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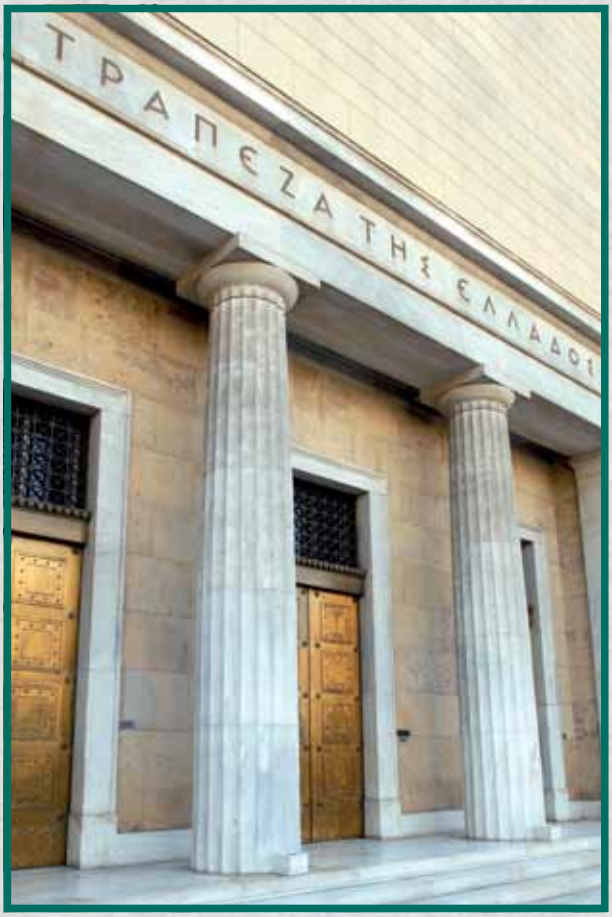
No 42



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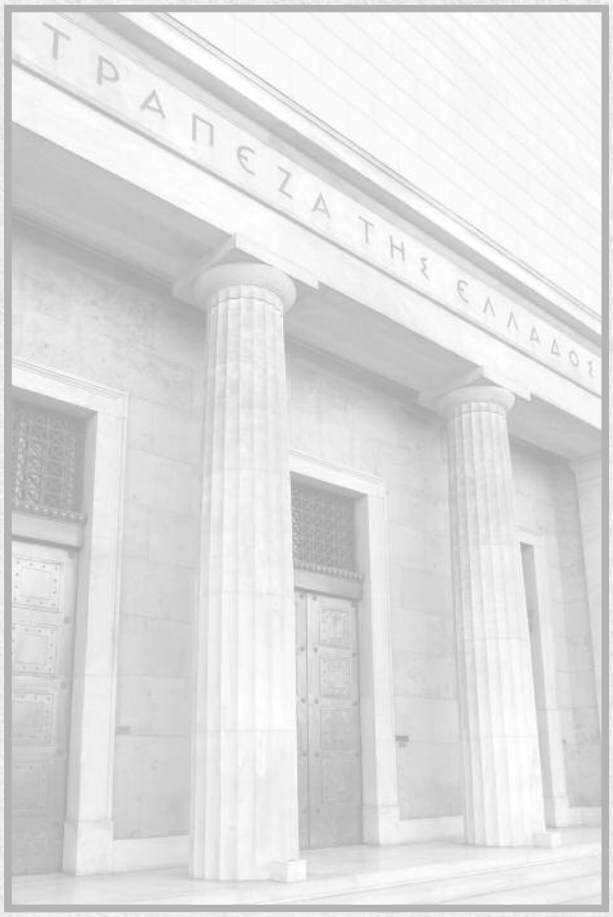

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CONTENTS

TOWARDS A NEW GROWTH MODEL FOR TOURISM: STRUCTURAL REFORMS AND THE TOURISM PRODUCT IN GREECE DURING THE CRISIS (2008-2014)[1]

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I INTRODUCTION

The robust performance of the Greek tourism industry in the past few years has highlighted Greece as a major destination in the European and global tourism markets. According to the latest available data from the World Tourism Organisation (WTO 2015), in 2014 Greece ranked 15th (from 16th in 2013) in international arrivals and 19th in tourism receipts among 50 countries. According to the World Economic Forum (WEF 2015), in 2014 Greece ranked 31st in tourism competitiveness (from 32nd in 2013) among 141 countries and 18th (from 22nd in 2013) among European countries, on the basis of the Travel and Tourism Competitiveness Index.[2] Moreover, the prospects of the Greek tourism industry appear to be very bright: the World Travel and Tourism Council (WTTC 2015) projects that by 2025 the direct contribution of tourism to GDP in Greece will rise by 3.6% per annum, on average (compared with 2.8% in Europe as a whole), coming to 7.9% of GDP in 2025 (against a European average of 3.6%).

In view of the importance of the tourism industry for the Greek economy, a number of recent studies deal with various components of the Greek tourism product and its dynamics. Paratsiokas and Danchev (2012), using primary data and input-output tables on the Greek economy for the year 2010, estimate that tourism contributes (both directly and indirectly) 15.1% to GDP and accounts for 5% of total indirect tax revenue in Greece. Direct and indirect tourism employment is estimated at 446,000 jobs, accounting for 9% of total employment; including jobs in related sectors, tourism supports 741,000 jobs overall, or 16% of total employment. In terms of macroeconomic multiplier effects, they estimate that for every €1,000 of travel spending, GDP increases by €2,200. The authors also find that the sectors which benefit the most from growth in tourism are retail and wholesale trade, financial services, real estate management services, construction, and manufacturing.

