	1.3	129	2.9	116	2.6	119	2.3	96	1.8	71	1.4	77	1.3
Hides-skins	38	0.9	40	0.9	54	1.2	80	1.5	87	1.6	64	1.2	73	1.3
Feeding stuff	51	1.3	41	0.9	42	0.9	47	0.9	59	1.1	58	1.1	54	0.9
Raw materials	18	0.4	20	0.5	23	0.5	30	0.6	32	0.6	34	0.7	37	0.6
Wood	9	0.2	7	0.2	9	0.2	8	0.2	10	0.2	10	0.2	8	0.1
Total	**4,011[b]**		**4,406**		**4,505**		**5,241**		**5,415**		**5,176**		**5,717**	

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

a. Includes live animals and meat products.

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

Fish increased its export value despite the credit/financial difficulties most aquaculture firms face. This is mostly the result of the rise in price as the quantity exported increased just marginally. It is very positive that Dairy exports keep the high rate of increase each year. Feta cheese as well as yogurt are the main products of this category. Both the per unit price as well as the quantity exported increased. For the rest of the products it was mostly the increased prices that a) raised the export value (Tobacco, Beverages and, Coffee-Tea-etc.), b) neutralized and reversed the drop in quantity exported (Sugars, Hides-Skins and Fruits-Vegetables), and c) abated the larger decrease of the quantity exported (Cereals, Cotton and Wood).

4.3.5. Conclusion

During the recession period 2008-2015, Greek export performance was much lower than in countries with similar reccessions, such as Portugal. Imports were more responsive to the crisis and had a large decreasing average annual rate during the same period. However, in order for an economy to return to growth, reduced imports is not enough. It needs increased exports and, consequently, increased production. It is very positive that in 2015 total exports, excluding petroleum, increased at a rate of 6.3%, significantly faster than the yearly average of the previous period (1.4%).

It is also very positive that agro-food exports grew at a rate of 10.5% in 2015, a much higher rate than the yearly average of the previous period (4.3%). A big chunk of this increase was due to the olive oil production and exports. Specifically, Oils and Fats contributed €392.5 million out of the total €541 million increase of agro-food exports. It will be very interesting to see if this trend continues in the coming years or if a bad year of olive oil production will be reflected in a significant decrease in Oils and Fats exports. As mentioned before,

Greece needs desperately to develop the processing sector of the agro-food industry in order to increase the value added of exports. Exporting final goods is much more valuable than exporting unprocessed agricultural products.

The Greek aquaculture industry is dynamic and has significant potential. Global demand is constantly on the rise and Greece should quickly and effectively address the credit/financial issues of many firms of this industry so they can move ahead in increasing production to keep up with the global demand. Otherwise, Greece will soon fall behind its competitors and will lose its leading global position in the market of sea bream and sea bass.

Finally, Greece needs to develop its livestock production, especially cattle (bovine). Meat products trade by itself produces a deficit of more than €1 billion (€1,117 million import value vs. €84 million export value, in 2015). Considering that the total agro-food trade deficit in 2015 fell just below €600 million, it becomes clear that livestock production can be a key for eliminating the agro-food trade deficit. As this column has often discussed, livestock production is not only important for strictly economic reasons; it is equally important for social and food safety reasons such as the need to increase the extremely low degree of self sufficiency in meat products, especially of bovine and porcine origin.

The determinants of NPLs during the economic crisis: a panel econometric approach

Fotini Economou*, Yannis Panagopoulos*, Ioannis Peletidis**

1. Introduction

The purpose of this article is to classify and record the effects of the determinants of the NPLs (Non-Performing Loans) of the four (4) systemic Greek banks during the economic crisis (2007-2015). The examination of these determinants is vital for the banking system of the country since it is helpful for any future re-capitalization. The discussion of the Greek banking system here is restricted to the following big banks: the National Bank of Greece (ETE), Eurobank, Alpha Bank and Piraeus Bank. The sum of these banks' assets constitutes 90% of the Greek banking system.

The management of NPLs is one of the most serious subjects which confronts the banking system, espe-cially after the economic crisis which erupted in the 2007-2015 period in the country. Diagrams 1-3 are representative of the NPLs of the systemic banks not only at the aggregate level but also at the level of firms and households. Possibly the most representative picture of the problem is given in Diagram 4, where the ratio of aggregate NPLs to the loan portfolio of the systemic banks is presented, as well as the ratio of corporate and household NPLs to the corresponding loan portfolio, during the same time period.

More analytically, although from 2007 to 2010 the per-centage of the aggregate NPLs to the loan portfolio of the systemic banks ranged from 3.20% to 8.70%, after 2011 this percentage exceeded 21.4%. Almost the same trend was recorded for the sectored categories of NPLs (for firms and households). Additionally, after 2012, the situation of the household NPLs was slight-ly worse than corporate NPLs. As we emphasized in Volume 29 of the *Greek Economic Outlook* (see Panagopoulos & Peletides, 2016) the situation of the banks' equity, apart from the NPLs, was burdened by the effects of the PSI+ (Private Sector Involvement). Therefore these two elements (NPLs and PSI+) are the main factors which led to the necessity of re-capitalizing of the banking system in 2013. However,

DIAGRAM 1
The NPLs (aggregate)
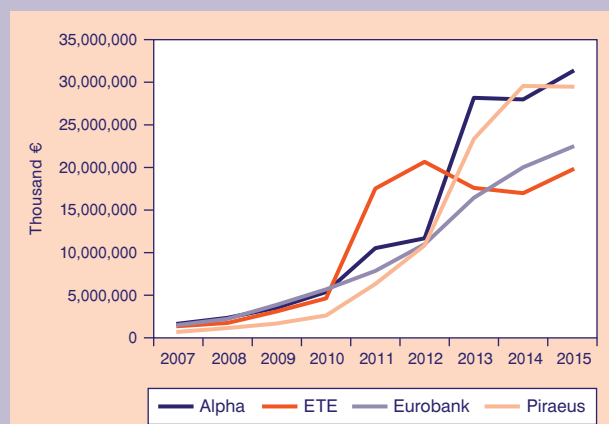
Source: Balance sheets of the four banks.
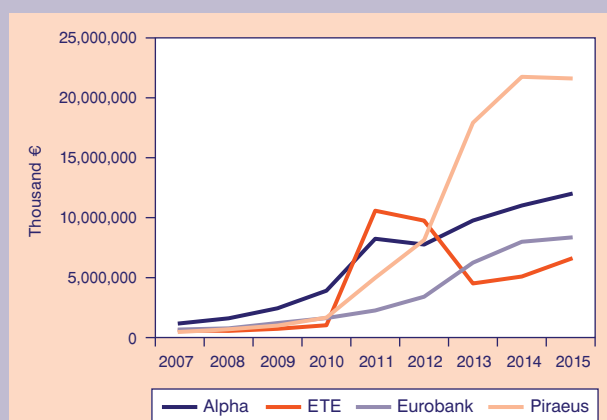
DIAGRAM 2
The NPLs (retail)
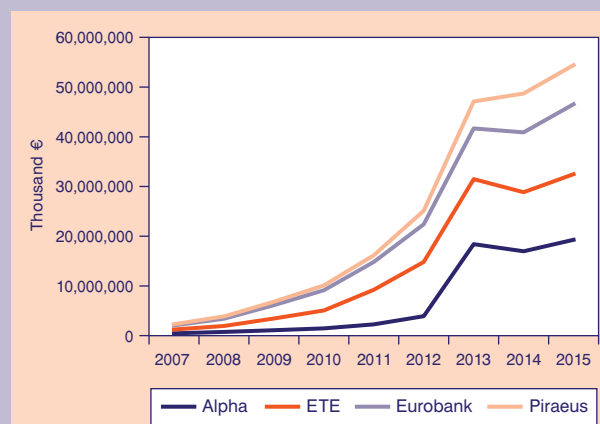
Source: Balance sheets of the four banks.

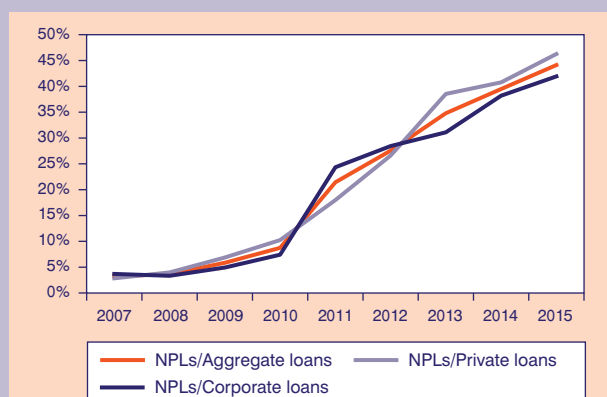* Research Fellow, Centre of Planning and Economic Research (KEPE).

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DIAGRAM 3
The NPLs (corporate)

Source: Balance sheets of the four banks.

DIAGRAM 4
The NPLs as a % of the total loans of the four systemic banks

Source: Balance sheets of the four banks.

from this year (2013) onwards the aggregate NPLs/ Loans ratio continues the intensive upward trend which led to a 44.1% aggregate NPLs/Loans ratio in 2015 (see Diagram 4).

Barring any new fiscal event that could further burden the systemic banks' equity, after 2012 we can assume that the amount that is reported as accumulated impaired provisions, especially during the 2013-15 period, is mainly a reflection of the prolonged recession of the economy (see Panagopoulos & Peletides, 2016, annex 1).[1]

The remainder of the paper is structured as follows. Section 2 presents a short review of the literature con-

cerning NPLs as well as the selection of the estimating model. Section 3 describes the panel econometric methodology which will be implemented while Section 4 reports the empirical results and discusses the potential explanations of the provided empirical evidence. Finally, Section 5 concludes.

2. Review of the literature

As we mentioned, the existing amount of NPLs is the most important factor which affects the condition of banks' equity. NPLs are the product of a bad or good loan-selection process by the banks as well as of the prudent management of the aggregate loan portfolio in each bank separately. Therefore, the better the quality of loans issued by the systemic banks and the more consistent the review of the loan's residuals, the smaller the amount of the existing NPLs. Nevertheless, apart from the quality review of the NPLs we should also examine the quantitative factors which determine their level.

According to the existing literature, the determinants of NPLs are divided in two sub-categories: the macroeconomic determinants (see Bernanke, Gertler & Gilchrist, 1998; Nkusu, 2011; etc.) and the special banking determinants (see Berger & DeYoung, 1997; Keeton & Morris, 1987; etc.). Table 1 summarizes the aforementioned determinants.

The determinants of Table 1 represent the explanatory variables for the estimated econometric models in the existing literature regarding NPLs (see, for instance, Fofack, 2005; Khemraj & Pasha, 2009; Loyzis, Vouldis & Metaxas, 2012; Makri, Tsagkanos & Bellas, 2014; Beck, Jakubik & Piliou, 2015; etc.).

