CENTRE OF PLANNING AND ECONOMIC RESEARCH

Issue 18, June 2012

# GREEK ECONOMIC OUTLOOK

- Macroeconomic analysis and projections
- Public finance
- Human resources and social policies
- Development policies and sectors
- Special topic: The Greek economy at a crossroad

Special participation: Professor Panagiotis Korliras
Professor Stavros Thomadakis

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# Editorial

"The Greek economy at a crossroad". This is the title of the June 2012 special issue of the journal of KEPE. This is also the reality. The effectiveness of the policies of the first phase seeking to exit from the crisis seemed inadequate. The subsequent public verdict of May 6 led to political deadlock. The reflection on the Greek economy was more than evident with effects on bank deposits, the stock-exchange index, the credit ratings of the Greek economy and internationally with statements from both institutional factors of the European Union and from global institutions and fora. The first results from the application of the second memorandum based on the analysis of figures, the forecasts of the models KEPE, but also on the hosted articles, show prospects that can advocate both for possible reformulation of the economic program and new parallel development and social policies. In any case, the end of uncertainty after the elections on June 17 and the effective functioning of state's institutions is a prerequisite, vital indeed for the economy.

In issue 18 the *first part* develops four main themes. In the first section of *Macroeconomic analysis and projections,* analyses of demand, the balance of trade, the consumer price index, the recession and the presentation of KEPE's recent short-term forecasts for the economy are hosted, together with a review of the global economic activity. The second section of *Public finance* includes analyses of the evolution of financial debt and the size of the budget of 2012. In the third section of *Human resources and social policies d*iscussions about the labor market issues, the structure of occupations by region and developments in relation to generic drugs are presented. In the fourth section of *Development policies and sectors*, we present recent developments in the tourism sector, an analysis of demand and public spending in the domestic shipping market and another on trade in agricultural products. The *second part* entitled *The Greek economy at a crossroad* hosts four very important articles. Of particular significance is the article of the Scientific Director of KEPE, Prof. Panagiotis Korliras, entitled *The prospect of an exit from the crisis* and the one of Prof. Stavros Thomadakis on *Financial exclusion and the emergence of non-bank liquidity.* Two other interesting articles follow, by the research teams of KEPE, on *The importance of productivity for the Greek economic growth* and of *The European Union's response to Greece's debt crisis.*

*NICHOLAS VAGIONIS*
*Editor*

# 1. Macroeconomic analysis and projections

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

***Ersi Athanassiou, Ekaterini Tsouma***

As evidenced by the latest National Accounts data (EL.STAT., March 2012), the Greek recession deepened significantly in the course of the year 2011, with the average annual rate of change of the GDP contracting to -6.9%, from -3.5% in 2010. Concerning the current year, preliminary estimates (May 2012) for the first quarter point to a GDP decline of -6.2% compared to the same quarter last year, on a non-seasonally adjusted basis.

According to the main macroeconomic data displayed in Table 1.1.1 and also on the basis of Figure 1.1.1, which illustrates developments in the contributions of the main expenditure components to the annual rate of change of the GDP, the deepening of the Greek economy's recession resulted almost exclusively from the sharpening of the decline in domestic demand. More specifically, as domestic demand contracted at an annual average rate of -9.5% in 2011 from -6.2% in 2010, the relevant negative contribution to the rate of change of the GDP widened to -10.4 from -7.0 percentage points, respectively. This reinforcement of the role of domestic demand as a weakening factor for the GDP was a reflection of both the faster decrease in private and public consumption and the accelerated decline in fixed capital investment.

**TABLE 1.1.1 Main macroeconomic data**

| | Billion EUR | % change compared to the previous period | |
|---|---|---|---|
| | Current Prices | Constant prices | |
| | 2011 | 2010 | 2011 |
| Private consumption | 162.3 | -3.6 | -7.1 |
| Public consumption | 37.5 | -7.2 | -9.1 |
| Gross fixed capital formation | 30.0 | -15.0 | -20.7 |
| of which | | | |
| Dwellings | 8.3 | -18.0 | -23.6 |
| Domestic demand* | 229.9 | -6.2 | -9.5 |
| Exports of goods and services | 51.7 | 4.2 | -0.3 |
| Exports of goods | 25.7 | 5.4 | 3.6 |
| Exports of services | 26.0 | 3.2 | -3.8 |
| Imports of goods and services | 67.7 | -7.2 | -8.1 |
| Imports of goods | 54.3 | -10.3 | -10.8 |
| Imports of services | 13.4 | 8.6 | 4.0 |
| Balance of goods & services (% of GDP) | -7.5 | | |
| GDP | 215.1 | -3.5 | -6.9 |
| Contributions to the change of real GDP | | | |
| Domestic demand* | | -7.0 | -10.4 |
| Balance of goods & services | | 3.0 | 2.4 |
| Change in inventories | | 0.4 | 1.1 |

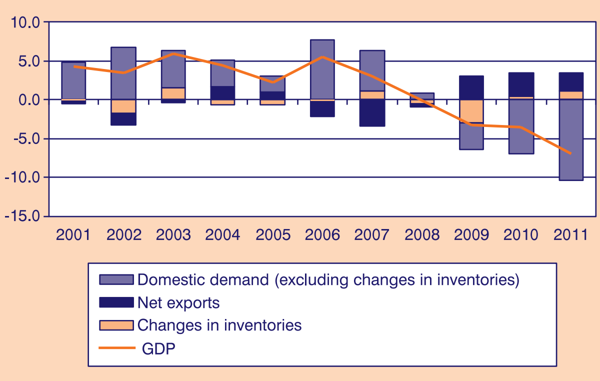
*Source: National Accounts,* EL.STAT (March 2012).

* excluding inventories.

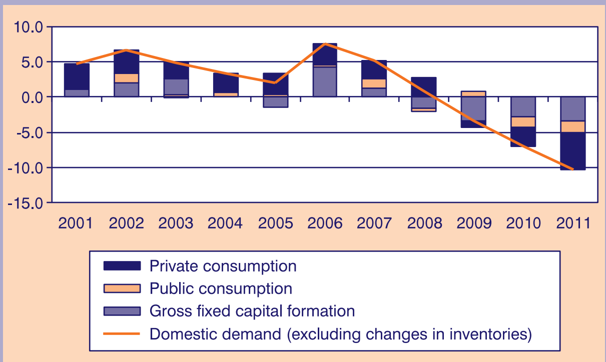
In contrast to the course of domestic demand, the balance of goods and services showed further improvement in 2011. Nevertheless, it should be noted that this improvement resulted solely from the decline in total imports (-8.1%), with total exports exhibiting a small decrease (-0.3%) versus a significant increase in 2010 (5.4%). The decline of the deficit of the balance of goods and services played a significant role in restraining the depth of the recession, as it had a positive contribution of 2.4 percentage points to the rate of change of the GDP. The extent of the recession was also reduced by the increase in inventories, which had a corresponding positive contribution of 1.1 percentage points.

The persistent decline in Greece's GDP is also depicted by the econometric estimates of the probabilities of a recession regime, presented in Section 1.4. Concerning the determining factors of recent developments in GDP, next follows a more detailed analysis of their course and prospects, on the basis of National Accounts data and selected short-term indicators.

**FIGURE 1.1.1**
**Contributions to the rate of change of the real GDP**
***Domestic and net external demand***




***Individual components of domestic demand***



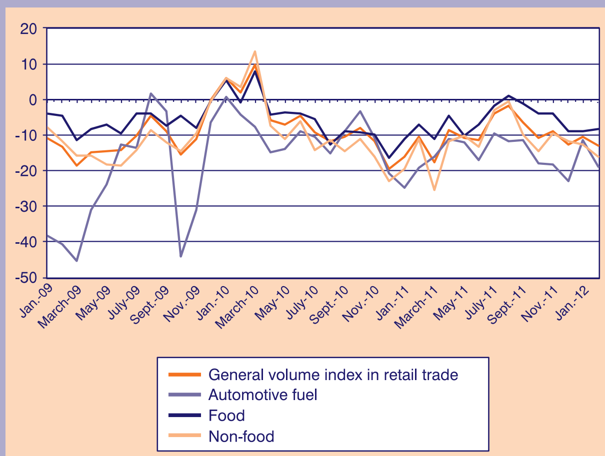

*Source: National Accounts,* EL.STAT.

## 1.1.1. Private consumption

The annual rate of change of private consumption deteriorated to -7.1% in 2011 from -3.6% in 2010, resulting in a major aggravation of its negative contribution to the rate of change of the GDP (to -5.3 from -2.6, respectively). The unfavorable evolution of the monthly general volume index in retail trade is indicative of both the overall deteriorating course of private consumption in the year 2011 and the lack of evidence on a potential recovery during the first two months of 2012 (Figure 1.1.2). For the entire year 2011, the general volume index, as well as the volume indices of the main retail sectors, recorded significantly negative rates of change as compared to 2010, which in all cases exceeded the respective rates that had been registered in 2010 as compared to 2009. In particular, the fall in the general index was on the order of -10.2%, while the decline in the *food, automotive fuel* and *non-food sector* indices amounted to -5.5%, -9.9% and -8.3%, respectively.

The above described adverse developments are also reflected in the path of the volume indices of the individual sub-sectors for the entire year of 2011. These indices recorded negative percentage changes that ranged from -5.1% to -18.8%, exceeding in most cases the respective ones for the year 2010. The ongoing downward trend of the retail sector in Greece is demonstrated by the annual rates of change of both the monthly general volume index and the volume indices of the main retail sectors for the months of December 2011 (holiday season) and February 2012 (season sales), in conjunction with the

**FIGURE 1.1.2**
**Percentage changes in the general volume index and the main sector indices in retail trade**

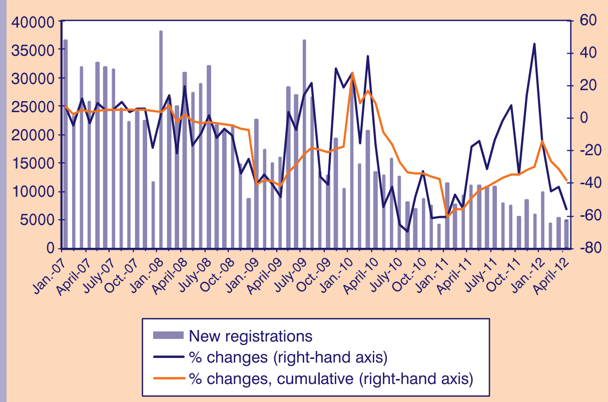



*Source:* EL.STAT.

considerably negative annual changes of these indices in the corresponding months of previous years.

Developments in the private passenger car sector provide further information on the course of private consumption, on the basis of the available monthly statistics on new car registrations. As demonstrated by the most recent statistics for the first four months of 2012 (Figure 1.1.3), the improving trends observed towards the end of 2011 proved temporary and were followed again by worsening conditions in the sector. This deterioration is expressed, on the one hand, through the significantly negative individual monthly rates of change as compared to 2011 (-13.9% in January, -44.5% in February, -41.8% in March and -55.6% in April), and, on the other hand, by the unfavorable and deteriorating cumulative percentage changes, which amounted to -13.9% in January and reached -38.1% in April.

**FIGURE 1.1.3**
**New private passenger car registrations**

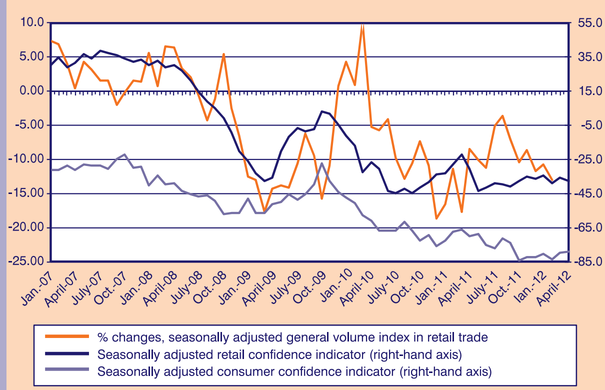



*Source:* EL.STAT.

The substantial setback in private consumption in 2011 is intrinsically linked to the continuing deep recession of the Greek economy. Among the most fundamental causes of the more pronounced private spending retrenchment, were the prevailing labour market conditions, the fiscal consolidation measures and the wide-spread and sharpening uncertainty. Rising unemployment, cuts in wages and pensions and the additional tax burdens imposed on households, exerted an adverse impact on their disposable income and their wealth, with the latter also continuing to be negatively affected by unfavorable developments in the housing market (see p. 8, 9). Notably, the aggravation of uncertainty inhibited the support of private consumption even by those households that have been less affected by the crisis. Furthermore, the credit channel also did not operate in favor of private consumption, given the high exposure of households to bank credit and the ongoing trend of credit restraint by the banks.

With reference to the short-term prospects, a recovery in private consumption is not to be expected, since the predominant conditions with respect to the labour market, incomes and uncertainty about the overall situation in the Greek economy are not foreseen to be reversed in the near future. In contrast, private consumption is expected to be adversely affected in the upcoming quarters by factors such as the accumulated impact of implemented measures and burdens on household incomes –which imply a gradual shrinking and eventual depletion of financial resources initially at the disposal of a number of households–, the anticipated imposition of new austerity measures and the aggravated economic and political uncertainty. This assessment is in line with the short term expectations of consumers and retailers, as captured by the consumer confidence and retail confidence indicators, respectively (Figure 1.1.4). It is indicative that during the four-month period January-April 2012, the respective indicators remained significantly negative and moved within a range of -79 to -84, in the first case, and -34 to -39, in the second, thus providing no signs of improving expectations.

**FIGURE 1.1.4**
**General volume index in retail trade and confidence indicators**

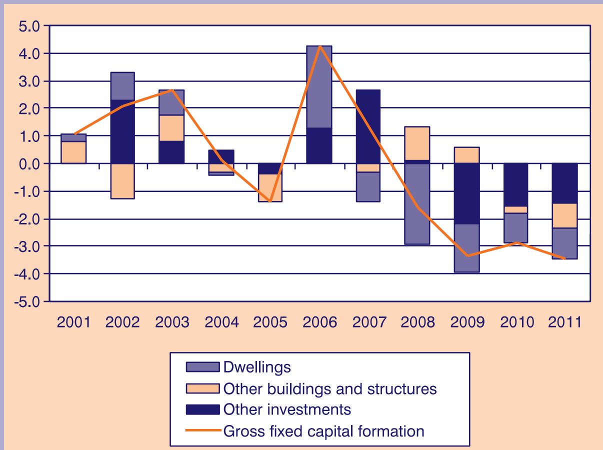



*Source:* EUROSTAT.

## 1.1.2. Investment

The rapid contraction of gross fixed capital investment continued during the year 2011, playing a leading part in the decline of domestic demand. The annual rate of change of investment reached -20.7% in that year versus -15.0% in 2010, the result being a contribution of -3.5 points to the relevant rate of change of the GDP, versus a respective contribution of -2.9 points in 2010.

**FIGURE 1.1.5**
**Contributions to the rate of change of the real GDP**
***Individual Components of Investment***




*Source: National Accounts,* EL.STAT.

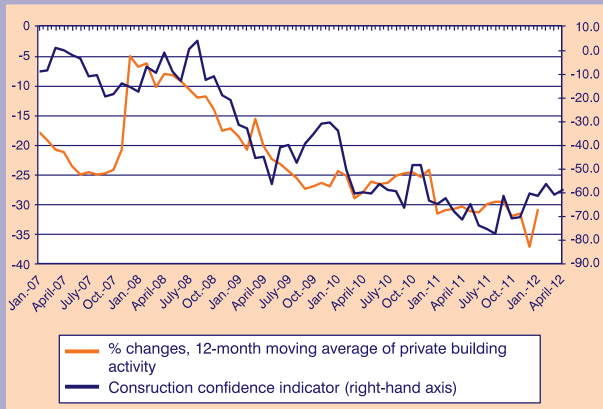
As shown in Figure 1.1.5, the sharp decline of gross fixed capital investment in 2011 reflects both the contraction of investment in housing and other constructions by -23.6% and -19.1%, respectively, compared to the previous year, and the drop in investment other than construction by -19.9%.

Regarding investment other than construction, the observed decline in transport equipment expenditure during 2011 was particularly severe (-38.9%), while the corresponding fall in metal products and machinery investment was relatively milder (-8.3%). The causes of these decreases were related to the poor profitability prospects associated with the weakening of domestic demand, the difficult credit conditions and liquidity constraints faced by a large share of businesses, as well as the growing uncertainty. With respect to credit conditions, the rate of credit expansion to businesses was actually negative in 2011, amounting for the year as a whole to -2.0% compared to 2010.

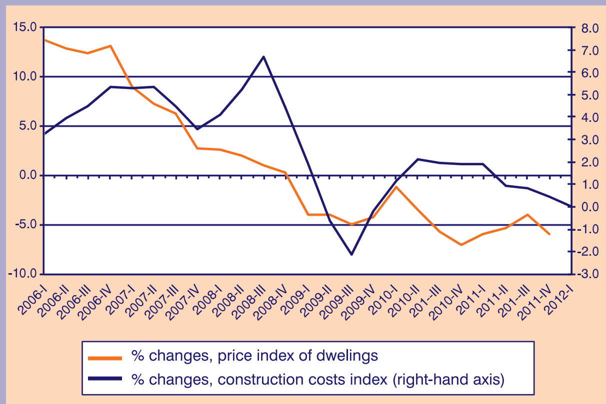
In the residential investment sector, the aforementioned marked decline during the year 2011 is also reflected in the adverse evolution of private building activity, according to the monthly permits-based volume of new housing statistics. More specifically, for the entire period from January to December 2011 the mean change in the estimated monthly private building activity[1] as compared to 2010 reached -37%, mirroring the continuation of the downward path in housing investment (Figure 1.1.6). Still, the latest statistic for building permits issued in January 2012, and after a twenty three-month period of continuous decline, indicates an increase of 11.7% as compared to the same month in 2011 (nonetheless, the mean change in the estimated monthly private building activity remained clearly negative at -30.8%). It should be, however, stressed that it is premature and unfounded to interpret at this point such a single positive figure as an indication for a recovery. Nevertheless, the construction confidence indicator, which reflects the short-term assessments of the construction sector participants and had been continuously worsening, displayed a containment tendency from December 2011 onwards and closed at -58.7% in April 2012.

The ongoing trends in the residential investment sector and the more general economic conditions are consistent with developments in housing prices, as recorded on the basis of the price index of dwellings and the index of apartment prices (lower part of Figure 1.1.6). Given

**FIGURE 1.1.6**
**Private building activity and construction confidence indicator**




**Price index of dwellings and construction costs index**




*Source:* EL.STAT., EUROSTAT, Bank of Greece.

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

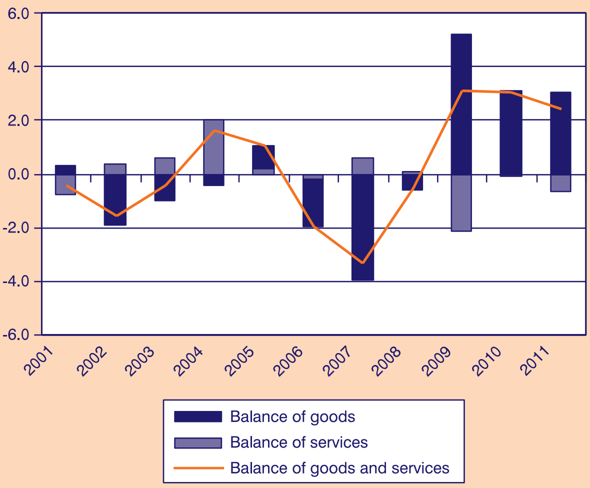
the persisting recession and the ongoing contraction in private building activity, the price index of dwellings in all urban areas continued to fall in the fourth quarter of 2011 and the corresponding percentage change as compared to the respective quarter of 2010 reached -6%. As a result, the mean annual negative rate of change for 2011 amounted to -5.3%, hence being broader than the respective rates for 2010 (-4.4%) and 2009 (-4.3%). The index of apartment prices, with respect to geographical area, recorded a similar path, with the respective decreases being most significant in the two urban centers. Among all areas, the broadest negative percentage change in the respective index in the last quarter of 2011, as compared to the corresponding quarter of 2010, was registered for the area of Thessaloniki (-8.1%). Still, for the area of Athens, the decrease by -7.9% has been the widest since negative figures started being recorded (in the third quarter of 2008). At the same time, the fall in the price index with respect to age by -5.4% for new (no older than five years) apartments, being quite close to the fall by -6.2% in the price index for old (older than five years) apartments, is indicative of the situation prevailing in the housing market. With respect to the construction costs for dwellings, the rate of change recorded in the index of construction costs for new dwellings was around zero in the fourth quarter of 2011, hence, indicating a break in the course of declining but still positive percentage changes, until that time.

With respect to the short-term prospects for investment, imminent developments are expected to remain negative, due to the adverse impact of crucial factors, including uncertainty, poor profitability prospects in the domestic market, public investment restraint and constraints on liquidity and credit availability troubling a large part of the business sector. However, should there be no conditions aggravating the country's current economic prospects, upward movements may soon be observed in certain private sector investment categories. The main forces that are likely to contribute towards such a development are, on the one hand, the strengthening of incentives for new investment due to the suppression of labour costs and structural changes and, on the other hand, the necessary adjustment of the productive infrastructure in order to respond to new domestic market conditions and to pursue opportunities in external markets.

## 1.1.3 External balance of goods and services

While, as already mentioned, the total balance of goods and services moved favourably in 2011, thus contributing to the restraint of the depth of the recession, the individual balances of goods and services moved in reverse directions, therefore exerting opposing effects on the GDP (Figure 1.1.7). More specifically, with respect to the balance of goods, the reduction in imports by -10.8% was accompanied by an increase in exports by 3.6%, thus leading to a significant reduction of the relevant deficit and a resulting positive contribution of 3.1 percentage points to the rate of change of the GDP. In contrast, with regards to the services balance, there was both a rise in imports by 4.0% and a fall in exports by -3.8%, the result being a contraction of the relevant surplus and a respective negative contribution of -0.7 percentage points to the rate of change of the GDP.

**FIGURE 1.1.7**
**Contributions to the rate of change of the GDP**
***Individual components of external demand***




*Source: National Accounts,* EL.STAT.

Notably, the aforementioned decline in services exports was mainly due to the considerable fall of receipts from transport services, since tourism receipts improved with the contribution of the reduction of the VAT on hotel stays. Regarding to the goods balance, the observed weakening of the rate of increase in exports compared to the previous year constitutes a negative indication, reflecting Greece's significant competitiveness problem, as well as the deterioration of economic conditions in the European Union towards the end of the year.

In the short-term, the contribution of the external sector to the rate of change of the GDP is foreseen to remain positive. With respect to imports, the intensifying contraction in domestic demand will continue to act in a restraining manner in the near future, thus contributing decisively to the improvement of the trade balance. On the exports front, uncertainty with respect to prospects is greater, since developments depend, on the one hand, upon the course of competitiveness of the Greek economy and, on the other hand, upon factors which are currently developing adversely. Such factors include both the political and economic conditions in Greece, which influence the activity of the export sector, and the negative economic developments in the rest of the European Union, which exert a negative impact on the demand for Greek products and services.

### 1.1.4. Conclusions and prospects

The preceding analysis of the main demand components, in combination with the econometric estimates of the recession probabilities for the current regime of the business cycle (Section 1.4), clearly demonstrate the graveness of the conditions prevailing in the Greek economy after four years of recession. The predominant factor underlying the persisting recession has been the ongoing contraction in domestic demand, whereas the rapid drop in the deficit of the balance of goods and services continued to play a substantial role in restraining the depth of the recession.

As to the short-term prospects, the Greek economy is not expected to exit the recessionary regime. This assessment relies both on the signals provided by indicators which incorporate expectations, and to the forecasts derived by the recession probability model for the two upcoming quarters (see Section 1.4.). In particular, no positive developments can be expected from the domestic demand side in the quarters to come, since both private consumption and investment will continue to be adversely affected by prevailing conditions. With respect to private consumption, the deterioration of the general unfavorable economic conditions, the worsening situation in the labour market, along with the effects from the successive restrictive economic policy measures and the amplified uncertainty on both political and economic grounds, do not allow any margins for a positive assessment of the short term prospects. Concerning investment, a similar adverse mix of conditions and expectations prevents a recovery over the short term, despite the incentives generated by the suppression of labour costs and the need for adjustment of the productive infrastructure. Given the fact that the strict framework for the implementation of the fiscal adjustment programme rules out the strengthening of domestic demand through public consumption, in the short-term the only positive contribution to the GDP will continue to originate from the improvement of the external balance. This improvement is expected to come about from the further contraction of imports, since on the part of exports the prospects arising from the recession in the European Union are not positive.

## 1.2. Current Account developments, 2000-2011

***Ioanna Konstantakopoulou***

The development of the Greek Current Account is characterized by intense and continuous deficits throughout the duration of the period 2000-2011. In particular, the average annual deficit of the current account as a percent of GDP was 9.5% in the examined period. In 2000, when our country entered the Eurozone, the current account deficit as a percentage of GDP was 7.8%. This increased significantly as of 2006, assuming the highest value in 2008 when essentially it doubled compared to 2000, reaching 14.94% of GDP (see Table 1.2.1). In 2011, the current account deficit as a percent of GDP showed a marginal decrease by 3.2% in comparison to 2010.

In absolute values, the average annual deficit of the current account was €19.1 billion in the examined period (2000-2011). Furthermore, we note that the current account deficit peaked in 2008, reaching €34.8 billion, and was at its lowest in 2002, at approximately €10.2 billion. In 2011, the current account deficit was €21.07 billion, marking a decrease of about 9% compared to 2010.

The main problem of the current account deficit comes from the trade balance deficit, in the period from 2000 to 2011. In recent years, the income balance, which increasingly widens its deficit, has been heading in the same direction. At the same time, the balance of services contributes to improving the current account, as does the current transfers balance but to a lesser degree due to its smaller size.

**TABLE 1.2.1 Current Account** *(as % of GDP and in EUR billions)*

| | CA | | Goods | | Services | | Income | | Current Transfers | |
|---|---|---|---|---|---|---|---|---|---|---|
| | as % of GDP | in EUR billions | as % of GDP | in EUR billions | as % of GDP | in EUR billions | as % of GDP | in EUR billions | as % of GDP | in EUR billions |
| **2000** | -7.8 | -10.62 | -16.1 | -21.93 | 6.4 | 8.71 | -0.7 | -0.96 | 2.6 | 3.55 |
| **2001** | -7.2 | -10.59 | -14.8 | -21.61 | 6.2 | 9.15 | -1.4 | -1.98 | 2.6 | 3.86 |
| **2002** | -6.5 | -10.20 | -14.5 | -22.71 | 6.9 | 10.76 | -1.3 | -2.07 | 2.4 | 3.82 |
| **2003** | -6.5 | -11.26 | -13.1 | -22.64 | 6.7 | 11.51 | -2.3 | -3.98 | 2.2 | 3.85 |
| **2004** | -5.8 | -10.72 | -13.7 | -25.44 | 8.3 | 15.47 | -2.4 | -4.38 | 2.0 | 3.63 |
| **2005** | -7.6 | -14.74 | -14.3 | -27.56 | 8.0 | 15.39 | -2.9 | -5.68 | 1.6 | 3.10 |
| **2006** | -11.4 | -23.76 | -16.9 | -35.29 | 7.3 | 15.34 | -3.5 | -7.21 | 1.6 | 3.40 |
| **2007** | -14.6 | -32.60 | -18.6 | -41.50 | 7.4 | 16.59 | -4.2 | -9.29 | 0.7 | 1.59 |
| **2008** | -14.9 | -34.80 | -18.9 | -44.05 | 7.4 | 17.14 | -4.6 | -10.64 | 1.2 | 2.76 |
| **2009** | -11.1 | -25.82 | -13.3 | -30.77 | 5.5 | 12.64 | -3.9 | -8.98 | 0.6 | 1.29 |
| **2010** | -10.1 | -22.98 | -12.4 | -28.28 | 5.8 | 13.25 | -3.6 | -8.14 | 0.1 | 0.20 |
| **2011** | -9.8 | -21.07 | -12.6 | -27.22 | 6.8 | 14.64 | -4.2 | -9.07 | 0.3 | 0.58 |
| **Average Annual** | **-9.5** | **-19.1** | **-14.9** | **-29.1** | **6.9** | **13.4** | **-2.9** | **-6.0** | **1.5** | **2.6** |

*Sources:* Bank of Greece and EL.STAT.

### 1.2.1. Trade balance

The average annual trade balance deficit as a percent of GDP was 15% in the examined period 2000-2011. This indicator maintains its level throughout the examined period, without showing significant variations, except in 2007-2008 (18.8%). It peaked in 2008 when the deficit rose to 18.9% of GDP. In 2011, it was 12.65% of GDP, marking an increase of 1.7% compared with 2010.

In absolute terms, the average annual level of the trade deficit was €29 billion. We note that in 2000 the trade deficit was already €22 billion, while in 2008, a negative year for the current account, the deficit reached €44 billion. In the previous year it amounted to €27.2 billion, also very high, showing a change of approximately -3.7% compared to 2010.

### Goods imports

According to statistics from the Bank of Greece, the average annual level of imports of goods as a percentage of GDP was 22.5% during the period 2000-2011. It is significant that in 2008 the corresponding indicator stood at 27.4% of GDP, while 2011 marked an increase of around 10.5% in imports as a percentage of GDP compared with 2010, reaching 22% of GDP. The latter is mainly attributed to increased oil imports due to their increased prices (see Table 1.2.2).

In absolute terms, the average annual level of imports amounted to €43.8 billion. Imports peaked in 2008, reaching €63.8 billion, but fell by -27.8% in 2009, amounting to €46.1 billion. In 2011, the imports of goods increased, approaching €47.5 billion, up by 4.6% compared with 2010.

### Goods exports

Regarding exports of goods, the average annual level of exports as a percentage of GDP was 7.6% throughout the examined period (see Table 1.2.2). In absolute terms, exports were €20.2 billion in 2011, the highest level since 2000.

Analysing the individual balances of the trade surplus, it is evident that *the trade balance excluding oil and ships* is the source of the trade deficit, followed to a lesser degree, given its size in the total trade balance, by the oil trade balance.

**TABLE 1.2.2 Exports-Imports** *(as % of GDP and in EUR billions)*

| | Goods exports | | Oil and ships | | Other goods | | Goods imports | | Oil and ships | | Other goods | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | as % of GDP | in EUR billions | as % of GDP | in EUR billions | as % of GDP | in EUR billions | as % of GDP | in EUR billions | as % of GDP | in EUR billions | as % of GDP | in EUR billions |
| **2000** | **8.1** | **11.10** | 1.8 | 2.42 | 6.4 | 8.68 | **24.2** | **33.03** | 4.0 | 5.41 | 20.3 | 27.62 |
| **2001** | **7.9** | **11.55** | 1.1 | 1.65 | 6.8 | 9.90 | **22.6** | **33.16** | 3.2 | 4.65 | 19.5 | 28.51 |
| **2002** | **6.7** | **10.43** | 1.1 | 1.65 | 5.6 | 8.78 | **21.2** | **33.14** | 3.0 | 4.73 | 18.1 | 28.42 |
| **2003** | **6.4** | **11.11** | 0.9 | 1.54 | 5.6 | 9.57 | **19.6** | **33.76** | 3.2 | 5.44 | 16.4 | 28.32 |
| **2004** | **6.8** | **12.65** | 1.5 | 2.83 | 5.3 | 9.82 | **20.6** | **38.09** | 3.9 | 7.22 | 16.7 | 30.88 |
| **2005** | **7.4** | **14.20** | 2.0 | 3.86 | 5.4 | 10.34 | **21.6** | **41.76** | 5.8 | 11.22 | 15.8 | 30.55 |
| **2006** | **7.7** | **16.15** | 2.2 | 4.57 | 5.5 | 11.58 | **24.6** | **51.44** | 8.0 | 16.72 | 16.6 | 34.72 |
| **2007** | **7.8** | **17.45** | 2.4 | 5.32 | 5.4 | 12.13 | **26.5** | **58.94** | 9.0 | 20.06 | 17.5 | 38.89 |
| **2008** | **8.5** | **19.81** | 2.5 | 5.83 | 6.0 | 13.98 | **27.4** | **63.86** | 9.7 | 22.70 | 17.7 | 41.17 |
| **2009** | **6.6** | **15.32** | 1.7 | 3.83 | 5.0 | 11.48 | **19.9** | **46.09** | 6.4 | 14.79 | 13.5 | 31.30 |
| **2010** | **7.5** | **17.08** | 2.5 | 5.75 | 5.0 | 11.33 | **20.0** | **45.36** | 7.9 | 18.00 | 12.0 | 27.36 |
| **2011** | **9.4** | **20.23** | 3.2 | 6.94 | 6.2 | 13.29 | **22.0** | **47.45** | 9.9 | 21.33 | 12.1 | 26.12 |
| **Average Annual** | **7.6** | **14.76** | **1.9** | **3.85** | **5.7** | **10.91** | **22.5** | **43.84** | **6.2** | **12.69** | **16.4** | **31.15** |

*Sources:* Bank of Greece and EL.STAT.

### *1.2.1.1. Trade balance excluding oil and ships*

The average annual deficit of the trade balance excluding oil and ships as a percent of GDP was 10.7%. In 2011, the same variable amounted to 6% of GDP, marking a decrease of 15.5% compared with 2010 (see Table 1.2.3).

In absolute terms, the average annual deficit of the trade balance excluding oil and ships was €20.3 billion (see Table 1.2.4) in the examined period. In 2011, the trade balance deficit excluding oil and ships was €12.8 billion compared to €16 billion in 2010, marking a change of about 20%.

**TABLE 1.2.3 Average annual change rate of the trade balance and its components, as percent of GDP**

| | Goods | Oil balance | Trade balance excluding oil | Ships balance | Trade balance excluding oil and ships |
|---|---|---|---|---|---|
| **2000-2002** | -5.02 | 1.44 | -12.35 | | -4.95 |
| **2003-2005** | -0.29 | 16.49 | -10.16 | -237.50 | -5.55 |
| **2006-2008** | 10.03 | 15.69 | 1.85 | 124.13 | 3.80 |
| **2009-2011** | -11.46 | 4.91 | 19.42 | -7.86 | -19.91 |
| **2000-2011** | *-1.38* | *10.38* | *0.79* | *-40.41* | *-6.81* |

*Source:* Bank of Greece.

**TABLE 1.2.4 Trade balance and its components** *(as % of GDP and in EUR billions)*

| | Total | | Oil balance | | Trade balance excluding oil | | Ships balance | | Trade balance excluding oil and ships | |
|---|---|---|---|---|---|---|---|---|---|---|
| | as % of GDP | in EUR billions | as % of GDP | in EUR billions | as % of GDP | in EUR billions | as % of GDP | in EUR billions | as % of GDP | in EUR billions |
| **2000** | **-16.1** | **-21.93** | -2.2 | -2.99 | -10.2 | -18.94 | 0.0 | 0.00 | -13.9 | -18.94 |
| **2001** | **-14.8** | **-21.61** | -2.1 | -3.00 | -8.7 | -18.61 | 0.0 | 0.00 | -12.7 | -18.61 |
| **2002** | **-14.5** | **-22.71** | -2.2 | -3.51 | -7.8 | -19.20 | 0.3 | 0.43 | -12.5 | -19.64 |
| **2003** | **-13.1** | **-22.64** | -2.3 | -4.04 | -6.3 | -18.61 | 0.1 | 0.14 | -10.9 | -18.74 |
| **2004** | **-13.7** | **-25.44** | -2.4 | -4.51 | -6.1 | -20.92 | 0.1 | 0.14 | -11.4 | -21.06 |
| **2005** | **-14.3** | **-27.56** | -3.4 | -6.63 | -5.6 | -20.93 | -0.4 | -0.72 | -10.5 | -20.21 |
| **2006** | **-16.9** | **-35.29** | -4.2 | -8.76 | -6.1 | -26.53 | -1.6 | -3.39 | -11.1 | -23.13 |
| **2007** | **-18.6** | **-41.50** | -4.1 | -9.22 | -6.5 | -32.28 | -2.5 | -5.52 | -12.0 | -26.76 |
| **2008** | **-18.9** | **-44.05** | -5.2 | -12.15 | -5.9 | -31.89 | -2.0 | -4.71 | -11.7 | -27.19 |
| **2009** | **-13.3** | **-30.77** | -3.3 | -7.60 | -4.3 | -23.17 | -1.5 | -3.36 | -8.6 | -19.81 |
| **2010** | **-12.4** | **-28.28** | -3.8 | -8.63 | -3.8 | -19.65 | -1.6 | -3.62 | -7.1 | -16.03 |
| **2011** | **-12.7** | **-27.22** | -5.2 | -11.13 | -7.5 | -16.09 | -1.5 | -3.26 | -6.0 | -12.83 |
| **Average Annual** | **-14.9** | **-29.1** | **-3.4** | **-6.8** | **-6.6** | **-22.2** | **-0.9** | **-2.0** | **-10.7** | **-20.2** |

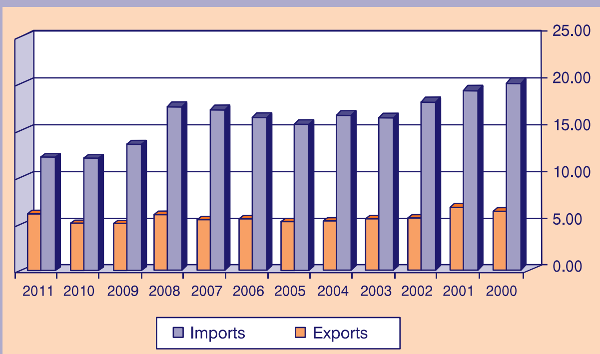
*Sources:* Bank of Greece and EL.STAT.

## *Imports-Exports excluding oil and ships*

Imports excluding oil and ships as a percentage of GDP are three times higher than exports. Specifically, for the period under review, the average annual percentage of GDP for imports excluding oil and ships was 16.4%, while exports accounted for 5.7% of GDP. In 2011, the deficit excluding oil and ships as a percentage of GDP stood at 22% of GDP, showing a 10% increase in comparison with 2010 (see Figure 1.2.1).

In absolute terms, the average level of imports reached €31.2 billion while exports were €10.9 billion.

**FIGURE 1.2.1**
**Imports-Exports excluding oil and ships, as % of GDP**




*Sources:* Bank of Greece and EL.STAT.

## 1.2.2. Service balance

The average annual services surplus as a percentage of GDP stood at 6.9% and in 2004 recorded its highest level of 8.4%. The average annual surplus of the services balance amounted to €13.4 billion. The highest surplus was achieved in 2008, reaching €17.1 billion, while the lowest surpus was recorded in 2000, at € 8.7 billion (see Table 1.2.5).

The services surplus comes mainly from travel and transport services. As a percentage of GDP, the average annual surplus of travel services amounted to 4%, while the balance of transport was 3.3% during the reported period (see Table 1.2.6). In 2011, the surplus of travel services amounted to 2.83% as a percentage of GDP, while the corresponding figure for transport was 3.19%, marking a percentage change of -0.3 and 16.7, respectively, compared to 2010.