Markaki et al. (2014) review the performance of Greek tourism in 2013. In their conclusions, apart from the recent positive developments in tourism aggregates, they point out an increased seasonality in tourism activity, which is also associated with a rise in international inbound tourism relative to domestic tourism. According to the authors, suggested lines of action towards further improving the performance of tourism include upgrading hotel infrastructure, enriching the tourism product and better promoting historical and archaeological sites.

On the other hand, Tsekeris and Skoultsos (2015), using data for 2014, estimate that 13.2% of income from inbound tourism is re-exported. Their policy recommendations for further reducing this percentage include: encouraging the consumption of domestic agricultural products, better planning and promoting the Integrated Tourism Development Areas, as well as revamping all-inclusive packages with a view to generating higher value added in the country's economy.

Gazopoulou (2012), using data covering the period from 1980 to 2010, explores the sensi-

1 The views expressed in this study are those of the authors and do not necessarily reflect those of the Bank of Greece. The authors would like to thank Heather Gibson and Hiona Balfoussia for their useful comments and remarks.

2 This index is the weighted score of a country in three main areas: (i) regulatory framework; (ii) business environment and infrastructure; and (iii) human, cultural and natural resources (WEF 2015).

tivity of tourist arrivals to changes in the prices of key tourism services (hotel accommodation/ restaurants) as a result of changes in VAT rates. She concludes that such price changes have only a negligible effect on the number of tourists coming to Greece and she advocates policies that would improve tourism infrastructure (such as the upgrading of local airports).

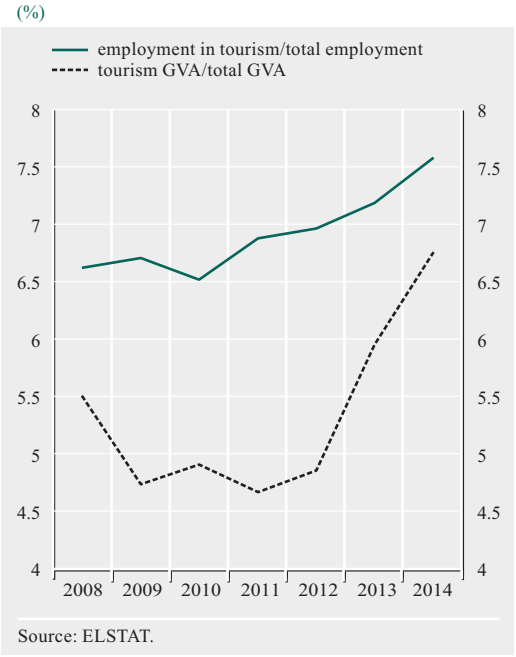
The present study uses data covering the 2008-2014 period and aims to analyse the qualitative changes that have been observed in Greece's tourism product, partly as a result of structural reforms in the tourism sector. The study is structured as follows: Section 2 presents the contribution of tourism to Greece's economic activity, as well as the recent trends of key aggregates. Section 3 describes the main structural reforms that took place in the tourism sector over the past few years. Section 4 outlines the qualitative changes which are observed in tourism. The analysis leads to concrete policy recommendations, as set out in Section 5.

2 THE IMPORTANCE OF TOURISM FOR ECONOMIC ACTIVITY IN GREECE, AND THE RECENT TRENDS

Tourism is one of the key services sector in the Greek economy. On the demand side, travel receipts – spending by foreign visitors during their stay in Greece – contributed 5% to nominal GDP, on average, over the 2008-2014 period, and this contribution shows a moderate upward trend in the past few years (from 5% in 2008 to 7% in 2014). On the supply side, the sector of "accommodation and food service activities" (codes 55-56 of national accounts) had a share of 5.3% in total gross value added (2008-2014 average), and this share has grown significantly over the past two years, reaching almost 7% (see Chart 1). Turning to total employment, the sector contributed 6.9%, on average, over the same period.

The contribution of tourism is estimated to be even higher if account is also taken of its direct and indirect impact (i.e. impact on other related activity sectors, as defined in tourism satellite accounts[3]). Thus, the overall (direct and indirect) contribution of tourism in 2014 is estimated at 17.3% of total GDP and at 19.4% of employment (WTTC 2015).[4] According to those estimates, the contribution of tourism to GDP and employment in Greece is the highest among OECD countries (OECD 2014).[5]

Chart 1 Shares of the sector "accommodation and food service activities" in total employment and total gross value added (GVA)



Source: ELSTAT.