In our empirical study we will proceed implementing a model similar to the Khemraj & Pasha (2009) model in the Greek banking system for the economic crisis period (2007-2015). More analytically, the NPLs theoretical model is going to have the following algebraic form:

$$\ln NPL\_A_{i,t} = c + \sum_{t=1}^{i} \beta_i \ln NPL\_A_{i,t-i} +$$
$$+ \gamma \ln L\_A_{i,t} + \delta \ln \left(A_{i,t} \Big/ \sum A_{i,t} \right) + \qquad (1)$$
$$+ \phi \Delta LOANS_{i,t} + \theta \Delta GDP_{i,t} + \rho \Delta UN_{i,t} + \zeta DY_t + \varepsilon_t$$

where: NPL_A stands for the ratio of NPLs divided by the assets of the bank i, L_A stands for the ratio of the loans divided by the assets of the bank i, ΔGDP stands for the real GDP growth, ΔUN stands for the per-

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1. The National Bank of Greece (ETE) is presented as a bank and not as a consortium and therefore does not include any subsidiary bank and, particularly, Finasbank.

centage change in unemployment, $\Delta LOANS$ stands for the percentage change of the loan portfolio of bank i, $\left(A/\sum A\right)$ stands for the size of the bank i as a share of the total market and it is represented by the ratio of the bank i asset divided by the aggregate assets of the banking system, and, finally, DY stands for the dummy which takes the value of 1 from 2013 to 2015 and represents the period of multi-mergers and acquisitions of the non-viable banks from the systemic part of the market.

3. Data and econometric methodology

The data of our empirical research, as indicated in Table 1, are derived from two different sources: more analytically, the macroeconomic determinants (e.g. GDP and unemployment) are from ELSTAT while the special banking determinants (e.g. the NPLs, the assets of each bank, the loan portfolios) are from the balance sheets of the four systemic banks (e.g. the National Bank of Greece, Eurobank, Alpha Bank and Piraeus Bank), for the time period ranging between 2007 and 2015.

For the estimation of the general theoretical model (1) with the use of the panel data we implemented the fixed effects and the random effects models as well as a dynamic panel methodology. More specifically, the Arellano-Bover/Blundell-Bond (1995, 1998) panel approach was implemented in order to account for serial correlation and endogeneity.

4. Empirical results

In Table 2 we analytically present the empirical results from Model 1. The first two columns (1 & 2)

present the results of the fixed and the random effects models, respectively. The use of the Hausman test signifies the appropriateness of the random effects model. The presented results indicate the large, negative and statistically significant influence of the real GDP growth. In practical terms the negative GDP growth (recession) "feeds" the size of NPLs.[2] This finding was actually expected and signifies that, if in the near future we face positive GDP growth rate, this will help to reduce the ratio of NPLs in the systemic bank assets. The same inferences were derived from Alexopoulos, Monokroussos and Thomakos' (2016) empirical study regarding the relationship between NPLs and GDP in the Greek banking system (time period 2005-2015).

The effect of the ratio of the total loans to assets (L_A,) as well as of the re-capitalization dummy (DY) in the 2013-2015 period is positive and statistically significant. On the other hand, the size of the bank, as a share of the total market $\left[\left(A/\sum A\right)\right]$, the percentage change of the total loan portfolio ($\Delta LOANS$) and the percentage change of unemployment (ΔUN) do not seem to have any statistical influence on the NPLs. Additionally, we should report the positive and significant effect of the lagged dependent variable ($NPL\_A_{i,t-1}$) on NPLs, which verifies the importance of implementing a dynamic panel approach.

Column 3 of Table 2 presents extensively the aforementioned results. Actually, the empirical results advocate that the real GDP growth is the most significant variable. Additionally, we should report here that we tested more than one lagged dependent variable but they were not statistically significant. We also examined the significance of the lagged percentage change of unemployment and GDP growth without any sig-

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2. The size of the estimated coefficients should be considered with a cushion due to the extraordinary conditions in the period under examination.

TABLE 2 Empirical results [model 1]
(Dependent variable: ln NPL_A)

Variables	Fixed effects (1)	Random effects (2)	Arellano-Bover/Blundell-Bond (3)
	Special Banking Factors		
Const	-0.1230	-0.2334	-0.1511
	(0.801)	(0.617)	(0.964)
ln $NPL\_A_{i,t-1}$	0.6532	0.6403	0.6752
	(0.000)***	(0.000)***	(0.000)***
ln $L\_A_{i,t}$	3.4035	1.3473	2.6660
	(0.007)***	(0.004)***	(0.000)***
ln $\left(A/\sum A\right)_t$	-0.1167	0.3681	0.0878
	(0.748)	(0.145)	(0.766)
$\Delta LOANS_t$	-0.3707	-0.4236	-0.3609
	(0.180)	(0.109)	(0.130)
	Macroeconomic Factors		
ΔGDP_t	-10.6999	-15.7738	-13.9160
	(0.071)*	(0.002)***	(0.020)**
ΔU_t	-0.2518	-1.1172	-0.9111
	(0.801)	(0.214)	(0.322)
DY	0.5666	0.7018	0.5196
	(0.010)***	(0.000)***	(0.000)***
Obs.	32	32	32
	R^2:	R^2:	
	within = 0.9722	within = 0.9675	Wald chi2(3) = 125.94
	between = 0.8253	between = 0.9956	Prob > chi2 (X^2) = 0.000
	overall = 0.9174	overall = 0.9678	

Notes: p-values in parentheses.

***, **, * Statistically significant at 1%, 5% and 10%, respectively.

nificant results in the model. Finally, we tested all the aforementioned explanatory variables on the ratio of NPLs to the aggregate loans (instead of aggregate assets) without any serious deviation regarding which variable can be considered as significant in the empirical results.

Because of the restricted size of the employed sample, we moved to a second step in our estimation process by removing the statistically insignificant terms and re-estimating the model. Consequently, our final general model has the following algebraic form:

$$\ln NPL\_A_{i,t} = c + \sum_{t=1}^{i} \beta_i \ln NPL\_A_{i,t-i} + \\ + \gamma \ln L\_A_{i,t} + \phi \Delta LOANS_{i,t} + \theta \Delta GDP_{i,t} + \zeta DY_t + \varepsilon_t \quad (2)$$

Even in this case we implemented a Hausman test which verified the suitability of the random effects model.

The derived empirical results (Table 3) coincide with the results of Table 2. The only difference was that in the case of the dynamic panel approach (Arellano-Bover/Blundell-Bond), we additionally trace the significance of the percentage change of the total loan portfolio, at 10% significance level.

5. Concluding comments

The aim of this article was to identify and classify the effects of the determinants on the NPLs of the four (4) systemic Greek banks during the economic crisis (2007-2015).

The estimated relationship has a dynamic form and the lagged dependent variable has a statistically significant positive effect on the NPLs. In addition, the empirical findings highlight the negative and statistically significant effect of the real GDP growth. This

TABLE 3 Empirical results [model 2]
(Dependent variable: ln *NPL_A*)

Variables	Fixed effects (1)	Random effects (2)	Arellano-Bover/Blundell-Bond (3)
Special banking factors			
Const	0.0116	-0.6992	-0.0067
	(0.976)	(0.019)***	(0.984)
ln $NPL\_A_{i,t-1}$	0.6480	0.6719	0.6769
	(0.000)***	(0.000)***	(0.000)***
ln $L\_A_{i,t}$	3.3468	1.0957	2.9973
	(0.001)***	(0.010)***	(0.000)***
$\Delta LOANS_t$	-0.3782	-0.2600	-0.2680
	(0.133)	(0.315)	(0.057)*
Macroeconomic factors			
ΔGDP_t	-9.3976	-9.6025	-9.2240
	(0.000)***	(0.000)***	(0.000)***
DY	0.5804	0.6624	0.5194
	(0.005)***	(0.001)***	(0.000)***
Obs.	32	32	32
	R^2:	R^2:	
	within = 0.9719	within = 0.9637	Wald chi2(3) = 56.55
	between = 0.8405	between = 0.9710	Prob > chi2 (X^2) = 0.000
	overall = 0.9240	overall = 0.9627	

Notes: p-values in parentheses.

***, **, * Statistically significant at 1%, 5% and 10%, respectively.

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variable is the most important, regardless of the methodological approach we implemented. The ratio of loans to assets also presents statistically significant findings as well as the dummy of re-capitalization used in the regression for the 2013-2015 period. The impact of the percentage change of the aggregate loans variable on NPLs looks marginal and this relates to the fact that there is no clear trend in the behavior (ascending or descending) of the total loan portfolio of the banking system during the crisis period.

More specifically, from the estimation of the model we presented above (Table 3, Column 3), the following macroeconomic conclusions can be inferred:

1) Every change (decrease or increase) of the GDP growth variable, with all other factors being equal, produces an opposite change (increase or decrease) in the percentage of NPLs to total assets of the systemic banks.

2) There are no statistically significant findings regarding the effect of the change in the unemployment rate on the percentage of the aggregate

NPLs to banks' assets. This does not mean that there is no correlation between the two variables, but in the sample we used it looks that any macroeconomic relationship is basically reflected by the GDP (negative) growth, leaving the unemployment variable as insignificant in the model.

With regard to the specific bank determinants presented above, the following conclusions can be inferred:

3) A positive relationship between the NPLs and its lagged value shows us that the NPLs of yesterday play a significant role in determining new NPLs today. This is rather expected if we consider that during the time period we examine these loans, a constant and intensive upward trend was shown. It also implies the interdependence between the different factors engaged in the economy so that any difficulty in "repaying" these loans today will consequently create difficulties in "repaying" new loans in the near future. Additionally, we might infer that the existence of high NPLs makes the banks very reserved for issuing new loans and this further tightens credit supply in the market resulting in new NPLs.

4) There is a positive correlation between the ratio of loan portfolios over assets for banks and their corresponding NPLs. This finding suggests that banks that might have followed a rather aggressive credit policy in the past now present a higher percentage of problematic loans.

5) Finally, we can observe the statistically significant relationship between the rate of NPLs over assets and the dummy variable which was used to depict the period of mergers and acquisitions in the Greek banking system commencing from the year 2013. This apparently is sourced from the fact that the big banks, whose data was analyzed in this study, absorbed the loan portfolios of other small non-viable banks. The consequence of this absorption was an increase in the percentage of NPLs in the big banks' portfolios because most of these absorbed loans from banks with insufficient capital adequacy (e.g. many problematic loans).

At this point it would be useful –due to the size of the aggregate NPLs (exceeding €102.9 billion in 2015)– to bring forward some drastic ways of confronting the NPL problem of the Greek banking system. More specifically:

Firstly, as suggested by Avgouleas and Papadimitriou (2015), we could proceed with the creation of a "bad bank" that would possibly accumulate the NPLs of the systemic banks accompanied by guarantees from the Greek state. This could substantially help the financial adequacy of the systemic banks' equity.

Secondly, as indicated in Panagopoulos and Peletidis (2016), although it is not a panacea, we could carefully examine –taking also into consideration the social dimensions of this issue– the engagement of distressed funds in the Greek market, by handing over to them a crunch of the NPL portfolio of the systemic banks with a discount value. In return, these funds could provide liquidity to the banks. This vital liquidity in the system could help banks with servicing their serious short-term liabilities (e.g. the repayment of Emergency Liquidity Assistance [ELA]) or issuing, if this is possible, new 'healthy' loans to firms that could support economic growth.

International experience has shown that careful management of NPLs may contribute to the repayment of the existing problematic loans, which can be beneficial for the Greek banking system.

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Competitive conditions and developments in the banking sector

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1. Introduction

This article examines the functioning of competition in the Greek banking system, based on data from the 4th quarter of 2012 until the 4th quarter of 2015. In particular, we address the Greek commercial banks *(hereinafter: commercial banks)* on a solo basis as well as their market share in total loans and deposits. In addition, the following portfolios are studied in detail: (a) assets of commercial banks, (b) total loans to customers (non-financial institutions), (c) loans by category (i.e. mortgages, consumer loans and corporate loans), and (d) customer deposits. Furthermore, the evolution of the margin between lending and deposit rates *(hereinafter: margin)* is examined as an indication of competition.