**TABLE 1.2.5 Service balance** *(in EUR billions)*

| | Total | Receipts | Travel | Transpo-rtation | Other services | Payments | Travel | Transpo-rtation | Other services |
|---|---|---|---|---|---|---|---|---|---|
| **2000** | **8.71** | **20.98** | 10.06 | 8.64 | 2.28 | **12.27** | 4.95 | 4.46 | 2.86 |
| **2001** | **9.15** | **22.08** | 10.58 | 9.11 | 2.38 | **12.93** | 4.65 | 5.35 | 2.92 |
| **2002** | **10.76** | **21.13** | 10.28 | 8.52 | 2.32 | **10.38** | 2.55 | 5.03 | 2.80 |
| **2003** | **11.51** | **21.43** | 9.50 | 9.57 | 2.37 | **9.92** | 2.14 | 4.92 | 2.86 |
| **2004** | **15.47** | **26.74** | 10.35 | 13.31 | 3.09 | **11.28** | 2.31 | 5.73 | 3.24 |
| **2005** | **15.39** | **27.25** | 10.73 | 13.87 | 2.65 | **11.86** | 2.45 | 6.24 | 3.18 |
| **2006** | **15.34** | **28.36** | 11.36 | 14.32 | 2.68 | **13.03** | 2.38 | 6.99 | 3.65 |
| **2007** | **16.59** | **31.34** | 11.32 | 16.94 | 3.08 | **14.75** | 2.49 | 7.77 | 4.49 |
| **2008** | **17.14** | **34.07** | 11.64 | 19.19 | 3.24 | **16.93** | 2.68 | 9.32 | 4.94 |
| **2009** | **12.64** | **26.98** | 10.40 | 13.55 | 3.03 | **14.34** | 2.42 | 7.07 | 4.85 |
| **2010** | **13.25** | **28.48** | 9.61 | 15.42 | 3.45 | **15.23** | 2.16 | 8.16 | 4.92 |
| **2011** | **14.64** | **28.62** | 10.52 | 14.10 | 4.01 | **13.99** | 2.27 | 7.23 | 4.48 |

*Source:* Bank of Greece.

**TABLE 1.2.6 Service balance** *(as % of GDP)*

| | Total | Receipts | Travel | Transpo-rtation | Other services | Payments | Travel | Transpo-rtation | Other services |
|---|---|---|---|---|---|---|---|---|---|
| **2000** | **6.39** | **15.39** | 7.38 | 6.34 | 1.67 | **9.00** | 3.63 | 3.27 | 2.10 |
| **2001** | **6.25** | **15.08** | 7.23 | 6.22 | 1.63 | **8.83** | 3.18 | 3.65 | 2.00 |
| **2002** | **6.87** | **13.49** | 6.57 | 5.44 | 1.48 | **6.63** | 1.63 | 3.21 | 1.79 |
| **2003** | **6.68** | **12.43** | 5.51 | 5.55 | 1.37 | **5.76** | 1.24 | 2.86 | 1.66 |
| **2004** | **8.35** | **14.43** | 5.59 | 7.18 | 1.67 | **6.09** | 1.25 | 3.09 | 1.75 |
| **2005** | **7.97** | **14.12** | 5.56 | 7.19 | 1.37 | **6.14** | 1.27 | 3.23 | 1.65 |
| **2006** | **7.34** | **13.58** | 5.44 | 6.86 | 1.28 | **6.24** | 1.14 | 3.35 | 1.75 |
| **2007** | **7.45** | **14.07** | 5.08 | 7.60 | 1.38 | **6.62** | 1.12 | 3.49 | 2.01 |
| **2008** | **7.36** | **14.63** | 5.00 | 8.24 | 1.39 | **7.27** | 1.15 | 4.00 | 2.12 |
| **2009** | **5.46** | **11.65** | 4.49 | 5.85 | 1.31 | **6.19** | 1.05 | 3.05 | 2.09 |
| **2010** | **5.83** | **12.53** | 4.23 | 6.78 | 1.52 | **6.70** | 0.95 | 3.59 | 2.16 |
| **2011** | **6.80** | **13.30** | 4.89 | 6.55 | 1.86 | **6.50** | 1.05 | 3.36 | 2.08 |

*Sources:* Bank of Greece and EL.STAT.

**TABLE 1.2.7 Income balance** *(as % of GDP and in EUR billions)*

| | Total | | Receipts | | Compensation of employees | | Investment Income | | Payments | | Compensation of employees | | Investment Income | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | as % of GDP | in EUR billions | as % of GDP | in EUR billions | as % of GDP | in EUR billions | as % of GDP | in EUR billions | as % of GDP | in EUR billions | as % of GDP | in EUR billions | as % of GDP | in EUR billions |
| 2000 | -0.7 | -0.96 | 2.2 | 3.04 | 0.5 | 0.63 | 1.8 | 2.41 | 2.9 | 3.99 | 0.2 | 0.27 | 2.7 | 3.72 |
| 2001 | -1.4 | -1.98 | 1.4 | 2.10 | 0.4 | 0.61 | 1.0 | 1.49 | 2.8 | 4.08 | 0.2 | 0.28 | 2.6 | 3.80 |
| 2002 | -1.3 | -2.07 | 1.0 | 1.63 | 0.3 | 0.51 | 0.7 | 1.12 | 2.4 | 3.70 | 0.2 | 0.24 | 2.2 | 3.46 |
| 2003 | -2.3 | -3.98 | 1.5 | 2.58 | 0.2 | 0.34 | 1.3 | 2.24 | 3.8 | 6.56 | 0.1 | 0.17 | 3.7 | 6.39 |
| 2004 | -2.4 | -4.38 | 1.5 | 2.81 | 0.2 | 0.28 | 1.4 | 2.53 | 3.9 | 7.19 | 0.1 | 0.19 | 3.8 | 7.00 |
| 2005 | -2.9 | -5.68 | 1.7 | 3.27 | 0.2 | 0.29 | 1.6 | 2.99 | 4.6 | 8.95 | 0.1 | 0.22 | 4.5 | 8.73 |
| 2006 | -3.5 | -7.21 | 1.7 | 3.53 | 0.2 | 0.32 | 1.5 | 3.21 | 5.1 | 10.74 | 0.1 | 0.28 | 5.0 | 10.46 |
| 2007 | -4.2 | -9.29 | 2.1 | 4.56 | 0.2 | 0.37 | 1.9 | 4.19 | 6.2 | 13.84 | 0.2 | 0.33 | 6.1 | 13.51 |
| 2008 | -4.6 | -10.64 | 2.4 | 5.57 | 0.2 | 0.34 | 2.2 | 5.23 | 7.0 | 16.22 | 0.2 | 0.41 | 6.8 | 15.81 |
| 2009 | -3.9 | -8.98 | 1.9 | 4.28 | 0.1 | 0.29 | 1.7 | 3.99 | 5.7 | 13.27 | 0.2 | 0.41 | 5.6 | 12.86 |
| 2010 | -3.6 | -8.14 | 1.6 | 3.57 | 0.1 | 0.20 | 1.5 | 3.37 | 5.2 | 11.72 | 0.2 | 0.38 | 5.0 | 11.34 |
| 2011 | -4.2 | -9.066 | 1.6 | 3.34 | 0.1 | 0.19 | 1.5 | 3.15 | 5.8 | 12.41 | 0.2 | 0.47 | 5.6 | 11.94 |
| Average Annual | -2.9 | -6.031 | 1.7 | 3.3567 | 0.2 | 0.3642 | 1.5 | 2.99333 | 4.6 | 9.3892 | 0.2 | 0.3042 | 4.5 | 9.085 |

*Sources:* Bank of Greece and EL.STAT.

## 1.2.3. Income balance

The income deficit as a percent of GDP was 4.2% in 2011. In absolute terms, this amounted to €9.1 billion (see Table 1.2.7). The average annual services deficit as percent of GDP was 2.9% throughout the examined period, while the relative figure was €6 billion. Moreover, in Table 1.2.7, we observe that the payments for interest, dividends and profits have increased significantly since 2006, while recording a slight decline after 2010.

## 1.2.4. Current transfers balance

The current transfers balance is characterized by surpluses throughout the examined period. The average annual surplus of current transfers was €2.64 billion. As a percentage of GDP the corresponding variable was 1.5%.

## 1.2.5. Conclusions

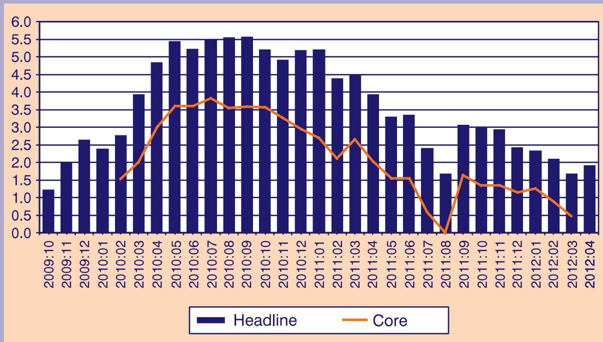
In summary, we should note that the deficit of the Current Account is mainly the result of the component of the *trade balance excluding oil and ships*, which bears the burden of imports excluding oil and ships. This indicator cannot be counterbalanced, as it is triple the exports excluding oil and ships. Essentially, this highlights not only the problem of competitiveness of Greek products but also of the structure of the Greek manufacturing process since the latter depends on imported intermediates. Furthermore, a second aggravating factor is the country's complete dependence on oil, which, given its volatility and price increases in the last five years, creates further difficulties.

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

***Stelios Karagiannis, Yannis Panagopoulos***

After a declining period (October 2011-March 2012), the Greek inflation presents a small increase. More specifically, the headline inflation has increased from 1.7% in March 2011 to 1.9% in April 2012 (see Diagram 1.3.1).[1] On the other hand, the core inflation continues on its downward trend. More specifically, from 0.9% in February 2012 it fell to 0.5% in March.

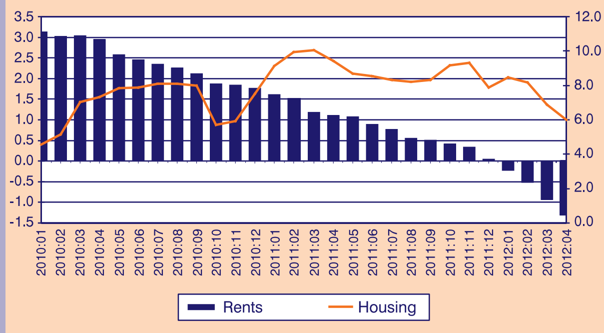
**DIAGRAM 1.3.1**
**CPI, % change relative to the respective month of the previous years**




*Source:* EL.STAT.

According to the Hellenic Statistical Authority, this increase in headline inflation (1.9%, April 2012) is mainly attributed to the broader category of "Energy". More specifically, it can be attributed to gasoline (impact 0.6), diesel (impact 0.47) and electricity prices (impact 0.27). On the other hand, this increase has been mainly restrained by the drop in prices on three sub-indices, namely: (a) medical and paramedical services (impact -0.7), car prices (impact -0.7) and housing rents (impact -0.4). However, the largest restrainer of headline inflation has been produced by the sub-category index of non-durable products (impact -0.6).

**DIAGRAM 1.3.2**
**Housing rents, % change relative to the respective month of the previous years**

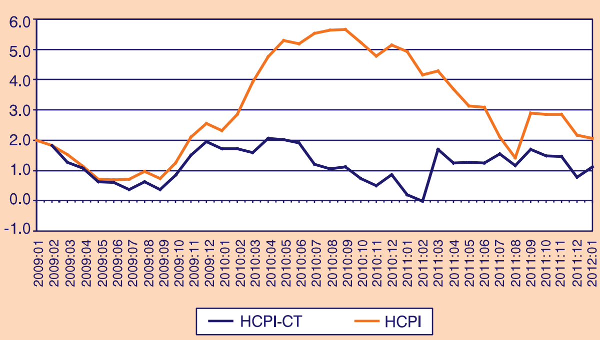



*Source:* EL.STAT.

Diagram 1.3.2 presents the evolution of the sub-index of housing rents which is included in the broader "Housing" category. More specifically, although the "Housing" category grew 6.0% (April 2012), the rents sub-category index shows a negative percentage (disinflation). More analytically, from 0.3% in December 2011, we moved to -1.3% in April 2012. Moreover, if the recession of the Greek economy continues, this will lead the housing rents sub-index to even more negative growth rates.

Additionally, Diagram 1.3.3 presents the harmonized CPI with and without constant indirect taxes (HICP-CT and HICP, respectively) in Greece. As we have previously analysed, the difference between the rates of change of HICP and HICP-CT reveals the effect of the indirect tax rates on the final price paid by the consumers. According to the aforementioned Diagram it is obvious that although the difference between the two tax rates widened in December 2011 to around 64.4%, mainly due to the

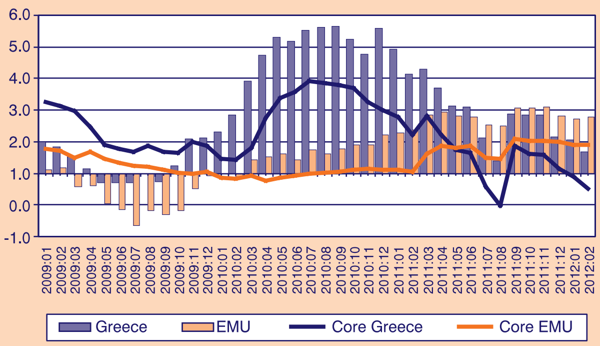
**DIAGRAM 1.3.3**
**Harmonized index of Consumer Prices with (HICP) and without constant indirect taxes (HICP-CT), % change relative to the respective month of the previous years**




*Source:* EL.STAT.

1. Note that the base year for the CPI is 2009 (2009=100).

**DIAGRAM 1.3.4**
**Harmonized indices of consumer prices in Greece & EMU, % change relative to the respective month of the previous years**




*Source:* EL.STAT.

VAT increases in the "Food" industry, it has again decreased to around 45.9% (January 2012).

Finally, in Diagram 1.3.4, we present a comparison between the harmonized inflation rates (headline and core) in the Eurozone and Greece. There are two interesting evolutions regarding the Greek rates: that both are moving at a level lower than the corresponding average inflation rates of the Eurozone. More specifically, the harmonized inflation rate in Greece and in the Eurozone in February 2012 were 1.7% and 2.8%, respectively. At the same time the core inflation rate in Greece and in the Eurozone were 0.5% and 1.9%, respectively. In general, the future trend for both inflation rates will depend upon their economic condition in both economies.

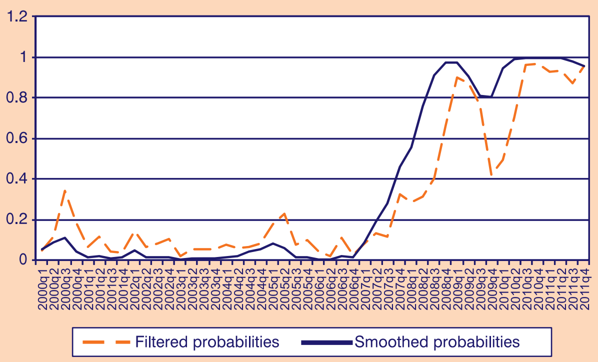
# 1.4. Recession probabilities for the Greek economy – Current period and forecasts

***Ekaterini Tsouma***

As has been analyzed in previous issues of the *Greek Economic Outlook*, it is possible to assess whether the Greek economy undergoes a recessionary (or expansionary) business cycle regime on the basis of recession (or expansion) probability estimates. Such estimates can be obtained by applying different models, like (a) Markov switching models and (b) probit models, and can either refer to the most recent time period or also incorporate forecasts.

In the case of the Markov switching model,[1] which describes the business cycle as a process switching between an *expansionary* and a *recessionary* regime, the rate of change of the quarterly GDP[2] is used, whereby the GDP presents the selected measure of economic activity. The estimated filtered (based on information available up to time *t*) and smoothed (based on information available through time *T*) recession probabilities concern the most recent period for which economic data has become available. Figure 1.4.1 depicts the estimates of the respective recession probabilities for the time period from the first quarter of 2000 to the fourth quarter of 2011.[3] It is noted that, according to the simple rule adopted, a recessionary period is signaled by a derived recession probability higher than 0.5. Both the obtained filtered and smoothed recession probabilities indicate that the Greek economy entered a recessionary regime in the late 2000s and confirm the continuation of the respective regime up to the most recent period. Their considerable level for the fourth quarter of 2011 (which is equal in the two cases) is close to unity. More specifically, it is estimated to amount to 0.957, clearly in favor of the assertion that the Greek economy has not yet exited the recession. It is important to stress that, on the basis of the additional information available for the fourth quarter of 2011, the recession probabilities for the third quarter of 2011, which seemed to moderate according to the previous recession probability estimates, now appear to be significantly increased. This fact reaffirms the assessment that the corresponding development constituted a one-off effect and should not be interpreted as an indication of an imminent exit from the recessionary regime.

**FIGURE 1.4.1**
**Recession probabilities from Markov switching model**




An additional estimation of the current phase of the business cycle is provided by the probit model.[4] This model assesses the state of the economy through a variable which takes two possible values, depending on whether the economy is in *recession* or not. The resulting fitted values from estimating the probability that the observable recession indicator takes the value of "1"[5] are interpreted as the estimated recession probabilities. The selected independent variables are the rate of change of quarterly GDP and the constructed monthly Leading Indicator (see Tsouma, 2010), which is converted to quarterly frequency for the purposes of the current application. The data used refer to the time period from the

1. For the detailed presentation of the specific model according to Hamilton (1989) as well as an interpretation of the resulting probabilities, see *Greek Economic Outlook* 13, September 2010, p. 22-24.

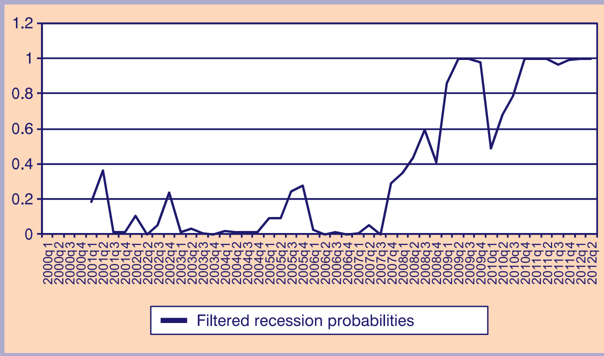
2. Note that the most recent revision of the National Accounts data has been taken into account and that the Demetra+ software is used in order to obtain seasonally adjusted quarterly GDP figures.

3. Whereas the estimations are carried out for the period 1970-2011, the shorter time period used for illustration is chosen for reasons of comparison to the probabilities resulting from the probit model that is presented below.

4. For the detailed presentation of the specific model according to Estrella and Mishkin (1998), see *Greek Economic Outlook* 14, January 2011, p. 27-28.

5. Due to the lack of an official Greek business cycle chronology, the recession indicator used is based on a related specification applied (see E. Tsouma, 2011), where the exact switch points between expansion and recession are derived.

**FIGURE 1.4.2**
**Recession probabilities from probit model**




first quarter of 2000[6] to the fourth quarter of 2011, while recession probability forecasts are also included, with the forecast horizon amounting to two quarters. Consequently, recession probability forecasts are provided for the first and second quarter of 2012. The estimates reveal, as illustrated in Figure 1.4.2, that high recession probabilities were forecast already at the onset of the recession that started in 2008 and have been retained during the total duration of the ongoing recession, which the Greek economy continued to undergo until the end of 2011 (with the exception of the probability value of 0.49 for the first quarter of 2010[7]). In addition, the forecasts provided by the probit model for the first two quarters of 2012 are indicative of the short-term prospects for the Greek economy. With the estimated recession probabilities approaching unity, the provided evidence clearly signals the continuation of the recessionary regime during the first half of 2012.

## References

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Hamilton, J. D. (1989). "A new approach to the economic analysis of nonstationary time series and the business cycle", *Econometrica*, 57, 357-384.

Tsouma, E. (2010). "Predicting Growth and Recessions Using Leading Indicators: Evidence from Greece", KEPE, *Discussion Papers,* 114.

Tsouma, E. (2011). "Dating the Greek Business Cycle: Is there Evidence on a Late 2000s Recessionary Regime for the Greek Economy?", *Essays in Economics-Applied Studies on the Greek Economy, 50 years anniversary publication*, Athens: KEPE.

6. The estimates start at the first quarter of 2001 due to the calculation of growth rates and the inclusion of lags. For that reason the respective figure depicts results starting in 2001.

7. The fall of the respective recession probability below 0.5 was clearly temporary and did not signal an exit from the recessionary regime. This is reinforced by the fact that the recession probabilities turned up immediately thereafter and remained at high levels ever since.

# 1.5. KEPE's short-run forecasts for Greek GDP

***Economic Forecasting Unit***

This article introduces the Center of Planning and Economic Research's (KEPE) updated forecasts regarding real Gross Domestic Product (GDP) rate of change.

Based on available data (up to the first quarter of 2012) and the dynamics of economic recession, the outlook for 2012 remains strongly negative. In particular, the rate of change of real GDP is expected to be around -6.7% for 2012, on a seasonally adjusted annual basis.

Table 1.5.1 presents the forecasts of KEPE's econometric model for the quarterly rates of change of the (seasonally adjusted) real GDP. Given that the GDP data provided by the Hellenic Statistical Authority (EL.STAT.) is provisional and non-seasonally adjusted, the quarterly forecasts should be evaluated with caution.

KEPE's GDP forecasts are derived from a "dynamic factor model". A detailed description of the econometric model is available in Issue 15 of KEPE's journal "Greek Economic Outlook" (June 2011). Estimates derived from this model can not incorporate the effects of announced, but not yet implemented, economic policy measures.

It should be noted that EL.STAT. has not completed its revision of the GDP time series, and its components (e.g. from NACE rev. 1 to NACE rev. 2). Therefore, discontinuities are found in these time series.

Finally, it should be noted that these forecasts are not comparable to those announced previously by KEPE, as they refer to GDP series which have been calculated with a different methodology (NACE rev. 1 instead of NACE rev. 2).

**TABLE 1.5.1 Real GDP rate of change (%, y-o-y)**

| | 2012 | | | |
|---|---|---|---|---|
| Quarter | 1 | 2 | 3 | 4 |
| Quarterly change | -6.54 | -6.87* | -9.14* | -4,25* |
| Annual Change | -6.70* | | | |

*Note: The values presented are forecasts derived from KEPE's econometric model and are seasonally adjusted.*

# 1.6. International environment: Recent developments and prospects in the world economic activity

***Aristotelis Koutroulis***

*In the absence of any adverse shocks, global economic activity is expected to pick up gradually during 2012-2013. Fiscal consolidation efforts and weak private demand in major advanced economies (especially in Euro area countries) are expected to hamper their economic expansion. By contrast, and in spite of a soft export demand, developing countries' growth momentum will continue. At the same time, unemployment rates are projected to remain elevated in most regions of the world.*

## 1.6.1. Trends and developments in the Global Economy

### Economic activity

Relative to the global slowdown during the second half of 2011, there are strong signs that the global economy is slowly improving again. Contributing factors to the improving near-term global outlook appear to be the accommodative monetary policies, the acceleration in growth-enhancing structural reform activity, the improved financial conditions, and the stronger consumer and business confidence in key industrial countries (e.g. USA and Japan). The continuing reconstruction efforts of Japan and Thailand are expected to play a positive role as well. Assuming that downside risks (e.g. a deep recession in the eurozone due to sovereign debt problems) are not realized, global real GDP growth is projected to stand at about 3.5% in 2012 before picking up to 4.1% in 2013. This rather moderate recovery reflects the expectation that fiscal consolidation efforts and private agents' portfolio rebalancing will dampen aggregate demand.

### Inflation and unemployment

Consumer price inflation has started to moderate in most regions of the world, indicating a halt in its upward trend observed since early 2011. In the coming months, energy and commodity prices are likely to exert an upward pressure on CPI inflation. Nevertheless, owning to weak aggregate demand and constrained labour cost developments, inflationary pressures are expected to remain subdued. Overall, for 2012 CPI inflation in the advanced economies is projected to fall to about 1.9%. The projection for developing economies is about 6.2%.

Regarding labour market developments, the International Labour Organization's (ILO) projections suggest

**TABLE 1.6.1 Real Gross Domestic Product[1] (annual percent change)**

| | 2011* | | | 2012** | | | 2013** | | |
|---|---|---|---|---|---|---|---|---|---|
| | IMF | OECD | EU | IMF | OECD | EU | IMF | OECD | EU |
| **World Economy** | 3.9 | 4.1 | 3.7 | 3.5 | 3.4 | 3.3 | 4.1 | 4.2 | 3.7 |
| **Advanced economies** | 1.6 | - | 1.6 | 1.4 | - | 1.2 | 2.0 | - | 1.8 |
| USA | 1.7 | 1.7 | 1.7 | 2.1 | 2.4 | 2.0 | 2.4 | 2.6 | 2.1 |
| Euro Area | 1.4 | 1.5 | 1.5 | -0.3 | -0.1 | -0.3 | 0.9 | 0.9 | 1.0 |
| Japan | -0.7 | -0.7 | -0.7 | 2.0 | -2.0 | 1.9 | 1.7 | 1.5 | 1.7 |
| **Developing economies** | 6.2 | - | 5.9 | 5.7 | - | 5.5 | 6.0 | - | 5.7 |
| Brazil | 2.7 | 2.7 | 2.7 | 3.0 | 3.2 | 3.1 | 4.1 | 4.2 | 4.2 |
| Russia | 4.3 | 4.3 | 4.3 | 4.0 | 4.5 | 3.6 | 3.9 | 4.1 | 3.8 |
| India | 7.2 | 7.0 | 6.9 | 6.9 | 7.3 | 6.8 | 7.3 | 7.8 | 7.5 |
| China | 9.2 | 9.2 | 9.2 | 8.2 | 8.2 | 8.4 | 8.8 | 9.3 | 8.2 |

*Sources:* IMF, *World Economic Outlook,* April 2012, European Commission, *European Economic Forecast,* Spring 2012, OECD, *Economic Outlook,* Volume 2012/2 (Preliminary version).

* Estimation **Forecasts.

1. The observed differences between the available macroeconomic projections partly reflect the differences between the macroeconometric models and the data used by each international organization.

that global employment rates are very unlikely to return to their pre-crisis levels in the near future. From labour statistics over the last five-year period it is also evident that while unemployment rates in advanced and developing economies exhibit a similar trend, the levels of unemployment rates differ substantially across the two groups. The relatively higher unemployment rates in advanced economies are explained largely by the fact that the bulk of fiscal adjustment costs as well as the costs of restructuring in order for these countries to increase their international competitiveness have fallen on labour through lower wages and job cuts. By contrast, the need for relatively small fiscal adjustment in conjunction with (nominal) exchange rate flexibility allowed developing countries to move away from developed countries' austerity trap and simultaneously maintain their international competitiveness without hurting employment.

## 1.6.2. Economic developments across the globe

### Advanced economies

The disappointing growth performance of advanced economies in 2011 is expected to extend into 2012. According to IMF estimations, real GDP growth is forecast to decelerate from around 1.6% in 2011 to 1.4% in 2012. This is mostly driven by output contraction in several Euro area countries. Non-European advanced economies' performance, by contrast, is expected to be better.

**USA:** Though high household debt and fiscal consolidation efforts remain a drag on economic expansion, recently released data suggest that the recovery in private domestic demand along with an increase in non-farm payroll employment will lift output. Other key indicators such as credit expansion and motor vehicle sales also point to increased consumer and business confidence. In this respect, real GDP growth is projected to settle at 2.1% in 2012.

**Euro Area:** In light of GDP contraction, high unemployment, and political controversy over the right approach to resolve the sovereign debt crisis, the Euro area remains a source of global concern. In more detail, real GDP growth is projected to be negative in 2012. This is attributed to a number of factors (e.g. tight credit conditions, continued stress in sovereign-debt-markets, and deteriorating conditions in the labour market) which weigh on consumer and business confidence and thus restrain private expenditures for consumption and investment. Ongoing fiscal consolidation and the corresponding decrease in public expenditures are expected to have a negative impact on economic activity as well. At the same time, the recent depreciation of the euro effective exchange rate is expected to boost exports. However, increased foreign demand for Euro area products is very unlikely to offset the downward impact of domestic factors. Assuming that an escalation of the sovereign-debt crisis will not materialize and provided that the ECB's monetary policy maintains an easy stance, real GDP growth will return to positive annual rates in 2013.

**Japan:** In 2012, Japan will return to positive annual growth rates thanks to its massive reconstruction efforts, the higher consumption expenditures of Japanese households and the repair of supply-chain disruptions after Thailand's floods in the second half of 2011. However, growth is forecast to taper off to 2.0% because of a persistently strong yen and lower foreign demand for manufacturing products.

### Developing economies

Developing and emerging market economies' growth will moderate to 5.7% in 2012 but will still lead the global recovery. This moderation reflects the fact that the developing world has started to feel the impact of advanced economies' slowdown. Hence, in order to maintain their growth momentum, developing economies will be required to switch from export-led growth to domestic-demand driven growth. Switching from foreign to domestic sources of growth will not only insulate developing countries from adverse developments in advanced countries but will also help to restore global balances.

**Brazil:** For Brazil, the outlook is promising as growth is projected to pick up slightly and edge up to 3.0% this year. The expansion of domestic demand is forecast to be the major driver of economic growth whereas an increase in imports is expected to contribute negatively. This indicates that overheating risks remain. Overall, thanks to its exports to rapidly growing emerging markets, Brazil is expected to remain resilient to real spillover effects from advanced economies currently in trouble.

**Russia:** In 2012, the Russian economy is forecast to experience positive developments on the fiscal, inflation, and unemployment fronts. Nevertheless, slowing world trade and Euro area financial uncertainties, along with domestically lower consumer spending and investment activity, are expected to decelerate real GDP growth. This implies that, by relying heavily on energy-commodity exports, the economy remains particularly vulnerable to negative external-demand effects. So, in the face of narrowing current account surpluses, the Russian authorities are expected to adopt a more comprehensive growth strategy that will insulate the country from external shocks.

**China:** A reduction in external demand has slowed the pace of economic expansion and is expected to continue doing so. However, domestic factors, including private consumption and investment expenditures, are expected to partly offset the external slowdown. In light of these developments, and given that inflation is forecast to recede from 5.4% last year to 3.3% in 2012, the People's Bank of China is expected to continue loosening monetary conditions. Supportive monetary policy growth in China is projected at 8.2% in 2012.

**India:** India's growth is projected to moderate slightly and reach 6.9% in 2012. This is due to a combination of lower external demand and policy uncertainty. Restrictive monetary policy due to high inflationary pressures and fiscal tightening through increases in indirect tax rates will play a negative role as well.

### 1.6.3. World trade and commodity prices

According to the IMF and the World Trade Organization (WTO) staff projections, world trade volume will expand by about five percentage points in 2012. The deceleration of world trade for a second year in succession reflects the negative economic and business environment in advanced economies and particularly in the Euro area. Should the Euro area fall into a deeper recession than expected, the negative impact on world trade would be larger. The remaining geopolitical tensions in the Middle East constitute another major downside risk for world trade dynamics.

As for commodity prices, uncertainty remains elevated. In general, it is expected that the prices of non-energy commodities will continue trending down. To the contrary, oil and other energy prices are projected to increase slightly.

**TABLE 1.6.2 World trade volume (annual percent changes)**

| | | 2010 | 2011 | 2012* | 2013* |
|---|---|---|---|---|---|
| **World trade volume (goods and services)** | | **12.9** | **5.8** | **4.0** | **5.6** |
| Imports | Advanced economies | 11.5 | 4.3 | 1.8 | 4.1 |
| | Developing economies | 15.3 | 8.8 | 8.4 | 8.1 |
| Exports | Advanced economies | 12.3 | 5.3 | 2.3 | 4.7 |
| | Developing economies | 14.7 | 6.7 | 6.6 | 7.2 |

*Source:* IMF, *World Economic Outlook,* April 2012.

* Forecasts.

# 2. Public finance

## 2.1. The evolution of public debt

***Yannis Monogios***

In the last quarter of 2011, the Central Government debt reached € 367,978.00 million. For the first quarter of 2012 the Central Government debt amounted to € 280,292.44 million, recording, thus, a significant decrease of 23.8 percentage points compared to the previous quarter, as a result of the successful outcome of the private sector involvement (PSI) in the voluntary sovereign debt restructuring process. Due to the lengthening of the repayment time-horizon of the debt outstanding, the weighted average maturity of Greek government securities during the reporting period of 2012 increased to 15.73 years, up from 2.36 years in 2011. Also, during the first quarter of 2012, the Greek government granted reduced (compared with the last quarter of 2011) guarantees against € 586.4 million, the total amount of which reached € 20,046.1 million. Table 2.1.1 presents the composition of debt by currency and residual maturity and the amount of guarantees granted by the Greek government during 2009-2012.

Based on preliminary data published in the most recent "Public Debt Bulletin" (March 2012) by the General Accounting Office, the composition of the Central Government debt by type of interest rate charged (fixed-floating) in the first quarter of 2012, exhibits a reversal of the ratio of constant: 47.0% to variable: 53.0% (from a fixed 62.0% -38.0% variable in the previous quarter), while the proportion of tradable to non-tradable debt became 53.4% to 46.6% respectively [as compared to the last quarter of 2011, in which this proportion stood at 74.7% (trad-

**TABLE 2.1.1 Central Government Debt (in mil of €) 2009-2012 (Jan.-Mar.)**

| Period | 2009 | 2010 | 2011 (A΄ quarter) | 2011 | 2012 ( A΄ quarter) |
|---|---|---|---|---|---|
| **Total Central Government Debt** (not excluding debt guaranteed by Central Government) | **298,524.20** | **340,286.20** | **354,540,91** | **367,978.00** | **280,292.44** |
| **Debt by currency:** | | | | | |
| Euro-denominated | 297,264.30 | 334,273.25 | 347,553.19 | 358,778.55 | 270,201.91 |
| % of total | 99.58% | 98.23% | 98.03% | 97.50% | 96.40% |
| Non-Euro currency | 1,259.90 | 6,012.95 | 6,987.72 | 9,199.45 | 10,090.53 |
| % of total | 0.42% | 1.77% | 1.97% | 2.50% | 3.60% |
| **Debt by maturity** (only General Government bonds, T-bills and E.C.P.) | **262,905.30** | **265,884.90** | **263,131.30** | **367,978.00** | **280,292.44** |
| Short-term (up to 1 year) | 28,273.90 | 33,510.70 | 39,038.10 | 50,521.70 | 24,454.70 |
| % of total | 10.75% | 12.60% | 14.84% | 13.70% | 8.70% |
| Medium-term (1 to 5 years) | 109,664.70 | 106,618.00 | 97,391.80 | 175,261 | 67,964 |
| % of total | 41.71% | 40.10% | 37.01% | 47.60% | 24.20% |
| Long-term (more than 5 years) | 125,002.70 | 125,756.20 | 126,701.40 | 142,195.30 | 187,873.74 |
| % of total | 47.54% | 47.30% | 48.15% | 37.80% | 67.10% |
| **Debt guaranteed by the Central Government** | **25,586.60** | **25,894.50** | **25,525.30** | **20,632.50** | **20,046.10** |

Average residual maturity of Central Government Debt 31/03/2012: 11.33 years.
*Source:* Ministry of Finance, General Accounting Office.

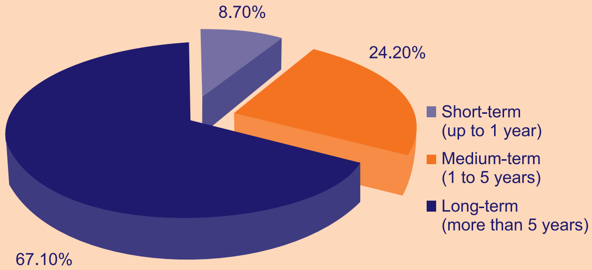
able) to 25.3% (non-tradable)]. Finally, there was only a marginal shift in the currency composition of Central Government debt (96.4% of debt is euro-denominated as opposed to 3.6% debt denominated in currencies outside the euro area (from 97.5% euro-denominated and 2.5 percent foreign currency debt during the previous quarter).

Regarding the composition of new borrowing for the period January to March 2012, 76.7% of new loans originate from the European Financial Stability Facility (EFSF), 19.9% comes from new issues of T-bills, while 3.4% comes from the International Monetary Fund (IMF).

The evolution of Public Debt, for the years 2009-2012, is depicted in Table 2.1.1.

The composition of debt based on residual maturity is presented in Figure 2.1.1.

**FIGURE 2.1.1**
**Public Debt by residual maturity 2012**

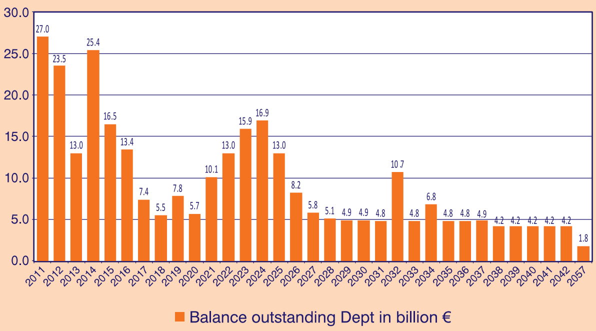



*Source:* Ministry of Finance -General Accounting Office.

In terms of duration, the long-term issues (those of more than 5 years to maturity) represent 67.1% of the total, medium-term issues (those that mature between 1 to 5 years) constitute 24.2%, while short-term issues (with maturity less than a year) amount to 47.3% of the total (the corresponding figures in the last quarter of 2011 were 47.3%, 40.1% and 12.6% respectively).

Figure 2.1.2 presents the Central Government Debt redemption schedule (2011-2057) based on the latest available data.

**FIGURE 2.1.2**
**Central Government Debt redemption schedule (bl €)**




*Source:* Ministry of Finance -General Accounting Office.

It is apparent from the above figure that a considerable portion of the outstanding debt that must be redeemed is concentrated in the periods 2012-2016 and 2021-2025.

Regarding the issue of the sustainability of the Debt/GDP ratio, and in reference to the 120% target by 2020 as stipulated in the Memorandum of Economic and Financial Policies signed in February 2012, this depends on a number of pivotal factors, predominant among which is the real GDP growth rate, the creation of primary budget surpluses, as well as the debt-interest burden. Nonetheless, the economic conjuncture, political developments, a number of exogenous factors and the international environment play an equally important role in the evolution of the Debt/GDP ratio.

# 2.2. Analysis of the State Budget Execution (Jan.-Apr. 2012)

*Yannis Monogios, Elisavet Nitsi*

The development of public finances, based on the latest available data for the execution of the state budget (total of ordinary budget and public investment budget, Table 2.2.1) for the first four months of 2012 (January-April), on a modified cash basis, shows that the state budget deficit, which amounts to € 9.10 billion, recorded a significant improvement of about 16.9% relative to the target of € 11.01 billion. However, relative to the corresponding period in 2011, the state budget deficit has increased by approximately 24.0% (from € 7.37 billion to € 9.10 billion).