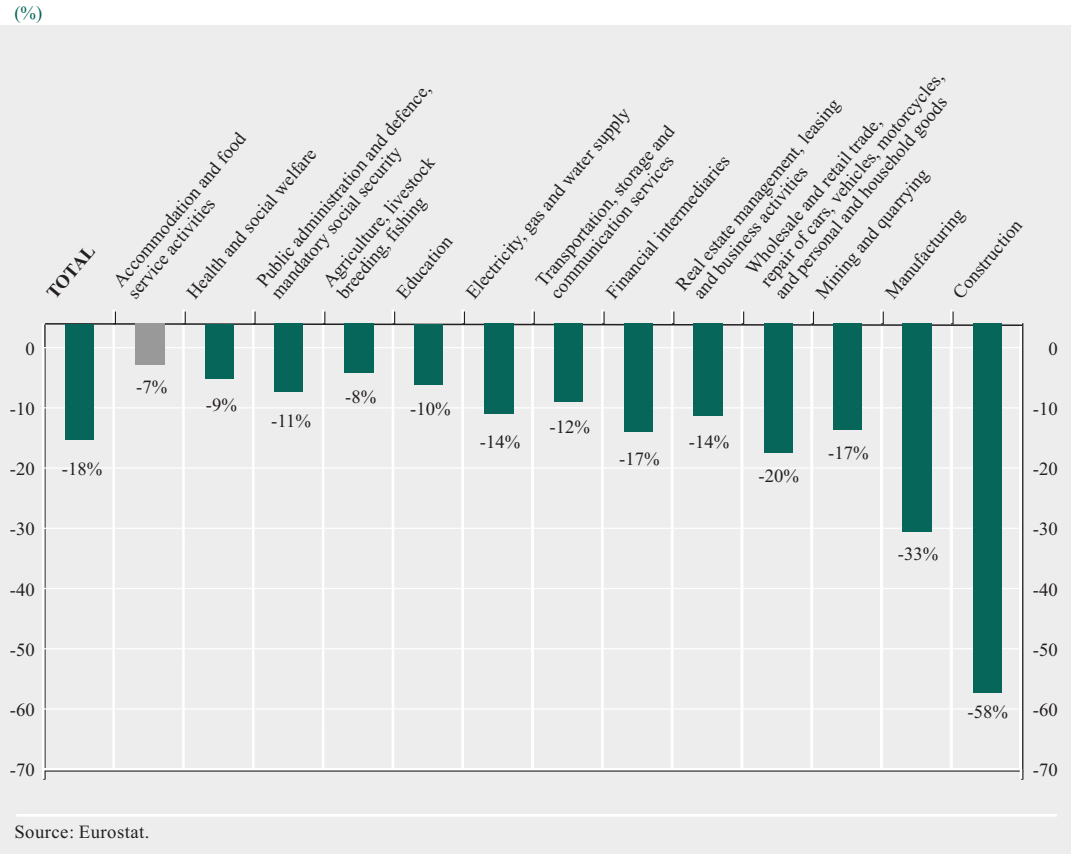
In recent years (2013-2014), visitor arrivals and tourism receipts increased further, with arrivals (excluding cruise data) reaching in

3 The methodology of tourism satellite accounts (TSAs) is an approach that estimates the impact of tourism on the economy relative to the other activity sectors; it enables comparisons at the national and the regional level, as TSAs can be associated, from a functional perspective, with the input-output tables on the economy and the methodological framework for tourist consumption. In general, satellite accounts measure the performance of an industry in the economy, the value of goods and services produced, as well as the number of jobs created. According to OECD methodology, TSAs comprise 14 tables, linking tourism supply and demand, thereby providing a tool for identifying the direct and indirect value added attributable to tourism.

4 WTTC Tourism Satellite Accounts Survey (2015) for Greece.

5 On average, tourism accounts for 4.7% of GDP and 6% of employment in OECD countries (OECD 2014).

Chart 2 Changes in employment across sectors of the Greek economy (2008-2014)



Source: Eurostat.

2014 for the second consecutive year a record-high level of around 22 million. In more detail, in 2014 arrivals (excluding cruise data) rose by 23%, and travel receipts by 12.4% at constant prices.[6] Cruise passenger arrivals increased by 57% between 2012 and 2014. The increase in international arrivals and travel receipts (excluding cruise data) continued through 2015, when Greece welcomed 23.6 million foreign visitors (up by 7.1% year-on-year) and received €13 billion at constant prices (up by 7.7% year-on-year).

As a result of the growth of tourism in recent years, the shares of the "accommodation and food services" sector in gross value added and employment have risen further (see Chart 1). Moreover, the tourism sector saw the smallest job losses among other main sectors of the economy over the 2008-2014 period: tourism employment fell by 7%, whereas much sharper declines of 58%, 33% and 20% were recorded in construction, manufacturing, and retail and wholesale trade, respectively (see Chart 2).

Possible factors behind the recent increase in arrivals and travel receipts, hence the higher shares of tourism-related sectors in GDP, are the following:

(1) Improved price competitiveness of the tourism product, as a result of a decline in the prices of tourism and associated services. This development was also supported by: (a) more competitive hotel pricing, in response to weak tourism demand during the first years of the

6 As regards the Greek economy's export performance, in 2014 travel receipts represented 43% of total receipts in the services balance, while net tourism receipts (i.e. receipts minus payments) accounted for 58% of the services surplus.

crisis;[7] (b) a 2.5% drop in prices across all tourism-related services (comprising accommodation, food, transport and cultural-entertainment services) over the 2012-2014 period, mainly as a result of a decline in production costs, which was in turn supported by structural reforms in the labour and product markets (lower labour costs, reduced tourist transportation costs and taxi fares); and (c) the overall deflationary environment in the context of the recession: HICP fell by 2.2% over the 2012-2014 period.[8]

(2) Greater differentiation of the tourism product: an analysis of recent data on Greek tourism also reveals qualitative changes in the tourism product, such as promotion and exploitation of the country's cultural assets and heritage, changes in seasonality patterns, a shift towards "new" markets and the emergence of "new" destinations. These changes support the case that part of the recent growth in tourism is attributable to the structural reforms in the sector.

(3) Exogenous developments: the rise in tourism, particularly in 2013-2014, is also associated with conjunctural factors, as instability in competitive tourist destinations in the East Mediterranean shifted tourist flows into Greece.

The first two factors can be influenced by policy measures, whereas the third factor is purely exogenous, as it is linked with international developments.

3 STRUCTURAL REFORMS IN TOURISM

A significant development towards upgrading the tourism product is the establishment of a separate Ministry of Tourism with extended responsibilities in June 2012 (OECD 2014). In February 2015, the Ministry was integrated into the Ministry of Economy, Infrastructure, Shipping and Tourism (renamed Ministry of Economy, Development and Tourism in September 2015), but maintained its extended responsibilities.

During the 2010-2013 period, a number of legislative measures were adopted, which improved the framework for the functioning of the tourism market, including, among other things:

(1) Simplification of visa procedures for emerging markets, such as Russia, Turkey and China, with a view to eliminating the long delays in visa processing which have often been reported as a factor behind the loss of tourist arrivals.