The results of this article, based on the assessment of the changes in the market shares of assets, loans and deposits of commercial banks, as well as the behavior of the margins which are examined during a period of significant wide-scale restructurings in the Greek banking system, show that the level of competition has been maintained, while the increase in the concentration –which mainly occurred in 2013– has not been a deterrent for the level of competition of Greek banks.

In addition, the article examines the impact of the macroeconomic environment and the uncertainty regarding the prospects of the Greek economy to the liquidity conditions of the banking system. Finally, the resilience of the banking system is addressed based on the assessment of capital adequacy ratios, taking into account the recent recapitalizations.

2. The Greek banking system during the crisis period

During the global financial crisis that took place in 2008-2012, various negative events affected the Greek banking sector, in terms of its capital adequacy, capital structure, liquidity, and the evolution of the market capitalization index. Of course, it should

be noted that in the beginning of the international crisis, the operations of Greek banks were not profoundly affected; when the international crisis transformed into a debt crisis (sovereign and private), the intermediation role of banks was hampered, which, in turn, resulted in negative profitability and an insufficient provision of finance to the real economy. The reasons for the negative profitability and liquidity crunch which Greek banks are facing (with spillover effects to Greek enterprises and households) are manifold but directly related to the debt crisis and the fiscal austerity measures that were imposed on Greek economy, as prior to the crisis the Greek banking system was relatively sound (but vulnerable, to a deterioration of an extended debt crisis due to its exposure to government bonds and also to funding of state institutions and non-tradable sectors) and adequately capitalized. Of course, the limited ability of financial institutions to provide liquidity to the real economy is exacerbated by the procyclicality impact, whereby in cases of a recession, their capital base is used as a safety margin to deal with unexpected risks. As a result, even higher minimum capital adequacy is required in such cases, which does not allow financial institutions to take higher investment positions or extend financing to the economy. On the other hand, the market capitalization of Greek banks has been significantly affected during the recent period, mainly due to the developments in the Greek economy, and specifically due to the review process of the Greek economic program, the lack of a stable political climate, as well as the injured confidence of investors/shareholders regarding the achievement of their financial objectives (within the time constraints) that have been incorporated in the business plans of Greek banks. It should not escape our attention that, since the beginning of this year, international financial markets, and in particular the European banking system, exhibited a downward trend.

Undoubtedly, after the implementation of the Private Sector Involvement for the restructuring of Greek government debt *(hereinafter: PSI+)*,[1] banks recorded significant additional losses, due to the possession of a significant amount of government bonds, thus being deprived from an important amount of their capital. This capital was replenished both with state aid through the Hellenic Financial Stability Fund (HFSF) during 2012 and 2013 as well as by the private sector during 2013 and 2014, resulting in a full restoration of capital ad-

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1. The Private Sector Involvement (PSI+) entailed the acceptance from Greek government bondholders of a voluntary "haircut" on the face value of the debt they had in their possession, as well as a loss from the yield.

equacy ratios. Moreover, the HFSF covered the €14 billion funding gap for the restructuring of the banking system in 2013 through mergers and acquisitions of troubled banks. The last recapitalization of the four Greek systemic banks (National Bank of Greece, Alpha Bank, Eurobank, Piraeus Bank) was completed by December 2015 (€5.3 billion from private investors, €2.7 billion from Liability Management Exercises [LME] and €5.4 billion from the HFSF). As a result, the general Capital Adequacy Ratio (CAR) of the Greek systemic banks is estimated, on average, at about 18.7% (higher than the average of EU banks, which on a consolidated basis amounted to 16.9% in September 2015). It should be noted that during the period 2012-2014 one of the largest restructurings in the Greek banking system was implemented, which led to a significant increase in its concentration, thus creating four major banking groups, namely the aforementioned systemic banks.

3. Structure and competitive conditions in the Greek banking system

During the period of 2008-2012, the Greek banking system demonstrated a mild contraction which was mainly attributed to the cessation of activities of some foreign credit institutions operating in Greece. Nevertheless, during 2013 one of the largest restructurings in the Greek banking system was implemented with recapitalizations both from the HFSF and the participation of the private sector, and also through a wide range of mergers and acquisitions.

This resulted in a significant reduction in the number of credit institutions operating in Greece, although no subsequent reduction in the financial figures of the financial system as a whole has been reported. As a result, while the total number of credit institutions declined from 52, as of 31 December 2012, to 41, as of 31 December 2013, no corresponding decrease in total assets took place, as they decreased from €441.4 billion to €406.7 billion. However, in 2014 and 2015 no significant change was observed with the number of credit institutions, amounting to 40 as of December 2014 and 2015, as observed in Table 1. Nevertheless, total assets declined to €397.0 billion to €385.5 billion in 2015 due to the continuation of deleveraging. According to BoG's data, financial products and services are being offered in Greece by 40 credit institutions registered in Greece or operating through a branch in Greece, 63 insurance corporations, 269 financial intermediaries and, finally, 61 financial auxiliary companies.

Banking intermediation in Greece has traditionally been carried out by commercial banks, of which there were eight in 2015. More specifically, five are head-quartered in Greece (National Bank of Greece, Alpha Bank, Piraeus Bank, Eurobank, Attica Bank), while three are subsidiaries of foreign banks (Investment Bank of Greece, Aegean Baltic Bank, Credicom Consumer Finance). It should be mentioned that commercial banks constitute 95.4% of the total assets of the banking system, while the five quoted banks, (National Bank of Greece, Alpha Bank, Eurobank, Piraeus Bank, Bank of Attica) listed in the Athens Exchange *(hereinafter: listed)* constitute approximately 95.2% of the total assets of the banking system.

In Table 2, the market share of the total assets of each bank on a solo basis to the total assets of the commercial banks from the 4th quarter of 2012 up to the 4th quarter of 2015 is presented, indicating the intermediate values for all quarters of 2013, 2014 and 2015. From the analysis, the following conclusions are derived:

(a) The four-systemic banks have increased, overall, the share of their assets in the period from the 4th quarter of 2012 up to the 4th quarter of 2015, compared with the market share of other commercial banks. These banks have gained considerable size that allows them to compete between themselves. It should be noted that, despite the tight liquidity conditions in the domestic banking system, the four specific banks continue to maintain a presence in Southeastern Europe –despite having significantly reduced their market share in the European market as well as in Turkey– by offering a range of specialized banking products in various sectors of retail and investment banking.

(b) From the evolution of the above market shares in total assets, it is observed that among those four largest banks, two of them (National Bank of Greece & Eurobank) have slightly increased their market share during 2013–2014 (through the acquisition and subsequent merger of First Business Bank and Probank from the former, and the Proton Bank and the TT Hellenic Postbank from the latter), while a significant increase was observed in the other two banks (Alpha Bank & Piraeus Bank). Specifically, the significant increase which is observed in the total assets of Alpha Bank is attributed to the fact that since the 2nd quarter of 2013 the merger of the former Emporiki Bank with Alpha Bank has been completed and therefore the total assets of the former Emporiki Bank have been included in the total assets of Alpha Bank in accordance with the rules of the International Financial Accounting Standards. Furthermore, regarding the assets of Piraeus Bank, an even greater increase is observed during the corresponding period, as

TABLE 1 Number of credit institutions in Greece

Credit institutions	2008	2012	2013	2014	2015 Q1	2015 Q2	2015 Q3	2015 Q4
Commercial Banks – of which:	19	16	10	9	9	8	8	8
Domestic Banks	11	11	7	8	8	7	7	7
Subsidiaries of foreign banks	8	5	3	1	1	1	1	1
Branches of foreign banks	30	22	20	20	20	21	21	22
Other credit institutions	17	14	11	11	11	11	11	10
Total credit institutions	**66**	**52**	**41**	**40**	**40**	**40**	**40**	**40**

Source: Bank of Greece (BoG).

TABLE 2 Market share in total assets of commercial banks (%)

Commercial banks	2012:Q4	2013:Q1	2013:Q2	2013:Q3	2013:Q4	2014:Q1	2014:Q2	2014:Q3	2014:Q4	2015:Q1	2015:Q2	2015:Q3	2015:Q4
National Bank of Greece	25.37	24.40	25.31	25.63	26.56	26.62	26.56	26.63	26.69	27.10	26.57	26.28	26.28
Emporiki Bank of Greece	6.32	5.64											
Alpha Bank	17.51	16.27	21.09	20.68	21.48	21.65	21.63	22.05	22.03	22.19	22.28	22.46	22.14
General Bank of Greece	0.88	0.84	0.81	0.77	0.84	0.88	0.92	0.91					
Attica Bank	1.27	1.21	1.21	1.21	1.28	1.30	1.32	1.29	1.29	1.26	1.20	1.23	1.25
Piraeus Bank	20.52	25.09	25.82	25.32	27.06	26.75	26.82	26.41	27.56	27.03	27.65	27.70	28.28
Eurobank Ergasias	19.80	18.16	18.45	19.26	22.29	22.34	22.26	22.25	21.99	22.24	22.12	22.16	21.87
Investment Bank of Greece	0.10	0.09	0.04	0.04	0.05	0.05	0.05	0.05	0.05	0.04	0.05	0.05	0.05
Proton Bank	0.39	0.37	0.23	0.37									
Millennium Bank	1.61	1.54	1.49	1.40									
Panellinia Bank	0.24	0.24	0.23	0.22	0.24	0.23	0.24	0.23	0.22				
Probank	1.07	1.06	0.97										
First Business Bank	0.47	0.44											
Aegean Baltic Bank	0.11	0.11	0.09	0.09	0.11	0.11	0.15	0.13	0.12	0.11	0.10	0.10	0.09
Credicom Consumer Finance Bank	0.15	0.16	0.12	0.09	0.08	0.07	0.06	0.06	0.04	0.04	0.03	0.03	0.03
TT Hellenic Postbank	4.21	4.41	4.15	4.92									
All commercial banks (%)	100	100	100	100	100	100	100	100	100	100	100	100	100
Total loans (bn)	307.2	314.9	327.1	327.6	317.0	310.8	305.5	303.3	307.0	307.9	297.2	293.6	293.5

Source: Bank of Greece (BoG).

it has incorporated the assets of Millennium Bank, which was merged into Piraeus Bank, as well as the Greek activities of the Cypriot banks that were operating in Greece (the branches of two Cypriot banks in Greece have closed, i.e. Hellenic Bank and Cyprus Popular Bank, while the branches of the Bank of Cyprus in Greece perform only the activities of provision of guarantees and commitments). In addition, Piraeus Bank incorporated the assets of the merged bank, Geniki Bank, in the 4th quarter of 2014, while in April 2015 it also integrated Panellinia Bank, after the withdrawal of its banking authorization.

From the above comparative analysis of the market shares in total assets, it appears that despite the significant reduction in the number of commercial banks, the four systemic banks maintained a satisfactory market share with significant banking activities, allowing them to maintain the level of competition in the domestic market.