During the same period, the state budget primary deficit amounted to € 1.72 billion, a 47.0% improvement, relative to € 3.26 billion primary deficit required to be in line with targets set in the supplementary budget of 2012.

Specifically, for January-April 2012, the state budget net revenues amounted to € 16.14 billion (performing below the target, which was € 16.64 billion, by € 495 million), while the ordinary budget net revenues amounted to € 14.65 billion (presenting a decrease of € 324 million compared to the target of € 14.99 billion as set in the supplementary budget in the current year). This deviation from the targets is attributed, for the most part, to

**TABLE 2.2.1 State Budget Execution (Jan.-Apr. 2012)**

in mn € (modified cash basis)

| | Jan-April 2011 outcome | Jan-April 2012 outcome | Jan-April 2012 target | 2011** outcome | 2012* target |
|---|---|---|---|---|---|
| **I. State Budget Net Revenue** | **15,103** | **16,146** | **16,641** | **53,860** | **56,159** |
| **1. Ordinary Budget Net Revenue** | **14,473** | **14,665** | **14,989** | **50,091** | **51,409** |
| A. Revenue before tax refunds | 16,108 | 15,588 | 15,991 | 54,217 | 54,949 |
| B. Special revenue from licensing and public rights | 0 | 0 | 40 | 1,157 | 270 |
| C. Tax refunds | 1,635 | 933 | 1,042 | 5,283 | 3,810 |
| **2. Public Investment Budget Net Revenues** | **630** | **1,491** | **1,652** | **3,770** | **4,750** |
| **II. State Budget Expenditure** | **22,477** | **25,291** | **27,650** | **76,743** | **70,298** |
| **1. Ordinary Budget Expenditure** | **21,150** | **24,336** | **25,765** | **70,135** | **62,998** |
| A. Primary expenditure | 16,765 | 16,319 | 17,243 | 51,548 | 47,685 |
| B. Grants to hospitals for past debt settlement | 375 | 391 | 380 | 435 | 400 |
| C. Military procurement (on a cash basis) | 50 | 53 | 180 | 359 | 700 |
| D. Guarantees called | 141 | 154 | 215 | 1,445 | 1,163 |
| to bodies classified inside General Government | 128 | 116 | 163 | 1,254 | 1,026 |
| to bodies classified outside General Government | 12 | 38 | 52 | 192 | 137 |
| E, Net interest payments *** | 3,819 | 7,419 | 7,747 | 16,348 | 13,050 |
| **2. Public Investment Budget Expenditure** | **1,328** | **956** | **1,885** | **6,608** | **7,300** |
| **State Budget Primary Balance (+surplus, - deficit)** | **-3,555** | **-1,726** | **-3,262** | **-6,534** | **-1,089** |
| **State Budget Balance** | **-7,374** | **-9,145** | **-11,009** | **-22,882** | **-14,139** |

* Target included in the 2012 Supplementary Budget Law approved by Parliament in February 2012.
** Total State Budget expenditures and revenues outcomes for 2011 are final. However, the distribution within categories will be confirmed in Q3 2012 following the submission to Parliament of the annual budget outcome review for 2011.
*** The interest expenditure for the first quarter of 2012 is analyzed as follows: a) Cash payments of approximately € 2.5 billion and b) accrued interest of approximately € 4.9 billion paid via short term securities of six months maturity issued by the EFSF to bondholders, due to the implementation of the first phase of the PSI agreement.
*Source:* Table reproduced from State Budget Monthly Execution Bulletin (Jan.-Apr. 2012) Table 1. General Accounting Office, Ministry of Finance.

the shortfall of VAT receipts in comparison with the target (by € 418 million) due to domestic demand contraction. Secondly, although a significant improvement was recorded in the collection of tax arrears due to intensified audits, as well as in the receipts from the special levy on real estate collected through electricity bills, there was nonetheless a decrease in specific non-tax revenues, which in turn contributed to the decline in government revenues. However, public investment program revenues amounted to € 1.49 billion (a decrease of € 161 million vis-à-vis the target of € 1.65 billion), a significant increase of 136.6% relative to the realized public investment program revenues for the corresponding period of 2011 (€ 630 million).

On the other hand, state budget expenditures for this period reached € 25.29 billion, 9.3% or € 2.36 billion lower than the target (of € 27.65 billion) stipulated in the 2012 supplementary budget. This expenditure development reflects the significant containment of ordinary budget spending (a decrease of € 1.43 billion –to a total of € 24.34 billion– relative to the target of € 25.77 billion). This outcome reflects a better control in the primary expenditure envelope of € 16.32 billion (€ 924 million lower than the target of € 17.24 billion). Furthermore, military procurement amounted to € 53 million (or € 127 million below the target of € 180 million), and net interest payments amounted to € 7.42 billion (or € 328 million lower than the target of € 7.75 billion), both below the supplementary budget projections. Finally, during the first four months of 2012, public investment spending was restricted to € 956 million, decreased by € 929 million against the target of € 1.89 billion, an overall decrease of 28.0% in comparison with the corresponding period of 2011.

However, state budget expenditures until April 2012 grew by 12,5% or were € 2.81 billion higher than in the same period a year ago, as a result of higher interest payments by € 3.6 billion (from € 3.82 billion to € 7.42 billion) as part of the implementation of the PSI agreement.

The development of the state budget until April 2012, makes apparent the intensification of fiscal adjustment efforts towards the target set in the Memorandum of Understanding on Specific Economic Policy Conditionality (February 2012), aiming at a primary surplus of 4.5% of GDP (or approximately € 9.5 billion). This target must be achieved by 2014.

The observed inertia of state mechanisms (especially tax collection), during the current period of parliamentary elections (May and June 2012), is a potential threat to the achievement of the targets set in the state budget.

# 3. Human resources and social policies

## 3.1. Labour market developments

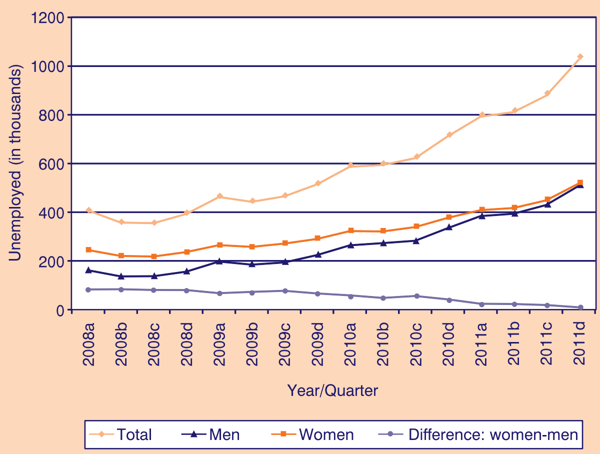
***Ioannis Cholezas***

This analysis focuses on the developments of the last quarter of 2011 with specific emphasis on the characteristics of the new unemployed, namely those who enter the pool of unemployed in the quarter under investigation. As in previous quarters, the majority of the new unemployed are mostly older men, usually of low educational attainment residing mainly in Sterea Ellada. On the other hand, employment rates continued to decline for all age groups, but more so for youth under 30 years of age, while male and female behaviours regarding labour force participation seem to differ significantly, since men withdraw from the labour market contrary to women who seem to increase their participation. Furthermore, employment rates declined in all sectors of economic activity with the exception of real estate activities. It turns out that the self-employed with personnel and those employed as assistants in family business are more severely hurt by the crisis. At the same time, more individuals tend to work as self-employed with no personnel. This is probably due to the wider view that self-employment with relatively limited obligations, namely with no personnel, can be a way out of unemployment problems, just like the sectors of agriculture, forestry and fishery. Finally, the analysis concludes with the review of the labour market interventions originating from the second memorandum of cooperation and their possible effects on the operation of the labour market.

### 3.1.1. Unemployment

Unemployment rates traditionally increase during the last quarter of the year in Greece, due to the end of the summer and the subsequent fall in the tourism industry employment. The fourth quarter of 2011 could not have been an exception to the rule, especially while one of the worst economic crises of the century is evolving. The number of the unemployed in the last quarter of 2011 has reached 1,025,900 persons, of which 508,100 are men and the remaining 517,800 are women (see Graph 3.1.1). These figures correspond to an overall unemployment rate of 20.7% for individuals older than 15 years, specifically 17.8% for men and 24.5% for women, which means that the gender unemployment gap has narrowed even more, as the crisis continues to hurt men disproportionately. Nevertheless, unemployment rates are still diverging, simply because men exhibit a higher labour force participation rate. But what is particularly troublesome and could be an indication that the worst is yet to come, is the accelerating pace of the number of the new unemployed between the third and the fourth quarter of 2011. According to Table 3.1.1 the new unemployed between 2011c and 2011d have reached a total of 147,600 or, alternatively, they have increased by 16.8%, when during the previous year the respective changes were 90,200 or 14.5%.

**GRAPH 3.1.1**
**Number of unemployed by gender (in thousands)**




*Source:* ELSTAT, *Labour Force Surveys,* author's calculations.

Equally disappointing is the situation with the long-term unemployed (over 12 months) whose number has increased by 147,600 in the last quarter of 2011, when the preceding quarter the increase did not exceed 67,500 and in the respective quarter at 2010 the increase was as low as 38,700. At the same time, long-term unemployed account for 54.6% of total unemployed, exhibiting an increase over one percentage point compared to 2011c, an observation which signals the inability of those people to re-enter the labour market and makes it even more imperative the need to take action in order to prevent those people from becoming discouraged and abandoning the labour market.

**TABLE 3.1.1 New unemployed between third and fourth quarter (in thousands)**

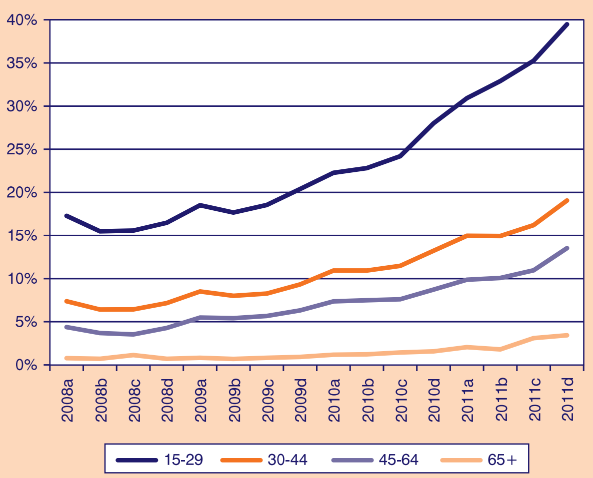
| | 2008c-2008d | | 2009c-2009d | | 2010c-2010d | | 2011c-2011d | |
|---|---|---|---|---|---|---|---|---|
| | (in thous.) | (%) | (in thous.) | (%) | (in thous.) | (%) | (in thous.) | (%) |
| Total | 37.6 | 10.6% | 49.3 | 10.6% | 90.2 | 14.5% | 147.6 | 16.8% |
| Men | 19.0 | 13.9% | 30.1 | 15.5% | 52.1 | 18.4% | 78.5 | 18.3% |
| Women | 18.6 | 8.5% | 19.3 | 7.1% | 38.0 | 11.2% | 69.1 | 15.4% |

*Source:* ELSTAT, *Labour Force Surveys,* author's calculations.

An important feature of the Greek labour market is that the youth aged below 30 are particularly hurt by unemployment, even before the beginning of the economic crisis. Graph 3.1.2 shows unemployment rates by age group and proves the above statement. The youth face a much higher unemployment rate compared with the older individuals who are still economically active and the gap seems to widen. In 2011d the unemployment rate for youth below 30 reaches 39.5%, much higher than the overall unemployment rate which stands at 20.7% and even higher than those aged 30-44 who face an unemployment rate of 20%. Despite that, it should be mentioned that the number of unemployed has increased faster for the rest of the age groups. For instance, in 2011d the unemployed below 30 years of age are 2.4 times more than the unemployed in 2008d of the same age group, while the ratio is 2.7, 3.3 and 4.0 for the age groups 30-44, 45-64 and 65+, respectively. Consequently, young unemployed constitute an ever smaller share of total unemployed (41.9% in 2011d vs. 35.8% in 2008d) compared with the beginning of the crisis, a fact which indicates that older individuals suffer more from the crisis. Finally, with respect to the last quarter of 2011, young unemployed below 30 years of age have increased by 11.6%, when at the same time unemployed aged 30-44 and 45-64 have increased by 18.2% and 23.3%, respectively.

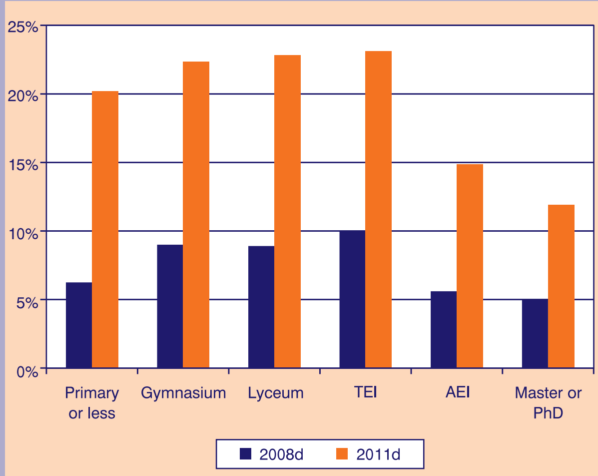
Unemployment rates by educational group in 2011d and 2008d (control year) are presented in Graph 3.1.3. One time consistent conclusion is that there are important variations in unemployment rates among groups. For example, tertiary education graduates and holders of Master or PhD are in a better position (below 15%). Beyond that, two more conclusions can be drawn. The first one is that unemployment has increased for all educational groups as a result of the economic crisis with no exception and the second is that this increase is not uniform. For instance, unemployed Lyceum graduates have increased by 37.7% between 2008d and 2011d, while at the same time unemployed Master or PhD holders have increased by a mere 1.9%. The second larger percentage point increase is reported among TEI graduates (19.6%), which is probably

**GRAPH 3.1.2**
**Unemployment rate by age group**




*Source:* ELSTAT, *Labour Force Surveys*, author's calculations.

**GRAPH 3.1.3**
**Unemployment by educational attainment**




*Source:* ELSTAT, *Labour Force Surveys,* author's calculations.

indicative of the limited acceptance of those graduates by the labour market.[1] Regarding the last quarter of 2011, available data seem to suggest that the three lower educational levels (Primary or less, Gymnasium and Lyceum) and holders of Master or PhD degrees exhibit a larger increase compared to the entire period's increase, while TEI graduates –contrary to period 2008d-2011d– and especially AEI graduates experience lower percentage changes (18.1% vs. 19.6% and 5.3% vs. 12.8%, respectively). Finally, most unemployed in 2011d are either Lyceum (37.3%) or TEI (20.4%) graduates.

Last but not least, there are important variations in unemployment rates among different regions. In the last quarter of 2011 West Macedonia has the highest unemployment rate (25.1%) followed by Sterea Ellada (23.8%) and Central Macedonia (22.8%). Attica, which is the larger in terms of population, comes fourth with an unemployment rate of 21.7%. On the other hand, South Aegean and Ionian Islands diverge considerably from average (20.7%) by reporting unemployment rates which are lower than 14%. As far as developments in the last quarter of the year are concerned, except for Ionian Islands and North Aegean which suffer from seasonality due to their dependence on the tourist industry, it turns out that Sterea Ellada (23.4%), Central Macedonia (19.3%), Attica (19.2%) and Epirus (19.1%) are the regions exhibiting the largest increases in unemployment rates in just one quarter.

### 3.1.2. Employment and labour force participation

Employment reduction observed since the beginning of the crisis continues in the last quarter of 2011, irrespective of age and gender, according to Table 3.1.2. Em-

**TABLE 3.1.2 Employment and labour force participation**

| | Employment | | | | Labour force | | | |
|---|---|---|---|---|---|---|---|---|
| | 2011c (%) | 2011d (%) | 2011c-2011d (in thous.) | 2011c-2011d (%) | 2011c (%) | 2011d (%) | 2011c-2011d (in thous.) | 2011c-2011d (%) |
| **Total** | **43.6** | **42.0** | **-146.5** | **-3.6** | **53.0** | **53.0** | **1.1** | **0.0** |
| 15-19 | 3.6 | 3.4 | -1.7 | -8.5 | 7.9 | 8.3 | 1.9 | 4.4 |
| 20-24 | 29.0 | 26.5 | -12.4 | -8.0 | 51.4 | 51.3 | 1.2 | 0.4 |
| 25-29 | 59.5 | 56.0 | -27.2 | -6.3 | 85.3 | 84.8 | -6.3 | -1.0 |
| 30-44 | 72.4 | 70.3 | -53.7 | -2.9 | 86.4 | 86.9 | 10.5 | 0.5 |
| 45-64 | 54.4 | 52.6 | -47.3 | -3.0 | 61.1 | 60.9 | -2 | -0.1 |
| 65 + | 3.4 | 3.2 | -4.2 | -5.9 | 3.5 | 3.3 | -4.1 | -5.5 |
| **Men** | **53.4** | **51.2** | **-98.8** | **-4.1** | **62.8** | **62.3** | **-20.3** | **-0.7** |
| 15-19 | 5.2 | 4.6 | -1.9 | -13.0 | 9.4 | 9.4 | 0 | 0.0 |
| 20-24 | 34.7 | 31.8 | -8.0 | -8.7 | 56.4 | 55.3 | -3.5 | -2.3 |
| 25-29 | 66.4 | 61.5 | -19.2 | -7.6 | 90.2 | 88.4 | -7.9 | -2.3 |
| 30-44 | 83.8 | 80.9 | -37.3 | -3.5 | 96.2 | 96.2 | -1.9 | -0.2 |
| 45-64 | 67.4 | 65.1 | -29.1 | -3.0 | 75.1 | 74.6 | -4 | -0.4 |
| 65 + | 5.3 | 4.9 | -3.2 | -6.5 | 5.3 | 5.0 | -3 | -6.0 |
| **Women** | **34.3** | **33.3** | **-47.7** | **-2.9** | **43.7** | **44.1** | **21.3** | **1.0** |
| 15-19 | 2.1 | 2.1 | 0.1 | 1.8 | 6.3 | 7.1 | 1.9 | 11.1 |
| 20-24 | 23.3 | 21.4 | -4.2 | -6.7 | 46.4 | 47.5 | 4.6 | 3.7 |
| 25-29 | 51.9 | 49.8 | -8.0 | -4.5 | 80.0 | 80.8 | 1.6 | 0.6 |
| 30-44 | 60.6 | 59.4 | -16.4 | -2.2 | 76.2 | 77.3 | 12.4 | 1.3 |
| 45-64 | 41.9 | 40.6 | -18.2 | -2.9 | 47.7 | 47.7 | 2 | 0.3 |
| 65 + | 1.9 | 1.8 | -1.0 | -4.5 | 2.0 | 1.9 | -1.1 | -4.6 |

*Source:* ELSTAT, *Labour Force Surveys,* author's calculations.

1. References which argue that TEI studies are either poor substitutes for AEI studies or do not correspond to the demand for skills on behalf of the employers (which is very important given the applied nature of TEI studies) are often in the public discourse.

ployed individuals were reduced by 146,500 persons (-3.6%), out of which 98,800 were men (-4.1%) and 47,700 were women (-2.9%). Regarding age composition, the greatest decrease is reported for youth aged below 30, especially those in group 15-19 (men) and 20-24 (women). The only group which has an increase in employment is women aged 15-19, but that increase is small (1.8%) and it involves less than 100 people, therefore it might fall within the limits of statistical error.

On the other hand, reduced employment has left overall labour force participation mostly unchanged (see Table 3.1.2), but a more careful look reveals that the labour force participation of men is actually lower by 20,300 individuals, while the labour force participation of women is higher by 21,300 individuals. Thus, varied behaviour by sex, which was also reported in earlier issues of the *Greek Economic Outlook* seems to be confirmed once again. As far as age is concerned, young men exhibit relatively larger declines in labour force participation (group: 20-29 years) and so do men over 65 years of age, who are probably directly or indirectly forced to retire. In case of women, there is a noteworthy increase in the labour force participation rate in age group 24-29 (3.7%), while only women older than 65 years seem to drop out of the labour market.

The evolution of employment by sector of economic activity is presented in Table 3.1.3. The composition of those employed compared to the last quarter of 2008 has changed due to the differential impact of the crisis on each sector. For instance, the only sector which demonstrates a noteworthy increase in its share during period 2008d-2011d is “Agriculture, forestry and fishery”

**TABLE 3.1.3 Employed individuals by sector of economic activity**

| | 2008d (%) | 2011c (%) | 2011d (%) | 2011c-2011d (in thous.) | 2011c-2011d (%) |
|---|---|---|---|---|---|
| Agriculture, forestry and fishery | 11.4 | 12.4 | 12.6 | -7.4 | -1.5 |
| Mining and quarrying | 0.3 | 0.3 | 0.3 | -0.4 | -3.2 |
| Manufacturing | 11.7 | 10.3 | 9.9 | -30.9 | -7.4 |
| Electricity, gas, steam and air conditioning supply | 0.7 | 0.6 | 0.7 | 0.8 | 3.1 |
| Water supply, sewerage, waste management and remediation activities | 0.7 | 0.6 | 0.7 | -0.5 | -1.9 |
| Construction | 8.5 | 5.9 | 5.8 | -14.8 | -6.1 |
| Wholesale and retail trade, repair of motor vehicles and motorcycles | 18.3 | 18.3 | 18.4 | -21.4 | -2.9 |
| Transportation and storage | 4.7 | 4.8 | 4.9 | -3.9 | -2.0 |
| Accommodation and food service activities | 6.7 | 7.8 | 7.3 | -30.6 | -9.6 |
| Information and communication | 1.7 | 1.7 | 1.7 | -2.6 | -3.7 |
| Financial and insurance activities | 2.5 | 2.8 | 3.0 | 1.6 | 1.4 |
| Real estate activities | 0.2 | 0.2 | 0.2 | 0.8 | 12.7 |
| Professional, scientific and technical activities | 5.4 | 5.2 | 5.5 | 3.0 | 1.4 |
| Administrative and support service activities | 1.6 | 1.8 | 1.8 | -2.5 | -3.4 |
| Public administration and defence, compulsory social security | 8.3 | 8.8 | 8.7 | -17.2 | -4.8 |
| Education | 7.1 | 7.5 | 7.7 | -1.3 | -0.4 |
| Human health and social work activities | 5.1 | 5.9 | 6.0 | -7.0 | -2.9 |
| Arts, entertainment and recreation | 1.3 | 1.2 | 1.2 | -2.7 | -5.4 |
| Other service activities | 2.0 | 2.1 | 2.1 | -4.0 | -4.6 |
| Activities of households as employers, undifferentiated goods –and services– producing activities of households for own use | 1.8 | 1.7 | 1.6 | -5.0 | -7.3 |
| Activities of extraterritorial organizations and bodies | 0.0 | 0.1 | 0.1 | -0.6 | -23.1 |
| Total | 100.0 | 100.0 | 100.0 | 146.6 | -3.6 |

*Source:* ELSTAT, *Labour Force Surveys,* author’s calculations.

**TABLE 3.1.4 Employed individuals by employment position**

| | 2008d (%) | 2011c (%) | 2011d (%) | 2008d-2011d (%) | 2011c-2011d (in thous.) | 2011c-2011d (%) |
|---|---|---|---|---|---|---|
| Self-employed with employees | 8.6 | 7.7 | 7.6 | -23.7 | -13.5 | -4.3 |
| Self-employed with no personnel | 21.2 | 23.0 | 24.0 | -2.0 | 5.5 | 0.6 |
| Employee (with wage or salary) | 64.4 | 64.0 | 63.0 | -15.4 | -131.8 | -5.0 |
| Assistant in family business | 5.8 | 5.3 | 5.3 | -21.4 | -6.6 | -3.1 |
| Total | 100.0 | 100.0 | 100.0 | -13.6 | -146.5 | -3.6 |

*Source:* ELSTAT, *Labour Force Surveys,* author's calculations.

(+1.3 percentage points), a remark in accordance with the observed movements towards the specific sector because of high unemployment rates. In contrast, employment in "Construction" and "Manufacturing" has declined considerably by 2.7 and 1.9 percentage points. In addition, the change in employment for the last quarter of 2011 reported in the last column of Table 3.1.1 is negative for all sectors of employment, even more so in "Construction" and "Manufacturing", for which it exceeds 6% and 7%, respectively. What is comforting, though, is the fact that three sectors[2] of economic activity report an increase in employment, even if it is just for one quarter. Unfortunately, only the sector of "Real estate activities" shows a strong increase of employment which exceeds 12%.

It is common knowledge that Greece has an unusually high share of self-employed individuals with no personnel. Table 3.1.4 attempts to provide an overview of the impact of the crisis by position of employment. For starters, the share of self-employed with no personnel exceeds 20% at all times. What is impressive, though, is that their share increases during the crisis from 21.2% to 24%. The question that follows is whether this increase is due to the relatively faster decline of other types of employment. Based on Table 3.1.4 that seems to be right for the entire period since 2008d, but not for the last quarter of 2011, when an increase in self-employed with no personnel is reported by 5,500 individuals or 0.6%. Although this is a small increase, it should not be ignored along with the rest of the reductions in other groups which go as high as 5% for employees in just one quarter. For period 2008d-2011d self-employed with personnel and assistants in family business seem to be mostly hurt by the crisis, since according to third column of Table 3.1.4 within three years they have lost 23.7% and 21.4% of their members, respectively. A plausible explanation is that firms closing down are mainly small family owned firms so that the entire family is hurt, namely the children and the wives of entrepreneurs who are employed as assistants in the family business.

## 3.1.3. Institutional changes

The first quarter of 2012 was marked by the signature of the second memorandum of cooperation between the Greek government and the European Commission (EC), the European Central Bank (ECB) and the International Monetary Fund (IMF), which succeeded the first memorandum of cooperation signed almost two years ago. The second memorandum is an expansion of the time our European partners and the IMF finance our budget deficits, since no other alternative is feasible, and as a result sets a number of policy measures to be adopted in order to make as sure as possible that the country will be able to repay its debtors smoothly. The second memorandum became a law of the Greek state with act 4046/2012 and its specialization regarding measures involving the labour market was implemented by law 4047/2012, last February. It is interesting to review the changes in the labour market introduced by the second memorandum.

More specifically, two very important institutional changes were already put into effect by last February. The first one refers to the minimum wage. Until the implementation of law 4047/2012, the minimum wage was set by the National General Collective Labour Agreement (EGSSE) which was the outcome of negotiations between em-

2. The fourth sector of economic activity, namely "Activities of extraterritorial organizations and bodies" refers to a very small number of employed persons, therefore it is deliberately ignored in the analysis.

ployees' (GSEE) and employers' representative bodies (SEV, ESEE and GSEVEE) and was binding for everybody. The new law unilaterally reduced the minimum wage by 22% for all employees (€586 gross) and by 32% for employees up to 25 years old (€511 gross) in an effort to motivate employers to hire young workers who face very high unemployment rates. The rational of those interventions is to reduce the labour cost for firms and increase their competitiveness, since reduced labour cost can lead to lower prices for goods and services. In essence, this effort falls within the strategy of internal devaluation which attempts to make the Greek economy more competitive worldwide, at least in terms of production cost, with obvious positive effects on the demand for goods (through exports) and services, on economic activity and on employment.

The second institutional change involves Collective Labour Agreements (SSE) and intends to increase labour market flexibility. The first critical issue is the duration of the terms of the agreement, which is set to three months after its expiration or denouncement. After this three-month period is over, the terms of the SSE which continue to hold apply to the basic wage rate and a few benefits, namely the benefits for seniority, children, education and dangerous work, as long as they are provided for by the SSE. Unless both parties (employees and employers) reach an agreement for a new SSE, then individual labour agreements could be signed with their terms being the result of direct negotiation between the employer and every single employee. The second crucial intervention involves the provisions for resorting to arbitration which, according to the new law, is allowed only if both parties agree to it, while arbitration is legitimized to decide on matters involving the basic wage rate or salary.

The combination of the above mentioned interventions is expected to put pressure on the entire wage distribution, not just minimum wages, leading to lower average wages both through the reduction of the minimum wage, but also through the short time limits provided in order for employers and employees to reach a new collective labour agreement, since employees have an incentive to agree on time (within the three-month extension), possibly by lowering their demands, so that they do not end up signing individual contracts risking even higher wage losses. However, a necessary prerequisite for these interventions to lead to the improvement of the Greek economy's competitiveness is for the reduction of wages to translate to a reduction in prices of goods and services produced. Otherwise, the only effect would be the deregulation of the labour market at the expense of the employees, with no benefits for the economy as a whole.

# 3.2. The occupational status of men and women in the regions of Greece

***Kyriaki Athanassouli***

While the participation of women in the labour market has increased significantly across Europe over time, their representation in employment is still below that of men. Indeed, in the country as a whole, almost 40.5% of women works compared with 59.6% of men, according to data from the Labour Force Survey conducted in 2011, for the third quarter. Also, even when some men are employed in female-dominated areas of the labour markets, the distribution of occupational functions by gender preserves its “traditional” barriers. In other terms, many professions remain male-dominated and others female-dominated. Economic activities at the local level and their characteristics are undoubtedly factors which affect the different occupations. In relation to the whole country, the share of the occupational activities in an area of employment presents some particularities. Thus, for the analysis of the structure of occupations by gender, some regional indicators are introduced (INSEE, 2012). The location quotient technique is utilized in order to compare the local economy to a reference economy, in the process attempting to identify specializations in the local economy.

Initially, the occupational status which absorbed 50% of the workforce of men and women is presented. Then, information on the structure of professional status is introduced and location quotients are calculated. Finally, emphasis is given to the structure of employment in the region of Attica, by analyzing occupational status at the 3-digit level (ISCO-08).

## 3.2.1. Higher degree of concentration in occupations of women

The highest participation of women in the labour market is located in the regions of Attica (42.4%) and in the Ionian Island (42.5%), while the lowest contribution is in the regions of the North Aegean (35.1%), Western Greece (35.9%) and the region of Central Greece (36.1%). Particularly noteworthy is the fact that the proportion of women in the labour market increases with the degree of urbanization of the different areas.

It is observed for the whole country that the degree of concentration in a limited number of occupations is much higher among women than among men. In the third quarter of 2011, the top 8 minor groups of occupations at the 3-digit level (ISCO-08) absorb almost 50% of women in work and the top 15 minor groups of occupations absorb 50% of men, according to data from the Labour Force Survey of EL.STAT.

The top-ranking occupational groups for women are different from those for men, though there are a few similarities. Shop salespersons (522), market gardeners and crop growers (611), general office clerks (411), waiters and bartenders (513), and secondary education teachers (233) constitute the top occupations for both men and women. Additionally, it is worth mentioning that a significant number of women is employed as domestic, hotel and office cleaners and helpers (911), primary school and early childhood teachers (234) and nursing and midwifery associate professionals (322). By contrast, many men are employed as heavy truck/bus and car/motorcycle drivers (833 & 832). They are also employed as building frame-building finishers and related trades workers (711 & 712), protective services workers (541) and in the armed forces occupations (code 0). Moreover, many men are hotel and restaurant managers (141) and finance professionals (241).

## 3.2.2. Over- and under-represented occupational functions by regions

Information on the structure of occupations is given with the introduction of regional indicators such as the location quotients which take into consideration the occupational activities and specialization. It provides the level of specialization of an occupational activity in a precise region. Location quotients are calculated for all occupations to determine whether or not the local economy has a greater share of each occupational activity than expected when compared to a reference economy. If an occupation has a greater share than expected of a given occupation, then the extra occupation employment is assumed to be important because those jobs are above what a local economy should have to serve local needs. These indicators are provided by calculating the ratio of the share of the occupational activity in a region over the share of the occupational activity in the country (or a defined larger area, e.g. country, province, world, etc.). A ratio greater than one indicates that the precise region is specialized in this occupational activity. In other terms, the occupation is over-represented in the region compared with the importance of the same occupation within the whole country. The higher the ratio is, the more specialized the region is (INSEE, 2007 and KEPE, 1988).

Looking at the indicators’ values for the major groups of the occupational activities at the one-digit level (ISCO-

## TABLE 3.2.1. Location quotients by occupational major groups and gender in the administrative regions of Greece

| Regions of Greece | 1. Managers | | 2. Professionals | | 3. Technicians and associate professionals | | 4. Clerical support workers | | 5. Service and sales workers | | 6. Skilled agricultural, forestry and fishery workers | | 7. Craft and related trade workers | | 8. Plant and machine operators, and assemblers | | 9. Elementary occupations | | 0. Armed forces occupations | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Men | Women | Men | Women | Men | Women | Men | Women | Men | Women | Men | Women | Men | Women | Men | Women | Men | Women | Men | Women |
| 01 East Macedonia and Thrace | 0.55 | 0.54 | 0.62 | 0.67 | 0.82 | 1.01 | 0.74 | 0.48 | 0.92 | 0.95 | 2.05 | 2.87 | 0.75 | 0.97 | 1.07 | 1.24 | 0.99 | 0.48 | 3.17 | 1.51 |
| 02 Central Macedonia | 1.03 | 0.84 | 0.99 | 1.09 | 0.96 | 1.02 | 0.88 | 0.83 | 1.05 | 1.05 | 1.16 | 1.03 | 0.95 | 1.40 | 1.11 | 0.86 | 0.85 | 0.82 | 0.76 | 0.86 |
| 03 West Macedonia | 0.76 | 0.99 | 0.59 | 0.85 | 0.59 | 1.08 | 0.51 | 0.73 | 1.09 | 0.98 | 1.33 | 1.73 | 1.27 | 2.78 | 1.71 | 0.61 | 0.74 | 0.46 | 0.25 | 1.33 |
| 04 Epirus | 1.13 | 0.92 | 0.81 | 0.92 | 0.59 | 0.80 | 0.71 | 0.69 | 1.06 | 1.06 | 1.35 | 1.47 | 1.22 | 1.62 | 0.94 | 1.52 | 1.09 | 0.92 | 0.33 | 1.05 |
| 05 Thessaly | 1.36 | 1.33 | 0.93 | 0.79 | 0.67 | 0.91 | 0.66 | 0.72 | 0.81 | 0.85 | 1.87 | 2.14 | 0.91 | 0.89 | 0.92 | 0.76 | 1.15 | 0.97 | 1.06 | 1.64 |
| 06 Ionian Islands | 0.88 | 1.23 | 0.65 | 0.62 | 0.75 | 0.67 | 0.99 | 0.96 | 1.31 | 1.19 | 1.51 | 1.16 | 1.25 | 0.97 | 0.64 | 0.47 | 0.56 | 1.57 | 0.00 | 0.00 |
| 07 West Greece | 0.82 | 1.00 | 0.89 | 1.02 | 0.89 | 0.83 | 0.75 | 0.88 | 0.89 | 0.98 | 1.86 | 1.73 | 0.95 | 0.85 | 1.06 | 0.51 | 0.91 | 0.64 | 0.62 | 0.00 |
| 08 Central Greece | 0.56 | 1.14 | 0.85 | 0.67 | 0.72 | 0.70 | 0.63 | 0.76 | 0.99 | 0.99 | 1.09 | 1.93 | 1.10 | 1.60 | 1.53 | 2.34 | 1.43 | 0.95 | 0.69 | 1.93 |
| 09 Attica | 1.04 | 1.05 | 1.34 | 1.23 | 1.38 | 1.23 | 1.39 | 1.29 | 1.00 | 0.95 | 0.13 | 0.07 | 0.97 | 0.72 | 0.93 | 1.19 | 0.95 | 1.12 | 0.92 | 0.62 |
| 10 Peloponnese | 0.90 | 0.94 | 0.60 | 0.64 | 0.65 | 0.60 | 0.94 | 0.78 | 0.92 | 0.99 | 2.20 | 2.49 | 0.99 | 0.84 | 0.90 | 1.12 | 1.18 | 0.83 | 0.31 | 1.17 |
| 11 North Aegean | 1.11 | 0.74 | 0.81 | 0.89 | 0.35 | 0.81 | 0.65 | 0.89 | 0.99 | 1.31 | 0.91 | 0.50 | 0.85 | 1.38 | 0.40 | 0.00 | 1.63 | 1.05 | 7.49 | 13.51 |
| 12 South Aegean | 1.42 | 1.11 | 0.52 | 0.60 | 0.87 | 0.67 | 0.79 | 1.24 | 1.21 | 1.22 | 0.73 | 0.70 | 1.42 | 0.40 | 0.76 | 0.51 | 1.11 | 1.77 | 1.17 | 1.28 |
| 13 Crete | 1.21 | 1.07 | 0.68 | 0.72 | 0.78 | 0.67 | 0.77 | 0.91 | 1.04 | 1.16 | 1.50 | 1.39 | 1.12 | 0.94 | 0.89 | 0.18 | 1.17 | 1.30 | 0.51 | 0.00 |
| Total | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

*Source:* EL.STAT., *Labour Force Survey, third quarter of 2011,* own calculations.