(2) Measures encouraging the development of cruise tourism and the abolition of cabotage fees. The lifting of cabotage restrictions involves the elimination of protectionist policies for domestic shipping, the abolition of the requirements that only Greek-crewed ships may operate in Greek territorial waters, as well as the permission to non-EU flag cruise ships to homeport in Greece.

(3) Establishment, within the Greek National Tourism Organisation (GNTO/EOT), of the Special Service for Promoting and Licencing Tourism Enterprises, a "one-stop shop" for tourism businesses.[9]

(4) Simplification of licensing procedures for all tourism businesses,[10] in order to reduce administrative costs and licensing lead times, speed up the procedures for starting a tourism business (including any type of licence, e.g. for establishment, operation, commencement of activity and environmental permits), and to ensure electronic and, in some cases, same-day processing of licensing applications.

7 For instance, in Athens, which has the highest share of arrivals nationwide, average hotel prices dropped by about 16% between 2009 and 2014 (Trivago data on the 50 most popular cities in Europe), making Athens more competitive as a European destination, given that average hotel prices in the 50 most popular European cities rose by 6% during the same period. Trivago data for 2014 suggest that Athens ranks 14th among the 50 most popular European cities in terms of the lowest average hotel prices, up from 24th place in 2009.

8 Gazopoulou (2012) of course shows that tourist arrivals are not so sensitive to price changes, but are rather influenced by non-price factors such as improvements in infrastructures.

9 Under Article 12 of Law 4002/2011 and Article 148 of Law 4070/2012.

10 Law 4276/2014 (Government Gazette A 155/30 July 2014).

(5) Introduction of a new form of integrated tourism enterprises, the Complex Tourist Accommodation.[11] This refers to five-star hotels built on land plots of no less than 150,000 sq.m. and combining (a) furnished tourist residences (villas) with a minimum surface area of 100 sq.m. available for sale or long-term lease as separate properties; and (b) special tourism infrastructure, such as golf courses, conference centres, marinas, thalassotherapy centres and spas, rejuvenation centres, etc.

(6) Liberalisation of the tourist guide profession,[12] allowing archaeologists and historians to become tourist guides, which was not permitted in the past;

(7) Streamlining of procedures and elimination of restrictions on the operation of travel agencies and car rental companies.[13]

(8) Introduction of extended visiting hours for museums and archaeological sites during the spring period.

The above structural reforms are geared towards enhancing the flexibility of the tourism market and strengthening long-term potential growth by removing existing restrictions and increasing competition, which in turn will lead to lower prices for tourism services. Moreover, they are aimed at spreading tourism demand across the year through better promotion and marketing of the tourism product.

Key actions to support the further development of tourism include: (a) increasing the number of target markets through appropriate marketing policies and market-specific advertising campaigns (OECD 2014); and (b) extending the tourist season throughout the year, by developing the tourism product beyond the traditional "sun and sea" model, creating diversified products, and focusing on alternative forms of tourism such as cultural, religious and medical tourism.

The methods applied to achieve those targets tend to rely on modern digital and social media. As a matter of fact, tourist satisfaction surveys (Ikkos 2009 and 2013) showed that 65% of reservations in two- to five-star hotels in the region of Attica were made on the internet in 2013, up from 40% in 2009. The adoption and use of new internet-based technologies can be expected to contribute to higher productivity and further growth in this sector.[14]

4 TOWARDS A DIVERSIFICATION OF THE TOURISM PRODUCT

4.1 NEW MARKETS

Opening up to new markets (Russia, Turkey)

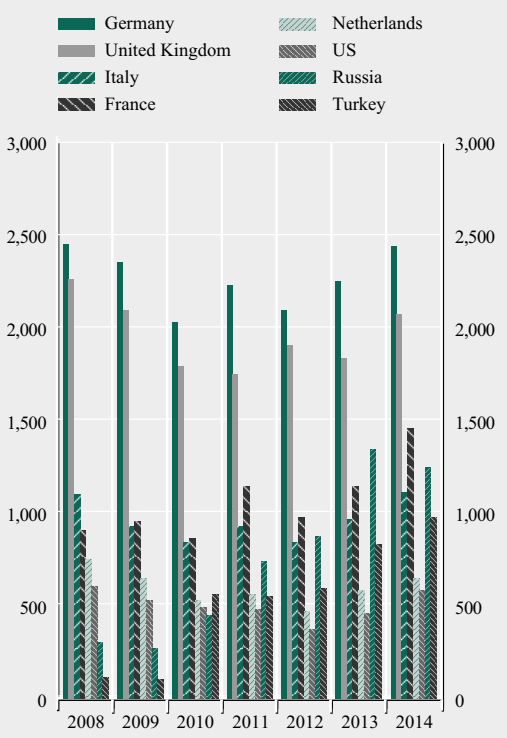
Demand for the Greek tourism product mainly stems from the European continent, with a rising share of visitors from Europe over the past decade (2005: 81%, 2014: 85%).[15] In 2014, arrivals from European countries stood at 18.8 million (85% of total arrivals), of which 74% came from the EU-28 and 44% from euro area countries.

However, shares by country of origin varied, particularly in the period after the simplification of tourist visa procedures. Germany and the United Kingdom (UK) have traditionally been the most important markets of origin for foreign visitors to Greece. In the past five years, however, new markets of origin have emerged, mainly Russia, Turkey and the neighbouring Balkan countries, from which Greece attracts a substantial number of

11 As provided for by Laws 4179/2013 (Government Gazette A 175/8 August 2013) and 4002/2011 (Government Gazette A 180/22 August 2011), as well as Ministerial Decision 177 (Government Gazette B 319/2012), Joint Ministerial Decision 278 (Government Gazette B 615/2012) and Ministerial Decision 125 (Government Gazette B 195/2012).
12 Law 4093/2012 (Government Gazette A 222/12 November 2012) "Adoption of the Medium-Term Fiscal Strategy Framework 2013-2016 – Emergency measures for the implementation of Law 4046/2012 and the Medium-Term Fiscal Strategy Framework 2013-2016".
13 Law 4093/2012 (Government Gazette A 222/12 November 2012) and Law 4276/2014 (Government Gazette A 155/30 July 2014).
14 The use of the internet is estimated to have positive effects on productivity in the services sector (Duarte and Restuccia 2010).
15 Data from the Border Survey conducted by the Bank of Greece.