Diagram 1 depicts the distribution of the assets of the commercial banks in quartiles. Specifically, according to this distribution, the average assets of the commercial banks increased from €19.2 billion in the 4th quarter of 2012 to €31.7 billion in the 4th quarter of 2013, mainly because the total number of credit institutions was reduced during this period (see Table 1). But even if the number of credit institutions remained stable, average assets would have marginally increased during the reporting period, implying that competitive conditions were maintained irrespective of the concentration in the banking system. The existence of the aforementioned competitive conditions is maintained during the nine months of 2014 due to the fact that there had not been any significant change in the average total assets

for the same number of credit institutions. Subsequently, the increase in the concentration in the 4th quarter of 2014 and the 1st quarter of 2015 is attributed to the absorption of Geniki Bank and Panellinia Bank by Piraeus Bank. During the 2nd, 3rd and 4th quarters of 2015, no significant change has been observed.

The reduction in the number of banks due to mergers and acquisitions resulted in the growth of assets in the large systemic banks, the "disappearance" of medium-sized banks with assets in the range between €12 and €20 billion and the maintenance or decrease of assets in the smaller banks. The increase in the area which is covered from the 2nd and 3rd quartiles is mainly attributed to the fact that some systemic banks are included, which, for the 4th quarter of 2015, are Alpha Bank and Eurobank (with total assets lower than €68 billion).

Table 3 illustrates the distribution of commercial banks depending on their quartile in the 4th quarter of 2015.

Regarding the evolution of loans, average loans increased from €11.7 billion in the 4th quarter of 2012 to €19 billion in the 4th quarter of 2013, given however, that the total number of credit institutions declined in this period. Of course, even if the number of credit institutions were to remain stable, average loans would decline slightly during the reporting period, due to the restriction in demand caused by the ongoing recession of the Greek economy during the reference period, and due to the reduction of supply, given the continued adoption of strict criteria for all types of loans by credit institutions. This is confirmed by the slight decline of average loans in the 1st, 2nd and 3rd quarters of 2014 for the same number of credit institutions, while the increase in the 4th quarter of 2014 is attribut-

DIAGRAM 1
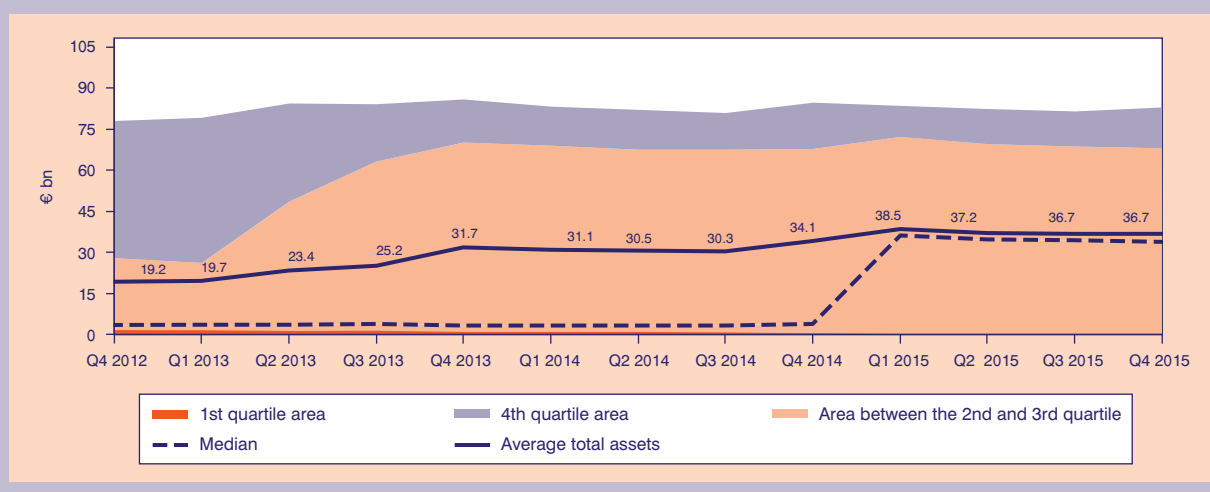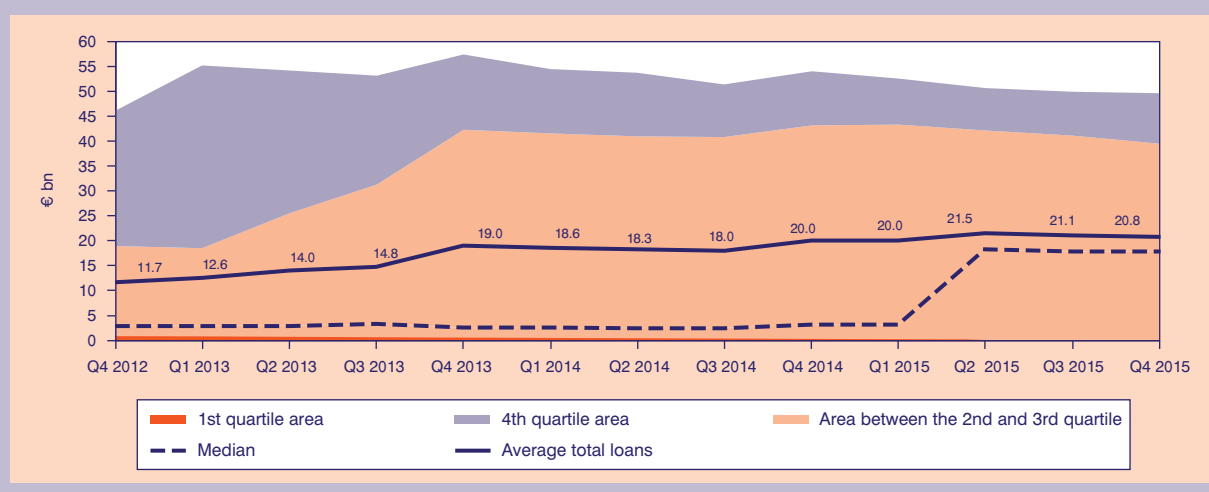**Distribution of total assets of commercial banks in quartiles (in € bn)**

DIAGRAM 2
Distribution of total loans of commercial banks in quartiles (in € bn)

ed to the absorption of Geniki Bank by the Bank of Piraeus. During the 2nd, 3rd and 4th quarters of 2015, no significant change was observed.

Table 4 illustrates the market share of total loans (mortgage, consumer and corporate) by banks.

It should be noted that the general trend in the evolution of total loans is generally confirmed in the loan evolution by category with the following remarks:

(a) For consumer and corporate loans during the reporting period from the 4th quarter of 2012 until the 3rd quarter of 2014, the decline in lending due to the ongoing recession reflects the general trend in total loans. Despite the fact that the aforementioned trend was also specifically observed for consumer credit in the 4th quarter of 2014 and in all quarters of 2015, the decrease in corporate credit was accompanied by a maintenance of non-performing loans up to a certain level and an increase in write-offs. This development implies an effort to restructure the corporate loan portfolio. In addition, mortgage lending remained fairly stable during the aforementioned period. More specifically, mortgage lending remained at the level of €60-€64 billion even du-

ring the contraction of the banking system in 2013. This suggests that the mortgage market is still very attractive as loan balances in this category demonstrate remarkable resilience despite the reduction in loan balances which is evident in the other loan categories.

(b) From the comparison of the distribution of loans by category, it can be observed that in all loan categories, i.e. mortgages, consumer and corporate loans, the ranges in the areas of the 2nd and 3rd quartiles significantly increased during 2013, and as a result have become larger compared to the 4th quartile. There are, therefore, a number of former medium-sized banks (e.g. Emporiki, Geniki, Millennium, TT Hellenic Postbank) which "belonged" in the 2nd and 3rd quartiles and were absorbed by larger banks, resulting in the increase of the threshold between the 3rd and the 4th quartile. This can be interpreted as an indication that the major banks have gained the market share of the medium-sized banks that were absorbed during 2013-2015, and can now compete without any threat from the other small banks. However, regarding corporate loans, the area of the 4th quartile remains significant despite the growth in

TABLE 4 Market share in total loans of commercial banks (%)

Commercial banks	2012:Q4	2013:Q1	2013:Q2	2013:Q3	2013:Q4	2014:Q1	2014:Q2	2014:Q3	2014:Q4	2015:Q1	2015:Q2	2015:Q3	2015:Q4
National Bank of Greece	24.59	22.57	22.90	24.02	23.83	24.17	24.26	24.69	24.20	24.81	24.37	24.21	23.35
Emporiki Bank of Greece	7.69	6.98											
Alpha Bank	17.38	15.93	23.01	23.15	23.03	23.28	23.32	23.77	24.00	24.05	24.76	24.89	25.03
General Bank of Greece	1.07	0.95	0.95	0.95	0.94	0.95	0.94	0.92					
Attica Bank	1.73	1.60	1.68	1.73	1.74	1.77	1.77	1.80	1.78	1.76	1.58	1.60	1.68
Piraeus Bank	20.10	27.43	27.56	27.58	30.19	29.41	29.41	28.61	30.03	29.16	29.46	29.60	29.87
Eurobank Ergasias	17.83	16.38	16.21	16.23	19.75	19.88	19.74	19.65	19.44	19.69	19.61	19.50	19.88
Investment Bank of Greece	0.12	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.01
Proton Bank	0.28	0.28	0.29	0.26									
Millennium Bank	2.27	2.07	2.09	2.09									
Panellinia Bank	0.29	0.27	0.28	0.28	0.30	0.31	0.32	0.32	0.32	0.32			
Probank	1.37	1.26	1.28										
First Business Bank	0.63	0.57											
Aegean Baltic Bank	0.13	0.11	0.10	0.10	0.11	0.12	0.14	0.15	0.17	0.16	0.15	0.15	0.14
Credicom Consumer Finance Bank	0.22	0.17	0.15	0.14	0.11	0.10	0.08	0.07	0.06	0.05	0.05	0.04	0.03
TT Hellenic Postbank	4.31	3.42	3.49	3.45									
All commercial banks (%)	100	100	100	100	100	100	100	100	100	100	100	100	100
Total loans (bn)	187.3	201.5	196.5	192.6	190.3	185.6	182.8	179.8	179.8	180.3	172.3	168.9	166.0

Source: Bank of Greece (BoG).

the areas of the 2nd and the 3rd quartiles. One interpretation of this fact may be that in this market of corporate loans, the absorbed banks did not possess a significant corporate loan portfolio, while the larger, absorbing banks already had a substantial market share in this portfolio.

(c) The degree of concentration increased significantly in all portfolios, i.e. consumer, mortgage and corporate loans, reaching an average of 2.462 units in the 4th quarter of 2015 from 1.718 units in the 4th quarter of 2012 as measured by the Herfindahl Index.[2] However, during the reporting period, the growth of concentration in the portfolio of

consumer loans was higher while the growth in the portfolio of mortgage loans was lower. As a result, concentration in both the portfolio of consumer and corporate loans is still the highest, amounting to 2.532 in the 4th quarter of 2015 regarding the consumer portfolio, 2.517 regarding the portfolio of corporate loans, while the concentration for the mortgage portfolio amounts to 2.465.

The apparent similarity in the distribution and partly in the degree of concentration in mortgage and corporate loans may be regarded as evidence of the existence of a relatively higher competition in these markets, as the portfolio of consumer loans is formed by

2. The Herfindahl Index is defined as the sum of the squares of the market shares of banks and has values from 0 to 10,000. A market is defined as highly concentrated when the Herfindahl Index exceeds 1,800, moderately concentrated when the value is between 1,000 and 1,800, and relatively low concentrated when the value is lower than 1,000.

high interest rates, due to the higher risk premium and the high rates of delinquencies.