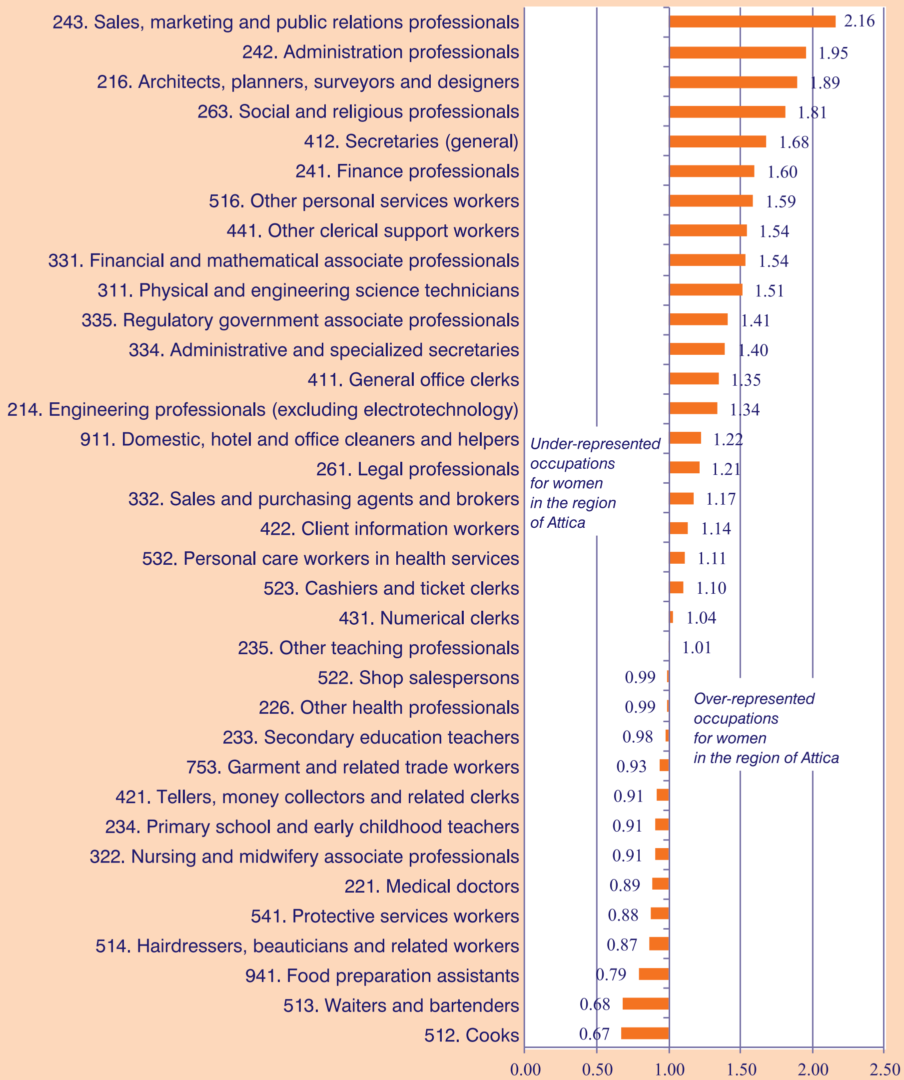
08), particularly noteworthy is the fact that there are regions where the structure of the employment remains the same for both men and women (Table 3.2.1). Typically this is the case for the region of Attica, where three categories of occupations for both men and women are over-represented relative to the whole country. With a ratio between 1.23 and 1.39 the major groups of *professionals* (group 2), *technicians and associate professionals* (group 3) and the *clerical support workers* (group 4) are preponderant in the region of Attica. To the contrary, group 2 of the professionals is under-represented in the region of East Macedonia and Thrace (women: 0.67 and men: 0.62), Ionian Islands (women: 0.62 and men: 0.65), Peloponnese (women: 0.64 and men: 0.60), South Aegean (women: 0.60 and men: 0.52) and Crete (women: 0.72 and men: 0.68). Group 3 of *technicians and associate professionals* is particularly under-represented for men in the region of West Macedonia (0.59), Epirus (0.59) and Thessaly (0.67) while, respectively, the participation of women in the labour market for this category of jobs remains proportional to the country as a whole. Moreover, as might be expected in the region of Attica, the representation of the other professional groups remains near the national average for both men and women, except for the group of skilled agricultural, forestry and fishery workers. This last group is over-represented in all the other regions (except South Aegean) and especially in East Macedonian and Thrace (women: 2.87 and men: 2.05) and in the Peloponnese (women: 2.49 and men: 2.20). It is worth noting that *managers* (group 1) are over-represented in the region of Thessaly (women: 1.33 and men: 1.36), emphasizing probably intensive business and administrative activity in the area. Men are still over-represented in the regions of the South Aegean (1.42) and Crete (1.21) while women stand out in the Ionian Islands (1.23). The structure of the *unskilled work* corresponding to group 9, Elementary occupations differ by gender from one region to another. So, the presence of unskilled female workers is particularly pronounced in the Ionian Islands (1.57), the South Aegean (1.77) and Crete (1.30). However, the presence of unskilled male workers prevails in the region of Central Greece (1.43) and in the North Aegean (1.63). The *Service and sales workers* (group 5) are over-represented in the South Aegean (women: 1.22 and men: 1.21) and the North Aegean only for the case of women (1.31) and in the Ionian Islands only for the case of men (1.31). Everywhere else the workers of this professional group are proportionally represented when compared to the Greek economy. Group 8 of *plant and machine operators, and assemblers* is preponderant in the region of Central Greece (women: 2.34 and men: 1.53). It holds a special place in the region of Epirus (1.52) and of East Macedonia-Thrace in the case of the women (1.24) and West Macedonia in the case of the men (1.71). Furthermore, it is worth noting that in the North and South Aegean and in the Ionian Islands this occupational group is under-represented. Finally, in the *armed forces occupations* (group 0), 40% are graduates from military academies. Similarly, the proportion of women and men are over-represented in the region of the East Macedonia and Thrace (women: 1.51 and men: 3.17) and in the North Aegean (women: 13.5 and men: 7.49). Additionally over-representation of women is found in the regions of West Macedonia (1.33), Thessaly (1.64), Central Greece (1.93), and the South Aegean (1.28). In the first three indicated regions, the presence of military staffs may explain the special presence of women. Conversely, in the region of Attica, one can detect an under-representation of women in the armed forces occupations, whereas the participation of men is close to the national average (0.92).

### 3.2.3. The dynamic and prevalent occupations in the region of Attica

In what follows, the analysis focuses on the region of Attica and the occupational groups are examined with greater precision at the 3-digit level. As for the whole country, in the region of Attica, women are concentrated in a smaller number of occupations than men. Effectively, almost 84% of the women employed work in the top 35 occupational groups, whereas the top 35 occupations for men account for just 70% of the total employed.

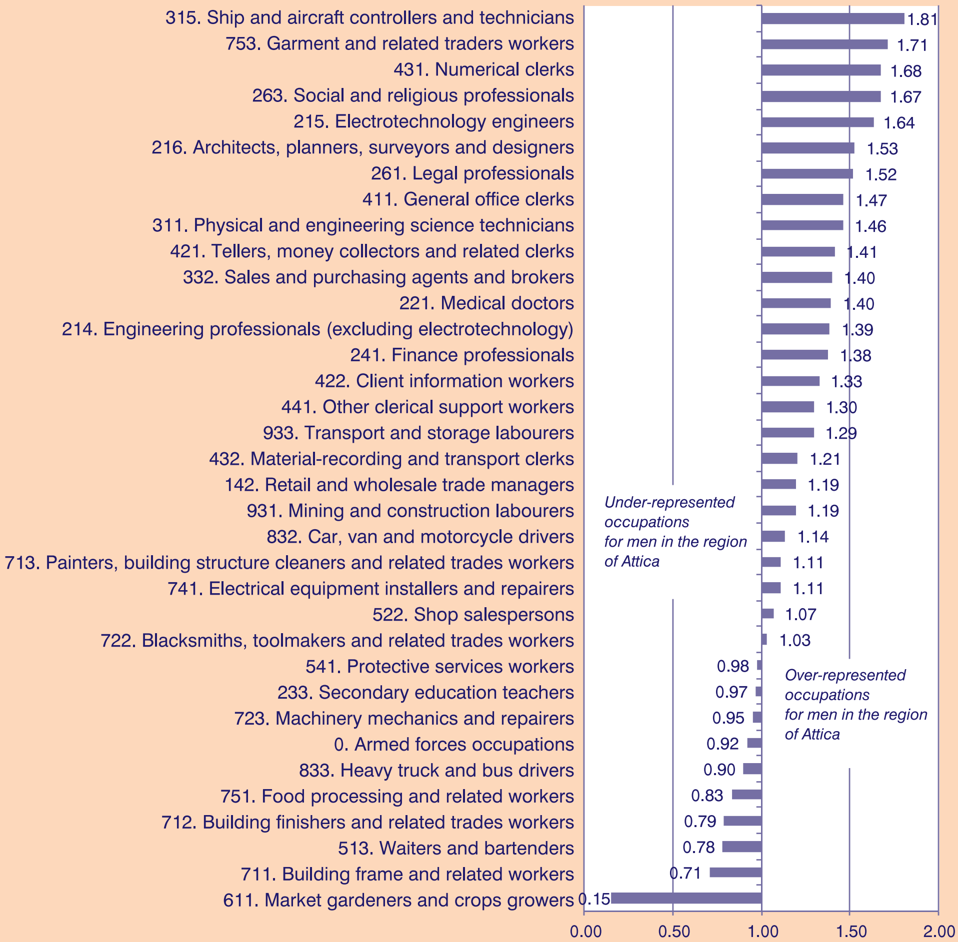
The job categories 2, 3 and 4 together refer to a series of occupations that characterize urban areas for both men and women, as opposed to job category 6 of skilled agricultural, forestry and fishery workers mainly found in rural and suburban areas. Specifically, moving to the more disaggregated data at the 3-digit level of category 2 of the *scientific professions*, over-representation is observed for *legal professionals* (261) (women: 1.21 and men: 1.52), *architects, planners, surveyors and designers* (216) (women: 1.89 and men: 1.53), *social and religious professionals* (263) (women: 1.81 and men: 1.67), *finance professionals* (241) (women: 1.60 and men: 1.38) and *engineering professionals*, excluding electrotechnology (214) (women: 1.34 and men: 1.39) (Figures 3.2.1 & 3.2.2). Moreover, the number of women who are *sales, marketing and public relations professionals*, is twice that of the whole country (code 243: 2.16) such as the number of those who work as *administration professionals* (code 242: 1.95). Normally located in the region of Attica, in the sense that they are proportionally distributed compared to the whole country, are women in the category of other teaching professionals (code 235: 1.01), where they are *teachers in private institutions*, the so-called "frondistiria" in Greece. On the other hand, male *electrotechnology engineers* (code 215: 1.64) both with *medical doctors* (code 221: 1.40) are over-represented in Attica. In category 3, *physical and engineering science technicians* (311) (women: 1.51 and men: 1.46) and *sales and purchasing agents and brokers* (332) (women: 1.17 and males: 1.40) are over-represented in the region of Attica. The women alone are over-represented in the category of *financial and mathematical associate professionals* (code 331: 1.54), *regulatory government associate professionals* (code 335: 1.41) and *administrative and specialized secretaries* (code 334: 1.40). While at the same time, the number of men in the group occupation of *ship and aircraft controllers* and *technicians* (code 315: 1.81) is almost twice that of the whole country. Afterwards, group 4 deals with the *clerical support workers*. More specifically, the number of women working as *secretaries* (code 412) is distinguished by a high ratio around 1.68, followed by *general office* clerks (code 411) (women: 1.35 and men: 1.47) and other *clerical support workers* (code 441) (women: 1.54 and men: 1.30). Re-

**FIGURE 3.2.1**
**The top-ranking 35 occupations of women in the region of Attica**




*Source:* EL.STAT., *Labour Force Survey, third quarter of 2011,* own calculations.

**FIGURE 3.2.2**
**The top-ranking 35 occupations of men in the region of Attica**




*Source:* EL.STAT., *Labour Force Survey, third quarter of 2011,* own calculations.

garding the unskilled work (group 9), over-representation of women is found in the case of *domestic, hotel and office cleaners and helpers* (code 911: 1.22), while many more men than women are present as *transport and storage labourers* (code 933: 1.29), *mining and construction labourers* (code 931: 1.19). Particularly noteworthy is the fact that a considerable proportion of men are employed as *garment and related trades workers* (code 753: 1.71)

## 3.2.4. Conclusion

The analysis of the structure of occupations by gender in the regions of Greece and especially in the region of Attica highlights the dynamic occupational groups, using data from EL.STAT for the third quarter of 2011.

One of the conclusions resulting from the analysis is related to the concentration of occupations by gender. Women are more concentrated in a few occupations than men. This high degree of concentration reflects the preponderance of women in a number of functions particularly in urban areas, but the number of occupations they are found remains lower than that of men. Following, indicators about the economic specialization of regions are provided through the occupational activities they mainly develop. Location coefficients are used to evaluate the relative weight of an occupational activity in a region and to appreciate the importance of an economic activity for a region compared with the importance of the same activity within the whole country. The provided indicators help identify specific occupations which are over-represented or under-represented in each region relative to the whole country. Regions where the structure of occupations remains the same for both men and women are highlighted. For example, in the region of Attica, three categories of occupations are over-represented for both genders at an aggregate occupational level. The major groups concern the professionals (group 2), the technicians and associate professionals (group 3) and the clerical support workers (group 4). Conversely, the structure of the unskilled work of group 9, Elementary occupations, differs by gender from one region to another. Additionally, for the region of Attica, a more disaggregated data analysis of occupational functions is elaborated at the 3-digit level, especially for the top 35 groups of jobs performed by women and men. This approach helps to identify the preponderance of a number of scientific professions such as lawyers, architects, engineers, finance professionals and medical doctors, the last one concerns only the case of men. It also reveals that physical and engineering science technicians as well as sales and purchasing agents and brokers are over-represented. Clerical support workers remain numerous compared to the national average. It will be interesting in a second term of the analysis to examine the occupations in a more disaggregated level for all the other regions of Greece and to create the respective typologies for the main activities. The methodology helps identify the dynamic occupational activities in terms of employment. And also contributes to the decision-making of local entities for the implementation of relevant training of the workforce (KEPE, 2011).

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# 3.3. Generic medicines: Recent developments

***J.N. Anastassakou***

Generic medicines[1] (or the so-called similar branded medicinal products) represent, by far, the main production bulk of the domestic pharmaceutical industry –especially of the firms which are owned by nationals– covering almost the entire corresponding demand in the country. Nevertheless, the generics penetration in the domestic market is comparatively low, not exceeding 20% of the total pharmaceutical sales (from pharmacies), while the remaining 80% is covered by imported, mainly originator, medicines. This relatively low use of generics implies a very high and, until recently, rising pharmaceutical cost in the healthcare system in Greece.

Increasing the use of generic medicines emerges as a high priority issue in the context of the pharmaceutical policy in our country. In fact, it represents the cornerstone in the process of curtailing the high public expenditures for pharmaceuticals in Greece's overall fiscal consolidation programme. Towards this objective, and in compliance with the Memorandum of Understanding,[2] a comprehensive set of measures has been enacted, aiming to increase the use of generics to 35% of total sales (in volume terms) during the current year and up to 60% till the end of 2013.[3] Similarly, measures are being implemented in order to increase the share of generics to 40% in public hospitals, by making mandatory the procurement of pharmaceutical products by active substance and by enforcing compliance with therapeutic protocols and prescription guidelines.

According to the recently passed implementation law (Law No. 4052/1.3.2012, Ministries of Health and Social Solidarity and Employment and Social Security), the pricing of the generics and off-patent medicines is set at much lower rates than previously, which, however, are more in line with the corresponding prices of other European countries of similar size and level of development. More specifically, the price of an original medicine is reduced by at least 50%, right after patent expiry (as specified in Law 4052, article 21, paragraph 1c). The price of the first generic product in the market must be lower by at least 10% of the off-patent medicine price, whereas an additional 10% reduction[4] is imposed on all subsequent similar medicinal products, in order to enhance competition in this market. Moreover, the doctors are requested to prescribe, at first start, the ten largest –in terms of demand– active substances, for all persons insured in the social security bodies, on the basis of the chemical substance alone. Then, from June 1, 2012 prescribing by active ingredient becomes mandatory for all medicines without exceptions.

Prescribing by chemical substance represents an entirely new practice in the healthcare system in Greece. The adoption of this measure aims at reducing the public pharmaceutical expenditure through the increased use of generics. It is recognized internationally that the use of similar medicinal products reduces the average cost of drug therapy not just for the patients, but for the social security funds as well. In other words, they represent a cost-effective mechanism, making thus possible the financing of additional research costs for new innovative medicines all over the world.

It is noted that the adoption of prescribing on the basis of the active substance provoked a widespread public debate in our country, where each side of the stakeholders put forward conflicting arguments. Nevertheless, the generic products are being widely used internationally,[5] while their share in the sales of pharmacies exceeds that of the originator medicines in many developed countries.

The measures which aim at the containment of pharmaceutical expenditure include, among others, the introduction of reduced profit margins along the entire supply chain of all medicinal products, both original and generic. Furthermore, it is made possible, under the imple-

1. The generic medicines include –in the context of this report– all medicinal products whose active substance is off-patent, therefore they include the originator medicines after patent expiry.

2. Memorandum of Understanding on Specific Economic Policy Conditionality, March 13, 2012. Ministry of Finance.

3. Note that in the Memorandum of Understanding there are many references to the generics, while in a separate section, on the increased use of similar medicines, specific measures are indicated in order to achieve this goal.

4. It must be noted that these reductions do not apply to drugs with a price less than € 10, so they will not be substituted by more expensive, probably imported, medicines.

5. It is worth mentioning that the share of generics –in volume terms– is higher than 70% in countries like the United Kingdom, Poland, Germany, and Canada, while in the United States it is as high as 89% of the total market. See the study *"Generic medicines: Essential contributors to the long-term health of society",* 2011, International Medical Statistics.

mentation law, the issuing of a ministerial decree which would allow a lower participation rate in the pharmaceutical cost, for all persons insured in EOPPY, in the cases where they accept a less expensive medicine of the same active pharmaceutical form and content. For the implementation of the preceding provision, the pharmacist is allowed to dispense the less expensive generic product. Conversely, if the insured patient prefers the more expensive medication of the same active substance, then the social insurance scheme will reimburse the lower-priced medicine, while the patient will pay the price differential.[6] Finally, the measures under implementation include the increment of the mandatory rebates, on the basis of the company's turnover, the completion of the e-prescribing system, as well as the periodic updating of the positive and negative lists of prescription medicines.

It is expected that the adoption of the pre-mentioned measures will generate a significant reduction of the pharmaceutical cost by an amount exceeding €1 billion during the current year, according to the estimates of the Memorandum of Understanding. In other words, the objective is to contain the out-patient pharmaceutical cost to about 1% of GDP, which is the average ratio of the European Union member countries, by the end of 2014.

The primary objective of the government for the reduction of the public pharmaceutical cost, mainly through the increased use of the generics, is expected to be achieved during the current year too,[7] without being forced to revert to new corrective measures[8] as the Memorandum specifies. Nevertheless, there is skepticism over the probable consequences of the recent regulatory interventions regarding the sustainability of the generics sector. In other words, the pharmaceutical companies' representatives, especially those of the domestic entreprises (PEF), express great concern that the implementation of the new pharmaceutical policy will probably affect negatively the future projects of the sector, which displayed notable dynamism until very recently. Similar concerns are being expressed by the Hellenic Association of the Pharmaceutical Companies of Greece (SFEE), which primarily represents the foreign subsidiaries, over the sustainability of all enterprises, be they subsidiaries of big multinational groups or domestic firms.

More specifically, the Panhellenic Union of Pharmaceutical Industry (PEF) agrees in principle with the government's decision to increase the use of generics. However, a lot of reservations are being expressed concerning both the pricing of the similar products and the mandatory prescribing by the chemical substance. Regarding the first issue (generics pricing), it is argued that the setting of the generic drug price (Law 4052/March 2012) at a level not higher than 40% of the corresponding original medicine puts the pharmaceutical companies, especially those of Greek ownership, in an unfavorable position since it makes the production of many medicinal items unprofitable and uneconomic, which could lead the sector into gradual decline with all the undesirable consequences of this potential production shrinkage on production activity and job losses. Moreover, the generics manufacturers claim that prescribing by active ingredient and not on the basis of the brand names will result in the flooding of the domestic market by less expensive similar drugs of inferior quality, imported, probably, from countries of the third world.

On the other hand, the National Organization for Medicines (EOF), as the country's responsible entity, argues that all medicines, including generics, are thoroughly checked and certified by the European Medicines Agency (EMA) –regardless of the origin country (USA, India, etc.)– in order to be imported and traded in Greece. Moreover, after licensing and marketing of pharmaceuticals, EOF conducts laboratory checks and scheduled and unscheduled inspections. It is noted that there are, at the present, about 3,000 generics (packages) available in the domestic market (2011 data), out of a total of approximately 7,300 medicines.

At this point, a brief reference to the domestic firms' overall activity may be useful. As it was already mentioned, the main bulk of the productive activity consists of branded generic medicines, which are produced according to the guidelines –the so-called Principles and Rules of Good Manufacturing Practice for human usage

6. Law 4051 /1.3.2012, article 21, paragraph 6.

7. The study of IOBE (Foundation for Economic and Industrial Research), entitled "Health Expenditure and Healthcare Spending and Policies under the Fiscal Consolidation Regime", concludes that "the expected savings in the public pharmaceutical expenditure is estimated at €1,033 million in 2011 and to €1,260 million in 2012, excluding the statutory return of pharmaceutical companies to the social security funds for 2009 and 2010, amounting to €137 million". These estimates do not reflect the expected impact of the second Memorandum, since it was released in November 2011.

8. Note that there is a reference, in the Memorandum of Understanding, for additional measures if, during the current year, it appears impossible to achieve the budgetary target.

drugs– of the European Commission. According to the information memorandum submitted to the Minister of Health by PEF, the domestic drug industry consists of 25 sizable manufacturing firms which employ about 15,000[9] highly trained people, whereas their investment plans for six, export-oriented, production plants amount to €300 million. At the same time, these companies display strong export activity in 60 countries, worth €300 million annually, with a forecast for an extra €150 million per annum. In the same memorandum, the sector's representatives claim that the greater part of the country's research activity is associated with the pharmaceutical industry in the context of 80 research programs of the General Secretariat of Research and Technology. On the other hand, the share of domestically produced medicines, mainly generic drugs, is less than 20% of the public pharmaceutical expenditure, with the remaining 80% representing the original, predominantly imported, medicinal cost.

The examination of the official statistical data of the Hellenic Statistical Authority (ELSTAT) for the last few years reveals the dynamism which characterized the domestic pharmaceutical industry[10] till 2010. Note that the statistical data and indices, estimated by ELSTAT, cover the activity of the whole sector and not just the generics producing firms. However, it is well recognized that the main bulk of the production output of the domestic drugs industry consists of generics medicines.

On the other hand, the recent short-term data show a slight decline of the strong rate of growth that the domestic pharmaceutical industry demonstrated during the 2000-2009 decade. The evolution of the new orders index in industry –which reflects the demand outlook for the sector's products as an indicator of future production– shows a slowdown of the productive dynamism, during the years 2010 and 2011.[11] Thus, a rapidly growing sector of domestic manufacturing displays evidence of a slowdown within the context of the deep recession which plagues our economy for the last five years. The industry representatives recognize that the crisis in our country could not leave the pharmaceutical sector intact. However, they claim that the recent regulatory interventions, pursuant to the requirements of the Memorandum, may lead to a contraction process which might result in a severe decline of the sector's activity. It must be noted that the most recent data, released by ELSTAT in the second half of May 2012, do not reflect the probable consequences of the recent implementation law (March 2012) since they cover the developments for the first three months of the current year. Therefore they cannot provide statistical documentation for the potential adverse effects anticipated by the industry.

The data of Tables 3.3.1 to 3.3.3 reflect the sector's growth dynamics till 2009 and the subsequent contraction trend. Specifically, Table 3.3.1 shows the evolution

**TABLE 3.3.1 Pharmaceutical sector fundamentals (values at current prices, thousands €)**

| | 2000 | 2003 | 2006 | 2009 | Average rate of growth | |
|---|---|---|---|---|---|---|
| | | | | | Pharmaceuticals | Manufacturing |
| Number of establishments | 69 | 62 | 66 | 51 | -3.3 | -2.2 |
| Employment (total) | 4,756 | 4,665 | 5,725 | 8,082 | 6.1 | -0.7 |
| Wages and salaries | 87,347 | 106,599 | 152,645 | 193,364 | 9.2 | 4.0 |
| Gross value of production | 534,435 | 617,665 | 818,906 | 1,217,947 | 9.6 | 3.1 |
| Intermediate inputs | 352,333 | 378,421 | 491,608 | 535,666 | 4.8 | 3.2 |
| Gross value added | 182,102 | 239,244 | 327,299 | 682,281 | 15.8 | 2.8 |
| Value of sales (Turnover) | 496,389 | 555,395 | 745,470 | 961,810 | 7.6 | 3.7 |
| Gross investment | 57,277 | 65,667 | 62,809 | 575,266 | 29.2 | -0.9 |

*Source:* ELSTAT, Secondary Sector Statistics Division. Author's calculations.

9. The figure must refer to the total number of employed persons in the pharmaceutical market, including those in wholesale and retail trade as well as the employees of the subsidiaries of multinational pharmaceutical groups.

10. Sector 21 "Basic pharmaceutical products and pharmaceutical preparations". STAKOD (Statistical Classification of Sectors of Economic Activity 2003), which is equivalent to the NACE Revision 2 classification.

11. However, there seems to emerge a reversal of the downward trend, on a month-on-month basis, not only in the new orders index but in the turnover index as well, according to the latest data of ELSTAT.

**TABLE 3.3.2 New orders index in industry: Pharmaceutical sector, total manufacturing**

| | 2009 | 2010 | 2011 | % change | |
|---|---|---|---|---|---|
| | | December | | 2010/2009 | 2011/2010 |
| Total market (domestic and non-domestic) | | | | | |
| Pharmaceutical products | 150.4 | 144.6 | 139.7 | -3.86 | -3.39 |
| Total manufacturing | 84.2 | 82.8 | 75.0 | -1.66 | -9.42 |
| Domestic market | | | | | |
| Pharmaceutical products | 120.1 | 98.3 | 99.2 | -18.15 | 0.92 |
| Total manufacturing | 79.3 | 75.7 | 52.8 | -4.54 | -30.25 |
| Non-domestic market | | | | | |
| Pharmaceutical products | 300.9 | 374.6 | 341.0 | 24.49 | -8.97 |
| Total manufacturing | 90.4 | 103.5 | 108.8 | 14.49 | 5.12 |

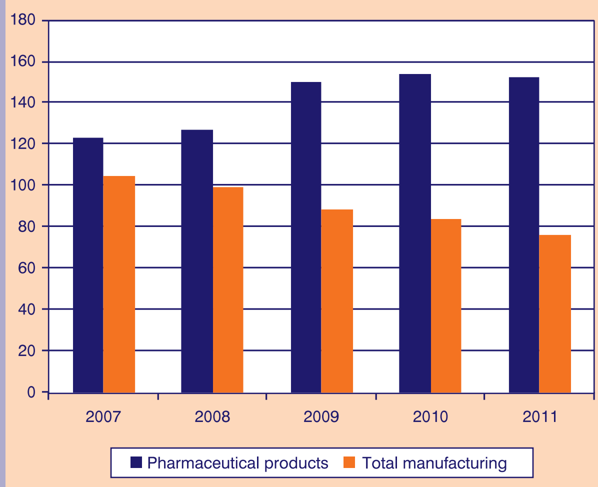
*Source:* ELSTAT, Industrial indices. Author's calculations.

of the fundamentals of the pharmaceutical sector in relation to the total manufacturing industry. It is apparent that the former shows higher growth rates than the latter, throughout the decade 2000-2009.[12] The employment data as well as the productive activity, in terms of the gross value added, but above all the gross fixed capital formation, display a strong upward trend. These developments reflect the dynamic presence of the pharmaceutical sector in the domestic manufacturing industry, during the 2000-2009 period.

The Table of the New Orders Index (Table 3.3.2) shows the different evolution of the pharmaceutical sector from that of the manufacturing industry as a whole. The latter shows a strong downward trend, except for the non-domestic market index, which presents an increase from 2011 onwards. For the same index (external sector), the pharmaceutical sector displays a rapid rise till 2010, showing, however, continuous decline in 2011 and the first months of 2012. It is clear that the new orders index shows a decline, in all its components, signaling a probable future downturn in the sector's production activity.

The industrial production index (see Figure 3.3.1) illustrates the dynamic presence of the pharmaceutical sector versus that of total manufacturing. It must be noted that the pharmaceutical industry is the only manufacturing sector which shows an upward trend (or stability, at the worst) during the 2009-2011 period, when all other sectors are characterized by a sharp downturn which is reflected in the relative level of the total manufacturing production index compared to the base year 2005. It is worth mentioning that the production index of the drugs industry has picked up during the first three months of the current year, compared to the relative stability in 2011.

**FIGURE 3.3.1**
**Industrial production index (2005=100)**




*Source:* ELSTAT, Industrial indices.

It is evident from the data of Table 3.3.3 –which show the employment, the hours worked and the wages indices–, that the medicinal products sector displays a relative resistance, from 2008 onwards, compared to the

12. The most recent data (end of May 2012) of the statistical survey of industry refer to 2009, which means that we cannot assess the sector developments, on the basis of this source, during the period of crisis our economy is experiencing.

**TABLE 3.3.3 Employment, hours worked and wages and salaries indices (2005=100)**

| Period | Employment index | | Hours worked index | | Wages and salaries index | |
|---|---|---|---|---|---|---|
| | Pharmaceutical products | Total manufacturing | Pharmaceutical products | Total manufacturing | Pharmaceutical products | Total manufacturing |
| 2008 | | | | | | |
| A΄ quarter | 107.6 | 97.6 | 105.3 | 99.0 | 112.3 | 99.5 |
| B΄ quarter | 108.3 | 98.2 | 106.2 | 99.9 | 116.3 | 108.3 |
| C΄ quarter | 108.7 | 99.3 | 106.9 | 100.8 | 118.3 | 108.6 |
| D΄ quarter | 108.8 | 98.3 | 108.0 | 100.2 | 125.8 | 114.8 |
| 2009 | | | | | | |
| A΄ quarter | 111.6 | 95.5 | 109.1 | 94.4 | 124.1 | 89.1 |
| B΄ quarter | 114.3 | 95.0 | 111.1 | 93,0 | 143.5 | 103.3 |
| C΄ quarter | 113.0 | 93.8 | 102.6 | 87.2 | 136.3 | 103.8 |
| D΄ quarter | 114.6 | 91.4 | 109.1 | 87.9 | 155.4 | 109.4 |
| 2010 | | | | | | |
| A΄ quarter | 114.2 | 88.5 | 108.9 | 85.4 | 143.9 | 93.2 |
| B΄ quarter | 111.4 | 88.2 | 108.5 | 85.4 | 137.9 | 95.9 |
| C΄ quarter | 111.8 | 86.9 | 102.0 | 79.6 | 132.4 | 92.4 |
| D΄ quarter | 111.2 | 83.5 | 105.4 | 81.1 | 144.6 | 102.0 |
| 2011 | | | | | | |
| A΄ quarter | 112.8 | 80.6 | 108.5 | 77.2 | 127.7 | 80.0 |
| B΄΄ quarter | 110.8 | 81.6 | 107.3 | 78.6 | 136.9 | 87.1 |
| Average | | | | | | |
| 2008 | 108.4 | 98.4 | 106.6 | 100.0 | 118.2 | 107.8 |
| 2009 | 113.4 | 93.9 | 108.0 | 90.6 | 139.8 | 101.4 |
| 2010 | 112.2 | 86.8 | 106.2 | 82.9 | 139.7 | 95.9 |
| 2011** | 111.8 | 81.1 | 107.9 | 77.9 | 132.3 | 83.6 |

* No correction according to the quarterly working days.
** Only the first two semesters.
*Source:* ELSTAT, Labour market indices.

sedimentation observed in the manufacturing industry as a whole. It is noteworthy that the average wages and salaries of the pharmaceutical sector indicate a strong growth in 2009, compared to 2008, remain stable in 2010, and decrease in 2011, but at a lower rate than those in total manufacturing.

The growth prospects of the domestic generics industry are being presented in a report, entitled “Greece 10 years ahead: Defining Greece’s new growth model and strategy” which was published in autumn 2011, by the international consulting firm McKinsey. In this report, the generics sector is characterized as one of the six primary rising stars of the country’s economy, because of the significant market growth –5 to 9% per annum– expected both in Greece and internationally, but mainly because of the established industry already in place –dominated by Greek players– which displays successful exporting activity. According to the McKinsey report, the possible export priorities include (a) strategic planning for the increased use of generics through the gradual reduction of their floor prices combined with competitiveness improvement, (b) awareness campaigns targeting all stakeholders, (c) enlargement of production units through selected mergers in order to maintain margins even in a lower price context, (d) expansion of exporting activity to new promising markets and (e) removal of delays in licensing, pricing and reimbursement. Finally, the McKinsey report argues that ensuring liquidity through alternative funding sources is necessary for the support of the domestic industry.

It is worth referring to a recent study of the European Generic Medicines Association which concludes that the long-term sustainability of the generics industry in the European countries “relies on a system of fair prices and a level playing field. Acceptable profit margins across the entire generic medicines supply chain are essential if their full value is to be realized”.[13]

The challenge, therefore, for a comprehensive pharmaceutical policy is the reconciliation of two main objectives: the need for a cost-effective approach to the public pharmaceutical expenditure through the increased use of generics, on the one hand, and providing support to an important domestic industry, on the other.

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# 3.4. EOPYY, health funds and earlier proposals of KEPE

*Nikolaos C. Kanellopoulos*

Within the framework of public debate regarding the competencies and responsibilities of the National Organisation for the Provision of Health Services (EOPYY) the following recommendations of KEPE regarding the organization of health services become apropos once again. In 1976, KEPE in the Report of its Working Group on Health, with researchers of the Organization, outstanding special scientists and responsible administrative officials, which was carried out as part of the Five Year 1976-80 Development Plan found that "health insurance illustrates substantial weaknesses. The fragmentation of the health insurance system into a large number of agencies causes serious difficulties in organizing an efficient system of care. There is an intense differentiation in the protection in terms of the amount and the quality of the services provided. ... there is also a strong differentiation on the financing of the health sector among the social security funds. ... it follows that regarding their health protection Greeks are divided into categories, with diverse obligations and rights, and that the amount and quality of the protection they receive depends on the social and economic status of different groups in the population and the influence they have had from time to time as political and economic pressure groups. ... It also appears as a serious problem the diversity of the potential of efficient caring in large cities as opposed to rural communities. This is the result of the unequal distribution of doctors in the country, the fragmentation of health care in a considerable number of agencies and the lack of rational, regional health services policy". The Report adopted, as a major goal of the health policy, the "ensuring of equal health services for the entire population with equal requirements and insurance of a high quality rendering of services". In order to achieve the aforementioned goal it suggested necessary "institutional reforms which will maintain an efficient health system and rational distribution in space of the means to satisfy the health needs of the population" and with first institutional solution "the creation of one unified national health service", for which it examined the necessary conditions, resources and institutional regulations.

Since then a lot of time has elapsed and a great number of changes in health and medical services have taken place in Greece. Perhaps the most notable change is that health expenditure increased diachronically in terms of absolute amounts and as percentage of the GDP and, in combination to the recent general fiscal problem, led to the debt and borrowing crisis. Public expenditure for health increased from 2.2% of the GDP in 1975 to 5.8% in 2007, and if private expenditure is included this reaches 9.6% of the GDP. Thus, as part of the fiscal consolidation effort and modernization of the country, the unification of the health services became inevitable. The new Memorandum includes the condition that "To strengthen health system governance, improve health policy coherence, reduce fragmentation in the purchasing of health services and reduce administrative costs, the Government further concentrates all health-related decision making procedures and responsibilities (including payroll expenditures) under the Ministry of Health. ... As part of this concentration process, all health insurance funds are merged into EOPYY and come under the responsibility of the Ministry of Health".

Even though many of these measures have already been launched and EOPYY is the successor of many major health funds, it remains to be seen whether some of the so-called privileged health funds will remain outside of EOPYY, as their representatives attempt and some politicians advocate, or if they will be incorporated in it, as mentioned in the Memorandum and supported by Troika. The argument used for some small health funds to remain outside of EOPYY is that they are self-funded and do not burden the State Budget. This results not only in an inevitable waste of resources, but it also lacks elementary economic reasoning, as these funds are significantly financed by legislated earmarked taxes; that is taxes which unlike all other taxes are not collected as revenues to the State Budget but are collected for the privileged health funds. It seems that the aforementioned findings and policy recommendations of KEPE regarding the health funds still remain timely.

# 4. Development policies and sectors

## 4.1. Recent developments in tourism in Greece

*Nicholas Vagionis*

### 4.1.1. Analysis of tourist turnover

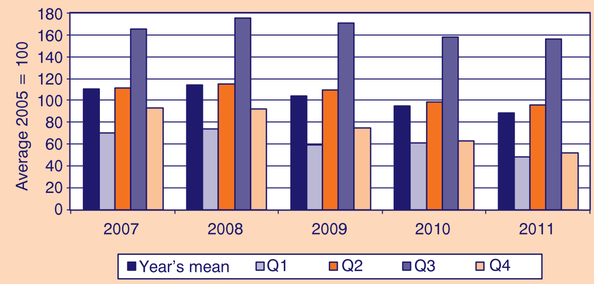
The Index of Turnover in Accommodation and Food[1] for our country reflects the financial performance of the tourism phenomenon. Analyzing the annual and quarterly size and variation of the index, and with the aid of Figures 4.1.1 and 4.1.2, it is observed that:

Adjusted at 100 for year 2005, the average index for 2007 was 110.4, followed by year 2008 with an index of 113.9, being the highest revenues ever in tourism. From the year 2009 a phase of reduction in turnover in all individual quarters began and the average index fell to 103.6, a decrease of 9.1%. In 2010, the downward trend in the tourism turnover continued, with the annual rate reaching only 95.1, a decrease of 8.2% over 2009.

During 2011, despite the expectations raised by increased tourist inflows, no increase in turnover occurred, not even against the very low level of 2010. Especially in the first quarter of 2011 we see a dramatic drop in turnover by 20.6% over 2010 with the index falling to 48.3. In the second quarter of 2011 there was an increase, which pushed the index to 96 but still 2.2% lower than the 98.8 that was the same indicator in the second quarter of 2010. In the third quarter of 2011 the turnover index rebounded, reaching 156.5, marginally lower than in 2010 (158.4). Finally, in the fourth quarter, the index reached only 51.4, well below (-18.2%), the relevant index of 2010. Overall, the average annual turnover index for 2011 was estimated at 88.1 (being 100 in 2005) a decrease of 7.4% from that of 2010 (95.1) and very far from that of the immediately preceding years.

As seen from the analysis, the third quarter of each year the biggest tourism receipts are marked. But in recent years, and of course for 2011, the participation of first and fourth quarter has significantly decreased (see Figure 4.1.1), and much more than the average score of the year (see also Figure 4.1.2). This means intensification of seasonality of the tourism phenomenon and market. To some extent it is due to the significant decline in domestic tourism and, to another, to the decline in city tourism (city-breaks) during off-peak periods and mainly in Athens, of course due to civil unrest but also due to the high taxes of the Venizelos airport.

**FIGURE 4.1.1**
**Greece: Accommodation and food turnover index 2007-2011**
***Year's mean and quarters, 2005=100***




*Source:* Greek Statistical Authority.

**FIGURE 4.1.2**
**Greece: Accommodation and food turnover index 2007-2011**
***Annual % change of the year's mean index and of the quarters***


*Source:* Greek Statistical Authority.

1. Greek Statistical Authority: Accommodation and Food Turnover Index , Piraeus, April 24, 2012.

## 4.1.2. Analysis of international tourist arrivals

The dataset of "arrivals of non-residents in the country"[2] offer a good indication of inbound tourism in a broad sense and not solely of registrations in hotels. A systematic analysis of recent developments of visitors by country of origin is of particular interest and we have promised it earlier.[3]

Let us note that the total number of such arrivals in the country in 2011 was 16,427,247, while in 2010 it was 15.007 million, in 2009 it was 14.914 million and in 2008 it was 15.938 million people. First, we observe a significant increase of 9.5% for 2011 versus 2010 and even larger over 2009. Second, that in 2011 a new all-time high in arrivals was recorded, above the milestone of 2008.