Chart 3 Tourist arrivals by country of origin (2008-2014)

(in thousand travellers)



Source: Bank of Greece.

visitors. Arrivals from these countries more than offset the declining tourist inflows from certain other countries (e.g. Spain, Austria, Cyprus). Arrivals from Russia and Turkey, in particular, have increased strongly in recent years (average annual growth rate of 32.3% for Russia and 15.7% for Turkey in 2011-2014). These developments have changed the relative importance of inbound tourism markets for Greece. Whereas the top six places were held by Germany, the UK, France, Italy, the Netherlands and the US (together accounting for around 50% of arrivals) until 2009, Germany, the UK, France, Russia, Italy and Turkey make the top-six list in 2014 (see Chart 3). The new entries (Russia and Turkey) are associated with improved economic activity and higher demand in those countries, but have probably also been supported by the simplification of tourist visa procedures since 2010.

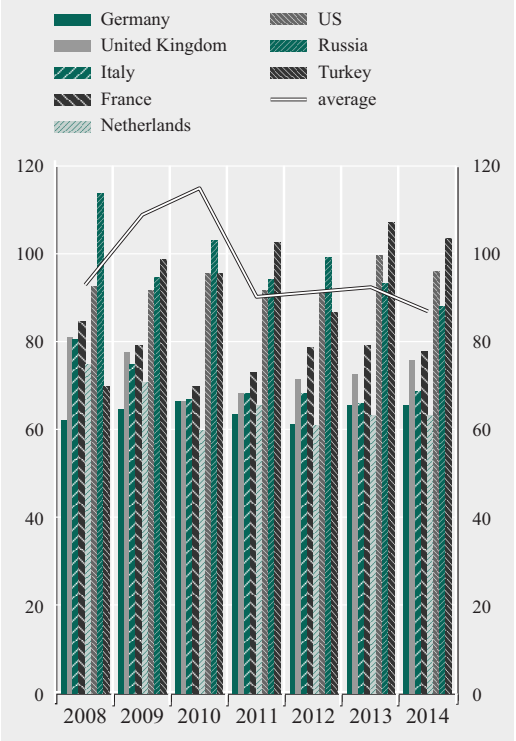
Furthermore, over the past five years double-digit growth rates have been recorded in arrivals from other non-traditional inbound tourism markets, such as Japan, China, Israel, as well as certain Arab countries (United Arab Emirates, Bahrain, Qatar), although their shares in total arrivals still remain low. This highlights the existence of alternative markets, which Greece could exploit in order to counterbalance variations of tourism demand from European countries.

Opening up to new markets with high-income travellers

A closer analysis of tourism expenditure data from the Border Survey conducted by the Bank of Greece reveals that inbound flows from the two major new markets (Russia and Turkey) are very profitable sources of tourism revenue. These two countries, along with the US, show

Chart 4 Expenditure per overnight stay (2008-2014)

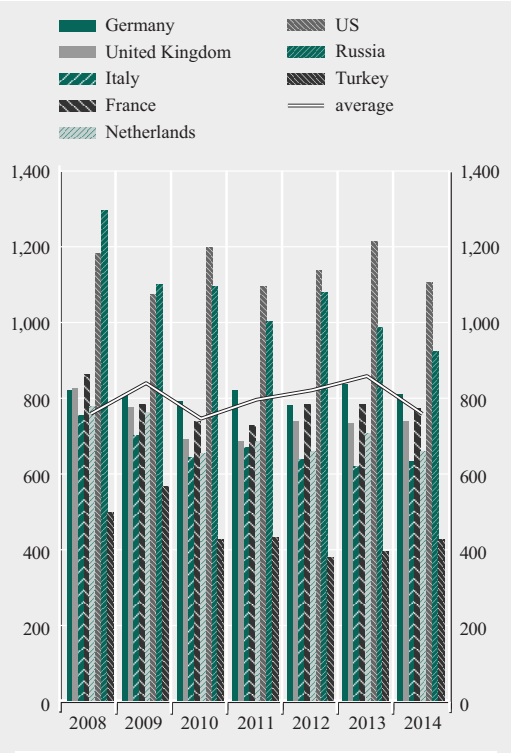
(in euro)



Source: Bank of Greece.

Chart 5 Expenditure per trip (2008-2014)

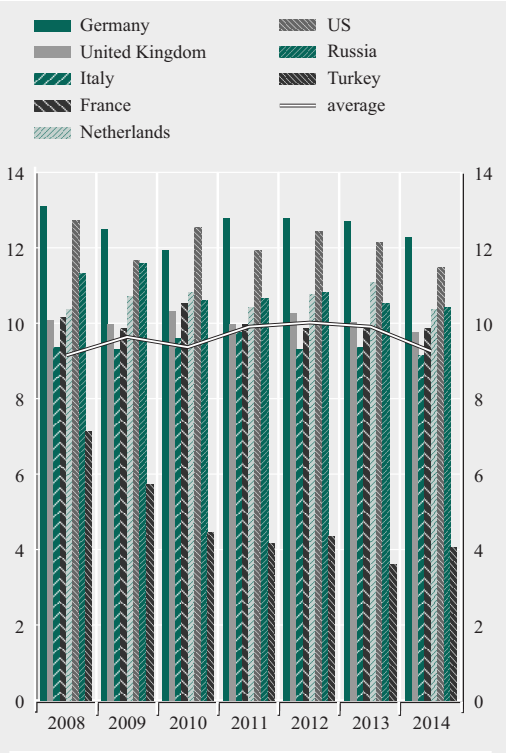
(in euro)



Source: Bank of Greece.