4. Analysis of interest rate margins

The indications of a potential existence of competition in the Greek banking system can be better observed from the differences in the average lending and deposit rates (see Diagram 3), i.e. the margin. Historically, the margin in the Greek banking system stood at levels between 3.5% and 4.5%.

From the empirical examination of margins, it can be derived that from December 2009 and until October 2011 an upward trend was observed both in the lending and in the deposit interest rates. The identical upward trend, with a higher rate of increase for lending interest rates, led to the increase in the margin.

Since October 2011, there has been, for the first time, a reversal in the upward trend in lending interest rates without any analogous reversal in the upward trend in deposit interest rates. Given the very limited ability to raise liquidity from the interbank market, Greek banks have used the emergency liquidity assistance as an option to benefit from the lower rates offered by the ECB and ELA, while continuing to compete themselves by "offering" higher deposit interest rates in order to derive further liquidity at a more stable level. However, the decrease in Euribor and ECB interest rates affected the lending rates, which were connected to the Euribor and ECB rates, during this period. This event contributed to a significant decline in the margin up to December 2012.

However, in 2013 the situation started to show a reversal in the trend. From the 1st quarter of 2013, deposit rates significantly reduced and this reduction continues up to now, due to the ongoing policy of reducing Euro area interest rates followed by the ECB in 2013, 2014 and the nine months of 2015. In addition, the restructuring of the banking system in 2013 has contributed as well to the reduction of deposit interest rates, reaching historic lows of 0.5% in February 2016, from the onset of the financial crisis in 2008.

The banks in this period compete primarily for flexibility in the terms and conditions of time deposits and not so much for the level of deposit rates. This reduction in interest rates has also "affected" the cost of deposit rates. Nevertheless, the cost of funding for banks is also influenced from the Eurosystem (ELA). Given that liquidity conditions were very tight due to the decline in deposits, the increase of ELA in the first half of 2015 was noteworthy and necessary to compensate for the continuing outflow of deposits, until the imposition of capital controls on June 28, 2015 which contributed to the stabilization of the deposit levels and reduced the reliance on ELA funding. It should also be mentioned that lending interest rates remain at a high level, mainly due to the consumer lending interest rates, since for the systemic banks that are competing with each other, there is no significant demand for the consumer loans portfolio when they acquire smaller banks. The stabilization of the margin trend after October 2014 and until June 2015, indicates that banks, in order to maintain their strategic corporate and mortgage loan portfolios, began to decrease their lending rates in accordance to the decrease in deposit rates. Obviously, the imposition

DIAGRAM 3
Average deposit rate, lending rate and interest rate margin
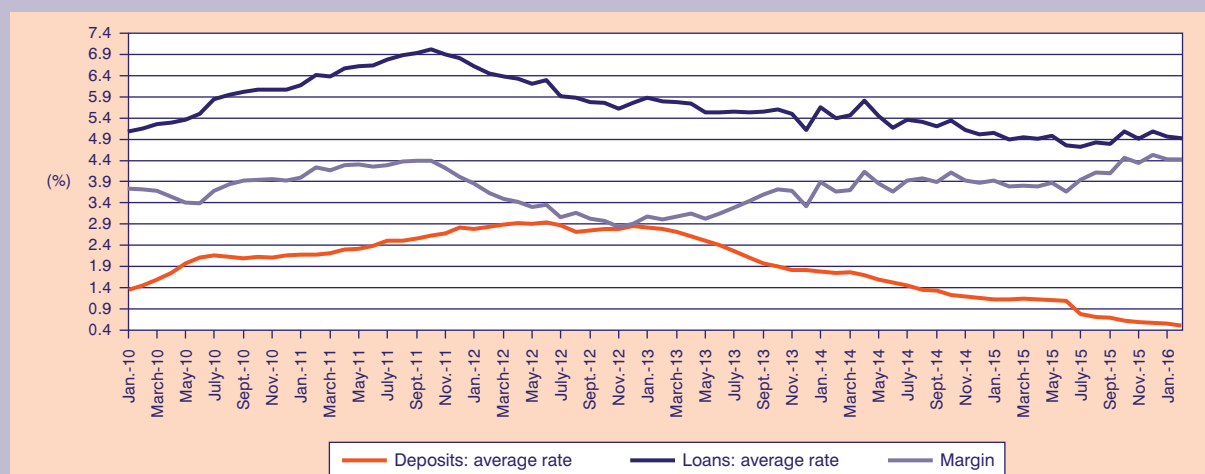
Source: Bank of Greece (BoG).

of capital controls had a downward impact on deposit rates in the second half of 2015 and the first quarter of 2016. As a result, the margin during this period increased and amounted to 4.4% in February 2016 from 3.7% in June 2015. Given the current conjuncture that maintains the current level of competition, it is expected that spread values will be maintained at February 2016 levels, given that the ECB's policy of low interest rates will continue, while due to the tight liquidity conditions and competition banks will try to preserve their loan portfolios –in particular corporate and mortgage– even with a further reduction in the lending rates.

However, it should be mentioned that the level of banking interest rates in Greece and other countries of the Eurozone is formed according to the key ECB interest rates and the competitive conditions between banks in the local markets. As average lending interest rates in the Eurozone as a whole declined in 2013 (while in Greece a decrease was observed only from the 4th quarter of 2014 until the 3rd quarter of 2015), the positive difference between the Greek and the corresponding European interest rates has decreased during this period. However, this difference shows a stabilization trend in the 4th quarter of 2015 and the 1st quarter of 2016. The largest discrepancy is still observed in lending rates to households (consumer loans) with a duration between 1-5 years, reflecting the higher credit risk and managerial costs that this borrowing entails. Consequently, in this category, the margin in February 2016 stood at 11.03% in Greece and to 5.32% in the Eurozone and the difference between them has widened in comparison to September 2015 (Greece: 11.01%, Eurozone: 5.45%). Regarding corporate loans up to one year with amounts up to €250,000, a lesser divergence is observed in this category given that the margin in Greece in February 2016 stood at 5.68% compared to 3.28% in the Eurozone and the divergence between them declined compared to September 2015 (Greece: 6.09%, Eurozone: 3.51%). Regarding housing loans with an interest rate covering the total cost of the loan (APRC), the margin in Greece in February 2016 stood at 3.09% compared to 2.49% in the Eurozone and the difference between them was marginally decreased compared to September 2015 (Greece: 3.25%, Eurozone: 2.61%).

It should be noted that the difference in interest rates between loans and deposits in Greece is higher compared to the average of the Euro area countries. Given that delinquencies remain at very high levels, this implies an increase in risk premia, which is incorporated into the lending rates. In this sense, to the extent that borrowing costs and non-performing assets of Greek credit institutions are maintained at high levels, bank lending rates in Greece will remain high in the near future. Nevertheless, the largest divergence is still observed in loans to households (consumer loans). This implies that the category of lending which is considered attractive for banks comprises both mortgages and corporate loans, where competition from mainly systemic banks has intensified. It should be noted that the systemic banks have already increased their market share to a significant extent at the expense of the smaller banks.

5. Liquidity conditions in the Greek banking system

Concerning the liquidity of the Greek banking system, there have been two periods observed whereby the loss of confidence from depositors regarding the course of the Greek economy and the prospects of Greece remaining in the Eurozone led to a significant outflow of deposits. The first period, as a result of the uncertainty of the financial crisis and the debt crisis, led to a decrease in deposits from €238 billion at the end of 2009 to €151 billion at the end of June 2012, through capital outflow which occurred mainly to foreign financial institutions. The second period was related to the uncertainty about the outcome of negotiations for reaching a new agreement on a financial program for Greece, after the election of the new Government on January 25, 2015. Since there was no sign of a compromise between Greece and international lenders, this development led to the reduction of deposits from €148 billion at the end of January 2015 to €130 billion at the end of May 2015. The reduction in deposits in this case is attributed to the outflow of deposits from the domestic banking system to destinations mainly within the Greek territory (i.e. safety deposit boxes, dwellings, etc). It should be noted that deposits are directly linked to GDP and the financial situation of the Greek economy. For many households and SMEs, which were affected by the austerity measures, disposable income dropped significantly, contributing to an additional reduction of deposits in order to cover their direct expenses and also due to increased taxation (in January 2016 deposits amounted to €122.2 billion compared to €123.4 billion in December 2015).

The significant outflow of deposits led the Greek banks to resort to other liquidity sources in order to meet their funding needs. The Greek banks were able, as members of the Eurosystem, to pledge government securities and other assets which were held in their portfolios in order to draw liquidity from the Eurosystem. In this respect, Eurosystem funding increased substantially from €44.9 billion in November 2014 to €56 billion in December 2014, reaching the amount of €126.7 billion in June

DIAGRAM 4
Customer deposits and Eurosystem funding (ECB and ELA)

Source: Bank of Greece (BoG).
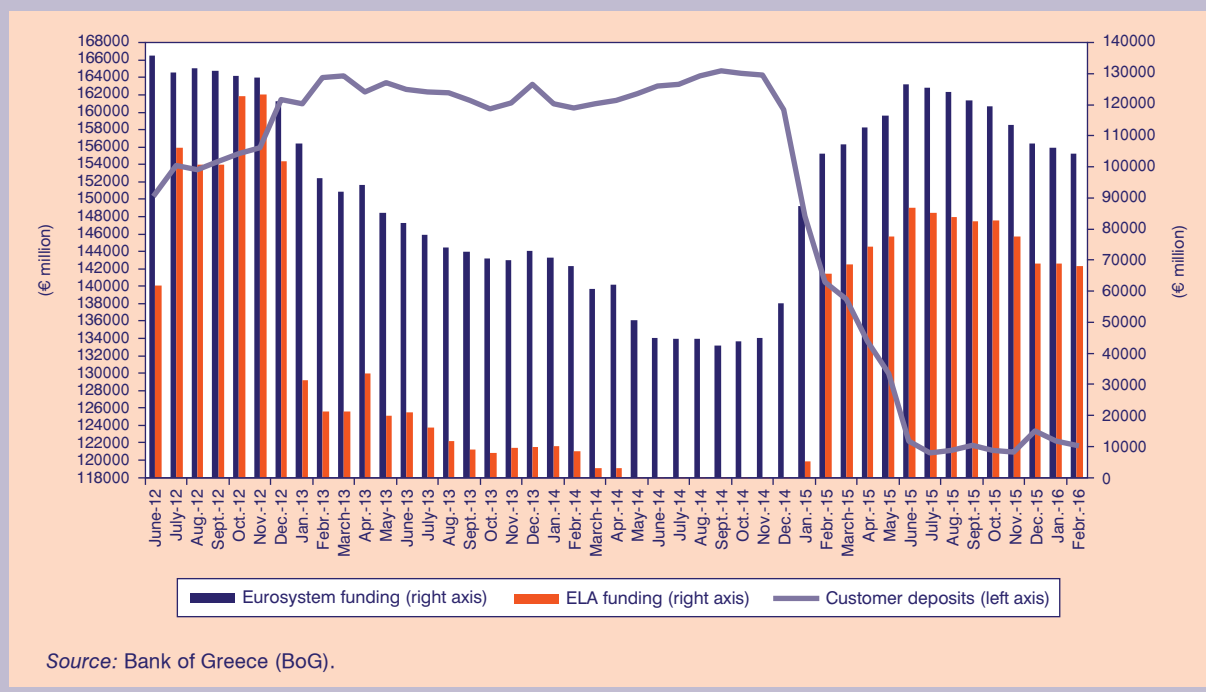
2015, when the Greek government imposed restrictions on capital movements due to a significant outflow of deposits. Diagram 4 indicates the inverse relationship between deposits and Eurosystem funding. Each time deposits decreased, Eurosystem funding increased and vice versa, although this relationship is not linear.