### *Europe*

Moving to the analysis of visitors' origin, we observe that arrivals from Europe (EU and other countries) in 2011 was 14.651 million people, compared to 13.275 million in 2010. These accounted for 89.2% of total arrivals in 2011, for 88.5% in 2010, for 91.2% in 2009 and for 90.8% in 2008. Arrivals from Europe decreased 6% from 2008 to 2009 and also fell 2.4% from 2009 to 2010. Arrivals from Europe rebounded in 2011 showing the increase of 10.4% over 2010.

But how did European arrivals rebound? Arrivals from the group of EU countries accounted for 74% of total visitors in 2008, 73% in 2009, 68% in 2010 and to 65.1% in 2011 – a systematic and steady decline that shows no signs of change.

On the other hand, arrivals from European countries outside the EU rose from 16.7% of total arrivals in 2008 to 18.2% in 2009, to 20.5% in 2010, and to 24.1% in 2011. Here a strong trend may be also assessed, more importantly because it suggests a shift in markets where the Greek tourist product is "sold", but also due to the dynamic that emerges. Of course, all markets, but each separately, have their importance and value.

In 2011, Germany held the largest participation in all arrivals with 13.6% (from 15.5% in 2008) and followed by the United Kingdom 10.7% (14.3% in 2008), France with 7.0%, Italy with 5.7% and Russia with 4.5% from 1.9% in 2008. Note that the recent focused marketing of Greek tourism in Russia has borne fruit and, according to estimates, Russian tourists in 2012 will reach 1 million. Serbia-Montenegro follow with 4.2%, Bulgaria with 4.2%, Poland with 2.7% and Cyprus with 2.7%, Switzerland, Austria and Belgium follow.

### *Asia*

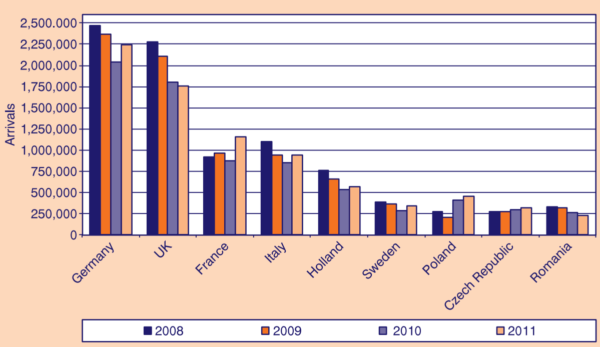
Visitor arrivals from Asia in 2011 were 882,000 compared to 869,000 in 2010, 372,000 in 2009 to 384,000 in 2008. In 2011 they accounted for 5.4% of total arrivals in Greece. Arrivals from Asia show an upward trend, which can be described as a "doubling jump" between the two years 2008-9 and 2010-11. The main countries contributing to this are Turkey, with 552,000 visitors in 2011 compared to 207,000 in 2008, and Israel with 226,000 in 2011 against 84,000 in 2008. From Japan 10,125 tourists came to Greece in 2011, from Iran around 8,748 and from China 15,838 versus 5,941 in 2008.

### *America - Africa - Oceania*

Total arrivals from the Americas were 720,000 in 2011, compared to 691,000 in 2010, 729,000 in 2009 and 849,000 in 2008. The downward trend is true, but there is a sign of reversal. No such sign in the percentage data, falling from 5.3% of total arrivals in 2008 to 4.9% in 2009, to 4.6% in 2010 and to 4.4% in 2011. From Oceania 126,000 visitors came to Greece in 2011, while from Africa 44,000 people.

Figure 4.1.3 shows the international tourist arrivals to Greece from countries of the European Union. A general decline can be noted, with the exception of France,

**FIGURE 4.1.3**
**Non-resident arrivals to Greece 2008-2011, from selected EU countries**

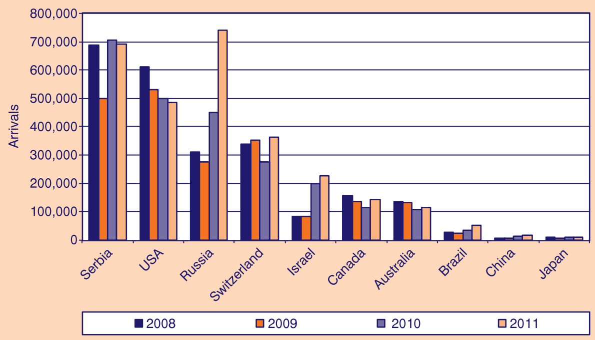



*Source:* Greek Statistical Authority.

2. Greek Statistical Authority: Arrivals of non-residents from abroad 2011, Piraeus, April 24, 2012.

3. N. Vagionis: "Recent tourism developments in Greece". *Economic Developments,* vol. 16, Oct. 2011, pp. 37-40.

**FIGURE 4.1.4**
**Non-resident arrivals to Greece 2008-2011, from selected non-EU countries**




*Source:* Greek Statistical Authority.

Poland and the Czech Republic. Figure 4.1.4 shows the international tourist arrivals to Greece from countries outside the EU, with the largest significant increase from Russia, and Israel, Brazil and China, and the recovery of Switzerland and Canada.

## 4.1.3. Conclusions

From the analysis of tourist arrivals and receipts data it is apparent that in 2011 international tourism recovered and knocked on the door of Greece, something which had been predicted. International tourist arrivals, after two years of significant decline, rebounded in 2011 facilitated also by significant reductions in tariffs for services provided. The shifts in visitors' countries of origin was reconfigured and compensated for reductions in arrivals by the traditional markets. But the revenue shortfalls persisted in 2011 and closed significantly lower than the 'bad' 2010. Ultimately, what must be noted is that the downward trend of the index is constant over the past 3 years. It is due not only to price reductions to foreign tourists in peak periods but also due to the significant downturn in domestic tourism in other periods. We need to establish an alternative approach of the off-season tourism towards the international market but also in any degree possible to support "off-peak" domestic tourism through effective and transparent social processes.

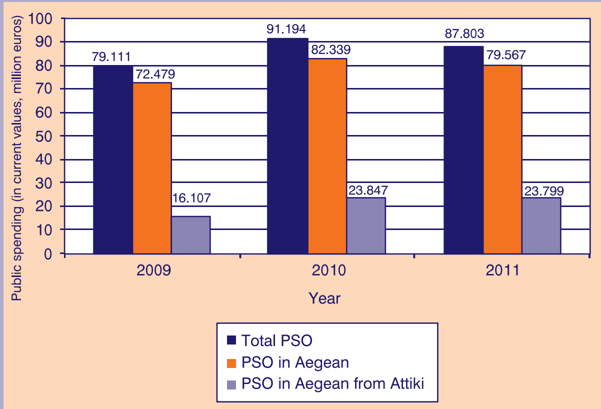
# 4.2. Demand and public spending for public service obligations for coastal shipping in the Aegean Sea

***Theodore Tsekeris***

Territorial cohesion constitutes a basic axis for the balanced development of the peripheries in the EU. Particularly in Greece, the operation of Public Service Obligations (PSO) in coastal shipping, as well as in air transport, are considered of major significance for the economic viability and social equity and development of island regions. The PSO for the coastal shipping of passengers, vehicles and fuels exceeds 80 lines per year, which are mostly concentrated on Aegean islands (more than 40). The amount of public subsidies between 2009-2011 exceeds €258 million, from which almost 91% correspond to lines servicing the islands of the North and South Aegean Regions. In this period, the subsidies have increased from €79 million (2009) to €88 million (2011) in total, and from €72 million (2009) to €80 million (2011) in the Aegean (although with a small reduction between 2010-2011) (Figure 4.2.1). This increase can be partially attributed to the increase of fuel prices as well as the overall macroeconomic conditions in the country. At the same time, the total public spending for PSO lines in the Aegean originating from Attiki ports (mainly, from Piraeus) is also found to increase, from €16 million (22%) in 2009 to €24 million (30%) in 2011. This trend principally reflects the increasing dependence of coastal shipping to islands from the Piraeus port and the lack of main regional hubs in large islands of the Aegean.

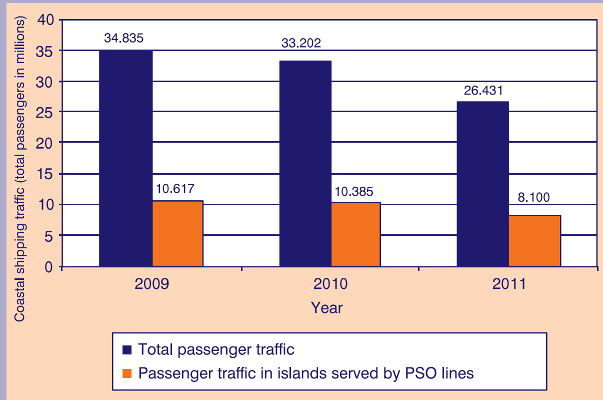
Figure 4.2.2 indicates that the evolution of coastal shipping passenger traffic between 2009-2011 in the whole country and in the Aegean islands served by the PSO lines (this traffic includes passengers served by commercial lines) has declined, in contrast with the increase of PSO subsidies (Figure 4.2.1). Specifically, the traffic in those Aegean islands, which corresponds to the 30-32% of the total traffic, was reduced from 10.6 million passengers (34.8 million passengers in total) in 2009 to 8.1 million (26.4 million passengers in total) in 2011. Thus, the state financing of PSO lines is not associated with the trends in passenger traffic to islands.

**FIGURE 4.2.1**
**Subsidies for PSO shipping lines in the Aegean and in total, 2009-2011**




*Source:* Processing of data from the Directorate of Maritime Transport, Ministry of Development, Competitiveness and Shipping.

**FIGURE 4.2.2**
**Total coastal shipping passenger traffic in the ports of the country and of the Aegean islands served by PSO lines, 2009-2011**




*Source:* Processing of data from the Directorate of Maritime Transport, Ministry of Development, Competitiveness and Shipping.

Table 4.2.1 presents the results of a set of spatial indices, which depict the inequity in subsidies and in the level-of-service, in terms of the frequency and the technology of the vessels servicing the passenger traffic in each Aegean island (destination) under the PSO scheme in 2011. These indices are: (i) average vessel category,[1] weighted by the permanent population served by the corresponding lines, (ii) total number of vessel trips, taking into account whether the duration of

1. The vessel category ranges from 1 (newest, fastest and most environmentally friendly vessels) to 5 (oldest, slowest and least environmentally friendly vessels).

**TABLE 4.2.1 Results of spatial indices for each Aegean island destination served by PSO lines, 2011**

| Region (NUTS II) | Island | Average vessel category | Total number of trips | Subsidy (euro) per inhabitant | Subsidy (euro) per trip | Subsidy (euro) per trip per inhabitant |
|---|---|---|---|---|---|---|
| North Aegean (NUTS II) | Limnos | 3.81 | 680 | 278.85 | 6971.21 | 0.41 |
| | Ag. Efstratios | 3.00 | 514 | 12495.50 | 6563.78 | 24.31 |
| | Mytilini | 3.85 | 166 | 14.90 | 7660.56 | 0.09 |
| | Chios | 3.80 | 971 | 79.20 | 4185.95 | 0.08 |
| | Inouses | 2.00 | 286 | 312.63 | 896.34 | 1.09 |
| | Psara | 3.67 | 529 | 5809.03 | 4941.52 | 10.98 |
| | Samos | 3.82 | 988 | 85.81 | 2845.34 | 0.09 |
| | Ikaria | 3.28 | 780 | 223.45 | 2409.27 | 0.29 |
| | Fournoi | 1.84 | 1248 | 1109.00 | 1288.50 | 0.89 |
| South Aegean (NUTS II) Dodecanese (NUTS III) | Agathonisi | 4.01 | 364 | 1642.96 | 857.59 | 4.51 |
| | Patmos | 2.90 | 717.3 | 381.24 | 1615.72 | 0.53 |
| | Lipsoi | 2.86 | 769.3 | 1165.77 | 1197.14 | 1.52 |
| | Leros | 2.81 | 769.3 | 117.17 | 1238.26 | 0.15 |
| | Kalymnos | 2.92 | 879.42 | 103.44 | 1898.36 | 0.12 |
| | Astypalea | 2.85 | 354.06 | 1369.35 | 5066.51 | 3.87 |
| | Kos | 2.73 | 754.97 | 50.39 | 2222.38 | 0.07 |
| | Nisyros | 2.76 | 661.67 | 1132.72 | 1677.67 | 1.71 |
| | Tilos | 2.97 | 297.67 | 1444.05 | 3832.43 | 4.85 |
| | Chalki | 4.17 | 273.06 | 1815.40 | 3257.69 | 6.65 |
| | Symi | 3.00 | 39.99 | 182.93 | 11802.05 | 4.57 |
| | Rhodes | 3.55 | 862.99 | 47.79 | 6383.88 | 0.06 |
| | Kastelorizo | 2.75 | 218.45 | 3212.26 | 7205.34 | 14.70 |
| | Kasos | 5.00 | 253.57 | 2021.60 | 8690.07 | 7.97 |
| | Karpathos | 4.99 | 369.81 | 383.10 | 6381.37 | 1.04 |
| South Aegean (NUTS II) Cyclades (NUTS III) | Andros | 2.33 | 208 | 65.24 | 2876.36 | 0.31 |
| | Kythnos | 2.33 | 208 | 743.02 | 4679.62 | 3.57 |
| | Kea | 2.33 | 208 | 402.22 | 4679.62 | 1.93 |
| | Syros | 2.28 | 1144 | 199.01 | 3720.98 | 0.17 |
| | Tinos | 2.33 | 208 | 69.65 | 2876.36 | 0.33 |
| | Naxos | 2.09 | 1063.41 | 406.95 | 7439.41 | 0.38 |
| | Amorgos | 1.98 | 842.35 | 1224.33 | 2819.72 | 1.45 |
| | Paros | 1.98 | 722.35 | 185.58 | 3522.29 | 0.26 |
| | Serifos | 2.00 | 156 | 627717.22 | 5955265.93 | 4023.83 |
| | Sifnos | 2.32 | 260 | 385.88 | 3814.30 | 1.48 |
| | Kimolos | 2.39 | 990 | 1383.99 | 1286.13 | 1.40 |
| | Milos | 2.46 | 1042 | 294.45 | 1401.58 | 0.28 |
| | Folegandros | 2.57 | 416 | 1856.74 | 3481.40 | 4.46 |
| | Sikinos | 2.46 | 364 | 4738.31 | 3384.51 | 13.02 |
| | Ios | 2.65 | 432 | 725.64 | 3409.81 | 1.68 |
| | Anafi | 2.55 | 208 | 2925.42 | 3375.48 | 14.06 |
| | Thira | 3.80 | 1216.62 | 208.77 | 2616.92 | 0.17 |
| | **Average** | 2.93 | 571.62 | 16561.24 | 149066.81 | 101.45 |
| | **Standard deviation** | 0.79 | 343.40 | 97857.29 | 929448.52 | 627.91 |
| | **Minimum** | 1.84 | 39.99 | 14.90 | 857.59 | 0.06 |
| | **Maximum** | 5.00 | 1248.00 | 627717.22 | 5955265.93 | 4023.83 |

*Source:* Processing of data from the Directorate of Maritime Transport, Ministry of Development, Competitiveness and Shipping.
*Notes:* Destinations (islands) of very small size are included as a single destination to the larger island where they administratively belong. These are the islands of Donousa, Iraklia, Schinousa and Koufonisia, which are included in Naxos; Farmakonisi, Kinaros and Levitha in Leros; Pserimos in Kalymnos; Thymena in Fournoi; Arkioi in Patmos; and Thirasia in Thira. The analysis does not encompass regions (origins or destinations) situated in mainland Greece (Thessaloniki, Kavala, Piraeus, Lavrio) and Crete, and it does not include the main-commercial shipping lines to the islands.

the service contract exceeds the year or spans several months within the year, (iii) total amount of subsidy per inhabitant, which is calculated in proportion with the number of islands served by the host lines, (iv) average subsidy per trip, defined as the ratio of the annual total subsidy to the number of vessel trips, and (v) average subsidy per trip per inhabitant.

The spatial index analysis can provide useful insight into how effective and equitable or balanced is the spatial allocation of subsidies to the islands served by the PSO lines. By focusing on the most disaggregate measure, i.e. the average subsidy per trip per inhabitant, it is observed that there are significant variations in each value. The standard deviation is about 6 times larger than the average, ranging from €0.06-0.07 (for Rhodes and Kos, respectively) to €4024 (for Serifos). In general, the larger islands (in terms of population) receive the lowest subsidies per inhabitant, compared to smaller islands. But, in summation, the largest islands attract the greatest share of subsidies.

The findings demonstrate the need for rationalizing and restructuring the allocation of subsidies in the network of PSO lines in the Aegean, among the under-financed and over-financed ones. The current allocation pattern principally relies on the population size, which creates severe imbalances between demand and supply, and important fiscal inequity at both the inter-regional and intra-regional level. The restructuring process must be based on the pure cost of service provision and the expected benefits from increasing scale economies and synergies which may arise from the operation of large regional hubs for servicing local or intra-regional trip flows. Such regional hubs will provide direct and reliable connections to smaller islands, to decrease operational costs, due to the reduction of large-distance trips from the mainland (especially, Piraeus). Also, such a decentralized structure will increase the robustness of the system, that is, its ability to retain the smooth operation of services to the islands in cases of potential failures in their connection with the mainland ports, e.g., due to adverse weather conditions, strikes, accidents, etc.

Moreover, the returns on subsidy transfers should be considered in relation to their impact on local economies, income redistribution and the competitiveness of the whole transport market in the Aegean periphery. The service contracts should become more flexible, with respect to specific vessels and seasons, to address liquidity problems due to recession. Last, instead of the cross-subsidization and non-contributory withholding taxes on behalf of third parties, the financing of universal services for PSO lines should principally be raised from independent, mainly EU funds, according to the particular needs of each island.

# 4.3. External trade of agro-food products[1]

***Athanasios Chymis***

## 4.3.1. Introduction

A slight increase in imports (2.6%) –after two consecutive years of decline– as well as in exports (2.2%) –the third consecutive year of increase– are the major characteristics of external trade of agro-food products of 2011. This resulted in a record €4.5 billion for the value of exports. However, because of the increase in imports, the deficit also had a minor increase. It is interesting as well as indicative of the special nature of the agro-food products that their imports slightly increased while total imports during 2011 shrank by an impressive 9.3%. Hence, their share of total imports increased. Conversely, the increase in agro-food products exports was overshadowed by the surprising 38.2% increase in total exports! Thus, their share of total exports significantly decreased. In what follows, we a) discuss the agro-food products external trade with respect to the total external trade, b) describe the evolution of imports and exports of the main agro-food products categories and, c) draw conclusions and suggestions regarding the perspectives of agro-food production and trade in Greece.

## 4.3.2. Putting agro-food products external trade into perspective

Table 4.3.1 shows the imports and exports of agro-food products as well as total imports and exports during the period of economic crisis, that is, 2008-2011. For reasons of comparison to the pre-crisis period we have added the year 2005. Keep in mind that between 2005 and 2008 both imports and exports, but especially imports, were growing rapidly in current price value. This can be easily seen in the table where both current price values and the average annual rate of change are cited. The severe impact of the crisis on the external trade is clear. While in 2008 total imports reached €60.7 billion, with an average annual growth rate of 9.7% since 2005, in 2011 they fell below the 2005 level to €43.3 billion, with an average annual decline rate of 10.7%. The most affected product categories are industrial goods, machinery and transportation equipment.

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

| | 2005 | 2008 | 2009 | 2010 | 2011 | % Rate of change 2005-2008 | % Rate of change 2008-2011 | % Change 2010-2011 |
|---|---|---|---|---|---|---|---|---|
| | | | | **Imports** | | | | |
| Total | 45.98 | 60.72 | 48.08 | 47.72 | 43.27 | 9.7 | -10.7 | -9.3 |
| Agro-food | 5.75 | 7.05 | 6.40 | 6.30 | 6.46 | 7.1 | -2.9 | 2.6 |
| % Agro-food in total | *12.5* | *11.6* | *13.3* | *13.2* | *14.9* | | | |
| | | | | **Exports** | | | | |
| Total | 14.78 | 17.36 | 14.39 | 16.25 | 22.45 | 5.5 | 9.0 | 38.2 |
| Agro-food | 3.75 | 4.01 | 4.00 | 4.41 | 4.50 | 2.3 | 3.9 | 2.2 |
| % Agro-food in total | *25.4* | *23.1* | *27.8* | *27.1* | *20.1* | | | |
| | | | | **Deficit** | | | | |
| Total | 31.20 | 43.36 | 33.70 | 31.47 | 20.82 | 11.6 | -21.7 | -33.8 |
| Agro-food | 2.00 | 3.04 | 2.40 | 1.89 | 1.96 | 15.1 | -13.7 | 3.4 |

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

1. The term "agro-food products" includes agricultural products and foodstuffs and its definition is based on the classification followed by the Ministry of Agriculture 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 are less elastic and during the 2005-2008 period their imports were growing at an average annual rate of 7.1%, while after 2008 their decline was just 2.9% (annual average rate, which includes the increase of 2011). This shows that while there is margin for further decrease in total imports, agro-food products are more resilient because many categories of the agro-food sector are essential for the population. The inelastic feature of agro-food products is also reflected by the fact that their share of total imports was 11.6% in 2008, at the start of the crisis, and went up to 15% in 2011. At this point, we must stress the fact that external trade values are expressed in current prices and not quantities. The rise of international food prices relative to other goods plays a significant role in shaping these percentages and, at the same time, this rise is a manifestation of the inelastic characteristic of agro-food products.

Regarding exports, we see that total exports had an impressive increase of 38.2% in 2011 and reached a historical record of €22.5 billion.[2] This resulted in the decrease of the agro-food exports share of total exports, from 27-28% in previous years to 20.1% in 2011, although the net value of agro-food products exports increased by 2.2% and reached a new record level of €4.5 billion.

A very positive consequence of the aforementioned developments is the significant decrease in the total external trade deficit by 33.8% within a year. From Table 4.3.1 we can see the impressive decrease (more than 50%) of the total trade deficit since 2008 –the year with the largest deficit– from €43.4 billion to €20.8 billion in 2011. The agro-food trade deficit has also followed a declining trajectory since 2008, although in 2011, it grew by 3.4% (from €1.89 billion to €1.96 billion) due to the imports increase.

## 4.3.3. Characteristics of agro-food products trade

Tables 4.3.2 and 4.4.3 present the imports and exports of almost all two digit categories for the years 2005 and 2008-2011. The order of presentation is in descending value with respect to 2011. Meat products rank first in imports although with a slightly decreasing share. We have discussed in previous articles the dominance of meat and dairy products in the imports of agro-food products. Upon the entrance of Greece in the, then, European Economic Community (EEC) in 1981, the country became a net importer of agro-food products due to the sharp increase of meat and dairy imports and the simultaneous decline of the domestic production. Meat and dairy together account for more than 30% of the agro-food imports, representing a value of €2 billion in current prices. Fruit and vegetables are another significant category with considerable imports (11% share). Cereals have a steadily increasing share (10.1% in 2011) but it is important to mention that this increase is mostly due to the rise in the world prices rather than the quantity imported. As mentioned earlier, most agro-food products are inelastic relative to other goods and so the quantity imported does not have major fluctuations. Conversely, categories such as beverages or wood are more elastic and indeed their imported quantities show a considerable decline since the economic crisis began in 2008.

Regarding exports, the dominance of fruits and vegetables is clear. Their share is constantly above 33%. It is worth noting that for 2011 the increase in the value of exports is due to the increase in price, as quantity slightly decreased. The phenomenon of observing an increase in the value of exports or imports of some products while the quantity traded is actually decreased is not unusual and it is the result of the world prices increase which, in some cases, can counteract the quantity decrease. Fish, in recent years, remains figures among the main export categories with its share constantly increasing since 2005 (10.8% to 13.4% in 2011), while tobacco, a traditionally exportable product, has its share decreasing. However, tobacco's exports are still considerable. Oils exports (olive oil being by far the major component of this agro-food products category) have also declined, ranking 6th in 2010 and 2011 from 2nd in 2005. Dairy products (mainly cheese) continue to increase, ranking 4th in 2011 from 7th in 2005. Cotton, another important exportable product under the Common Agricultural Policy (CAP) of the last decades, significantly decreased its exports in 2011. It will be interesting to see the evolution of the exports of cotton and tobacco –two heavily CAP subsidized products– in the next few years under the projected reforms of the CAP regime from the year 2013 and on.

2. Note that by far the major part of this increase is due to exports of petroleum products which, from €1.7 billion in 2010, jumped to €6.3 billion in 2011. It will be interesting to follow the course of petroleum products exports to see if this trend has the dynamic to continue in the future or if it is conjunctural.

**TABLE 4.3.2 Imports of agro-food products categories, in million € (M €)**

| | 2005 | | 2008 | | 2009 | | 2010 | | 2011 | |
|---|---|---|---|---|---|---|---|---|---|---|
| | M € | % | M € | % | M € | % | M € | % | M € | % |
| *Meat products*[1] | 1,150 | 20.0 | 1,211 | 17.2 | 1,204 | 18.8 | 1,160 | 18.4 | 1,171 | 18.1 |
| *Dairy* | 682 | 11.9 | 808 | 11.5 | 733 | 11.5 | 770 | 12.2 | 812 | 12.6 |
| *Fruits-Vegetables* | 661 | 11.5 | 786 | 11.1 | 735 | 11.5 | 672 | 10.7 | 702 | 10.9 |
| *Cereals* | 456 | 7.9 | 681 | 9.7 | 487 | 7.6 | 541 | 8.6 | 655 | 10.1 |
| *Fish* | 371 | 6.5 | 428 | 6.1 | 401 | 6.3 | 384 | 6.1 | 414 | 6.4 |
| *Coffee, tea, etc.* | 264 | 4.6 | 365 | 5.2 | 364 | 5.7 | 376 | 6.0 | 409 | 6.3 |
| *Animal feed* | 301 | 5.2 | 406 | 5.8 | 361 | 5.6 | 371 | 5.9 | 355 | 5.5 |
| *Various foodstuff* | 257 | 4.5 | 344 | 4.9 | 353 | 5.5 | 356 | 5.7 | 331 | 5.1 |
| *Beverages* | 414 | 7.2 | 436 | 6.2 | 425 | 6.6 | 370 | 5.9 | 308 | 4.8 |
| *Sugars* | 124 | 2.2 | 225 | 3.2 | 177 | 2.8 | 220 | 3.5 | 259 | 4.0 |
| *Oils and fats* | 132 | 2.3 | 290 | 4.1 | 209 | 3.3 | 232 | 3.7 | 255 | 3.9 |
| *Tobacco* | 313 | 5.4 | 335 | 4.7 | 401 | 6.3 | 310 | 4.9 | 247 | 3.8 |
| *Oil seeds* | 133 | 2.3 | 224 | 3.2 | 192 | 3.0 | 173 | 2.7 | 175 | 2.7 |
| *Wood* | 269 | 4.7 | 262 | 3.7 | 169 | 2.6 | 148 | 2.3 | 121 | 1.9 |
| *Raw materials* | 119 | 2.1 | 130 | 1.8 | 119 | 1.9 | 111 | 1.8 | 112 | 1.7 |
| *Hides-skins* | 78 | 1.4 | 93 | 1.3 | 41 | 0.6 | 76 | 1.2 | 97 | 1.5 |
| **Total** | **5,748*** | | **7,054** | | **6,396** | | **6,299** | | **6,461** | |

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

1. Includes live animals and meat products.

* 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. For the same reason sums of percentages do not equal 100%.

**TABLE 4.3.3 Exports of agro-food products categories, in million € (M €)**

| | 2005 | | 2008 | | 2009 | | 2010 | | 2011 | |
|---|---|---|---|---|---|---|---|---|---|---|
| | M € | % | M € | % | M € | % | M € | % | M € | % |
| *Fruits-Vegetables* | 1,246 | 33.2 | 1,346 | 33.6 | 1,264 | 31.6 | 1,485 | 33.7 | 1,519 | 33.7 |
| *Fish* | 406 | 10.8 | 449 | 11.4 | 477 | 11.9 | 541 | 12.3 | 604 | 13.4 |
| *Tobacco* | 431 | 11.5 | 416 | 10.4 | 421 | 10.5 | 374 | 8.5 | 370 | 8.2 |
| *Dairy* | 201 | 5.4 | 275 | 6.9 | 278 | 7.0 | 301 | 6.8 | 322 | 7.1 |
| *Cereals* | 238 | 6.3 | 315 | 7.9 | 339 | 8.5 | 292 | 6.6 | 311 | 6.9 |
| *Oils and fats* | 466 | 12.4 | 333 | 8.3 | 283 | 7.1 | 287 | 6.5 | 299 | 6.6 |
| *Cotton* | 288 | 7.7 | 236 | 5.9 | 305 | 7.6 | 391 | 8.9 | 251 | 5.6 |
| *Beverages* | 139 | 3.7 | 163 | 4.1 | 169 | 4.2 | 166 | 3.8 | 195 | 4.3 |
| *Various foodstuff* | 84 | 2.2 | 124 | 3.1 | 128 | 3.2 | 161 | 3.7 | 188 | 4.2 |
| *Sugars* | 51 | 1.4 | 54 | 1.3 | 86 | 2.2 | 129 | 2.9 | 116 | 2.6 |
| *Meat products*[1] | 39 | 1.0 | 76 | 1.9 | 70 | 1.8 | 67 | 1.5 | 87 | 1.9 |
| *Oil seeds* | 55 | 1.5 | 76 | 1.9 | 59 | 1.5 | 64 | 1.5 | 66 | 1.5 |
| *Hides-skins* | 24 | 0.6 | 38 | 0.9 | 18 | 0.5 | 40 | 0.9 | 54 | 1.2 |
| *Coffee, tea, etc.* | 25 | 0.7 | 30 | 0.7 | 31 | 0.8 | 34 | 0.8 | 43 | 1.0 |
| *Animal feed* | 31 | 0.8 | 51 | 1.3 | 44 | 1.1 | 41 | 0.9 | 42 | 0.9 |
| *Raw materials* | 17 | 0.5 | 18 | 0.4 | 18 | 0.5 | 20 | 0.5 | 23 | 0.5 |
| *Wood* | 10 | 0.3 | 9 | 0.2 | 7 | 0.2 | 7 | 0.2 | 9 | 0.2 |
| **Total** | **3,751*** | | **4,011** | | **3,998** | | **4,406** | | **4,505** | |

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

1. Includes live animals and meat products.

* 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. For the same reason sums of percentages do not equal 100%.

## 4.3.4. Conclusions - Suggestions

We can see that the crisis, changes in the CAP regime, and the increase in world prices are some important factors that change and can significantly influence and shape the trade of the agro-food products. We also realize that Greece imports considerable quantities (in value) of a series of agro-food products categories whereas it exports only a few. Consequently, imports have a larger degree of diversification; 15 product categories with import values greater than €100 million, whereas only 10 product categories with export values greater than €100 million. More specifically, there are 4 product categories with import values of more than half a billion euros, whereas only 2 product categories (fruit-vegetables and fish) exceed this amount in exports.

It is not necessarily negative that exports rely mainly on fruits and vegetables. But Greece has strong potential for the development of a series of other product categories. It is likely that the reform of CAP and the expected decrease in subsidies will reduce market distortions in such a way that Greek farming will become more aligned with real market needs and real market demand (both domestic and, most importantly, international). This may actually help Greek farmers improve their competitiveness by shifting to products which fully exploit the comparative advantages of Greek nature as well as the benefits of collective action and entrepreneurship. Indeed, as we read in the news, initiatives such as the "potato movement", a farmer's initiative to directly distribute their produce to consumers circumventing the middle men, show that something is changing in the right direction. At the same time, many entrepreneurs move to rural areas to invest and work in farming related activities. Producers' organizations bottle and export, at relatively high prices, olive oil mixed with herbs that Greek nature offers abundantly. It is a well-known fact that Greek olive oil is mostly exported to Italy in bulk, thus, not capturing the value added of bottling, packaging, certifying and advertizing before it reaches consumers as a high quality final good.

The increase in demand of fast developing countries such as Brazil, Russia, India and China (known as BRIC) is a great opportunity for Greek farmers in general to dynamically penetrate these markets with high quality goods of unique nutritional, geographical and historical value. Another example is aquaculture. Turkey, for example, a country with half the coastline of Greece (7,000 vs. 14,000 klm), has almost the same level of production with Greece. This shows the significant margins for development for aquaculture. Herbs are a major product category that has not fully developed its potential. Their use is not limited only to agriculture but extends to gardening-floriculture, perfumery, chemical and pharmaceutical industries, even in decoration.

There are plenty of ideas just waiting for an entrepreneur to pick up the opportunities and transform them into value. An example of such an opportunity may be pine needles! In many countries, in public or private gardens mulch is used around trees in order to better preserve the humidity of the ground as well as keep weeds away. This mulch is usually made of small pieces of wood. Scientists found that pine straw (that is, pine needles) is the best mulch because pine needles are a natural herbicide. Thus, in the USA, farmers in certain states cultivate pine trees for their needles. In Greece there is no need for pine cultivation as they are in abundance and the only need is to organize their collection and distribution to the market. This will add double value to pine trees: a) from the pine straw market and, b) from the decrease in wildfires once the main fuel for wildfires, that is, pine needles, has been removed!

We should not continue to underestimate the market value of several products such as figs, pomegranates and berries, the demand of which is steadily increasing due to their high nutritional value. Finally, the dependence of the country on meat imports shows that the development of livestock may be a good idea. Successful examples on meat producing livestock (organic and non-organic) already exist around the country but they are on a small, local scale.

The current economic crisis combined with CAP reform (cuts in subsidies), however destructive, offers an opportunity ("creative destruction" was the term used by Schumpeter) for the whole economy in general and for the agro-food sector in particular to overcome all chronic diseases that actually are to blame for the debt crisis. A better incentive scheme rewarding entrepreneurship and hard work and punishing laziness, theft and non-compliance with the law, simplification of tax regime and reduction of tax rates, simplification of the legal framework and effective law enforcement, are some of the reforms Greece has slowly started to implement. The hope is that the implementation of these reforms will eventually take place more rapidly and give the aforementioned opportunities the chance to become reality.

# Special topic: The Greek economy at a crossroad

## The prospect of an exit from the crisis

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***Scientific Director of KEPE***

The Greek economy is at a crossroad, and its future course depends on an uncertain combination of economic, social and political factors. Today, it sits at the depth of a prolonged recession, implementing an economic program of fiscal adjustment and structural reforms, which has been agreed upon with the country's lenders. This program has a cost for the Greek people, and it appears as if it has been imposed "externally", as a quasi-loss of national sovereignty. The perspective of an exit from the current crisis is not embedded in the expectations of the citizens, as the direct negative effects of the program have not been yet counterbalanced by the anticipated positive effects of the structural changes taking place in the Greek economy. The entire discussion about the "memorandum", both in favor or against it, does not address our own responsibilities, i.e. the fact that we did not, in due time and consistently, take the initiative to design and implement our own "national memorandum" for the necessary adjustment and reforms, before it was too late.

As of approximately 28 months ago, the country missed the opportunity to address the international markets in order to meet its borrowing requirements. The exclusion from the markets was due to the deterioration of the fundamentals of the Greek economy, such as the current account deficit, the fiscal deficit, and the public debt (all as a percentage of GDP). That deterioration of the fundamentals, combined with our own admission, twice, that the country's reported statistical data were corrupt, led to a sharp reversal of the markets' perception concerning the sustainability of our public debt, with serious doubts as to whether our lenders will ever get their money back. As a result, in the Spring of 2010 the country faced the spectre of immediate bankruptcy. In March 2012, the doubts of the markets about the sustainability of our public debt were fully corroborated with the "haircut" of the Greek bonds, despite all the previous assurances and commitments by Greek and European officials.

The Greek economy has been in the Eurozone for a decade (2001-2011), with a mixed record. During the period 2001-2007, Greece had, on average, a high rate of growth (4.1%), but, at the same time, with a persistently high rate of unemployment (9.5%). The fiscal deficit was also high (5.7%), as was the public debt (102.1%), as percentages of GDP. The current account deficit was also high (8.4% of GDP, but with rapid deterioration in the years 2007 and 2008). As can be seen in Table 1, a recessionary cycle began in 2008, along with a rapid deterioration in fiscal deficit and the public debt. As a result of the deepening recession (2008: -0.2%, 2009: -3.3%, 2010: -3.5%, 2011: -6.9%), unemployment increased, while the current account deficit, after the high levels of the years 2007: 14.3% and 2008: 14.7%, tends to return to its pre-crisis level. We see, therefore, a decade with persistent weaknesses, and the deterioration of the fundamentals in the period 2008-2009, and the resulting liquidity and debt crisis in the Spring of 2010.

The chronic structural weaknesses of the economy, combined with the deficiency of the political system and the cultivated social rigidities, have contributed to the current adverse state of the nation. It is certain that by neglecting those obvious weaknesses, we have all felt a sudden bankruptcy, like a bad awakening from a pleasant dream. For many of our citizens, the vision of a respectable participation in the strong club of the Eurozone seemed to convert to a nightmare, with painful adjustments and costs with an uncertain outcome. Social cohesion is under strain, domestic political controversy is now according to new dividing lines, for or against the "memorandum", and the participation of the country in the Eurozone is now at stake. Our economy follows an economic program which can result in overcoming the crisis, but only in the medium-term and under certain conditions.

It may be that Greece had not realized the dire state of its economy in due time, but neither the rest of Europe proved ready to respond to a liquidity crisis of a Eurozone member state. To that effect, it is indicative of Europe's inability to react that it invited the IMF to participate in the so-called rescue program, and, even more, to let the IMF to have the upper hand in its design, due

**TABLE 1 Basic macroeconomic figures 2001-2011**

| | 2001-2007 | 2008 | 2009 | 2010 | 2011 |
|---|---|---|---|---|---|
| Real GDP (% change) | 4.1% | -0.2% | -3.3% | -3.5% | -6.9% |
| Current account deficit (% of GDP) | 8.4% | 14.7% | 11.1% | 10.1% | 9.5% |
| Fiscal deficit (% of GDP) | 5.7% | 9.8% | 15.6% | 10.6% | 9.1% |
| Puplic dept (% of GDP) | 102.1% | 113.0% | 129.3% | 144.9% | 165.3% |
| Unemployment (%) | 9.5% | 7.7% | 9.5% | 12.6% | 17.6% |

*Source:* ELSTAT, EUROSTAT.

to lack of know-how. Europe could not by itself cover the borrowing needs of Greece, and the liquidity crisis turned into a debt crisis, with a contagion risk, even though the Greek public debt was only 2% of the public debt of the entire Eurozone. In the Spring of 2010, the available loanable funds were limited, and several countries had to overcome moralistic or selfish scruples which prevented them from agreeing to a supportive loan mechanism.