Chart 6 Average length of stay (2008-2014)

(in days)



Source: Bank of Greece.

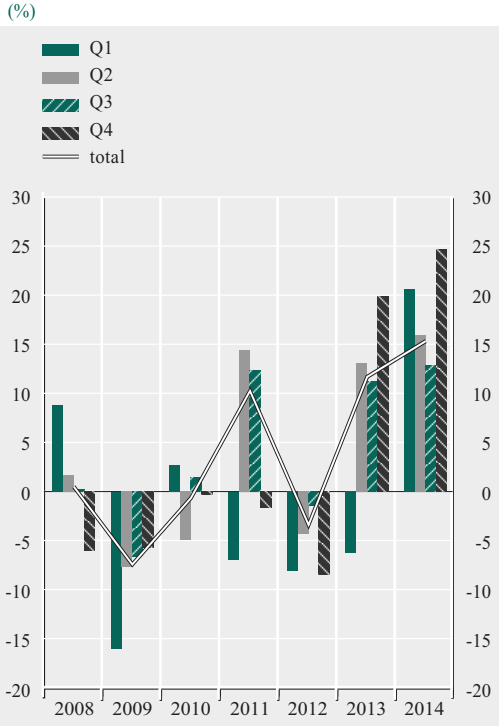
the highest spending per overnight stay (see Chart 4), suggesting that Russian and Turkish visitors are likely to belong to high-income groups.

The picture does not change drastically when one looks at spending per trip (see Chart 5) and average length of stay per trip (see Chart 6) for visitors from the top eight countries of origin. Russia and the US again top the list, while the low spending per trip observed for Turkish visitors is largely due to low transport costs and short length of stay. Spending per trip and per overnight stay for Russian visitors has dropped considerably relative to 2008, as a result of the economic crisis in Russia during the past few years. Still, Russian tourists remain the second biggest spenders per overnight stay and per trip in 2014, implying that they are likely to belong to high-income groups, above those of visitors from other countries.

The slight fall in spending per trip and per overnight stay during the period under review is largely explained by lower prices of Greek tourism services (i.e. accommodation and other tourism-related services).

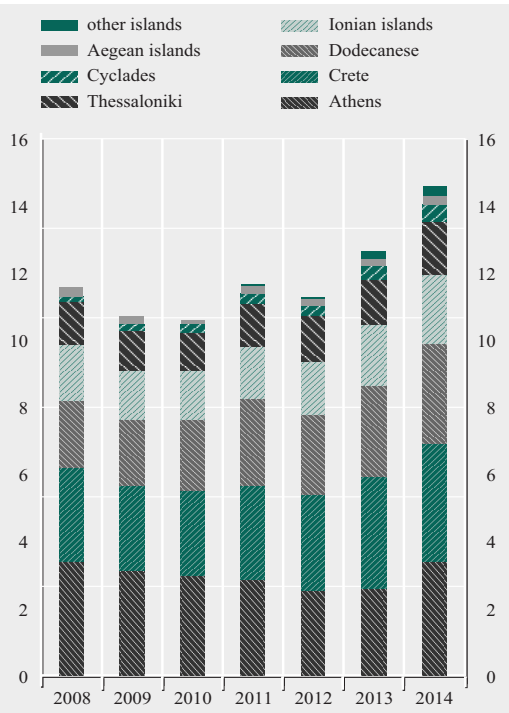
Turning to the length of stay, visitors from Germany and the US tend to stay the longest per trip. Conversely, neighbouring countries —Turkey and, to a lesser extent, Italy— exhibit the shortest average length of stay (see Chart 6). This may reflect the fact that the low cost of transport from the neighbouring Turkish coastline, as well as the relatively inexpensive ferry crossings from Italy, make short-stay trips more affordable. On the other hand, long and costly flights (e.g. from the US) justify a longer stay in the travel destination rather than a few-days trip. Overall, the average length of stay appears to be broadly stable over the reviewed period, with the exception of visitors from

Chart 7 Quarterly changes in tourist arrivals (2008-2014)



Source: SETE.

Chart 8 Number of travellers by destination (2008-2014)



Source: SETE, Bank of Greece calculations.

Turkey, whose shorter length of stay from 2010 onwards may be related with the simplification of tourist visa procedures that has encouraged Turkish residents to visit Greece even for one or two days.

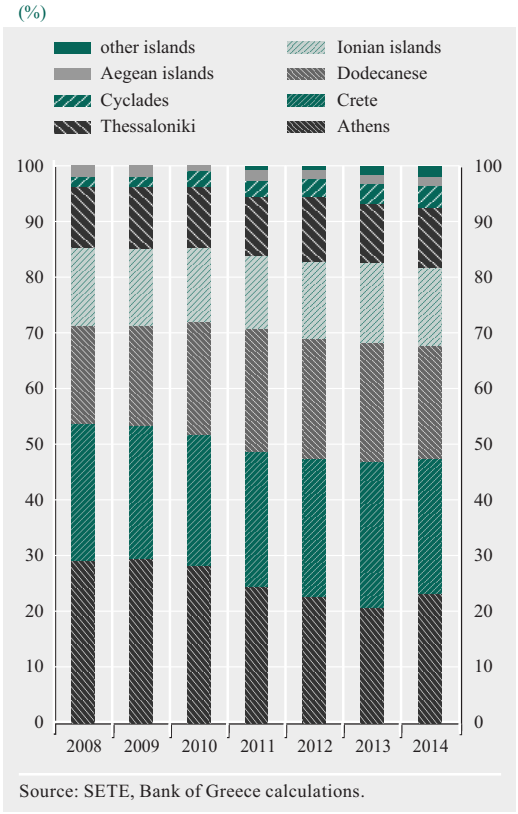
4.2 EXTENSION OF THE TOURIST SEASON

The breakdown of airport arrivals provides further insights into the qualitative evolution of tourism in the recent period.[16] Air transport has typically been the main means of transport used by tourists coming to Greece. Out of a total of 22 million non-residents that Greece welcomed in 2014, 64% arrived by air, 33% by road and 3% by sea, while the use of rail transportation was negligible.