It should be noted that the funding of banks from Eurosystem involves both the direct funding from the ECB as well as the funding from the emergency liquidity mechanism ELA (Emergency Liquidity Assistance). ELA funding is extraordinary and takes place with the aim to substitute ECB funding in case the ECB does not recognize securities as eligible with those of a high credit rating, and in other exceptional cases where a sudden and large-scale outflow of deposits occurs. During the first half of 2015, ELA was the ultimate balancing mechanism for the outflow of deposits before the imposition of controls on capital movements. However, the advantage of direct ECB funding stems from the fact that this is a very cheap source of funding, at an interest rate of 0.05%, while ELA funding is more expensive, with an interest rate of 1.55%.

6. Analysis of the resilience of the Greek banking system

The ECB conducted a comprehensive assessment for the four Greek systemic banks, which consisted of

evaluating their asset quality –the Asset Quality Review (hereinafter: AQR)– and conducting stress tests which were based on (a) the implementation of AQR to evaluate the accuracy of the book value of assets of banks as of June 30, 2015 and (b) conducting stress tests, with the adoption of two hypothetical scenarios, the baseline and adverse scenario for the period starting from June 2015 until the end of 2017, taking into account the results of the AQR exercise. The objective of this assessment was (a) to correct asset quality issues identified during the audit and (b) to create a capital buffer, which will facilitate the ability of banks to cope with the adverse macroeconomic disturbances both in the short and in the medium term.

The comprehensive assessment after the stress tests during the period from June 2015 until the end of the year 2017, identified a capital shortfall of €4,391.12 million in the baseline and €14,400.61 million in the adverse scenario for the four systemic banks after comparing the estimated CET1 capital adequacy indicators at the end of 2017 with the thresholds for each scenario (9.5% for the baseline and 8% in the adverse scenario) which were already set for the exercise.

In order to fully meet their capital needs, the four systemic banks proceeded to recapitalizations mainly from the private sector and to a lesser extent from the HFSF, which were successfully completed in December 2015.

TABLE 5 Capital adequacy indicators (%)

		Greek commercial banks		
		Greece		**EU domestic banks**
	2014	2015 H1	2015	2015 Q3
On a consolidated basis				
CAR	14.1	10.3	16.5	16.9
Tier I ratio	13.9	10.1	16.4	14.2
Common Equity Tier I ratio	13.8	10.1	16.4	13.1
		Greece		**EU domestic banks**
	2014	2015 H1	2015	2015 Q3
On a solo basis				
CAR	16.5	12.3	18.7	-
Tier I ratio	16.1	12.1	18.6	-
Common Equity Tier I ratio	15.9	11.9	18.6	-

Source: Published Financial Statements and Presentations.

For the aforementioned reasons, the Capital Adequacy Ratio (CAR) of the Greek commercial banking groups, increased significantly and amounted to 16.5% in 2015 compared to 14.1% in 2014 (1st half of 2015: 10.3%). Similarly, the Tier 1 ratio amounted to 16.4% in 2015 compared to 13.9% in 2014 (1st half of 2015: 10.1%). Finally, the CET 1 ratio stood at 16.4% in 2015. On a solo basis, the CAR of Greek banks amounted to 18.7% in 2015 compared to 16.5% in 2014, while CET1 amounted to 18.6% in 2015 (Table 5).

The strengthening of the capital base of Greek commercial banks has resulted in the creation of a capital buffer, consisting of a good quality of capital, which will support these banks to withstand the negative financial results and the effects of the high level of delinquencies. Nevertheless, the deterioration of the GDP has a negative impact on the asset quality of Greek banks, while the high stock of delinquencies constitutes a constraint to the capability of funding the real economy and thus enhancing revenues through the increased operating profitability, given the necessity to maintain a high stock of provisions in order to cover delinquencies. On the other hand, credit institutions find it difficult to raise more liquidity from depositors, while the prospects of drawing liquidity from the international markets prior to a successful program review of the Greek economy from international lenders remain uncertain. As a result, the maintenance of a significantly higher capital buffer in Greek banks, even above the averages of the Euro area banks, is the only way to ensure their resilience in the medium run.

7. Conclusions

From the assessment of the changes in the market shares of assets, loans and deposits as well as the behavior of the margins, it appears that an increase in concentration has not been a deterrent for the level of competition; on the contrary, competitive conditions were maintained during the reporting period. It should be noted that in 2015 an acceleration of deleveraging was observed, which focused more on the categories of loans related to higher credit risk (i.e. consumer loans) and less on the categories of mortgage and corporate loans where banks are trying to preserve these two portfolios.

In addition, from the analysis of the sample of commercial banks, it was observed that there is a small number of banks with average loan balances (especially mortgages and corporate loans) much higher than the remaining ones. This can be viewed as an indication that banks have increased their market share in these two markets during the reporting period and compete between themselves without any threat from the remaining ones. Regarding the consumer loan market, there are more banks with higher market shares. In addition, a significant increase in the concentration which was observed during 2013 in the Greek banking system is positively related to competition, because the non-profitable/non-viable banks were acquired by the efficient/viable banks. Despite the fact that the banking system remains a "hostage" of capital controls (since June 2015), but is also dependent on reigniting the Greek economy and the restoration of investor confi-

dence in the Greek market, the existence of the four systemic banks, as pillars of the banking system, has resulted in the increase in concentration, nevertheless there is no indication of an adverse effect to competition.

It is also important to note that while during the period from October 2011 until December 2012, a decrease in the margin was observed, in 2013 and the three quarters of 2014 the margin increased. An interpretation of this finding is the continuation of the ECB policies of interest rate reduction in the Euro area in conjunction with the restructuring of the banking system. On the other hand, lending interest rates remain high, mainly due to consumer lending interest rates (bearing the highest credit risk and managerial costs that are evident in this category of borrowing). Nevertheless a small downward trend is observed during the 4th quarter of 2014 and the 1st quarter of 2015, while a stabilization is observed in the 2nd half of 2015.

From the examination of data, it is observed that the funding of banks from Eurosystem sources (ECB and ELA) was significantly increased in the 1st half of 2015, given that in the midst of a significant deposits outflow, access to the interbank market, the money and the capital markets has been restricted. Specifically, during the first half of 2015, ELA funding increased marketly as the significant delay in reaching a compromise agreement between the Greek authorities and international creditors for the fiscal adjustment program affected adversely the liquidity of banks.

However, the agreement in July 2015, after the imposition of capital controls on capital movements, resulted in the stabilization of deposit balances with relatively small outflows observed. On the other hand, inflows were limited during the summer months (August & September 2015) due to the tourist season, and in December 2015 due to the successful recapitalization of the Greek banking system. It should be noted that the delay in the completion of the program review by international creditors is considered a deterrent for a more imminent and stable inflow of deposits.

It is also noteworthy that the recapitalization of the banking system, which was completed in December 2015, created a significant high-quality capital buffer for Greek banks, which allowed the banking system to further protect itself from the effects of the adverse macroeconomic environment and the high level of NPLs. Moreover, maintaining high capital adequacy ratios is a necessary condition for the maintenance of liquidity provision through Eurosystem.

It should be noted that the recovery of the Greek economy and the achievement of sustainable economic growth requires a healthy, functional and viable banking system. Nowhere in the world could sustainable growth be observed without a properly functioning financial system, its key role being the provision of liquidity from those who have surpluses (depositors and investors) to the real economy that shows a lack of funds (businesses and households) through the channel of credit growth.

In order for the financial institutions to be able to finance the Greek economy, the confidence of Greek depositors in the domestic banking system should be restored. The repatriation and growth of deposits to Greek banks, with the basic incentive that the new deposits will not be subject to capital controls, could significantly help in achieving this objective. Also, the maintenance of the existing European Directive on deposit guarantees up to €100.000 and the assurance that this will apply to the letter and without any exception (even on bail-in cases) as long as Greece remains in the fiscal consolidation program, would contribute to increased confidence in the banking system.

Finally, banks should demonstrate a greater social responsibility through the prudent management of the problem loans and proceed to "generous" restructuring of non-performing mortgage loans and NPLs of sustainable SMEs (not only through a reduction in interest rates, an increase in the grace period, and an extension of the repayment term, but also by applying a "haircut" to the principal amount). At the same time, banks should be "permitted" to undertake real estate auctions and auctions of businesses in cases where there is significant evidence that their owners/holders are "strategic defaulters". This measure would withhold the upward trend of their delinquencies and free up funds that can be diverted to the real economy.

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A dynamic analysis of profitability in cultural and creative industries in Greece

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1. Introduction

Cultural and creative goods have become available to an increasing number of people worldwide, impacting their welfare and quality of life. Individuals consume or make use of such goods on a daily basis while, for example, watching a movie or an advertising message on TV, playing a videogame, visiting a museum, attending a concert or the theater, or hiring an interior designer/decorator to decorate their house. In general, cultural and creative products and services are based on symbols, rely heavily on intellectual property and appeal to human senses conveying meanings, and offer a great variety of experiences. At least some of these benefits can be explicitly or implicitly interpreted in terms of economic value.

With revenues of €535.9 billion, cultural and creative industries (CCIs) accounted for 4.2% of Europe's GDP in 2012 (EY, 2014). At the same time, more than 7 million Europeans were directly or indirectly employed in CCIs, corresponding to 3.3% of the EU's active population in 2012 (EY, 2014). In addition, given the close relationship between creativity and innovation (Potts, 2009; Cooke & De Propris, 2011), relevant studies provide evidence on the significant contribution of CCIs to the production of innovative products and services (Bakhshi & McVittie 2009, Müller et al. 2009). Notably, these industries, due to their idiosyncratic features, appear to be highly dynamic and more "resilient" to economic crisis compared to other industries (UNCTAD, 2010). Indeed, in adverse economic conditions and times of crisis, CCIs seem to be an even more significant driving force of employment and entrepreneurial activity (Henry & De Bruin 2011).

The research and academic interest in CCIs has grown considerably during the last decade due to their increasing economic magnitude, as well as the major changes that these industries have experienced, largely resulting from relevant technological advances. The internet and digitization have significantly changed production, distribution, exchange and consumption patterns of cultural and creative goods, affecting both supply and demand in the relevant markets. For example, digital technology has largely transformed creative activities based on design (e.g. industrial design, architectural design, fashion design and web design) while, at the same time, it has brought about radical changes in the music industry. In the context of the so-called New or Digital Economy, CCIs play a key role, being highly recognized by the "Europe 2020" strategy which considers the cultural and creative sector a significant driver of growth and competitiveness at European, national and regional levels.

In Greece these industries have been highly disregarded until recently. During the last years, though, an increasing number of researchers, managers and policy makers have begun to pay attention to the cultural and creative sector. The study of Lazaretou (2014) is one of the most recent attempts to investigate Greek CCIs, examining their features and performance, mostly, in terms of international trade. Moreover, Avdikos (2014) summarizes theories and policies related to CCIs, and attempts to quantify the contribution of cultural and creative businesses to the Greek economy using data from Eurostat, emphasizing spatial aspects at the same time. At a policy level, the potential crucial role of CCIs in the recovery of the Greek economy is increasingly recognized. Notably, CCIs are included among the eight strategic priority areas under the new National Strategic Reference Framework (ESPA 2014-2020).