The first “memorandum” had three serious drawbacks. First, the rate of interest of the loans to Greece was very high, some say “punitive”. Second, the required fiscal adjustment was too front-loaded, thus resulting in a severe recession and strong social reaction. Third, it did not adequately take into account some particularities of Greek society, as e.g. the relatively small participation of salaries in the aggregate income, a fact which limits the tax-collecting capacity. The implementation of the first “memorandum”, as far as the its fiscal leg is concerned, relied more in increasing taxes rather than reducing expenditures, while on the leg of structural reforms, the implementation was very hesitant. The macroeconomic developments in the period 2010-2011 were such that a conviction was established that the Greek public debt is not sustainable, and the country, deep in an unprecedented recession, could not return to the market after an initially assumed short-lived absence. In the mean time, Ireland and Portugal were also placed under similar “support mechanisms” (albeit for completely different reasons), and it was finally recognized that Greece would need a second loan program, with more favorable terms as far as the rate of interest and the period of fiscal adjustment are concerned, and with the reduction of the public debt via the exchange of bonds held by the private sector, known as the PSI program.

Where are we now, and what are the prospects of the Greek economy? From 2008 onwards, the country’s GDP has been constantly declining: the decline in 2011 was 6.9%, and we estimate that in 2012 the decline will be more than 6%. The country is in the downward phase of a prolonged recessionary cycle, which may peter out by the end of 2013. As a result of the recession, the rate of unemployment is already more than 20%, and it is not expected to stabilize before the end of this cycle. In the meantime, we have an improvement in those fundamentals which prompted our exclusion from the markets, i.e. a reduction of both the fiscal deficit and the current account deficit.

During this crisis, one is entitled to ask the plausible question, whether the Greek economy is indeed in a phase of a recessionary cycle, or if the economy is stuck in a state of secular stagnation. If the latter holds, the situation is more than critical, rife with major economic, social and political upsets, with the future largely unknown. If, however, the former holds, then there is the prospect of an exit from the crisis: all cycles are sometime consumed away and it is both theoretically and empirically valid that as the negative rates of the economy are reduced, it is inevitable that a phase with positive rates will follow.

With the available data so far, the macroeconomic forecasting models developed at KEPE suggest that a phase of recovery of the Greek economy will begin in 2014, perhaps even with a slightly positive rate in the fourth quarter of 2013. This, combined with a continuing improvement in the fundamentals, i.e. the fiscal deficit and current account deficit, along with the gains in competitiveness, may signal the eventual start of a positive phase.

The reduction of public debt due to PSI, the lower interest rate on the loans granted to Greece, and the quite probable lengthening of the financial support, create the preconditions to be more optimistic about the prospects of the economy. The markets, however, have already discounted a further "haircut" of the debt in the hands of the "official sector" (the OSI), an eventuality which cannot be discarded, as for many analysts and market participants it appears inevitable. There exists, however, the possibility that the improvement in the fundamentals, along with the activation of European mechanisms such as the ESM or the euro-bonds, may alter the market sentiments on Greece, allowing it to return to the international capital markets.

As it is known, the current economic program for Greece has two parts. The first concerns the required fiscal adjustment, with the target of achieving primary surpluses (4.5% of GDP in 2014), so that the country stops creating more debt and begins to reduce it as percent of GDP. The second part concerns the structural reforms, with the aim of increasing competitiveness and attracting foreign and domestic investments, thus laying the foundations for growth. This program, with both parts, must be seen as a whole, with its anticipated medium-term positive impact, while the crucial period are the years 2013-2014. Greece must, with undiminished perseverance, implement both the fiscal adjustment and the structural reforms. If it does, the end of the crisis is within sight; if not, the future is uncharted and uncertain.

Many analysts point out that recession and unemployment undermine the targets of the economic program, endogenously to the extent that fiscal adjustment intensifies the recession, as well as because of social and political reactions. We already have the elements of a vicious circle of austerity-recession, with the maturing of the structural reforms as the only positive perspective. It is a fact that the Greek economy is experiencing a situation akin to the bursting of a bubble, a bubble which sustained an artificial standard of living due to borrowing. Most citizens of the country have suffered losses in their incomes, personal and family budgets have been overturned, unemployment has risen to levels which threaten social cohesion, and the country's middle class is crushed. The Greek economy is seeking a new "level of equilibrium", obviously a lower level, with a cumulative reduction of national income which may exceed 20%. This percentage reduction of national income, as the cost of the "internal devaluation", represents a macroeconomic average, and it is logically impossible to be equiproportionally distributed to all citizens. On this course, we have already covered most of the total distance (we already have a reduction of approx. 14%), and it is estimated that by the completion of the economic program, we can achieve the coming of the next phase of growth and development. In that sense, it is of paramount importance to have a consistent economic policy which can stabilize expectations, embedding a positive prospect in the perception of citizens. Economic policy must be consistent and credible, because that is the only way to consolidate the prospect of an end of the crisis, and concentrate on the major issue of growth.

In the theoretical alternative of a "currency devaluation", in case that Greece leaves the euro and adopts a new national currency, there will also be a cost, which cannot be calculated *ex ante*. The reason is that such currency devaluations have been proven to be only temporarily effective, as long as the fundamental weaknesses of an economy remain unchanged, as those expressed by the current account deficit. On the other hand, the devaluations of a national currency often develop their own dynamic, which, combined with the destabilization of expectations, may end up in a vicious circle of successive devaluations with no effect. On the other hand, a change in the currency regime may have broader implications in the position of the country in the international economic order, implications not only economic.

KEPE has undertaken two important tasks stemming from the "memorandum", the study of the implications of the opening-up of the so-called "closed professions", and the detection of areas where the general government expenditures can be reduced in the years 2013-2014, although it is highly probable that the period of fiscal adjustment will be extended at least up to 2015. Such an extension is deemed necessary due to the worse than anticipated recession, as well as because of the aggravated social problems. The "opening-up" of professions is considered as an important structural change, which will reduce the overall cost of economic activity, thus making Greece more competitive. The reduction of general government spending, in conjunction with combating tax evasion, serves the goal of achieving a primary surplus, i.e. a "positive shock" vis-à-vis the perceptions of the international markets.

At the current difficult conjuncture, where most of the required adjustment has already been achieved, it is obvious that Greece needs the mobilization of all domestic creative forces, private and public, so that the country may soon create the conditions of a period of sustainable economic growth. This is theoretically feasible, but in practice it requires political consistency and social cohesion. These are not self-evident, they must be achieved with the consciousness of feasible options which can allow the prospects of a better future.

Taking into account the current state of the economy and the required structural reforms, it is clear that growth shall be, to a much lesser extent, driven by domestic demand, and, to a much greater degree, driven by supply-production. The main drivers of growth shall be the exports and investments, both private and public. The main reason for the downgrading of the Greek economy was its low competitiveness. The current account deficit, although to some extent covered by EU transfers, represented a loss of domestic income to abroad. Without the "tool" of devaluation of a national currency, to the extent that was proven to be only temporarily effective, this "leak" is directly diffused in the domestic real economy. Covering this "leak" with borrowed funds, as in the post-euro era where Greece could borrow easily at low, almost "German" interest rates, proved disastrous. The issue, therefore, is that along with the fiscal adjustment, we must address the fundamentals of the country. The key to that task is to make our economy more extrovert, to transfer economic resources to the sectors of internationally tradable goods and services. The increased flexibility of the labor markets, the opening-up of closed professions, the simplification of bureaucratic procedures, and (hopefully) the elimination of corruption, along with the entire set of structural changes, are the factors which can establish the prospect of economic recovery and growth.

Which are, then, the preconditions for the prospect of an exit from the crisis? From the Greek side, we must renegotiate some of the elements of the "memorandum", in order to apportion the burden of the fiscal adjustment in a longer period of time, thus to contain its recessionary effect. At the same time, we must design a net of protection for the weaker elements of society, and we must also design our own, "made in Greece", national growth plan, with priorities and feasible targets. In this plan, the utilization of the country's human capital, and the encouragement of a productive and extrovert business spirit, must play a primary role. Greece, coming into discussions about "re-negotiating" the current "memorandum", must project its own program, a realistic and binding medium-term growth program, so that the country can be considered as a credible negotiating partner. From the part of our European partners, they must concede to greater flexibility in the time-framework to achieve the targets, if they genuinely want Greece to remain in the Eurozone. We already see efforts to supplement the agreement for fiscal stability with targeted measures to assist the recovery of the weaker member-states, while there is always the prospect of transforming a monetary union to some sort of a federal union. In the prospect of such developments, Greece must not be absent, and must indeed take advantage of such new possibilities, in order to maintain the economic and political capital due to its participation in the hard-core of United Europe.

# Financial exclusion and the emergence of non-bank liquidity*

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## I. Introduction: The slippery notion of liquidity

The depiction of an economy's liquidity is the total of available tools for undertaking transactions in the present and meeting financial obligations arising from the past.

The available tools for each financial entity (households, businesses, public sector) comprise cash surpluses generated from current activity, liquidation of accumulated values and loans or other forms of financing. Cash surpluses are generated by current transactions. But liquidation of values and borrowing are necessarily performed through transactions in money, capital or other markets. Therefore, money and capital markets' conditions are a key factor in indentifying liquidity and its fluctuation.

In classical monetary analysis, liquidity is closely related with the concept of money supply. In classical financial analysis the concept of liquidity is different: it is related with the active presence of potential buyers of assets (securities, promissory notes, insurance obligations, etc.). The two concepts do not coincide. The first includes the *necessary* condition for the existence of liquidity which can technically be affected by the central bank. The second includes the *sufficient* condition for the activation of liquidity (originally provided by money supply) and which is based on the relationship between buyers and sellers of assets. This relationship involves expectations and the ability to provide safety of liquidation.

The current global crisis has clearly highlighted the gap between these two concepts. The increase of "exogenous" money supply from central banks does not automatically engender increased active demand for securities, promissory notes and other assets. The reason is simple: potential buyers of securities prefer to maintain their liquidity in an inactive form, instead of proceeding to purchases. Liquidity holding by households, businesses and banks is a self-insurance option against future (and largely imponderable) risks. We may therefore have "liquidity" in the monetary sense without having active liquidity in the economy and the capital markets.

The old (but timely) formulation of Keynes in his *General Theory* reveals what I call the "self-referential nature of liquidity": securities' buyers act in the belief that there will also be active buyers in the future, so that today's purchases can easily turn to tomorrow's sales. Current liquidity supply only exists through the conventional acceptance that willing liquidity suppliers will also exist tomorrow. Should this "convention" break, a confidence crisis would arise leading to the self-cancellation of liquidity.[1] Active liquidity is therefore a self-referential and imponderable concept.

Since the first manifestation of the crisis in 2008, we have seen examples of confidence issues that led to market freezing, i.e. self-cancellation of liquidity. The liquidity crisis in the international monetary system, which started in 2008, highlighted nevertheless the state's essential role as "external" liquidity supplier, i.e. liquidity not endogenously generated by the economy's transactions. This was made possible through extraordinary public expenditure and monetary injections that increased central bank assets, especially in the USA. In Greece, however, this role does not exist. The state is heavily indebted, and therefore does not have autonomous instruments to undertake fiscal expansion, and, on the other hand, the monetary authority is European. Thus, the supply of "external liquidity" in Greece is at least complicated, inflexible and *ad hoc*.

## II. The Greek impasse: The delayed "discovery" of liquidity

When the budgetary impasse was revealed in 2010, the combination of high debt and high fiscal deficit necessitated strict measures to restore balance. The general context of these actions, sadly, was not an act of self-consciousness and foresight of our society. It was the result of a great coercion in which the country was trapped without the social conscience that we were heading to a dead-end: the Greek public sector's exclusion from the markets, namely refusal of financing from the market.

The illusion that everything went well was in large part due to the functioning of the international credit market through the period 2001-8, which was characterized by

* I would like to sincerely thank Mr. Yannis Katsampoxakis for research assistance on this article.

1. John Maynard Keynes, *The General Theory of Employment, Interest and Money,* Ch. 12 (Classic Books of America 2009).

very high liquidity and a climate of financial euphoria. In this climate, the international market failed to transmit signals to Greece regarding the upcoming impasse. On the contrary, the easy financing of Public Debt caused over-liquidity to spread within the Greek economy.

Financing the Greek debt with German rates was an implicit international subsidy to the Greek government, which continued until 2008 despite the fact that even then Greek fiscal data had deteriorated. Clearly the famous "market discipline" failed to prevent the Greek tendency to overborrowing. To the contrary, markets encouraged it. The joint lack of discipline of markets and government finally led Greece to an abrupt financial embargo, from which the economy now suffers.

Financial exclusion simply meant that the public sector suddenly lost the usual instruments employed for many years to fulfill its growing obligations, i.e. an unprecedented public sector liquidity crisis. The two memoranda were constituted on an emergency funding of the government by public international institutions in the face of the exclusion from markets, in order to avoid a disorderly bankruptcy that would harm all sides. However the target of the memoranda, particularly the first, and of the policies drawn for fiscal adjustment, did not focus at all on the foreseeable possibility that *public sector's lack of liquidity would soon lead to a liquidity crisis for the whole economy.*

The Greek economy's liquidity was left to be determined as a residual item of other economic policy and fiscal adjustment choices. As the recession deepened, especially during 2011, everybody started to realize that the lack of liquidity spread to businesses, households and banks. The particular importance of this observation is attributed to the fact that businesses and households having long-term solvency are forced into distress due to an inability to find available cash in order to meet immediate obligations. This deepens the recession but also destroys the productive tissue.

Liquidity shortage is a common denominator in all financial crises: gradual crises, panic crises, private, banking or public crises. The fact that liquidity was not a key political objective in Greece is a major omission. *Liquidity contraction is a major mechanism for crisis diffusion.* Failing to size up the effects of this mechanism might be partly justified by the fact that the very concept of liquidity is hard to measure and to control, as I will explain.

In this article I will develop, in the first part, the conditions which determine liquidity shortage, taking into consideration the core institutional characteristic of the Eurozone: namely that we operate in a system with *unrestricted capital mobility*.

In the second part, I will present typical indices and calculations of liquidity movement in the Greek economy and of the very significant substitution of bank by non-bank liquidity which occurred in the period 2009-2011.

The article does not seek to be an exhaustive analysis, which would require more detailed information than I have here, but to offer motivation for a targeted study of Greece's recessionary economic conditions from the liquidity point of view in the present and the future.

## III. Determinations of liquidity

In any financial manual, money supply is referred to as the bedrock of liquidity. Central banks' modern monetary practice identifies and monitors M1, M2, M3 quantities as *successive* determinations of available payment instruments. These aggregates are primarily affected by monetary policy. But they are also affected –especially those mentioned as "quasi-money"– by money and capital markets.

As far as Monetary Union is concerned, monetary policy is maintained for the whole Union and not for each member country separately. If therefore a country faces a distinct recession while others don't, it is understandable that the country facing recession cannot determine overall money supply management. In this case, money redistribution (and thus liquidity) appears as the dominant outcome, to the detriment of the recessionary country, exacerbating the original deviation: contraction of the distressed economy and expansion of the others.

This process is triggered by capital movement. Free capital flow does not contract but rather expands cyclical deviations between economies, given the overall money supply. It is not difficult to presume that a distressed economy will suffer significant private capital outflows which will reduce its domestic liquidity, and that this outflow can only be counterbalanced by capital inflows induced by public bodies, effectively borrowing of the public sector or credit expansion via the central bank.

Money supply aggregates –even in the strict M1 definition– do not completely cover the active liquidity condition for three reasons. The first relates to effectiveness of the internal payments system in the economy. The second relates to the functioning of credit and securities markets which govern the ease or difficulty of assets liquidation. The third reason relates to behavior of economic entities in managing the liquidity they acquire. Let us discuss them one by one.

The effectiveness of payment system depends on the ability to minimize the volume of payment instruments required for the processing of a given amount of transactions. The debit/credit entries in a multilateral settlement system lead to a movement of payment instruments only for net and not for the gross amount of transactions. For example, a system where all payments are automatically made through debit/credit entries to bank accounts requires less movement of payment instruments than a system where all transactions are dealt in cash. An economic entity proceeding to X purchases and Y sales, requires payment instruments (X-Y) in a debit/credit clearing system, but (X+Y) in a cash system. Liquidity demand in the form of a natural means of payment (i.e. money) is multiple in the second case and an "accident" (erroneous calculations, delays, mismanagement, misappropriation of funds) can occur more easily. A shortage of liquidity is much more likely in the second case.

The operation of credit and securities markets plays a crucial role in determining liquidity availability, for it offers liquidity substitutes. Traditional banking innovations such as current accounts, credit lines and letters of credit, for example, offer direct access to liquidity if and when unexpected needs arise. Holding of liquid securities is a basic liquidity management tool for businesses which use them instead of cash. In times of stock market euphoria, even the possession of long-term securities (shares or bonds) functions as a liquidity substitute. However, the operation of credit and securities markets is the Achilles heel of a liquidity management system, for the "substitutability" of liquidity by securities can be easily lost.

The behavior of economic entities in terms of liquidity is organized in a specific *institutional context* (access to payment systems and to money and capital markets) but is defined by a fundamental factor: the need for insurance against unexpected payment needs. In other words, holding liquidity (or retaining direct access to liquidity) is a form of insurance. In multiple levels of economic theory this "service" provided by liquidity is matched with the payment of a "liquidity premium". If we borrow a concept from inventory theory, holding liquidity offers a non-pecuniary "convenience yield" which reflects the value of holding reserves against unforeseen claims (or risks). Capital market institutions allow the retention of substitute forms of liquidity, as I said, and even the buying of coverage for certain risks (insurance policies), which reduces the overall need for liquidity holding.

If the essence of liquidity is to provide insurance, the general increase in uncertainty obviously increases the liquidity preference and the corresponding "convenience yield". The phenomenon of "flight to safe havens" often observed in capital markets, indicates an increase in liquidity demand. Moving from securities of uncertain liquidation value to others with certain liquidation value is a reflection of liquidity demand, which, if significant, creates crises in stock and bond markets. If the uncertainty of banks' ability to fulfill their obligations expands, then the flight to liquidity takes the form of transfers from bank liabilities (e.g. deposits) to primary forms of payment, i.e. cash. If, finally, the uncertainty expands to the instrument of payment itself (cash), flight to liquidity takes the form of storage of natural values (gold, commodities). Therefore, essentially, the expansion of uncertainty always moves the defining line of liquidity from composite substitutes based on financial claims to simpler substitutes and intrinsic values.

In this process we notice that "storage" of payment instruments can lead to negative unintended consequences: the loss of means of payment from society's current transactions needs. In other words, a "liquidity crisis" may result from the disappearance of substitute forms, and the flight to fundamental forms of storing value. The size of the global financial crisis we are experiencing today ballooned for the exact reason that, during the previous period of euphoria, complex substitutes of liquidity were over-supplied due to the inflated values of capital markets.

## IV. Liquidity in Greece

The magnitude of liquidity in the Greek economy is measured in three steps, as seen below. At first we observe the evolution of monetary aggregates and the composition of money supply. This is the essential starting point for having a picture of liquidity movement in the economy. As a second step we analyze the distinct relation of three sectors of the economy with the banking system: public sector, private businesses and households. From these relations we gauge the role of each sector as a net lender or borrower in the Greek financial system. Net lenders are entities that remove liquidity from the economy and stock it in banks while, conversely, net borrowers provide liquidity.

As a third step we carry out a measurement of inflows and outflows of liquidity from the banking system. The whole methodology is oriented to the credit system because, in Greece, the distribution of financial resources is managed largely by the banks.

The liquidity source that may not be fully captured by the outflows from the credit system is the net external borrowing of the public sector. To the extent that the Greek government is an autonomous entity which conducts external borrowing, in order to meet its domestic payments, it also operates as a liquidity generator to the domestic economy. If external borrowing triggers initial inflow and subsequent outflow of deposits to and from the domestic banking system, there is a possibility that these two acts could take place in such a short time that they are not recorded in the end of period figures, especially if the period concerns an entire year. In this case, the liquidity movement from the domestic banking system will be underestimated. I will get back to this matter later.

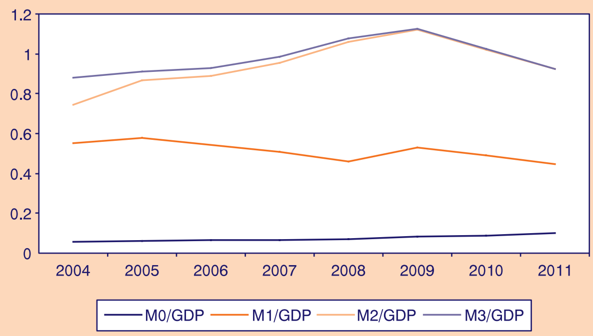
The most important aspect of the descriptive methodology used and of the concommitant analysis is not the general monitoring but the focused observation of changes and upheavals brought about by the great crisis of 2009-2011. The crisis is changing both the structures and behaviors of the economy. Two features of the crisis are *ex ante* factors associated with the demand for liquidity and are expected to bring conflicting results. One result is that the big drop in income leads to a decrease in demand, transactions and, therefore, use of liquidity. And the other is that the crisis deepens uncertainty and is therefore fuelling demand for liquidity as a means of self-insurance. It is therefore important to examine the motion of liquidity in light of these opposing forces.

### A. Monetary aggregates: Rise and fall

The monetary aggregates depict the money supply, i.e. the available liquidity instruments which can be accessed by economic agents, through the banking system. Chart 1 shows the relation of aggregates M0, M1, M2, M3 to GDP. I should note that the size of primary money M0 is not the result of measurement but a quantity extracted by interpolation from the circulation of money in the Eurozone based on Bank of Greece's participation in ECB's capital.[2] The reported size of M0 does not therefore necessarily reflect short-term changes, but must be reflective of the long-term trend. Therefore, we need a more accurate measurement of non-bank liquidity which would reflect the short-term trend. We will develop this in later parts of the article.

The evolution is eloquent and expected. The monetary aggregates showed an increase relative to GDP until 2008 and declined thereafter. The rise before 2009 is due to money components consisting of bank deposits which increased very significantly over the same period. The downturn during the three years of the crisis (2009-2011) is equally due to deposit contraction. However, during the three-year crisis, the narrow measure of (by interpolation) monetary circulation (M0) increased. So, while the deposit component of money supply was de-escalating, the "exogenous" component, even with the imperfect measure-

**CHART 1:**
**Aggregates and composition of money supply**




*Source:* Bank of Greece Short-term Statistics Bulletins.

ment of M0, was escalating. The general picture of monetary aggregates suggests two conclusions. First, that money demand declines, as expected, for transaction purposes. But second, that the de-escalation involves a clear disintermediation process which unfolded in the Greek economy during the three years of the crisis: available liquidity instruments held in the banking system decreased significantly and in an hierarchical order. The decline in M2 is large, smaller in M1, while M0 seems to increase.

Therefore, the only monetary aggregate that increases relative to GDP during the years 2009-11 is the (estimated) size of primary money (M0). This finding is consistent with the process of disintermediation and illustrates its general trend.

On this basis of monetary developments, we can construct the actual movements in liquidity aggregates.

### B. Lenders and borrowers: Main sectors of the economy

The formation of monetary savings and their transfer to deficit units in the economy determine the internal financial structure of an economy that regulates the central flow of liquidity. In bank-centered systems such as the Greek one, the financial structure is mainly supported by the credit system, i.e. the banks. Traditionally, with small historical exceptions, the role of direct capital markets (stock, bond and derivatives markets) was small in Greece compared with the banks and this applies during the period of accession to the euro.

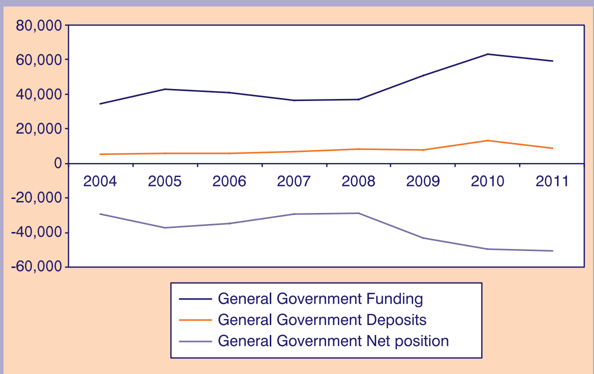
2. Bank of Greece's relevant explanation notes that "there is a particular element in the calculation of "Greek contribution" to monetary circulation (banknotes and coins in circulation). Since January 2002, when euro banknotes were put into circulation and replaced national banknotes, monetary circulation can be calculated only for the entire Eurozone, and not separately for each country. The Euro system adopted a conventional rule in order to calculate monetary circulation in each member state. According to this rule, Greece's contribution to monetary circulation results from the consideration that the amount of banknotes put into circulation by Bank of Greece is proportional to Greece's contribution key in ECB's share capital, excluding 8% of the issued banknotes allocated to the ECB".

The display of various sectors' net positions versus the domestic banking system is achieved by subtracting claims in the form of deposits from obligations in the form of loans and credit.[3] The presentation is organized into three sectors: the public sector, businesses and households. In the theoretical case where all three sectors have zero net positions, we have a neutral financial structure in which each sector produces endogenously the liquidity it is using. In this theoretical case, financial institutions (or money markets) would appear, with intrasectoral specialization. The deviation from this neutral structure means that net lender sectors and net borrower sectors are appearing and the need emerges for financial intermediaries to cover the whole economy. The national credit systems then include credit institutions that manage cross sector financial flows.

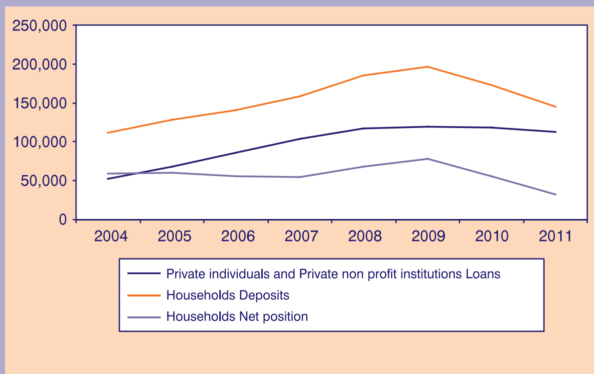
In Chart 2 we have grouped 5 smaller charts successively presenting the public and private (non-financial)

**CHART 2**
**Net position of sectors in the domestic credit system (million Euros)**

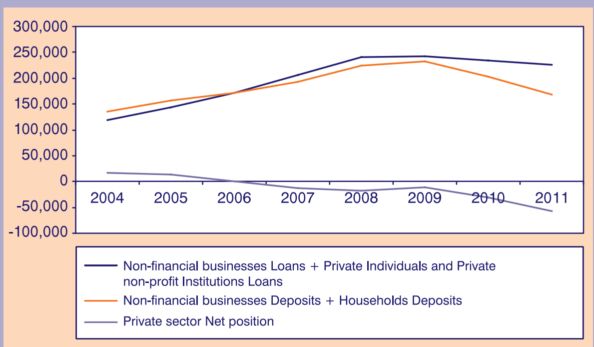
**2A Public sector**



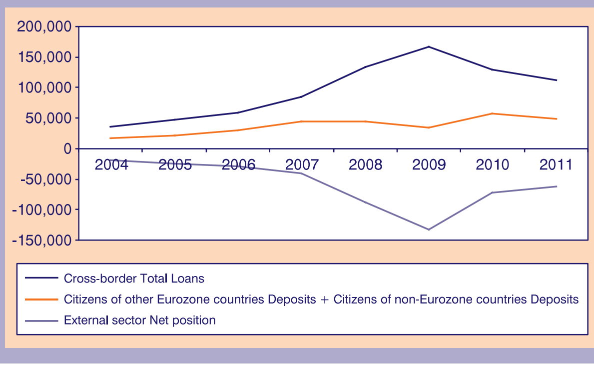

**2D Households**



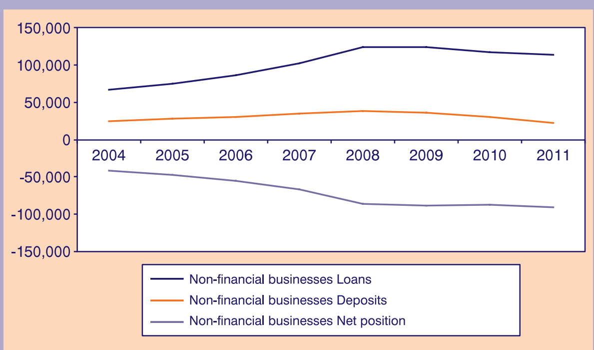

**2B Private sector**




**2E External sector**




**2C Non-financial businesses**




sector and the subdivisions of the latter into businesses and households. The fifth smaller chart shows the net position of the external sector in the domestic credit system.

These diagrams show very clearly that the public and corporate sector are systematic net debtors to the credit system, while households are net lenders. As a whole, the private sector (businesses and households) was approximately in a neutral position towards the credit system until the crisis. Finally, the positions of the external entities were also negative since lending to

3. The presentation of following aggregates comes from consolidated balance sheets of financial institutions provided by the Bank of Greece. The reported data correspond to "levels" (stocks) of assets and liabilities.

them exceeded their deposits in the domestic credit system.[4]

The relations described remain stable in the period up to 2007 and mark the basic fact that domestic households were the "funding sector" of the growth of bank intermediation in the economy. Similarly, the public sector and the domestic business sector were those to which liquidity was systematically released by the domestic credit system to be diffused to the economy.

As early as 2008, the private sector's total net position clearly tends towards negative figures. Net positions of the other sectors are also affected negatively. The 2009-2011 crisis reversed the balance of previously existing funding streams in at least two ways, as is apparent in the smaller charts. The simple observation of the economy's conditions is supported by these upheavals. An obvious change is that of a distinct deterioration of the public sector's net position from 2008. Essentially, it stands to reason that market deterioration in that year (Lehman Brothers) and the public sector's perceived exclusion from international markets shifted public funding requirements to the domestic credit system. This shift led to the second obvious change: the termination of credit expansion to the private sector. This second change must have contributed decisively to the third shift which seems to take shape with a one year lag, starting from 2009: the beginning of the continuous reduction of household deposits until 2011 (and to the present). This shift is fundamental because it deconstructs the development model of banking intermediation in the euro era and the period preceding it. The reduction of deposits is responsible, as I said, for the change in monetary aggregates and underlies the appearance of the economy's disintermediation during the crisis.

The phenomenon of deposit leakage from the domestic banking system has been multiply interpreted.[5] Consumption smoothing amid major reductions in available income, cash demand for tax payments, deposit exports abroad and holding of available cash as store of international value (i.e. foreign exchange) are common interpretations. The phenomenon to be assessed however is the reduction of deposits resulting from credit tightening itself. A characteristic of the outlined aggregates of Diagram Series 2 is that we first observe the credit shift and subsequently the shift in deposits.

## *C. From bank to non-bank liquidity*

The change in the net positions of the economy's sectors is equivalent to a movement in tectonic plates. The fundamental energy that drives this movement stemmed from the primary actions of the economy's entities, and more specifically from credit demand, on one hand, and demand for savings products on the other. The change in credit supply ($\Delta C$) can be considered as a liquidity release (if positive) from banks to the economy. The change in deposit products' holding ($\Delta D$) can be regarded as a liquidity-absorption (if positive) by banks. The difference ($\Delta L$) is:

$$\Delta L = \Delta C - \Delta D,$$

and captures the flow of liquidity to and from the banking system. Indeed, when

$$\Delta L > (<)\ 0,$$

a net increase (decrease) occurs in non-bank liquidity in the economy. A long and continuous series of positive values of the $\Delta L$ leads to disintermediation, whereas a long and continued series of negative values of the $\Delta L$ indicates a growing preference of economic entities for "mediated" liquidity. The systematic increase of non-bank liquidity can theoretically be driven to various forms of values storage: cash, non-bank securities, foreign claims, gold or other precious metals. Excluding changes in foreign claims that are (partially) readable in balance of payments data, the exact distribution of non-bank liquidity in various forms is not observable and can only be subject to speculation.

The following charts describe the values of the $\Delta L$ for the whole domestic banking system but also for every sector of the economy. The data used represent *annual* changes.

Chart 3 contains smaller charts which correspond to those presented in Chart 2. These diagrams show the contribution of each domestic sector to *change* in non-bank liquidity.[6] For this reason, the chart shows the aggregates ($\Delta C$,-$\Delta D$, $\Delta L$) since the positive change in credit and the negative change in deposits indicate the flow of non-bank liquidity. The depicted domestic sectors are the public (General Government) and private sector, and the subdivisions of the latter, i.e. non-financial businesses and households.

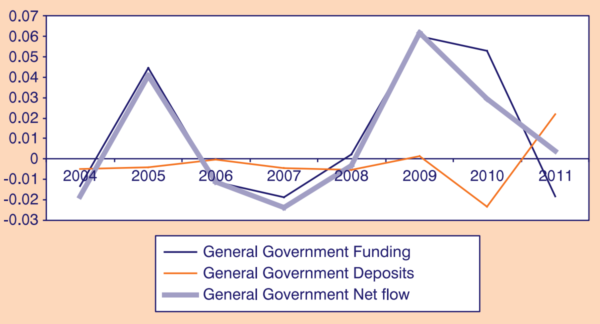
4. These aggregates refer only to assets and liabilities of credit institutions against foreign entities. Therefore, they do not include Greek government's liabilities abroad, which of course are considered as "non-bank liquidity" from the perspective of the present analysis.

5. See precise analysis in National Bank of Greece, *Greece: Monthly Macroeconomic Outlook,* March 2011.

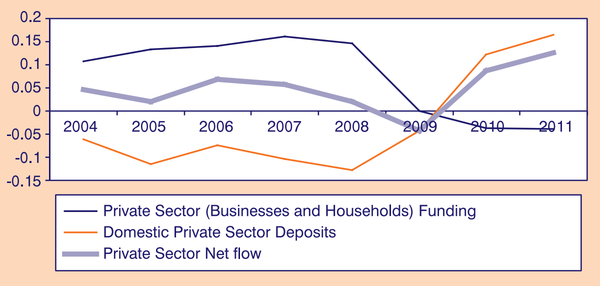
6. Following aggregates refer only to flows that capture the change in short-term trends.

## CHART 3
## Contribution of the economy's sectors to non-bank liquidity (ΔC,-ΔD)

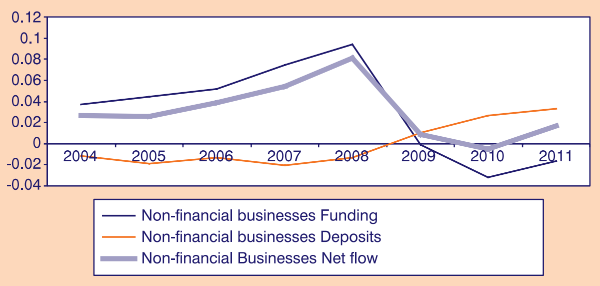
### 3A Public sector
Flows/GDP



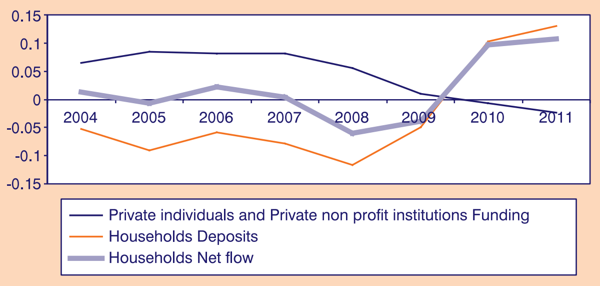

### 3B Private sector
Flows/GDP




### 3C Non-financial businesses
Flows/GDP




### 3D Households
Flows/GDP




These charts reveal several aspects of liquidity's behavior and we can focus on the main ones.

To start with, the significant difference in behavior between the public sector and businesses and households is obvious. Public sector accounts affect liquidity primarily through changes in borrowing and much less than through changes in public sector deposits. Credit to the public sector shows larger fluctuations both before and after the critical date of 2009. These fluctuations are probably the result of a complex process involving, on the one hand, primary budgetary balances and, on the other, actual external funding from international borrowing. The fundamental conjecture that can be proposed here is that debit/credit entries from the domestic banking system to the public sector are not the result of primary decisions but consequences of other more strategic variables such as external borrowing. It is from this perspective that we can also interpret the dramatic increases of credit to the public sector observed in 2009 compared with 2008. It is the first year of crisis in which difficulty in external borrowing occurs, eventually to be resolved by the first memorandum.

Unlike the public sector, the behavior of businesses and households is highly relevant to the fluctuations of liquidity in the economy. Three observations are obvious from the simple reading of charts 3B, 3C, 3D:

First, throughout the period before the crisis, non-bank liquidity is balanced and consistent with the predictions of theory and international experience. Credit changes in tandem with deposits, *so that non-bank liquidity maintains a relative balance.*

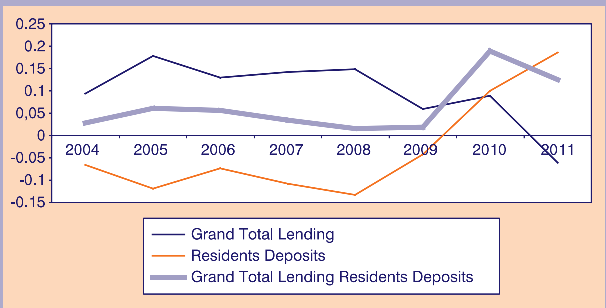
Second, *the reduction of credit to the private sector is huge and quite steep in 2009, in prominent correlation with the huge and sudden increase in credit to the public sector.* Essentially, then, in 2009 we observe a net displacement of the private sector by the public sector in matters of credit supply. The displacement is too large, since it corresponds to about 6-7 percent of GDP. It is even higher when we consider that this is a period of declining demand, during which financing to the private sector has to cover additional needs in maintaining liquidity reserves and working capital. We can reasonably speculate that *2009's displacement was a key mechanism in the diffusion of the crisis to the private sector, which took effect even before budgetary austerity measures (cuts, tax increases).*

Third, the sharp decline in private sector credit, which occurs in 2009, can be considered as a development that impairs the flow of liquidity and causes a compensatory reaction of economic entities: a large reduction of deposits, which means withdrawals, restoring a desired level of non-bank liquidity. *The combination of* *these movements is equivalent to a net disintermediation towards cash equivalents in the private sector.* The essence of disintermediation is exactly an important substitution of bank liquidity by non-bank liquidity.

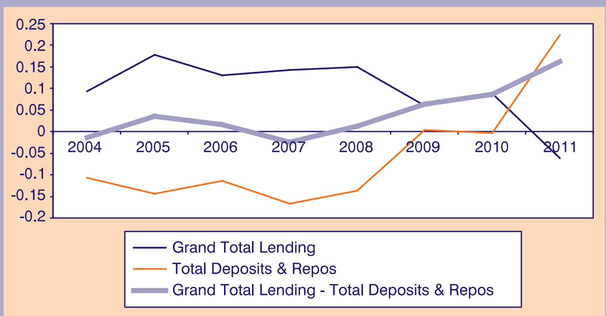
The overall picture emerges from the total changes in deposits and credits of the economy, as they arise from changes in financial institutions' balance sheets. Chart 4 shows two versions. The first (Chart 4A) measures more accurately the change in non-bank liquidity considering only the changes in residents deposits. The second measures more accurately the reduction in bank liquidity after taking into account changes in deposits by both residents and non-residents. However, the calculation of 4B overestimates non-bank liquidity in the Greek economy as it is almost certain that the withdrawals made by non-residents were immediately transferred abroad and did not represent internal non-bank liquidity.