According to the available data, airport arrivals rose by 12% and 15% in 2013 and 2014, respectively (see Chart 7), supported by increased arrivals during non-peak periods (the first and fourth quarters of each year). This suggests an extension of the tourist season and/or the promotion of alternative forms of tourism beyond the traditional "sun and sea" model. It should be noted that the extension of the tourist season can boost tourism activity without requiring large capital investment in new accommodation capacity. However, a more permanent transition to a year-round tourist season calls for substantial investment in organisation and skills, as the quality of the tourism product is determined by the level of services offered, the human resources engaged in the industry, as well as the overall tourism conscience of stakeholders and the society at large. Against this background, human resources management and development plays a key role in the competitiveness of the tourism product, as tourism services depend crucially on the human factor.

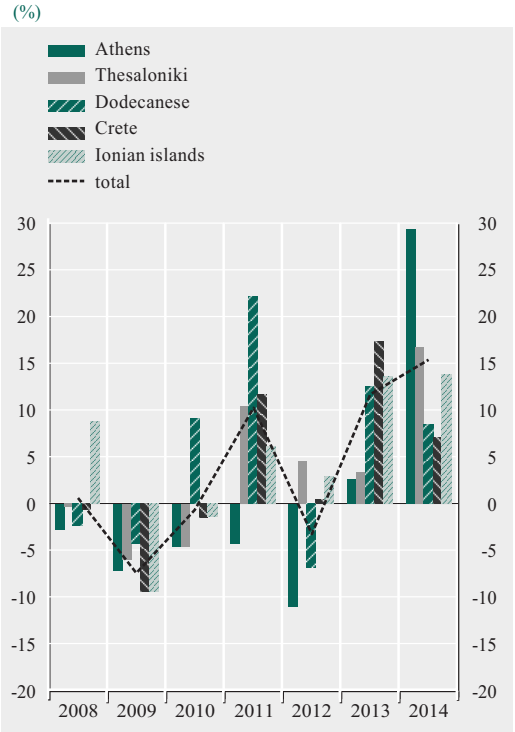
16 Greek Tourism Confederation (SETE) data.

Chart 9 Tourist arrivals by destination (2008-2014)



Source: SETE, Bank of Greece calculations.

Chart 10 Changes in tourist arrivals by destination (2008-2014)



Source: SETE, Bank of Greece calculations.

4.3 GEOGRAPHICAL DIVERSIFICATION OF THE TOURISM PRODUCT

The analysis of arrivals by destination points to minor differences in the geographical breakdown of the tourism product over time (see Charts 8 and 9). In the 2008-2014 period, the lion's share goes to Crete and Athens —although the latter is not necessarily the end destination— followed by the Dodecanese, the Ionian Islands and Thessaloniki. In 2014, Crete had the largest share (24%), followed by Athens (23%).

An examination of changes in arrivals at the five major tourist destinations sheds light on other aspects of the recent rise in tourism (see Chart 10): a significant increase in city breaks is observed, with Athens and Thessaloniki showing the largest percentage increases (27% and 16%, respectively) in arrivals, far outperforming other Greek destinations in 2014, relative to 2013, when they had seen the weakest increases. Besides, hotel customer satisfaction surveys (Ikkos 2009 and 2013) suggest that the average length of stay in Athens increased from 3.92 days in 2009 to 4.5 days in 2013. The strong rebound of arrivals in Athens followed a period of five years (2008-2012), when Athens had been receiving less and less visitors, largely owing to the 2008-2009 crisis and the political uncertainty that prevailed in 2010 and 2012.

The increase in city break tourism may have been supported by the recent structural reforms, such as the Sunday opening of shops and the liberalisation of tourism professions (e.g. tour guides). Increased arrivals of urban tourists may also be associated with more competitive pricing policies in the case of Athens (see footnote 7) and with the promo-

tion of significant elements (Ottoman and Jewish) of the cultural heritage of Thessaloniki.

4.4 PROMOTION OF THE CULTURAL TOURISM PRODUCT

A breakdown of travel receipts by trip purpose shows that the share of leisure trips increased to 84% in 2014, from 80% in 2008 (see Chart 11). This rise is an additional indicator of a buoyant tourism sector.