Given the above, the present article examines the performance and strategic behavior of firms operating in the Greek cultural and creative sector during the period 2000-2014. The analysis is conducted using a dynamic model based on the concept of "persistence of profitability" (PoP). To the best of our knowledge the literature offers no evidence on the dynamic patterns of firm profits in CCIs in a similar context. To test the PoP hypothesis we estimate a first degree autoregressive model using data of financial accounts at the firm level, which are derived from the Hellastat database. The results provide evidence on the firms' ability to preserve profits over time, as well as the dynamic competition patterns in Greek CCIs, placing particular emphasis on the years of economic crisis.

The remainder of the paper is structured as follows: The next section presents the main approaches to defining CCIs, while Section 3 summarizes the existing theories referring to the PoP hypothesis. Section 4 describes the data and methodology of the research. The results of the empirical analysis are presented and discussed in Section 5. The final section summarizes the main conclusions.

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2. Defining cultural and creative industries

Although the culture and creativity sector has been the subject of considerable debate for more than a decade, there is no commonly accepted definition of CCIs with serious implications concerning their conceptualization, determination and mapping. Existing definitions emphasize elements related to creativity and intellectual property, as well the great diversity of features embedded in other sectors. More particularly, CCIs lie at the crossroads of arts, culture, business and technology and can be defined as those economic activities that strongly rely on individual creativity, skills and talent and in principal produce intellectual property, in contrast to material goods or immediately consumable services (UNCTAD 2010).

The recent literature (e.g. UNCTAD 2010) highlights four different models of CCIs: The first –which is quite popular– has been developed by the UK's Department for Culture Media and Sport model (DCMS, 2011), and is a relatively straightforward selection of 13 industries based on individual creativity, skill and talent, with potential for growth through the exploitation of intellectual property. Second, the Symbolic Texts Model, which derives from the critical-cultural studies tradition (Hesmondhalgh 2002) puts the 'high arts' at the core and separately categorizes other activities as peripheral and 'borderline'. Third, the Concentric Circles Model places cultural goods and value at the core, but also identifies wider cultural and related industries (Throsby 2001). Fourth, the Copyright Model, developed by the World Intellectual Property Organization (WIPO), is primarily concerned with industries directly involved with, or which support, the creation, manufacture, production, broadcast and distribution of copyrighted works.

Since the aforementioned models reflect different understandings of CCIs, using also different classification criteria, they do not agree regarding the inclusion of certain activities in CCIs. Such examples are museums and libraries (included only in the Concentric Circles Model), crafts (included only in the DCMS model) and sports (considered to belong to CCIs only by the Copyright Model). However, there is clearly much agreement about the majority of activities referring to film, music, advertisements and the performing arts. In general, one could argue that there is no 'right' or 'wrong' model of CCIs, simply different ways of interpreting the structural characteristics of creative production (UNCTAD 2010).

A relatively recent study (Nesta 2013) proposes a complete methodological framework for the identification of CCIs, leading to results which are consistent to a large extent with the DCMS model. However, it has some comparative advantages, such as it takes into account the changes in relevant activities resulting from the introduction of information and communication technologies. This methodology uses the term "creative intensity" (CI) as a creativity indicator underlying economic sectors. The CI index is defined as the ratio of creative-occupied workers to total employment in an industry, i.e. the proportion of an industry's workforce that is engaged in creative occupations. In defining creative-occupied workers or creative professions, five criteria are adopted, which refer to the degree of novelty of the process, the absence of a mechanical substitute to do the work, the non-repetitiveness or non-uniform function, the creative contribution to the value-chain, and the requirements in creative judgment and interpretation.

3. Theory of the Persistence of Profitability

According to the theory of the Persistence of Profit (PoP) (Mueller 1977, 1986), if entry and exit are sufficiently free in a market, competition will eliminate any abnormal profit quickly. In this case, economic profits should quickly converge to a common mean. On the contrary, the existence of high barriers to dynamic competition reveals that profits should persist. In other words, Mueller's work implies that high entry barriers, by softening competition, appear to protect the profitability of an entire industry. Cable and Mueller (2008) point out that in a world of innovation, imitation and market share rivalry, it is dynamic competition which matters on how quickly excess profits are eliminated over time.

Some studies (e.g. Porter 1980, Besanko *et al.* 2010) provide a framework according to which the structural characteristics of industries constitute the primary factors of firm profitability. However, Caves and Porter (1977) claim that asymmetries among firms within industries, that is mobility barriers, deter the equalization of profit rates. More specifically, the term "isolating mechanisms" is commonly used in the literature to describe the economic forces that may protect profitable firms within a market (Rumelt 1984, Teece *et al.* 1997). Isolating mechanisms limit the extent to which a competitive advantage can be duplicated or neutralized and thus allow profitable firms to persistently outperform their industry.

According to Besanko *et al.* (2010), isolating mechanisms can be classified into two general groups: impediments to imitation and early-mover advantages. Impediments to imitation hinder existing firms and potential entrants from duplicating the resources and capabilities that form the basis of the firm's competitive advantage. These forces include, for example, legal restrictions, superior access

to inputs or clients, scale economies, etc. Early-mover advantages appear once a firm gains a competitive advantage and enable the increase of the economic power of that advantage over time. Some types of early-mover advantages are learning economies, reputation and client's uncertainty, clients' switching costs, etc. Overall, it can be argued that PoP depends on the degree of industrial entry barriers and/or the isolating mechanisms that may exist within a market.

4. Data and methodology

The dataset used is derived from the Hellastat database.[1] It consists of annual observations of 3,252 firms over the 2000-2014 time period. The firms were selected according to the specific industry in which they were classified based on the NACE1 statistical classification of economic activities. In particular, for the purposes of our research we focused on CCIs which were determined based on the study of the British Innovation Foundation (Nesta 2013), as described above. Since this study identified the CCIs following the NACE2 classification, we had to convert the industrial codes into the corresponding NACE1 codes as the latter were used by Hellastat. Consequently, 22 industries were selected at a four-digit level which made up six wider cultural and creative sectors in Greece, as shown in Table 1.

TABLE 1 Distribution of CCI firms by sector

Sector	Number of firms	NACE 1 Code	Description
Publishing	551	22.11	Book publishing
		22.12	Publishing of newspapers
		22.13	Publishing of journals and periodicals
		22.14	Publishing of sound recordings
		22.19	Other publishing activities
Computer programming & consultancy	1,040	72.21	Software publishing
		72.29	Other software consultancy and supply
		72.60	Other computer related activities
Advertising, News and Market Research	637	74.40	Advertising
		74.13	Market research and public opinion polling
		92.40	News agency activities
Media, video and sound	434	92.21	Radio activities
		92.22	Television activities
		92.11	Motion picture and video production
		22.31	Reproduction of sound recording
		22.32	Reproduction of video recording
		22.33	Reproduction of computer media
Architectural activities	454	74.20	Architectural and engineering activities and related technical consultancy
Arts & Photography	136	92.31	Artistic and literary creation and interpretation
		92.39	Other entertainment activities n.e.c.
		74.81	Photographic activities
		92.33	Fair and amusement park activities
CCIs -Total	**3,252**		

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1. The Hellastat database provides business and financial Information for 90,000 companies covering the entire Greek market.

The initial sample comprised 4,607 enterprises. However, data cleaning procedures led to the final sample consisting of 3,252 companies.[2] As shown in Table 1, most firms (1,040) are engaged in software and computer-related activities, followed by advertising agencies (637) and publishing firms (551). Arts and photography comprise the smallest number of companies (136), where many businesses were excluded due to insufficient data. It should, however, be noted that very small businesses and freelancers producing cultural/creative goods and services are not officially registered and therefore cannot be taken into account in our analysis. Indeed, the small size of many CCI firms and the associated difficulty in identifying creative businesses is considered a common feature of the cultural and creative sector not only in Greece but in Europe as well (HKU 2010).

Based on Goddard *et al.* (2004), we analyze the persistence of firm profitability using the following autoregressive model which describes the dynamic profit patterns of firms in two subsequent periods ($t-1$, t):

$$\pi_{i,t} = a_i + D_t + \rho \cdot \pi_{i,t-1} + \varepsilon_{i,t} \qquad (1)$$

where $\pi_{i,t}$ denotes the profitability of firm i at time t; the dummy D_t captures the time effects; the time invariant term a_i captures the unobserved firm-specific effects; the coefficient ρ captures the impact of past profits on current profits, and the disturbance term $\varepsilon_{i,t}$ reflects all the other factors that affect the convergence process of profits among firms.

To test the PoP hypothesis for CCIs, i.e. the extent to which firms in CCIs preserve their profits over time, we focus on coefficient ρ which reflects the speed at which abnormal profits tend to converge towards a common mean. When $\rho = 0$, this implies zero persistence, and suggests that competition is sufficiently fierce so that an abnormal profit earned in one year does not persist at all into the following year. If $\rho > 0$, this implies that firms that earn above-average profits today should continue to do so in the future. In that case, abnormal profit does persist. Competition is less fierce because barriers to entry or other impediments to competition are effective to some extent. Apparently, the higher the value of ρ the slower the rate in which earnings decline and, hence, the more persistent the profits are. On the other hand, the smaller the value of ρ the faster the rate in which profits decline to a common mean and, as a result, the persistence of profits is weaker.

To further elaborate the above, Figure 1 illustrates the case of firms which are able to preserve their abnor-

FIGURE 1
Persistence of firm profitability
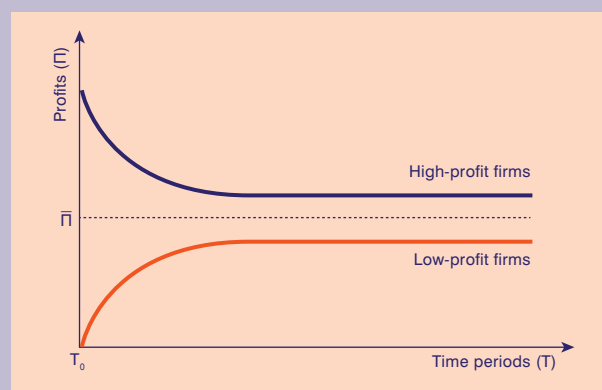
mal profits over time ($\rho > 0$). It is obvious that despite the convergence trend in profits between high- and low-profitability firms to an average level $\overline{\Pi}$, firms with profits above $\overline{\Pi}$ in time T_0, preserve at least some of their profits in subsequent periods. On the contrary, firms with profits below $\overline{\Pi}$ in period T_0 fail to increase profits above the average level even after many time periods. In case of zero persistence of profitability ($\rho = 0$), profits would finally converge to a common level $\overline{\Pi}$, which reflects competitive market profits.

Equation (1) is estimated using the Generalized Method of Moments (GMM) system as developed by Blundell & Bond (1998). This is considered an appropriate method for panel data which involve a large number of firms observed over a relatively small number of time periods. The basic advantages of this method refer to controlling for unobserved individual effects and also for endogenous independent variables. To take into account a potential correlation of independent variables with the disturbance term, the GMM system constructs proper instruments using time lags of the included independent variables.