**CHART 4**
**Financial flows**

**4A Financial flows**
**(Non-resident Deposits)**
**Flows/GDP**

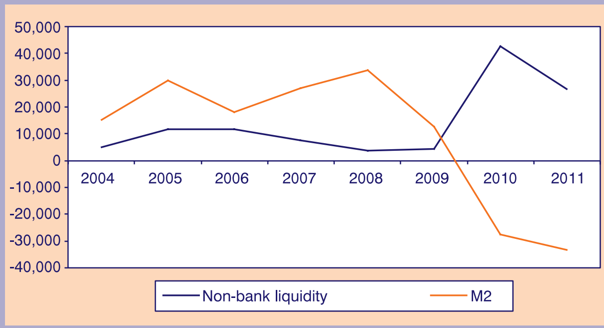



**4B Financial flows**
**(Resident and non-resident Deposits)**
**Flows/GDP**




In any case, the picture is the same in terms of interpretation. In Chart 5 there is a critical distinction showing

**CHART 5**
**Bank and non-bank liquidity**
**(million euros)**




the reverse processes of change in bank and non-bank liquidity. The general change of non-bank liquidity derives from 4A above and simultaneously the Chart includes the change of M2.

The substitution process of bank by non-bank liquidity is sharp and clear. In fact, its beginning occurs during 2008, in 2009, the lines cross and the ascendancy of non-bank liquidity consolidates.

## *D. Conjectures on non-bank liquidity*

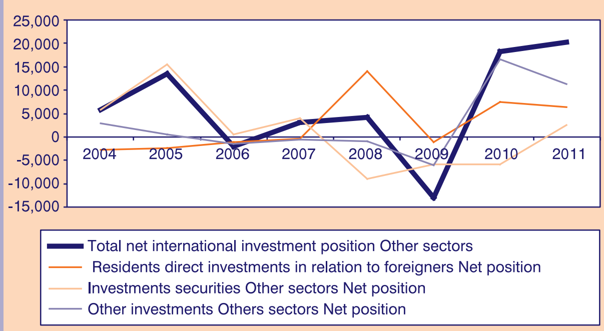
The key finding of the preceding calculations is the clear evidence that after 2009, unlike the previous period, we note a widespread substitution of bank by non-bank liquidity.

The release of non-bank liquidity (from the domestic credit system) from 2009 to 2011 amounts approximately to a cumulative sum of € 70 billion. Where is this huge amount located? The answer cannot be given without acknowledging that Greece is, as a member of the Eurozone, an economy open to capital flows. If we consider the net change in the private non-financial sector's claims against the external sector, we can distinguish the size of net outflows that occurred during the period of crisis. Chart 6 depicts the changes in net claims in different categories of the private, non-financial sector.[7]

The strong positive change in private individuals' net international investment position occurs in 2010-2011. Cumulatively over the three years 2009-2011, the change in net position was approximately € 30 billion. Although to some commentators such outflows are illegal or even unethical, freedom of capital flow is the cornerstone of the Eurozone Treaty. The increase in private outflows is consequential to investment rationality under conditions

7. The data quantify *net* changes, i.e. increase in assets minus increase in liabilities of private institutions, excluding credit institutions. The positions of the latter are reflected in assets and liabilities magnitudes of these institutions on the data described above.

**CHART 6**
**Change in net private claims abroad (million euros)**




*Source:* Bank of Greece, International Investment Position

of increasing uncertainty in the Greek economy and with freedom of capital flow to and from Greece. In any case, outflows absorb a significant part of the increase in non-bank liquidity. The remaining aggregate from this increase, minus the outflow, is therefore approximately €40 billion.

The process of increase in non-bank liquidity in the economy is compatible with two widely accepted premises. First, it creates a critical situation for banks which cannot fulfill their primary role, namely intermediation between monetary savings and credit supply. Therefore, credit stringency is maintained and worsening, and this becomes a great obstacle to any attempt for recovery of economic activity in the country.

Secondly, the large increase of non-bank liquidity is certainly linked to new uncertainties which enveloped the system of social expectations in Greece during the crisis. One is the uncertainty about remaining in the euro and the reasonable attempts to safeguard the value of savings against the possibility of exit. Flight to the currency relates to its basic function as a "store of value". The other uncertainty probably relates to an attempt to shift values beyond the reach of tax collection mechanisms which, in conditions of fiscal crisis, seek or are expected to tax accumulated values. The holding of currency is associated with the anonymity it provides, since its value is controlled by its anonymous bearer. These are theoretical premises that appear reasonable in the context of an unprecedented fiscal crisis occuring in an economy with stable currency.

The increase in liquidity as a means of non-bank self-insurance against macroeconomic uncertainty has a strong self fulfilling feature since it adversely affects bank stability. This effect feeds the uncertainty further.

But there is another important reason that promotes demand for non-bank liquidity. Moving from bank to non-bank liquidity creates an impairment of the effectiveness of payment system. As I mentioned before, a payment system based on bank debit/credit entries requires a much smaller volume of exogenous money for handling a certain volume of transaction than a payment system that runs on cash. Reduction of bank and increase of non-bank liquidity indicates the transition to a system that "consumes" more liquidity for a given volume of transactions. This effect is not directly related with increased uncertainty but also contains a self feeding feature. Thus a liquidity unit that is converted from feed a bank to a non-bank unit creates *de facto* a net reduction of effective liquidity in the economy. Therefore, the "liquidity crisis" is directly enhanced by its transformation from bank to non-bank liquidity.

## *E. Outlets and regularizations*

Theoretically, holding a large volume of non-bank liquidity in the economy is not a sustainable situation. Gradually, this liquidity will seek a return to intermediated forms which will offer returns and safety. A possibility is for cross-border outflows to continue and to increase. A second possibility is the creation of non-bank markets that could absorb non-bank liquidity providing guarantee of their value or very high yields. An (unwanted) version of this possibility is the development of financial "black markets", traces of which have already appeared.

A legitimate version of this same possibility would be the establishment of markets for certificates of deposit already existing in other countries. But this version requires some external source of assurance, which is not currently in sight. An institutional body like the European Investment Bank, for example, could use instruments that would attract non-bank liquidity, in the form of special bonds for Greece or certificates of deposit. The funds could be used either for direct and selective corporate finance in Greece or for programs of targeted funding through banks. Other institutional pillars could also be designed for the development of such markets.

The restoration of non-bank liquidity in intermediated forms can and should of course have also as a primary policy goal the restoration of deposits in Greek banks. Bank recapitalization will contribute positively to this goal, but it is doubtful whether this will be sufficient, since the trend of liquidation of deposits has strengthened in the early months of 2012. Bank recapitalization is not sufficient *per se* to eliminate the fundamental macroeconomic uncertainty that motivates the shift to non-bank liquidity. Interest rate policy to attract deposits cannot overcome this uncertainty. A European –even partial– deposit guarantee scheme would have a catalytic role in this field.

It is finally clear that the opportune political debate concerning rejection of the loan agreement, which is the only channel left for the public sector's external financing, fuels intensely those exact expectations that drive the shift of liquidity to non-bank forms. Political management of expectations requires great caution in the current situation.

The expansion of non-bank liquidity and the disintermediation it implies, as I already explained, affects dramatically the sector of non-financial businesses which, traditionally, is the net borrower of the economy. While the other traditional borrower, the public sector, is covered by official European lending, the Greek business sector is faced with a debilitating credit shortage. This is a major financial problem for the economy in its current state and it acts as a basic mechanism of the general crisis.

Targeted policies that would distinguish creditworthy entities likely to perish from lack of liquidity (illiquid agents), from insolvent agents are sorely needed. This means two things: First, venture capital type institutions that will be able to make the distinction with long-term criteria. Second, a funding allocation system that would not, initially at least, be based on an open market interest rates policy, but on other types of allocation criteria. Export activities, activities that allow employment of idle industrial capacity in sectors with sufficient demand or, lastly, infrastructure investments are obvious choices. This type of policy will necessarily involve funding not restricted to a classical form of credit but to variations of the equity form that would allow funding with a development perspective and not just a prospect of debt repayment.

## ANNEX DATA

### Gross Domestic Product (million €)

| | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 |
|---|---|---|---|---|---|---|---|---|
| Gross Domestic Product at market prices | 185,266 | 193,050 | 208,893 | 222,771 | 232,920 | 231,642 | 227,318 | 215,088 |

### Greek contribution to key monetary aggregates in the euro area (balances in millions of €)

| End of period | Dec-03 | Dec-04 | Dec-05 | Dec-06 | Dec-07 | Dec-08 | Dec-09 | Dec-10 | Dec-11 |
|---|---|---|---|---|---|---|---|---|---|
| Currency in circulation | 8,791 | 10,835 | 12,212 | 13,377 | 14,247 | 16,318 | 19,122 | 20,383 | 21,370 |
| M1 | 88,243 | 102,530 | 111,419 | 113,485 | 113,084 | 106,917 | 122,287 | 111,214 | 95,942 |
| M2 | 122,577 | 137,877 | 167,618 | 185,751 | 212,893 | 246,627 | 259,431 | 231,852 | 198,479 |
| M3 | 149,577 | 163,099 | 175,640 | 193,617 | 219,927 | 251,397 | 261,090 | 232,880 | 199,207 |

### Lending to residents other than MFIs by domestic MFIs (excluding Bank of Greece) (end of period balances, in million Eur)

| End of period | Dec-03 | Dec-04 | Dec-05 | Dec-06 | Dec-07 | Dec-08 | Dec-09 | Dec-10 | Dec-11 |
|---|---|---|---|---|---|---|---|---|---|
| Grand Total of Lending | 140,807 | 158,219 | 192,722 | 219,944 | 251,665 | 286,398 | 300,316 | 320,522 | 307,286 |
| General Government | 36,958 | 34,465 | 43,084 | 40,786 | 36,577 | 37,075 | 50,995 | 63,048 | 59,140 |
| Private sector (Households and Businesses) | 103,848 | 123,754 | 149,639 | 179,158 | 215,088 | 249,324 | 249,321 | 240,991 | 232,787 |
| Non-financial businesses | 59,284 | 66,229 | 74,812 | 85,579 | 102,160 | 124,131 | 123,820 | 116,514 | 113,044 |
| Individuals and private non-profit institutions | 40,229 | 52,323 | 68,630 | 85,584 | 103,801 | 116,866 | 119,280 | 117,747 | 112,662 |

### Deposits and repos of non-MFIs in MFIs in Greece (except Bank of Greece) (end of period balances, in million Eur)

| End of period | Dec-03 | Dec-04 | Dec-05 | Dec-06 | Dec-07 | Dec-08 | Dec-09 | Dec-10 | Dec-11 |
|---|---|---|---|---|---|---|---|---|---|
| Residents | 130,395 | 142,680 | 165,499 | 180,916 | 204,940 | 235,878 | 245,470 | 222,874 | 182,790 |
| General Government | 4,244 | 5,149 | 5,918 | 5,979 | 7,011 | 8,258 | 7,940 | 13,269 | 8,564 |
| Businesses and Households | 126,152 | 137,532 | 159,581 | 174,937 | 197,929 | 227,620 | 237,531 | 209,604 | 174,227 |
| Non-financial businesses | 22,197 | 24,287 | 27,903 | 30,612 | 35,107 | 38,185 | 35,877 | 29,810 | 22,644 |
| Households | 101,404 | 111,154 | 128,750 | 141,070 | 158,414 | 185,424 | 196,860 | 173,510 | 145,370 |
| Residents of other Eurozone countries | 686 | 705 | 453 | 587 | 841 | 1,940 | 1,825 | 1,725 | 1,395 |
| Non Eurozone residents | 8,949 | 16,469 | 21,634 | 29,955 | 42,925 | 42,570 | 32,248 | 55,644 | 48,086 |
| Total deposits and repos | 140,030 | 159,855 | 187,587 | 211,458 | 248,706 | 280,388 | 279,544 | 280,243 | 232,271 |

## International investment position (in millions of €)

| | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 |
|---|---|---|---|---|---|---|---|---|---|
| 1. DIRECT INVESTMENTS | -8,010 | -10,785 | -13,213 | -14,328 | -14,653 | -637 | -1,835 | 5,686 | 11,983 |
| 2. PORTFOLIO INVESTMENTS | | | | | | | | | |
| Assets | | | | | | | | | |
| Securities | | | | | | | | | |
| Bonds and notes | | | | | | | | | |
| Other sectors (bonds) | 7,566 | 13,819 | 28,894 | 29,493 | 31,142 | 24,315 | 16,928 | 14,934 | 14,046 |
| Money market instruments | | | | | | | | | |
| Other sectors (money market instruments) | 391 | 417 | 1,489 | 2,118 | 5,325 | 5,506 | 4,522 | 258 | 458 |
| Liabilities | | | | | | | | | |
| Securities | | | | | | | | | |
| Bonds and notes | | | | | | | | | |
| Other sectors | 3,833 | 4,306 | 4,943 | 5,677 | 6,472 | 8,709 | 6,144 | 5,763 | 2,537 |
| Money market instruments | | | | | | | | | |
| Other sectors | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 20 | 1 |
| 3. OTHER INVESTMENTS | | | | | | | | | |
| Assets | | | | | | | | | |
| Other sectors | 16,467 | 18,106 | 18,973 | 18,029 | 17,534 | 16,105 | 15,614 | 25,076 | 32,690 |
| Liabilities | | | | | | | | | |
| Other sectors | 13,271 | 12,086 | 12,469 | 12,960 | 13,029 | 12,543 | 18,072 | 10,908 | 7,160 |

## Data from aggregated balance sheet of Credit Institutions Assets (End of period balance, in millions)

| End of period | Dec-03 | Dec-04 | Dec-05 | Dec-06 | Dec-07 | Dec-08 | Dec-09 | Dec-10 | Dec-11 |
|---|---|---|---|---|---|---|---|---|---|
| *Assets against other CI* | | | | | | | | | |
| Other Eurozone countries | 9,712 | 10,162 | 10,121 | 10,065 | 18,182 | 39,222 | 61,914 | 45,609 | 37,309 |
| Other countries | 12,652 | 12,258 | 18,843 | 23,222 | 31,311 | 36,204 | 36,820 | 36,058 | 28,623 |
| *Assets (loans) against non-MFI* | | | | | | | | | |
| Other Eurozone countries | 143 | 184 | 161 | 140 | 125 | 1,246 | 1,626 | 2,110 | 2,257 |
| Other countries | 3,701 | 3,897 | 4,374 | 4,616 | 8,043 | 11,346 | 11,400 | 4,407 | 4,131 |
| *Securities other than shares and derivatives* | | | | | | | | | |
| Other Eurozone countries | 5,055 | 3,547 | 5,243 | 5,330 | 5,184 | 7,436 | 6,921 | 4,892 | 3,574 |
| Other countries | 3,151 | 4,764 | 6,552 | 9,865 | 12,571 | 27,729 | 36,348 | 24,479 | 22,348 |
| *Money market mutual fund units* | | | | | | | | | |
| Other Eurozone countries | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other countries | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Shares and other variable yield securities other than money market mutual fund units* | | | | | | | | | |
| Other Eurozone countries | 119 | 174 | 420 | 278 | 1,051 | 2,206 | 2,712 | 2,448 | 2,480 |
| Other countries | 1,294 | 1,374 | 1,779 | 5,648 | 8,078 | 7,638 | 9,351 | 9,611 | 11,000 |

# The importance of productivity for the Greek economic growth

***Stelios Karagiannis, Yannis Panagopoulos and Sotiris Papaioannou***

## 1. Introduction

The Greek economy is currently facing a structural crisis, which is reflected in the sharp drop of the economic fundamentals and the deteriorating outlook. The main features of the crisis are the large fiscal deficit, the huge public debt and the high unemployment rate, but mainly the sharp decline in Gross Domestic Product (GDP). According to the revised National Accounts of ELSTAT (2011), the real economy entered into recession in 2008, with GDP shrinking by 0.2% in 2008, by 3.2% in 2009, by 3.5% in 2010 and by 6.9% in 2011.

The primary scope of this paper is to explore the role of productivity as a source of growth for the Greek economy. We, first, use a growth accounting model to analyze the sources of growth of the Greek economy. Then, we emphasize the role of productivity as a major contributor to Greek economic growth and estimate, at the industry level, a model of labor productivity growth.

The estimates of this study indicate that Total Factor Productivity (TFP) growth was the major driver of Greek economic growth for the period 1995-2007. These estimates, also, show that TFP growth accounted for most of the recession during the period 2008-2010. Furthermore, the evidence of this paper indicates that the labor productivity level of the Greek economy lags significantly those of the most developed OECD countries. It is worth noting that the factor of labor productivity substantially differentiates the current level of economic development of Greece, as compared to that of other developed countries. At the industry level, the econometric estimates show that capital investments and R&D spending have a positive and significant impact on labor productivity growth. On the other hand, employment has a rather significant negative impact.

## 2. A macroeconomic model of growth for the Greek economy

As already mentioned, the main purpose of this paper is to assess the sources of growth of the Greek economy during the period 1995-2010. By using a growth accounting framework, we can analyze the sources of growth of the Greek economy, we can numerically quantify the drivers of economic growth and we can interpret these empirical findings to derive implications for economic policy.

Let us assume the following neoclassical Cobb Douglas production function:

$$Y_t = A_t (K_t)^{\alpha} (L_t)^{(1-\alpha)} \tag{1.1}$$

where $Y$ represents GDP, $K$ is the capital stock of the economy and $L$ is the labor input, measured in total hours worked. Furthermore, $A$ is a labor neutral and capital neutral technology parameter, associated with TFP growth, $t$ is a time index and $\alpha$ is the elasticity of capital with respect to output. After taking logarithms, differentiating both sides of the equation (1.1) and accepting the hypothesis of constant returns to scale,[1] we obtain:

$$\frac{\dot{Y}}{Y} = \frac{\dot{A}}{A} + \alpha\frac{\dot{K}}{K} + (1-\alpha)\frac{\dot{L}}{L} \tag{1.2}$$

Equation (1.2) shows the main sources of growth of an economy. In particular, the growth rate of output, $\frac{\dot{Y}}{Y}$, is comprised of three main components: the growth rate of labor, $\frac{\dot{L}}{L}$, multiplied by its income share ($1-\alpha$), the growth rate of capital, $\frac{\dot{K}}{K}$, multiplied by its income share ($\alpha$) and technological progress $\frac{\dot{A}}{A}$, which is usually referred as TFP growth. It should be noted that, in the above equation, we have assumed that the inputs of capital and labor are paid according to their marginal products, so that the shares of labor and capital income sum up to 1.

### 2.1. Data and descriptive statistics

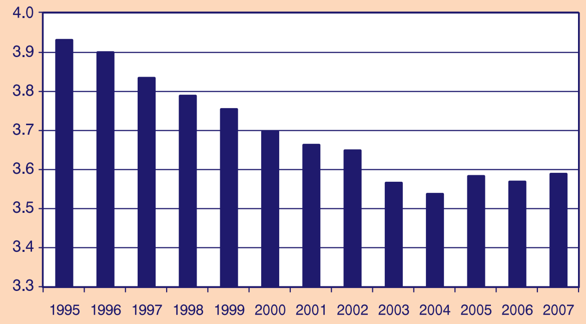
The data used for the estimates cover the period between 1995 and 2010 and are expressed on an annual basis. The data for GDP are provided from the National Accounts of ELSTAT (expressed in constant 2000 prices), while the data for hours worked were taken from the National Accounts of ELSTAT for the period of 1995-1999 and from Eurostat for the period 2000-2010.

For the construction of the capital stock variable, we have employed the estimates for capital-output shares of the Greek economy, for the period 1995-2007 (Figure 1). Romer (1989) has noted that a stylized fact of eco-

1. In most growth accounting exercises, the existence of constant returns to scale is assumed, so that the income shares of labor and capital sum up to 1.

nomic growth is that the capital-output shares tend to converge to a constant level. For the case of Greece, we can see that this ratio ranges between 3.6 and 3.9 for the period 1995-2007. By using these capital-output shares, we can obtain the capital stock series up to 2007. For the remaining years (2008-2010), we have used the perpetual inventory method, by assuming a capital depreciation rate of 5% (Bosworth and Kollintzas, 2001) and by employing data for gross fixed capital formation, provided by the National Accounts of ELSTAT.[2]

**FIGURE 1**
**Capital-output share**




*Source:* Dimelis (2010).

For the case of the Greek economy, we have the income shares of labor and capital available, which are shown in Table 1. It is confirmed that the shares of labor and capital are relatively constant over time and equal to 0.6 and 0.4, respectively. These income shares, combined with the available data for the growth rates of capital, labor and output, allow us to estimate the coefficients $\alpha$ and $1-\alpha$, as well as TFP growth.

**TABLE 1 Income shares of labor and capital**

| | *Share of labor* | *Share of capital* |
|---|---|---|
| 1996 | 0.56 | 0.44 |
| 1997 | 0.57 | 0.43 |
| 1998 | 0.58 | 0.42 |
| 1999 | 0.59 | 0.41 |
| 2000 | 0.59 | 0.41 |
| 2001 | 0.57 | 0.43 |
| 2002 | 0.61 | 0.39 |
| 2003 | 0.60 | 0.40 |
| 2004 | 0.59 | 0.41 |
| 2005 | 0.59 | 0.41 |
| 2006 | 0.58 | 0.42 |
| 2007 | 0.59 | 0.41 |
| 2008 | 0.61 | 0.39 |

*Source:* Dimelis (2010).

## 2.2. Estimates of the model

A certain way to estimate the coefficients $\alpha$ and $1-\alpha$ of equation (1.2), as well as TFP growth, is by employing an econometric framework. However, the econometric estimation presents a series of problems. First, it assumes that the growth rates of labor and capital are exogenous and that they are not affected by output growth. However, this is not often the case, as labor and capital tend to be endogenously determined and, therefore, they are affected by the growth rate of GDP. Furthermore, if there exist measurement errors in the independent variables, which is a usual case, then the coefficients $\alpha$ and $1-\alpha$ will be estimated with a systematic error.

However, equation (1.2) does not need to be estimated with the use of econometric methods. The coefficients $\alpha$ and $1-\alpha$, which represent the income shares of capital and labor, can be evaluated directly with the use of National Accounts' data. Kaldor (1963) and Romer (1989) have confirmed that the shares of capital and labor in total income remain relatively constant over time.

The growth accounting estimates, which are shown in Table 2, indicate that during the period 1996-2007, output growth was equal to 3.8%. The estimates also indicate that output growth was mainly driven by the high contribution of TFP growth which was equal to 1.9%, that is, 50% of total output growth. With respect to capital and labour, the estimates indicate that capital output growth contributed by 1.25% (33% of total output growth), while labour input, as measured by total hours worked, contributed by 0.65% (17% of total output growth). Overall, the estimates indicate that, during the high growth period between 1996-2007, output growth was mainly driven by the high contribution of TFP growth, while the contribution of capital and labour were relatively lower.

The estimates of Table 2 also indicate that, during the recession period between 2008 and 2010, average output growth was equal to -2.9%. The estimates also indicate that the most important source of negative output growth was the highly negative contribution of TFP growth which was equal to -2.32%, that is, 80% of neg-

2. Capital stock estimates for the period 1995-2010 are expressed in constant 2000 prices.

**TABLE 2 Growth accounting results**

| | GDP | Capital | Labor | TFP |
|---|---|---|---|---|
| 1996 | 2.36% | 0.69% | -0.86% | 2.53% |
| 1997 | 3.64% | 0.81% | -1.20% | 4.02% |
| 1998 | 3.36% | 0.89% | 2.30% | 0.17% |
| 1999 | 3.42% | 1.03% | 1.30% | 1.09% |
| 2000 | 3.11% | 0.63% | 1.32% | 1.16% |
| 2001 | 4.20% | 1.42% | 0.10% | 2.68% |
| 2002 | 3.44% | 1.18% | 1.18% | 1.08% |
| 2003 | 5.94% | 1.42% | 1.70% | 2.82% |
| 2004 | 4.62% | 1.57% | -0.01% | 3.07% |
| 2005 | 2.03% | 1.40% | 0.90% | -0.27% |
| 2006 | 5.17% | 1.98% | 0.56% | 2.62% |
| 2007 | 4.28% | 2.01% | 0.48% | 1.79% |
| 2008 | -2.00% | 0.34% | 0.52% | -2.86% |
| 2009 | -3.20% | 0.06% | -0.53% | -2.74% |
| 2010 | -3.50% | -0.28% | -1.87% | -1.35% |
| **Average 1996-2007** | **3.80%** | **1.25%** | **0.65%** | **1.90%** |
| **Average 2007-2010** | **-2.90%** | **0.04%** | **-0.62%** | **-2.32%** |

ative growth. With respect to capital and labour, the estimates indicate that the contribution of labour was negative and accounted for the remaining 20% of the negative output growth, while the contribution of capital was very low and almost equal to zero. Overall, the estimates indicate that, during the recession period, the negative trend of output growth was mainly driven by the highly negative contribution of TFP growth.

## 3. The significance of productivity as a source of growth for the Greek economy

In the previous section, it was shown that TFP growth was the major driver of growth for the Greek economy, during the period 1996-2007. Table 3 presents the average labor productivity levels of the Greek economy, as compared to those of other OECD countries. Although closely related, usually labor productivity growth exceeds TFP growth, because it incorporates the influence of the growth of capital stock. In particular, it can be shown that if we divide both sides of equation (1.1), then the growth of labor productivity is equal to the rate of growth of TFP plus the rate of growth of capital intensity (capital per effective unit of labor). However, in the long run, labor productivity growth is, ultimately, the result of TFP growth (Sargent and Rodriguez, 2001).

Labor productivity levels, as shown in Table 3, are expressed in comparison to the U.S. productivity level and are defined as total output divided by total hours worked. As it is evident, the labor productivity level of the Greek economy is quite low and slightly higher than the 50% of the U.S. productivity level.

The analysis of Jones and Olken (2005) confirms that shifts in the growth process are largely due to changes in productivity growth, and do not rely on changes in the factors of production. Similar conclusions have been drawn by Kehoe and Prescott (2002), indicating that the rate of TFP can adequately explain long periods of economic crises across economies of many developed countries (e.g. USA, UK, Germany). Also, Prescott (1998) argues that TFP is the basic determinant of income differences across the world economy. Similarly, for the case of Greece, Gogos et al. (2012) show that changes in the rate of TFP are able to explain both the slowdown period between 1979 and 1995, as well as the economic recovery between 1995 and 2001.

**TABLE 3 Productivity levels of OECD countries (USA=100, 2010)**

| Country | % USA | Country | % USA |
|---|---|---|---|
| Luxemburg | 132 | Japan | 66.2 |
| Norway | 126.6 | Iceland | 65.9 |
| Netherlands | 100.2 | Slovenia | 60 |
| Usa | 100 | Israel | 59.4 |
| Belgium | 98.8 | New Zealand | 57 |
| Ireland | 97.3 | Slovakia | 56.8 |
| France | 92.1 | **Greece** | **54.5** |
| Germany | 89.8 | Portugal | 54.1 |
| Denmark | 85.4 | Korea | 45.6 |
| Sweden | 83.7 | Czech Republic | 45.2 |
| Austria | 82.9 | Estonia | 44.8 |
| Switzerland | 81.4 | Hungary | 43.5 |
| Spain | 79.7 | Turkey | 43.3 |
| Finland | 79.5 | Poland | 41.2 |
| Australia | 78.8 | Russia | 34.5 |
| United Kingdom | 78.5 | Mexico | 33.2 |
| Canada | 75.6 | Chile | 32.2 |
| Italy | 73.2 | | |

*Source:* OECD (2011).

## 4. Labor productivity across sectors of the Greek economy: a comparison with the Eurozone.

In this section we describe the evolution of labour productivity across sectors of the Greek economy, in comparison to the evolution of labour productivity across sectors of Eurozone (Figures 2.A-8.A).

From the Figures 2.A-8.B, it is clear that labor productivity levels of the Greek economy significantly lag behind those of the Eurozone, across all sectors of economic

**FIGURES 2-8**
**Labor productivity growth of the Greek and Eurozone economy (2000-2010)**

**FIGURE 2.A**
**Total economy (year-on-year growth rate)**

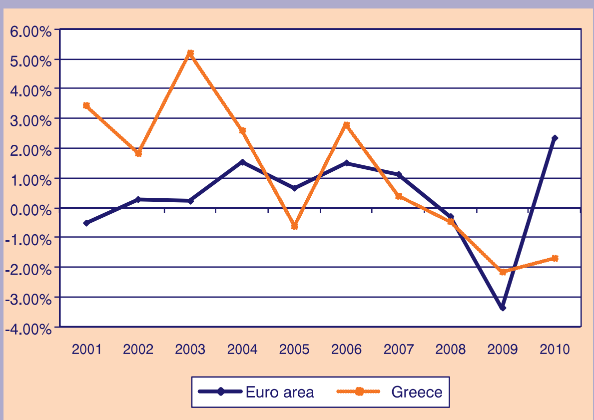



**FIGURE 2.B**
**Total economy (% of Eurozone)**

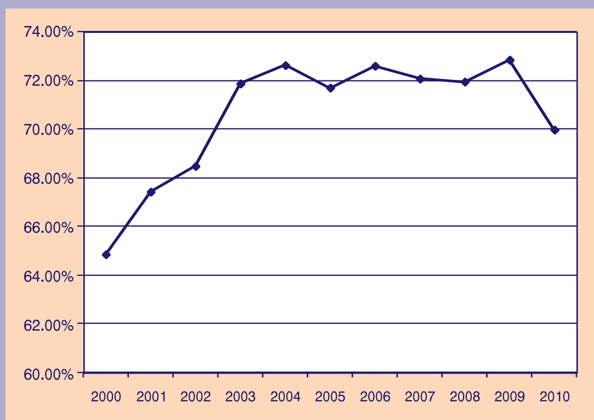


FIGURE 3.A
Agriculture, Fishing
(year-on-year growth rate)

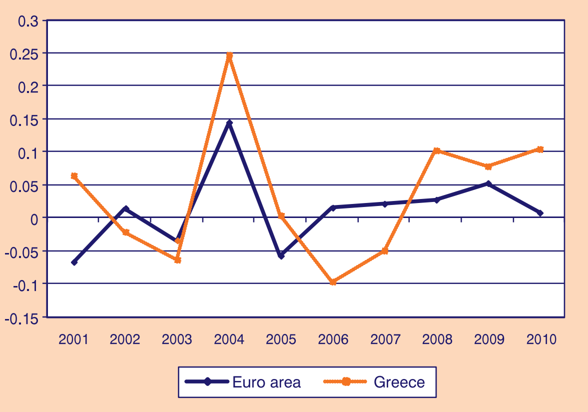



FIGURE 3.B
Agriculture, Fishing
(% of Eurozone)

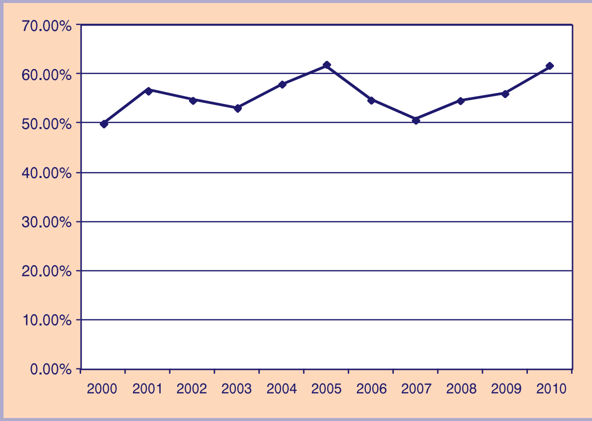



FIGURE 4.A
Wholesale & Retail Trade - Restaurants & Hotels - Transport
(year-on-year growth rate)

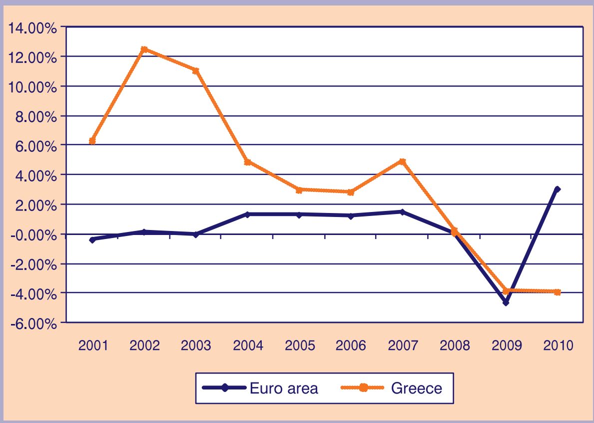



FIGURE 4.B
Wholesale & Retail Trade - Restaurants & Hotels - Transport
(% of Eurozone)

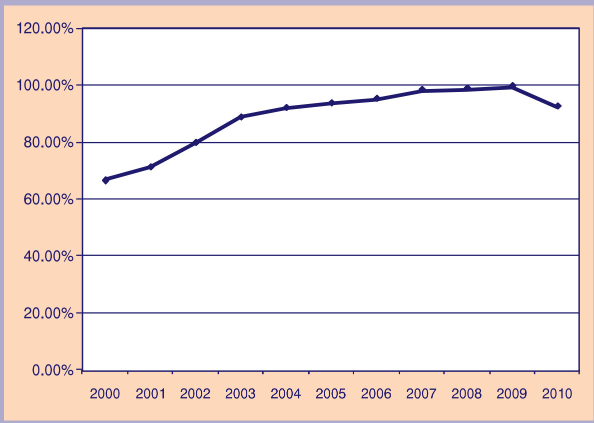



FIGURE 5.A
Financial Intermediation, Real Estate
(year-on-year growth rate)

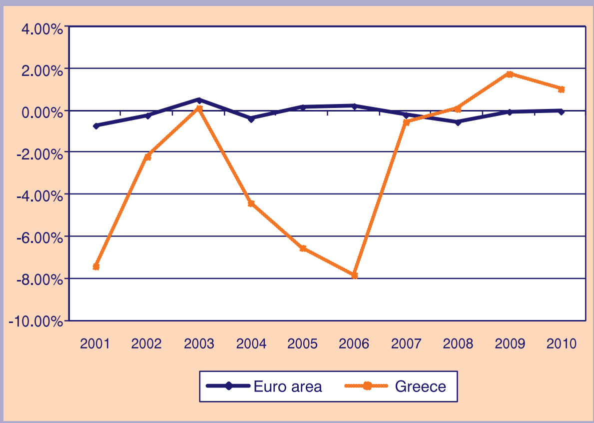



FIGURE 5.B
Financial Intermediation, Real Estate
(% of Eurozone)

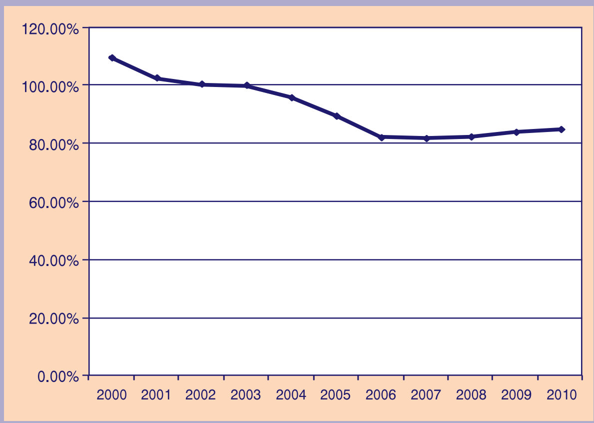


**FIGURE 6.A**
**Manufacturing**
**(year-on-year growth rate)**

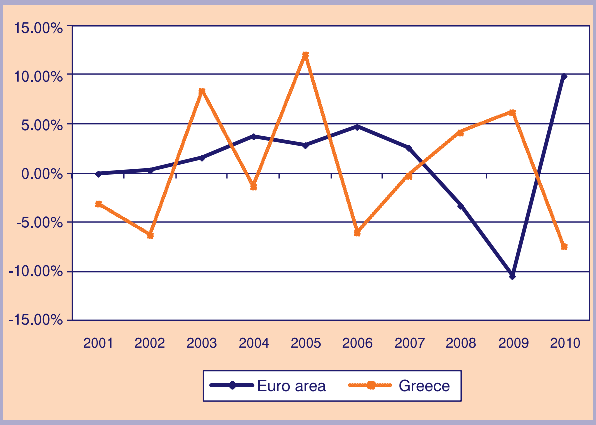



**FIGURE 6.B**
**Manufacturing**
**(% of Eurozone)**

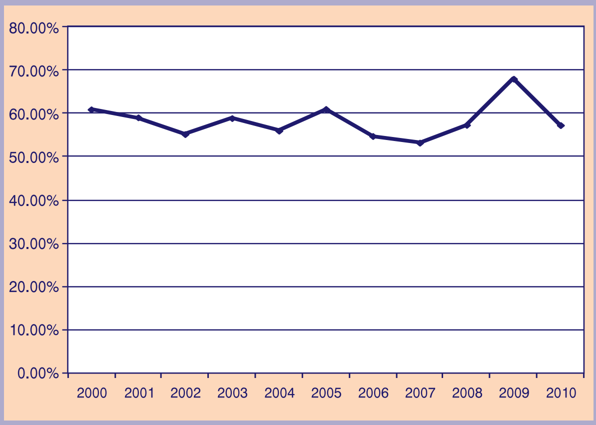



**FIGURE 7.A**
**Construction**
**(year-on-year growth rate)**

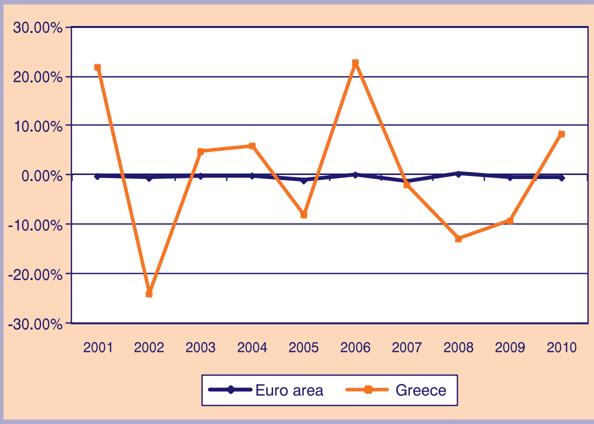



**FIGURE 7.B**
**Construction**
**(% of Eurozone)**

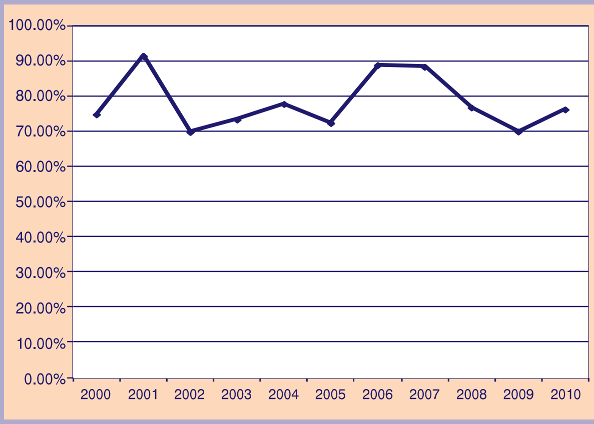



**FIGURE 8.A**
**Public Administration and Community Services; Activities of Households**
**(year-on-year growth rate)**

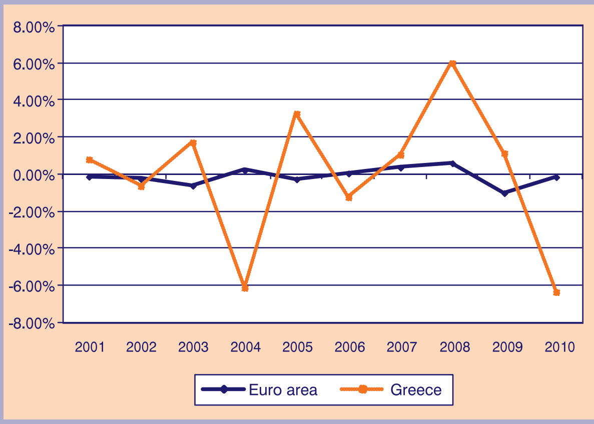



**FIGURE 8.B**
**Public Administration and Community Services; Activities of Households**
**(% of Eurozone)**

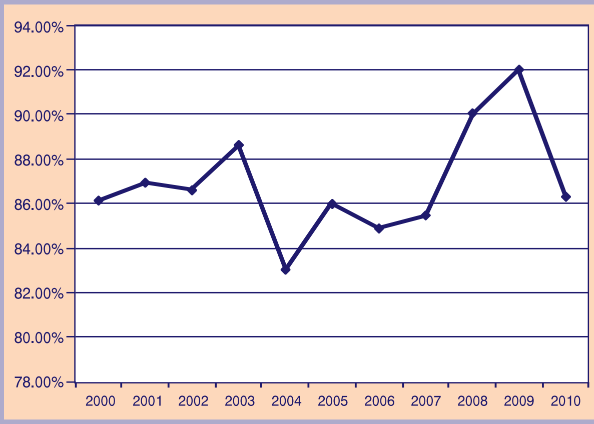


**TABLE 4 Classification of sectors of the Greek economy (Based on comparative labor productivity)**

| Sector | 2000 | 2010 |
|---|---|---|
| Agriculture and Fishing | 5 | 5 |
| Wholesale & Retail Trade-Restaurants & Hotels-Transport | 4 | 1 |
| Financial Intermediation and Real Estate | 1 | 3 |
| Manufacturing | 6 | 6 |
| Construction | 3 | 4 |
| Public Administration and Community Services; Activities of Households | 2 | 2 |

activity. Two exceptions are the sectors of *Financial Intermediation & Real Estate* (for the period 2000- 2003 when it reached and exceeded the average of the Eurozone, see Figure 5.B), as well as *Wholesale & Retail Trade-Restaurants & Hotels-Transports* (when it reached the average of the Eurozone, see Figure 4.B). It should be noted at this point that, in 2009, the levels of labor productivity in Greece reached 73% of the levels of labor productivity in the Eurozone but then fell 70%.

In Table 4 we have classified the sectors of the Greek economy, based on comparative labor productivity (in relation to the respective sectors of the Eurozone) for the years 2000 and 2010.

From the classification of Table 4, it is noticeable that the *Manufacturing* sector has persistently the worst performance over time, in terms of labor productivity, as compared to the performance of the corresponding sector of the Eurozone (at 57% of the Eurozone in 2010). The sector with the second worst relative labor productivity performance is *Agriculture and Fishing* (62% of the Eurozone in 2010). The best relative labor productivity performance in 2010 is produced by the *Wholesale & Retail Trade-Restaurants & Hotels-Transport* sector with the 92% the Eurozone's average. The second best labor productivity performance, during same year, is produced by the *Public Administration & Community Services-Activities of Households* sector with 86% of the Eurozone's average.

In the following section, we present a simple industry-level econometric model to explore factors which might affect labor productivity growth of the Greek economy.

## 5. An industry-level labor productivity model for Greece

As it was already mentioned in section 3, labor productivity is the most significant factor between income differences with OECD economies. In this section, we will specify a labor productivity growth equation across sectors of the Greek economy in order to get an idea of the factors that affect labor productivity at the industry level.

### 5.1. The econometric model

We start by using a slightly transformed (as compared to that of equation 1.1) *Cobb-Douglas* production function of the following form:

$$Y_{it} = K_{it}^{\theta_K} (A_{it} L_{it})^{\theta_l} \qquad (1.3)$$

where, $Y_{it}$ denotes total output of industry $i$ expressed in real value added terms during period $t$ ($t$=*1990,...,2010*), $K_{it}$ the stock of physical capital, $L_{it}$ is the employment expressed in thousands of employees, $A_{it}$ a (labor-augmenting) TFP indicator. Also, we assume $\theta_K + \theta_l = 1$, so we have a *Solow*-type model. Incorporating technology factor ($A_{it}$) we allow for permanent differences in the production function of the various industries.

Now, equation (1.3) in employment terms takes the form:

$$\frac{Y_{it}}{L_{it}} = K_{Git}^{\theta_K} A_{it}^{\theta_l} L_{it}^{\theta_l - 1} \qquad (1.4)$$

Taking logs of (1.4)

$$\ln\left(\frac{Y_{it}}{L_{it}}\right) = \theta_{KG} \Delta\ln K_{Git} + \theta_l \ln A_{it} + (\theta_l - 1)\ln L_{it} \quad (1.5)$$

and then time differences, we get a labor productivity growth equation, with labor productivity defined in value added per worker terms and $K$ (growth of capital stock) and $L$ (growth rate of employment) being the explanatory variables.

$$\Delta\ln\left(\frac{Y_{it}}{L_{it}}\right) = \theta_{KG} \Delta\ln K_{Git} + \theta_l \Delta\ln A_{it} + (\theta_l - 1)\Delta\ln L_{it} \quad (1.6)$$

Furthermore, in our empirical estimations we include a number of additional explanatory variables in order to further investigate factors that can affect labor productivity. These variables are: (i) Research and Development (*R&D*) intensity, defined as the R&D expenditures as a percentage of value added, (ii) investment intensity (*INV-INT*), calculated as the ratio of gross fixed capital formation to value added in that industry and (iii) unit labor cost (*ULC*) which is the ratio of labor compensation to value added expressed in current prices. This variable represents the current cost of labor to produce one unit of output and reflects how labor costs increase/decrease relative to output.[3] It can also be perceived as an indicator of cost competitiveness. It can also be presented as an index, where 2000=100. The source of these explanatory variables is the Structural Analysis Database of OECD (STAN Industrial Database).

### 5.2. Empirical results

Before we proceed to the empirical estimations, we should mention that the regressions are based on equation (1.6) using an unbalanced panel dataset and implemented on nine (9) different industries[4] for the time period 1995-2010. The estimation results of the basic model are presented in Table 5 below.

According to the random effect (RE) estimator (Table 5, column 1), the elasticity of labour productivity growth with respect to the *employment growth* ($\Delta L$) is statistically significant and negative. This result indicates that any increase of *employment growth* was counterproductive in the examined time period. Also, our results indicate that capital investment ($\Delta K$) is positively and significantly related to labour productivity.

Furthermore, we include two additional variables in our estimations, namely *R&D intensity* ($\Delta R$ & $D$) and *unit labour cost* ($\Delta ULC$) (see Table 5, column 2). Our empir-

**TABLE 5 Labour productivity-Econometric results**

| Explanatory variables | RE[1] Estimators (1) | RE Estimators (2) | RE Estimators (3) | RE Estimators (4) | GMM Estimators[2] (5) |
|---|---|---|---|---|---|
| $\Delta L$ | -0.935***<br>(-5.17) | -0.624***<br>(-5.96) | -0.613***<br>(-6,42) | -0.795***<br>(-9.40) | -0.459***<br>(-4.08) |
| $\Delta K$ | 0.072*<br>(1.86) | 0.037*<br>(1.70) | 0.124***<br>(4.64) | 0.471***<br>(9.30) | 0.013***<br>(2.89) |
| $\Delta R$ & $D$ | - | -0.014**<br>(-2,01) | -0.011**<br>(-1.77) | -0.010**<br>(-2,11) | 0.397**<br>(2.09) |
| $\Delta ULC$ | - | -0.630***<br>(-15.16) | -0.545***<br>(-13.12) | -0.431***<br>(-11.51) | -0.123**<br>(-0.22) |
| $\Delta INV\text{-}INT$ | - | - | -0.001***<br>(-4.82) | -0.460***<br>(-9.18) | 0.488**<br>(2.38) |
| Time period (*T*) | - | - | - | -0.015***<br>(-2.55) | - |
| No. of observations | 126 | 104 | 104 | 104 | 98 |
| Sargan Test (p-value)[3] | - | - | - | - | 0.674 |
| Autocovariance (p-value)[4] | - | - | - | - | 0.401 |

*Note:* Dependent variable is value added per employee in industry *i* (i =1,...,9) in period *t* (t =1990,...,2010). z-statistics are reported in parentheses.
*, **, *** denote 10%, 5% & 1% significance, respectively.
1. Random effects estimates.
2. GMM ( Generalised Method of Moments), Dependent variable lagged 1 period and all explanatory variables lagged 1 to 6 periods are used as instruments.
3. Sargan is a test of the additional moment conditions used in the system GMM estimators relative to the corresponding first-differenced GMM estimators.
4. The null hypothesis is that the errors in the first-differenced regression exhibit no second order serial correlation.

3. Labor costs can exceed value added in certain cases; for example, when heavy losses are incurred within an industry or, more generally, when an industry's gross operating surplus is negative and/or it receives significant subsidies.

4. These sectors are: Agriculture, Hunting, Forestry and Fishing, Mining and Quarrying, Manufacturing, Electricity, Gas and Water Supply, Construction, Wholesale and Retail Trade-Restaurants and Hotels, Transport, Storage and Communications, Finance, Insurance, Real Estate and Business Services Community, and, finally, Social and Personal Services. These industries' definition is slightly differentiated from the definitions of Tables 2.A-8.B.

ics indicate that both explanatory variables have a negative and significant effect on labour productivity. However, the negative relationship between *R & D* intensity and labour productivity was not expected and it will be interesting to see if it holds in the reaming estimations.

We next augment our estimations including *investment intensity per industry* (*ΔINV – INT*) and *a binary* variable (*T*) to capture any effects from the introduction of the Euro in 2002 (see Table 5, columns 3 and 4, respectively). *Investment intensity* seems to have a negative effect on labour productivity growth, a result which is rather unusual. However, the period dummy employed in our estimation reveals a negative effect, implying that the introduction of the common currency in EMU had a negative effect on growth.

However, as mentioned earlier, it is possible that these estimates are biased due to endogeneity problems and unobserved heterogeneity. For this reason, the Arellano-Bond (1991) panel data estimators are employed (see Table 5, column 5). Overall, our results concur prior empirics based on random effect (RE) estimator. This is also a sign of robustness. In detail, *employment* and *capital* growth are found once more to have a negative and positive effect on labour productivity growth, respectively, while *unit labor cost* has a negative one. However, *R & D expenditure*, which is an indicator of innovation input, is now estimated to have a positive influence on labour productivity. This finding is in line with relevant literature, arguing that in order to improve labour productivity and enhance technological change, innovations are crucial (see among others Van Leeuwen & Klomp, 2001; Lööf & Heshmati, 2002). Finally, *investment intensity* exerts a positive influence on labour productivity, which is rather anticipated.

## 6. Conclusions

In this study we analysed the importance of productivity as a source of growth, for the Greek economy. To do so, we estimated a macroeconomic model of growth the result of which indicated a significant contribution of TFP on the growth rate of GDP. We also showed that the levels of labor productivity of the Greek economy significantly lagged behind those of most OECD countries. Importantly, we estimated an industry-level econometric model for labor productivity growth. The evidence provided from this model indicates that capital investments and R&D expenditure exert a positive and significant influence on labour productivity growth. On the other hand, the employment variable seems to have a negative effect on labour productivity.

Summarizing, we can underline the importance of technological progress for the improvement of productivity of the Greek economy. This can be achieved through investments in R&D, in information and communication technologies as well as through foreign direct investments (FDI). The EU funds (National Strategic Reference Framework) and the European Investments Bank can help toward achieving this purpose. However, the most decisive factor for attracting such forms of investments is a legal and regulatory framework which is expected to assist the entrepreneurship and which will also help in creating market competiveness. Finally, an important factor for attracting investments in technology is the existence of a well-trained and specialised labour force which can absorb technological progress and, in this way, to effectively contribute to the improvement of productivity.

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# The European Union's response to Greece's debt crisis

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## 1. Introduction

In its thirteenth year of existence, the European single currency is facing its biggest challenge yet. Greece, Portugal and Ireland have received substantial bailout packages in order to keep their economies afloat and to avoid defaulting on their debt. Italy and Spain –the third and fourth largest economies in the Eurozone respectively– are exhibiting worrying symptoms, combining high public debts, large budget deficits and low growth. Germany and France, considered the most robust economies of the region, are feeling the strain of supporting their weaker partners, in an attempt to save the Eurozone.

Greece has been at the centre of the Eurozone debt crisis. It has the highest level of public debt in the Eurozone, and one of the biggest budget deficits. Greece was the first Eurozone member to come under intense market pressures and the first to turn to its Eurozone partners and the IMF for financial assistance. Over the past two years, the IMF, European officials, the European Central Bank (ECB) and the Greek government have undertaken substantial crisis response measures.

The purpose of this paper is to analyse and evaluate the European Union's policy response to the Greek crisis. The analysis begins with a brief discussion of the terms and conditions set out in the Stability and Growth Pact (section 2). Section 3 discusses how Greece's consistent violation of the terms of the Stability and Growth Pact contributed greatly to the buildup to the Greek crisis. Section 4 presents and analyses the successive EU responses to the crisis, starting with the first bailout package of May 2010 until today. Finally, section 5 presents an evaluation of the crisis response measures to date, and attempts to draw some conclusions regarding the implications of the Greek crisis for the broader Eurozone debt crisis and the future of the Eurozone.

## 2. The Stability and Growth Pact

The Stability and Growth Pact (SGP) was established in 1997 to ensure that the Maastricht Convergence Criteria –that had been established in 1992– would continue to be applied once the common currency was launched. The Stability Pact also aimed to enforce budgetary discipline and sound public finances among the countries preparing to adopt the euro.

The Pact consisted of a "preventive" and a "corrective" arm. Under the provisions of the *preventive* arm, member states were obliged to submit annual stability or convergence programmes, indicating how they intended to achieve or maintain sound fiscal positions. As far as the *corrective* arm was concerned, its target was to govern the excessive deficit procedure (EDP), which would be triggered by the deficit breaching the 3% of GDP threshold. Accordingly, if a country broke the rules, it had to take measures to reduce its deficit. If it broke the rules for three consecutive years, the Commission could impose a fine of up to 0.5% of GDP (Stark, 2001). Despite

**Maastricht Convergence Criteria**

The Maastricht Treaty of 1992 set the rules that all countries trying to achieve Economic and Monetary Union (EMU) would have to strive for and abide by. Specifically, according to the Maastricht Convergence Criteria:

- Budget deficits should be no more than 3% of gross domestic product (GDP);
- Accumulated public debt should be no more than 60% of GDP;
- Exchange rates should have stayed within the normal margins set by the ERM for at least 2 of the previous years;
- Inflation should not exceed by more than 1.5 points the average of the 3 best performers;
- Long term interest rates should be no more than 2 points above the average of the lowest 3.

Moreover, some basic safeguards against fiscal recklessness were enshrined in the Maastricht Treaty, including the prohibition of monetary financing of government deficits via central banks, the prohibition of privileged access to financial institutions by the public sector, and the "no bailout principle", which precluded the sharing of liability for government debt across member states (Dyson and Featherstone, 1999).

all these provisions, however, the greatest weakness of the Stability and Growth Pact was its ineffective enforcement mechanism (Schuknecht, 2005). The fact that a qualified majority was required in the ECOFIN Council in order to approve further procedural steps meant that countries that were in violation of the criteria retained the right to vote and needed only a few additional countries to block such steps.

The threat of not being allowed to join the Euro area led to an initial success with fiscal consolidation. During the period from the signature of the Maastricht Treaty up until the launch of the euro in 1999 developments in public finances were extremely encouraging, as average deficits improved, falling from almost 5% of GDP to just over 2% in 1998. All the founding members of the Euro area managed to bring their deficits below 3%, while in the second half of the 1990s levels of public debt also began to decline. However, almost as soon as the euro had been introduced, consolidation fatigue set in, and fiscal policies were broadly relaxed. Several countries (including not only Greece, Portugal and Italy, but also France and Germany) breached the 3% threshold for deficits. Thus, in the Fall of 2003, France and Germany (among others) blocked the strict implementation of the Pact by colluding in order to reject a Commission recommendation to impose sanctions under the excessive deficit procedure. By failing to impose the appropriate penalties, the Commission set a negative precedent and showed that there were no effective rules on budget deficits or public debt in the Eurozone. Thus, the first test of the Stability and Growth Pact's implementation failed (Featherstone, 2011).

The Commission responded by proposing a reform of the Stability and Growth Pact in 2005, which envisaged much more flexible rules and introduced greater discretion, leniency and political control into procedures. While on the surface the reformed SGP maintained the key rules on deficit and debt, the small print contained a list of exceptions for types of spending that would not be counted as part of the debt. This included spending on education, research, defense, aid and the "unification of Europe". Many economists subsequently argued that the exceptions in the reformed pact made it too flexible and allowed for the deficit limit to be broken to create economic growth. Moreover, nothing was done to improve the incentives for strict implementation by the Commission and effective enforcement in the ECOFIN (Morris et al., 2006). Once again, the actual implementation of the revised Pact was lenient. Significant extensions were immediately observed for deadlines under the excessive deficit procedure, and limited adjustment efforts were required. In the case of Greece, an excessive deficit procedure was abrogated in 2007 on the basis of a Commission proposal, despite significant concerns being repeatedly expressed by the European Central Bank regarding the reliability of data and policy commitments – concerns that proved to be justified in 2009. The scope for tighter surveillance and increased peer pressure was not used in a decisive manner either.

In 2008, there was concern that a number of member states would break the SGP rules as a result of the global economic crisis. The Commission was particularly worried about levels of public debt in Ireland, Spain and France, but it was Greece's spiraling public debt that presented the biggest concern as it began to affect the stability of the euro, leading to speculation concerning the future of the Eurozone. By 2009, only 5 members of the EU had a deficit lower than 3%.

## 3. The buildup to Greece's debt crisis

In the 1990s, as Greece prepared to adopt the euro its borrowing costs dropped dramatically. Interest rates on 10-year Greek bonds dropped from 24.5% to 6.5% between 1993 and 1999, spurred by investor confidence in economic convergence among the Eurozone countries. Investor confidence in the prospects of Greece and other weaker Eurozone member states was also fuelled by the fact that the common monetary policy was to be anchored by economic heavyweights, including Germany and France, managed conservatively by the ECB, and controlled through the rules imposed by the Stability and Growth Pact.

The Greek government took advantage of easier access to cheap credit to pay for government spending and offset low tax revenue. The government also borrowed to pay for imports from abroad that were not offset by exports. Government budget and trade deficits ballooned during the 2000s and borrowed funds were not channeled into productive investments that would generate future growth, increase the competitiveness of the economy, and create new resources with which to repay the debt. Instead, the inflows of capital were used to fund current consumption that did not yield streams of revenue with which to repay the debt (Mitsopoulos and Pelagidis, 2010).

As discussed above, EU policies that had been put in place to provide a check on the accumulation of public debt failed to do so. Between 2003 and 2010, the EU had initiated more than 30 cases against members in violation of the fiscal rules set out in the Stability and Growth Pact, including Greece. Although the EU institutions reprimanded member states in violation of the deficit and debt limits and pressured them to consolidate public finances, they never imposed a financial sanction against a member state in violation of these limits.

The global financial crisis of 2008-2009 and the related economic downturn strained the public finances of many advanced economies, including Greece. Starting in 2009, investor confidence in Greece's ability to service its debt dropped significantly. Greece's reported public debt rose from 106% of GDP in 2006 to 126% of GDP in 2009. Additionally, in late 2009, the new government, led by Prime Minister George Papandreou, revealed that previous Greek governments had been under-reporting the budget deficit. The new government revised the estimate of 2009 budget deficit from 6.7% of GDP to 12.7% of GDP. This was followed shortly by rating downgrades of Greek bonds by major credit rating agencies. Allegations that Greek governments had attempted to obscure debt levels through complex financial instruments contributed further to a drop in investor confidence. Greece's 2009 budget deficit was subsequently revised upwards a number of times, finally to 15.4% of GDP. Investors became increasingly nervous that the Greek government's debt was too high and that it would default on its debt: thus, they started demanding higher interest rates for buying and holding Greek bonds, which drove up Greece's borrowing costs, exacerbated its debt levels, and caused Greece to veer towards default.

## 4. EU policy responses to the Greek crisis

As fear turned to panic, the contagion from Greece quickly began to spread to the Eurozone. It was clear that although Greece's troubles were the most extreme, they highlighted problems in the Eurozone that also applied to other economies. Italy, Ireland, Spain and Portugal shared many of Greece's macroeconomic characteristics and structural problems, and their high budget deficits and huge long-term debts made them susceptible to a Greek-style meltdown. When the two major credit-rating agencies (Fitch and Standard and Poor's) sharply cut their ratings on Greek bonds from A– to BBB+ and gave warnings of further downgrades, a steep sell-off in the Greek (as well as Spanish and Portuguese) bond market ensued, adding to those countries' borrowing costs. Greece's deficit grew even larger as interest payments rose, saddling Athens with an even heavier debt service burden.

During this time of uncertainty, the Eurozone's internal discord and protracted negotiations over how to deal with the Greek crisis made a dangerous situation even worse. Every day that passed without an orderly resolution of Greece's problems only served to postpone the inevitable while adding immeasurably to the cost of inaction. Thus, the first months of 2010 passed with no coherent European response to the crisis in Greece, while the Greek leadership continued to claim it did not need international assistance. The EU's heads of government issued a statement of "solidarity" with Athens, promising that member states of the euro would take "determined coordinated action, if needed, to safeguard financial stability in the euro area as a whole" (*Independent*, 12/2/2010). It was hoped that this show of solidarity would calm the markets, and that the promise that financial support would be forthcoming –if needed– would restore confidence and avert that action becoming a necessity.

During these months of uncertainty, the euro was attacked by speculators and fell against the dollar, while investors' fears about the stability of the Eurozone caused further market turmoil. Eurozone leaders were eventually forced into action when faced with the frightening prospect of fiscal contagion if Greece defaulted: this would spur the debt crisis to spiral out of control, engulfing not only Portugal and Ireland, but also much larger economies such as Spain and Italy. Thus, on 10 May 2010, the EU unveiled a "plan" to deal with Greece's growing sovereign debt crisis.

### 4.1. The First Bailout Package: May 2010

The first round of crisis response measures focused on financial assistance from the Eurozone and the IMF, combined with austerity measures and reforms implemented by the Greek government. Central banks also played a role in providing liquidity in the region. As far as financial assistance was concerned, Eurozone leaders and the IMF announced a three-year package of €110 billion in loans to Greece at market-based interest rates. Of the €110 billion, the Eurozone countries pledged to contribute €80 billion (of which Germany contributed 27.9%, France 21%, Italy 18.4% and other Euro area governments the rest) while the IMF contributed €30 billion. The disbursement of funds was made conditional on implementation of economic reforms (*European Report*, 2010).

At the same time, in an effort to prevent the spread of the crisis beyond Greece, EU leaders created a new European mechanism for providing financial assistance to Eurozone member states under market pressures. The new mechanism, the European Financial Stability Fund (EFSF) consisted of two temporary, three-year lending facilities that could make loans totaling €500 billion to Eurozone members facing debt crises. The European Central Bank (ECB) also played a role in responding to the crisis: in order to increase confidence and lower spreads for Eurozone bonds under market pressure, the ECB announced that it would accept Greek government bonds as collateral, even if the rating agencies downgraded the debt to junk status. Between May 2010 and June 2011, the ECB purchased government bonds totaling €78 billion, of which €45 billion are estimated to have been Greek bonds. The ECB also provided substantial liquidity support to private banks in Greece and other countries in the Eurozone: ECB support for Greek banks climbed from €47 billion in January 2010 to €98 billion in May 2011, roughly 40% of Greece's 2011 GDP.

Finally, as a condition of financial support from the IMF and Eurozone countries, the Greek government committed to the implementation of ambitious fiscal consolidation measures and economic reforms. An austerity programme outlined in May 2010 aimed to reduce the government's budget deficit by 11 percentage points through 2013, bringing it below 3% of GDP by 2014. The programme's immediate objectives were a deep cut to public spending and enhanced revenue growth through tax increases and a crack-down on tax evasion. Most spending cuts were implemented in the civil service, including a reduction or freeze on civil service compensation and a civil service hiring freeze. On the revenue side, the government raised the average value-added tax rate and increased taxes on certain commodities (fuel, tobacco, and alcohol). Structural reforms pursued in 2010 to boost Greek competitiveness were focused on the rigid and highly fragmented labor market. Moreover, the government began implementing healthcare and pension reforms deemed vital to consolidating public finances; thus, in July 2010 the Greek parliament agreed to pension reform, including an increase in the average retirement age.

The first bailout package spurred hopes that such a show of financial firepower from the EU would be enough to deter speculative attacks by dispelling any chance of a Greek default. The idea was to give Greece time to sort out its economy so that the cost for it to borrow money commercially would come down. However, this did not happen, and intense market speculation led the ratings agencies to downgrade Greek debt to "junk". Due to particularly grim economic growth figures, and Greece's inability to borrow commercially, it was soon clear that Greece would require more assistance in order to avoid defaulting on its debt.

### 4.2. The Second Bailout: July 2011

In the spring of 2011, EU officials, the ECB, and the IMF debated for several weeks about what a second package for Greece would include. An agreement was reached under duress after a speculative attack on Italy in July renewed fears of contagion of the crisis. The second financial assistance package for Greece totaled €109 billion, and was to provide loans to Greece on more favorable terms than the first package (lower interest rate and longer maturities), as well as extend the maturities on existing Eurozone loans to Greece. It was also decided that in addition to more financial assistance and more austerity measures –which were to be imposed despite tremendous social backlash and turmoil– the holders of Greek bonds would also share in the crisis response by accepting some losses on their investments. Thus, European leaders and the Institute for International Finance (IIF) announced that holders of Greek bonds would contribute €50 billion through 2014 to the crisis response. Specifically, they would participate, on a voluntary basis, in bond exchanges and bond rollovers (€37 billion) and debt buybacks (€12.6 billion) to lower Greek debt payments over the short-term.

The Euro group also agreed to make the EFSF far more flexible and helpful as a crisis-solving instrument. EFSF lending would be at the much lower rate of the European Balance of Payment facility at around 3.5% and at a maturity of 15 to 30 years. The EFSF would also be able to act (with the appropriate conditionality) in a precautionary capacity, i.e. without a country being under an IMF programme. It would further be able to finance recapitalisations of financial institutions through earmarked loans to all Euro area governments. Finally, it would be able to intervene in the secondary bond markets with the consent of the ECB and based on the "mutual agreement" of the Euro area governments. Moreover, EU leaders agreed to create a permanent lending facility, the European Stability Mechanism (ESM), to replace the temporary facilities of the EFSF after they expired in mid-2013. It was decided that the ESM would not have preferred creditor status when it helped countries that had already been bailed out.

During this same period, the Commission and the Council agreed on some modifications to the Stability and Growth Pact, which were to be concluded by June 2011. These changes included: a reduction in debt ratios as a percentage of GDP; the decision that it would be the Commission, and not the Council, that would decide to apply a sanction to a member state with an excessive deficit; the harmonisation of accounting rules of public finances; a requirement for member states to submit each year a stability and convergence plan, explaining their medium-term budgetary strategies, and a commitment to prevent and correct macroeconomic imbalances. Just like the "Excessive Deficit Procedure", a new "Excessive Imbalance Procedure" would be introduced: if a high economic imbalance occurred, member states would first be warned and then sanctioned (up to 0.1% of GDP) if they did not tackle the imbalance. The Council would be able to revoke the decision of the Commission with a qualified majority.

As economic conditions worsened in the spring of 2011, the Greek parliament approved an additional round of austerity measures and structural reforms in June 2011. These measures were a necessary precondition for receiving the next disbursement of funds from the original Eurozone-IMF financial assistance package, as well as for securing a second assistance package. The cornerstone of Greece's so-called medium-term fiscal strategy (MTFS) was a consolidation programme through 2015 worth €28 billion (12% of GDP), including €6.5 billion (2.9% of GDP) of additional spending cuts and revenue measures to be implemented in 2011. The newly proposed consolidation measures aimed primarily to reduce over-staffing in the public sector, improve the financial performance of state-owned enterprises, and streamline social transfers. The other major component of the new fiscal strategy—and its most contentious—was an ambitious privatisation and public real estate development programme designed to raise €50 billion by 2015, including €15 billion by 2013. Concerns about the Greek government's administrative capacity led to discussions that the sale of public assets would be, quite unusually, overseen by an independent privatization authority, which was expected to include EU and IMF representatives.

However, the July 2011 deal unraveled and eventually broke down when it became clear that due to the deterioration of the Greek economic situation and the rapidly worsening market conditions it was extremely difficult to secure sufficient private sector involvement in the process. In October 2011, following long and arduous negotiations involving bankers, heads of state and central bankers, European leaders agreed on another plan to lower Greece's debt burden and to draw a line under the spiraling crisis. According to the deal, the private sector agreed to voluntarily accept a nominal 50% loss in its Greek government bond investments. This would reduce Greece's debt burden by €100 billion, cutting its debts from 160% to 120% of GDP by 2020. At the same time, the Eurozone would offer "credit enhancements" or sweeteners to the private sector totaling €3 billion. The aim was to complete negotiations on the package by the end of the year so that Greece would have a full, second financial aid programme worth €130 billion in place before 2012.

In addition to the deal on deeper private sector participation in Greece –which emerged after Sarkozy and Merkel personally engaged in the negotiations with bankers– Eurozone leaders also agreed to strengthen the EFSF by creating one or more Co-Investment Funds (CIF) which would combine public and private funding to provide additional liquidity and to enhance market capacity to fund loans. They also agreed to boost the firepower of the bailout fund to about €1 trillion.

Five days after the agreement on the deal, Prime Minister Papandreou announced that the package would be put to a referendum. The announcement of the referendum led to the freezing of the bailout package, while the country's political and economic environment witnessed unprecedented turmoil over the next months. An interim coalition government was formed in November 2011 under the leadership of Lucas Papademos –former Governor of the Bank of Greece and former Vice President of the European Central Bank– whose task was to oversee the necessary steps for Greece to secure the bailout/PSI deal that had been agreed in October.

### 4.3. New Deal: February 2012

In February 2012, after a long phase of political wrangling, the governing coalition agreed on the politically unpopular reform package, which was a prerequisite for Greece to qualify for the second bailout. The programme aimed to stabilise Greek government finances by cutting spending by 1.5% of economic output in 2012; in addition, the programme called for at least €19 billion in additional revenues from the privatisation of state assets, and contained measures to recapitalise Greek banks and boost lending. Despite explosive social protest, the programme was passed by the Greek parliament. Shortly after, Eurozone finance ministers announced that a deal had been reached to "secure Greece's future in the euro". Like the October 2011 programme, the new deal had two parts, the PSI and a new bailout extension.

Under the terms of the new PSI agreement, investors would hand in €206 billion in existing bonds for a series of new bonds worth a combined 53.5% of the original face value (total net present value loss is likely to approach 75-80%). A participation rate of at least 90% was necessary for the deal to be valid. The new Greek bonds would be governed by English law, meaning that the Greek government would not be able to change their regulation in the future. The deal would reduce Greece's debt burden from over 160% of GDP to 120.5% by 2020. National central banks agreed to pass on any potential future profits on their Greek sovereign bonds, netting the government about €1.8 billion. The European Central Bank also agreed to forgo any profits it might earn on its Greek bond portfolio –thought to amount to around €50 billion– by passing these profits through to national central banks, who could then distribute them to Greece. Moreover, a total of €130 billion in bailout funds was pledged to Greece.

Greece was also issued a checklist of reforms to finalise before it could receive any funding. Acceptance of the ten "prior actions" was required in order for the Greek leadership to convince its increasingly unsure and frustrated bailout partners that it was serious about implementing reforms. Greece has consistently failed to meet deficit and privatisation targets under its first €110 billion bailout, agreed in May 2010. Greece would also have to agree to an "enhanced and permanent presence in Athens", including more Commission and Troika officials. The government would also have to set aside money in a "segregated account" to meet future interest payments on the debt, effectively making Eurozone countries preferred creditors. Finally, the payment of the funds was conditional on a successful PSI bond swap reducing Greece's total debt burden.

## 5. Evaluation of the EU's policy response to the Greek debt crisis

There is no doubt that the support provided to Greece by the EU (together with the IMF and the European Central Bank) through the bailout packages thwarted what appeared to be the country's inevitable default on its debt. However, it is also clear that a long-term solution to Greece's problems has not been guaranteed, and this uncertainty has taken its toll on the stability of the Economic and Monetary Union. Crucially, as discussed above, although Greece's troubles were the most extreme, they were not unique, and they highlighted problems in the Eurozone that also applied to other economies. Thus, Italy, Portugal, Spain and Ireland shared many of Greece's macroeconomic characteristics and structural problems, including high budget deficits and huge long-term debts.

The fact that the macroeconomic imbalances that characterise the countries of Southern Europe did not just suddenly appear in the post-2008 period but were evident since the launch of the single currency, raises questions concerning the governance of the Eurozone both before and during the crisis. It is clear that the EU's policy response to the Greek crisis is directly linked to the overall management of the Eurozone *per se* since its inception. Thus, all the flaws and shortcomings that were inherent in the planning and management of the Eurozone –including the basic tenets of economic and monetary union– have impacted and influenced the handling of the Greek crisis as well.

Theoretically, the smooth functioning of an economic and monetary union requires *inter alia* that a) its members have a certain level of economic homogeneity, b) there is a satisfactory coordination of national economic policies, c) the economic administration of the union is well-planned, and d) there is a well thought-out crisis response plan. When one considers these requirements, and in light of the heterogeneity of the Eurozone members, one would expect that the coordination of national economic policies and the overall administration of the Eurozone would be a top priority for the Eurozone leaders. In fact, from the very early years of the common currency's existence there was a clear and growing divergence between the Eurozone members' national economic policies, and a parallel inability of the mechanism to realign them. As was discussed above, almost as soon as the euro had been introduced, fiscal policies were broadly relaxed, and several countries –including Greece, Portugal, Italy, France and Germany– breached the 3% threshold for deficits. The Commission failed to impose the appropriate penalties, thus setting a negative precedent and showing that neither the "preventive" nor the "corrective" arms of the Stability and Growth Pact represented effective rules on budget deficits or public debt in the Eurozone. Hence, despite being systematically in violation of the convergence criteria, several countries continued to enjoy the benefits of membership in the Eurozone, without being pressured to adjust their fiscal policies.

At the same time, in addition to growing fiscal pressures, Greece –and other South European economies– started exhibiting serious macroeconomic and structural imbalances, which contributed to an increasing divergence from the North European economies. However, despite evident cause for concern, the implementation and enforcement of the terms of the Growth and Stability Pact remained lenient and ineffective, while the scope for tighter surveillance and increased peer pressure was not used in a decisive manner either. Although the Commission reprimanded member states in violation of the deficit and debt limits and urged them to consolidate public finances, it never imposed financial sanctions for these violations. Moreover, the entire system lacked a support mechanism for EMU countries under duress, as well as a means to protect and shield the Eurozone from external threats. Whether these oversights were due to over-optimistic perceptions or simply short-sightedness, the fact remains that from the very beginning the lenient management of the Eurozone and the lack of tight surveillance of individual Eurozone members allowed the creation and accumulation of potentially destabilizing macroeconomic imbalances.

When the global economic crisis revealed the full scale of the economic problems of Ireland and the South European countries, the EU was not prepared to deal with a crisis of this magnitude. There was no coherent action plan, no financial support mechanism – the fact that the IMF's help was solicited in the Greek bailout package is indicative of the EU's lack of appropriate response mechanisms. As discussed above, under extreme duress and under the specter of a catastrophic default, Greece received a significant financial assistance package, which was underscored by the country's commitment to undertake ambitious fiscal consolidation measures and economic/structural reforms. The motivation behind the bailout package was twofold: first, it was hoped that this demonstration of European solidarity and financial firepower would be enough to deter speculative attacks, by dispelling any chance of a Greek default; and second, it was a way to buy more time, to give Greece a chance to sort out its economy while the EU leaders evaluated the unprecedented situation and tried to construct an action plan. However, both aspects of the plan failed. As intense market speculation led the ratings agencies to downgrade Greek debt to "junk", Greece slipped further into recession and closer to default, while the debt crisis threatened to spiral out of control and engulf not only the countries of Southern Europe, but Ireland as well.

Many analysts attribute the poor results of Greece's bailout deal to the reluctance of several Eurozone countries to participate actively in the process, as well as the ambivalence felt over "rewarding" a country that consistently violated the terms of the Stability and Growth Pact (moral hazard). However, the above analysis points to other reasons for this failure, namely a) the lack of a convincing and reliable management structure of the Eurozone, b) the inadequate coordination of national economic policies, and c) the lack of a warning and intervention system that would be activated when a Eurozone member state diverged from the SGP criteria and exhibited macroeconomic imbalances.

## Prospects for the future

The global financial and economic crisis, as well as the crisis in Greece, have proven that the argument "too big to fail" cannot be taken for granted even when a large grouping of countries such as the Eurozone is concerned. Having learned by their mishaps, the EU and the Eurozone responded by promoting two important initiatives. The first was the creation of a "safety network" to provide funding for Eurozone countries under market pressure. Thus, the European Stability Mechanism (ESM) was conceived as a permanent lending facility, which would replace the temporary facilities of the EFSF after they expired in mid-2013. The second initiative was the promotion of a deeper coordination of national economic policies as well as a broadening of macroeconomic supervision of member states. The experiences of the past years have indicated that stability in the Eurozone is not only linked to the fiscal conditions of its members. Other factors that are inherent in an economy's macroeconomic imbalances and competitiveness (e.g. current account deficits, real effective exchange rate, nominal labour costs) as well as internal factors (such as private sector debt, real estate prices, and unemployment) also play an important role. For this reason, the new "Excessive Imbalance Procedure" is to be introduced this year, whereby member states will first be warned and then sanctioned if a high economic imbalance occurs, thus tackling the problem before it spreads and causes further damage to the Eurozone. This initiative will enhance the administration and management of the Eurozone, while limiting further the possibility of each member state exercising its own economic policy. In any case, the positive or negative repercussions of this new and yet-untested method of administration of the Eurozone remain to be evaluated.

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