To measure firm profits we use the Return on Assets (ROA) indicator which shows how profitable a firm is relative to its total assets, and is related to a firm's efficiency in utilizing its assets to generate earnings. In particular, two variables were built: ROA_1 which was computed as the ratio of *profits before interest and taxes* to *total assets*, and ROA_2 which was constructed as the ratio of *profits before interest, taxes and depreciation* to *total assets*. The required data for the computation of the two indicators were derived from firms' balance sheets (total assets) and income statements (profit before interest and taxes,

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2. Initially, 206 companies were removed since errors in industry classification were found based on the description of the activity provided by Hellastat. At a second stage, 1,149 additional companies were also excluded due to data unavailability.

TABLE 2 Descriptive statistics for the Return on Assets (ROA) indicator

	Total period (2000-2014)	Pre-crisis period (2000-2008)	Crisis period (2009-2014)
ROA_1=Profits before interest and taxes / Total assets			
Average	0.011	0.035	-0.020
Standard deviation	1.791	2.314	0.578
Number of observations	24,500	14,023	10,477
ROA_2= Profits before interest, taxes and depreciation / Total assets			
Average	0.057	0.085	0.021
Standard deviation	1.783	2.305	0.567
Number of observations	24,461	13,995	10,466

earnings before interest, taxes and depreciation) as provided by Hellastat.

Table 2 reports basic descriptive statistics of ROA_1 and ROA_2 for all firms in our sample in the total examined period 2000-2014, as well as the two subperiods, i.e. before the onset of the crisis in Greece (2000-2008) and the subsequent years (2009-2014). Descriptive statistics in Table 2 show the negative impact of the crisis on firm performance, since both indicators appear to significantly decline in average terms in the 2009-2014 period as compared to the pre-crisis years. Notably, in the case of ROA_1 a negative average value (-2%) is observed during the crisis period.

4. Results

The main results of the empirical analysis are presented in Table 3, where model (1) has been estimated using both profitability measures based on the Return on Assets (ROA_1 and ROA_2) for the total study period (2000-2014), the period before the crisis (2000-2008) and the period after the start of the crisis (2009-2014). Focusing on the coefficient ρ, we observe that the corresponding estimate is statistically significant at the 1% significance level in all examined periods irrespective of the used measure of profitability (ROA_1 or ROA_2). In fact, the differences in ρ estimates between the alternative measures appear to be very small.

For the whole period, a ρ value of about 0.03 indicates an almost absence of persistence of profitability. This suggests that in Greek CCIs competition is sufficiently fierce so as to quickly eliminate any abnormal firm profits, leading to the prevalence of a common aver-

age profit level in the market. Therefore, the results indicate that the entry/exit barriers in these industries are very low. This conclusion is consistent with a general characteristic of CCIs, namely the small requirements in initial capital being an insignificant barrier to entry in these sectors (UNCTAD 2010). At the same time, mobility barriers within CCIs seem to be very low as well, so that firms fail to maintain any sustainable competitive advantage that they may have built in a previous time period.

Comparing the values of ρ before and after the crisis onset yields even more interesting conclusions. While the estimate for the years 2000-2008 is very close to zero, in the recession years it appears to be considerably higher (0.14). This shows that –at least to some extent– a number of CCI firms succeed in retaining profits above the average industry level. This can be explained in the context of the theory of "isolating mechanisms". Some firms, in their attempts to survive, may intensively exploit existing capabilities based on creativity and innovation that allow them not only to build but to also sustain a competitive advantage that is difficult for competitors to duplicate or neutralize. In other words, the crisis is likely to contribute to the development of mobility barriers within industries, facilitating the operation of isolating mechanisms and, consequently, the maintenance of a competitive advantage by even a small number of business over time. On the other hand, it seems that low-profit and loss-making firms in the period before the outbreak of crisis are unable to significantly improve their position and increase their profitability (or constrain their losses).

To further test the robustness of our results, we additionally used Return on Sales as a measure of firm prof-

	Total period (2000-2014)	Pre-crisis period (2000-2008)	Crisis period (2009-2014)
ROA$_1$= Profits before interest and taxes / Total assets			
$\pi_{i,t-1}$	0.0298*** (0.0016)	0.0020*** (0.0002)	0.1395*** (0.0020)
α_i	0.0861*** (0.0154)	0.0854*** (0.0109)	0.0138* (0.0078)
Number of instruments	52	28	25
Number of observations	20,968	11,470	9,498
ROA$_2$= Profits before interest. taxes and depreciation / Total assets			
$\pi_{i,t-1}$	0.0289*** (0.0015)	0.0017*** (0.0002)	0.1389*** (0.0020)
α_i	0.0831*** (0.0131)	0.0545*** (0.0085)	0.0031 (0.0073)
Number of instruments	52	28	25
Number of observations	20,962	11,462	9,500

Notes:

*** The null hypothesis that the parameter is equal to zero is rejected at the 1% level of significance.

** The null hypothesis that the parameter is equal to zero is rejected at the 5% level of significance.

*The null hypothesis that the parameter is equal to zero is rejected at the 10% level of significance.

Standard errors are reported in parentheses.

Sargan tests are accepted in most cases, indicating the validity of the instruments used.

The tests for the absence of second order serial correlation are accepted, confirming the key identifying assumption for the consistency of the GMM method according to Arellano and Bond (1991).

itability, constructing two indicators corresponding to ROA$_1$ and ROA$_2$, namely ROS$_1$ and ROS$_2$, respectively. The related results are presented in Table 4. It is clear that, although the estimated profitability coefficients are slightly lower than those of Table 3, they lead to the same conclusions regarding the PoP hypothesis. The results show that the dynamic competition in the pre-crisis period pushes profits of firms in CCIs to converge to a common mean industry level. On the other hand, the findings suggest that when Greece plunged into a prolonged recession period, businesses in CCIs that had created value at a previous time maintained their competitive advantage in the subsequent years, albeit to a small extent, contrary to their weak and loss-making counterparts which seem unable to considerably improve their position after the crisis outbreak.

5. Conclusions

The economic contribution of the cultural and creative sector in terms of value added, employment, innova-tion and development is now widely recognized. However, the research on CCIs is largely fragmented and insufficient, failing to provide consistent and complete guidelines regarding a number of issues referring to the exact definition of CCIs, firm behavior, strategies and competition patterns in the relevant markets. This article carries out a dynamic analysis of the profitability of firms being engaged in CCIs in Greece, using a large number of observations referring to 2,352 companies in the 2000-2014 period. The analysis employs the theoretical framework of "persistence of profitability" that allows the investigation of the existence of obstacles to competition and, consequently, the persistence of abnormal profits in the market. Particular emphasis is placed on profitability patterns and the operation of dynamic competition during the crisis period.

The empirical results reveal that, before the crisis, the forces of competition seem to successfully eliminate any abnormal profits in Greek CCI markets. However, the picture changes to some extent after the start of the crisis, with at least some firms being able to sustain

	Total period (2000-2014)	Pre-crisis period (2000-2008)	Crisis period (2009-2014)
ROS_1= Profits before interest and taxes / Sales			
$\pi_{i,t-1}$	0.0233*** (0.0008)	0.0132*** (0.0005)	0.1200*** (0.0043)
α_i	0.6788*** (0.0637)	0.4571*** (0.05043	0.3848*** (0.1290)
Number of instruments	52	28	25
Number of observations	19,761	10,855	8,906
ROS_2= Profits before interest, taxes and depreciation / Sales			
$\pi_{i,t-1}$	0.0281*** (0.0008)	0.0083*** (0.0003)	0.0880*** (0.0032)
α_i	0.7121*** (0.0562)	0.3577*** (0.0747)	0.3568** (0.1428)
Number of instruments	52	28	25
Number of observations	19,763	10,855	8,908

Notes:

*** The null hypothesis that the parameter is equal to zero is rejected at the 1%level of significance.

** The null hypothesis that the parameter is equal to zero is rejected at the 5% level of significance.

*The null hypothesis that the parameter is equal to zero is rejected at the 10% level of significance.

Standard errors are reported in parentheses.

Sargan tests are accepted in most cases, indicating the validity of the instruments used.

The tests for the absence of second order serial correlation are accepted, confirming the key identifying assumption for the consistency of the GMM method according to Arellano and Bond (1991).

a competitive advantage already achieved and retain profits above the average market, potentially due to the operation of isolating mechanisms. However, low-profit and generally weak firms before the crisis appear to be negatively affected by the adverse economic conditions in Greece and transfer their weaknesses in the years of crisis, being unable to significantly improve their position. The crisis, therefore, is likely to have contributed to the emergence of barriers to mobility within the industries, facilitating the operation of isolating mechanisms in favour of firms that were able to create value before the crisis, but at the expense of already weak and loss-making enterprises.

Overall, however, our findings indicate that there exist at least some firms in Greek CCIs which show growth potential and appear to be resilient in times of recession. This is especially important given the difficult economic situation of our country, and should be taken into account by policy makers. In this context, it is necessary to design and implement a series of specific measures and tools aiming at supporting the CCIs, taking into account at the same time the specific characteristics and needs of businesses active in these industries.

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REPORT 75: Freight transport and development of international logistics hubs in Greece

Theodore Tsekeris

This book investigates the national strategic goal to make Greece an international transit cargo hub. At the same time, it provides an analysis of the country's possibilities to more efficiently utilize all the available means of transport, in order to maximize the diffusion of benefits arising from the attainment of this goal across the Greek regions. On the one side, the analysis demonstrates the impacts of economic crisis and the interregional inequalities in various performance measures of the Greek freight transport market per mode and commodity category. On the other side, it shows the prospects for the export trade activity and several opportunities arising from investment actions and plans, such as those of COSCO on the basis of Piraeus port. The developments and the crucial role of combined transport are stressed, which can potentially reinforce the geopolitical and economic position and the openness of the country as an import-export gateway of the European hinterland and a major transit and transhipment cargo hub in Southeastern Europe and the Eastern Mediterranean.

Special emphasis is given on how Greece can adjust to the current conditions of international trade, logistics and global value chains and can take advantage of the reorganization of global shipping, container terminal and infrastructure supply markets. Among the prerequisites, greater coordination among the various transport network systems is suggested, in conjunction with other activities, such as those of manufacturing, energy, and information and communication technologies. The completion of the south-north intermodal (road and rail) corridor between Patras-Athens-Thessaloniki up to the northern borders, as well as the intermodal Egnatia corridor linking the Greek-Turkish borders with the Ionian Sea, are considered of utmost importance for promoting the combined (mostly sea-rail) transport operations and reducing interregional inequalities in domestic and foreign market access.

An indispensable component of the domestic freight transport system must be a network of logistics parks or hubs (of national and/or regional extent), whose hierarchical structure, number, location and catchment area are specified here with use of advanced network analysis techniques. In addition, several structural/institutional reforms are proposed, including the integrated strategic planning and multilevel governance of transport networks and the creation of a national transport and logistics observatory for project-level monitoring and evaluation purposes, based on a set of spatial economic, environmental and social indices.

In order to fill the estimated funding gaps in the transport and logistics sector, attention should be given to innovative financing mechanisms and alternative European funds from such programs as 'Connecting Europe', the extension of public-private partnerships and the attraction of foreign investment by companies having an influence on global supply chains. Networking strategies and cooperation schemes between the domestic and foreign transport/logistics hub operators, the development of Greece as a regional energy transit hub and the establishment of special economic zones, such as free trade and export-processing zones, would foster the country's hubness in the international freight transport and logistics networks. The proposed plans, in combination with the strengthening of the institutional framework for logistics activities, are evaluated that would have a considerable contribution to the Greek economy, in relation to macroeconomic variables such as GDP and the number of employees in the sectors of road, rail and maritime transport and logistics services.

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