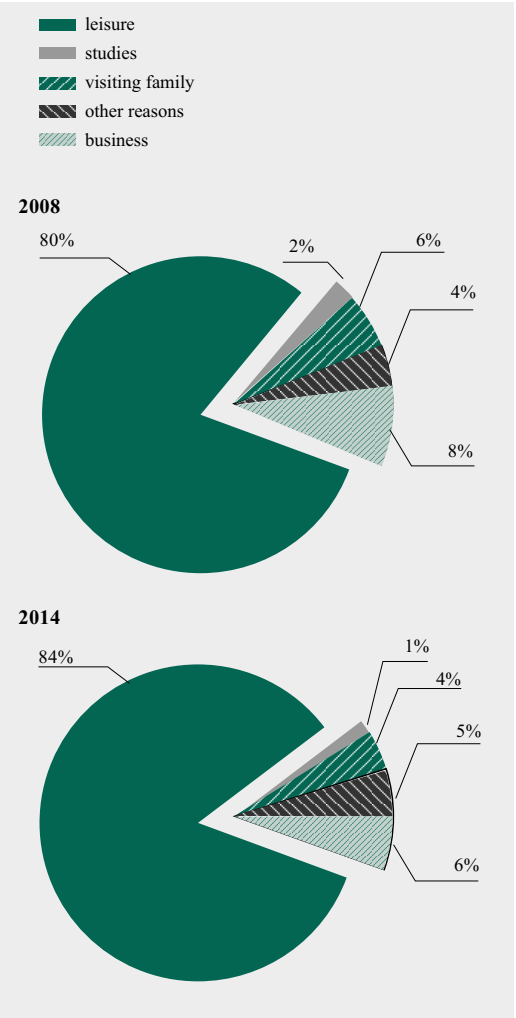
A large share of inbound leisure visitors are interested in Greece's cultural heritage and history. On the basis of a recent survey (Ikkos 2013), archaeological sites and culture are a major pull factor for leisure visitors.[17] Over the 2008-2014 period, visits to archaeological sites surged by 60% (from 6,217,302 visitors in 2008 to 9,953,161 in 2014), peaking in 2010-2014, following the implementation of structural reforms in the tourism sector (see Chart 12). However, this increase did not translate in a similar rise in the corresponding receipts, which grew by a mere 6%. This may reflect changes in the pricing policy of archaeological sites (reduced entrance fees for special groups, free tickets, etc.).

The strong rise observed in city breaks is consistent with the rising numbers of visitors to the archaeological sites of Athens and Thessaloniki, up by 89% for Athens over the 2008-2014 period and by 51% for Thessaloniki between 2013 (earliest available year) and 2014.

Turning to the museums across the country (see Chart 13), visitors more than doubled and receipts grew by more than 50%. The rise in the number of visitors of archaeological sites and museums may also have been driven by the structural reforms in the tourism sector during the recent years, including the opening-up of cultural tourism professions (e.g. tour guides) and expanded visiting hours for museums and archaeological sites.

Chart 11 Tourism receipts by purpose of trip

(% of total tourism receipts)



Source: Bank of Greece.

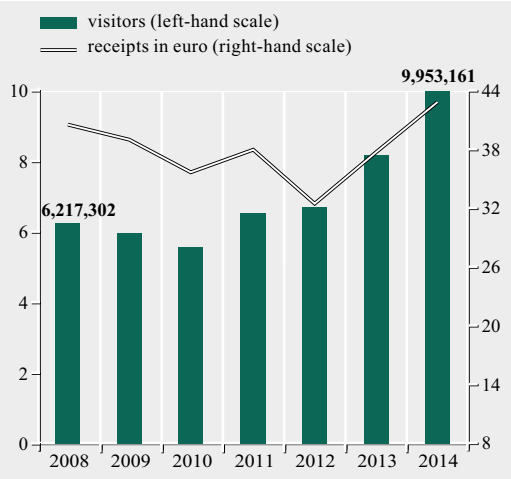
5 CONCLUSIONS – POLICY RECOMMENDATIONS

The past two years saw a significant increase in international arrivals and tourism revenue. Thus, tourism is now established as a key sector of economic activity in Greece, with sizeable contributions to GDP and employment. In fact, according to recent estimates, the con-

17 Hotel customer satisfaction survey carried out in Athens and Thessaloniki in 2013 (Ikkos 2013). Asked why they had chosen Athens or Thessaloniki as a destination for their leisure trip, 70% of respondents in Athens and 36% in Thessaloniki cite archaeological sites and culture.

Chart 12 Visitors and receipts in archaeological sites (2008-2014)

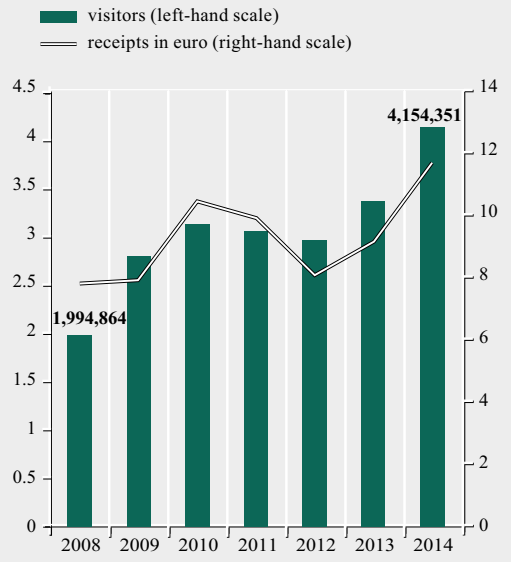
(in millions)



Source: ELSTAT.

Chart 13 Visitors and receipts in museums (2008-2014)

(in millions)



Source: ELSTAT.

tributions of tourism to GDP and employment in Greece are the highest among OECD countries. The robust performance of tourism in recent years was supported by: (1) more competitive pricing; (2) qualitative changes to the tourism product; and (3) exogenous factors related to political instability in rival destinations of the East Mediterranean.

The objective of the present study is to examine the qualitative diversification of the tourism product in recent years. In this context, the following changes can be observed: (1) the emergence of new markets for the Greek tourism product, most notably Russia and Turkey, the two countries with the highest levels of expenditure per overnight stay; (2) better promotion and exploitation of Greece's cultural heritage (the number of museum visitors more than doubled over the reviewed period), which also leads to (3) the promotion of cities as tourist destinations, hence to (4) an extension of the tourism season. These changes are, to a large extent, attributable to the structural reforms implemented in the tourism sector during the past few years.

The effort to change the growth model of the Greek economy mainly rests upon increasing export-oriented business activity, a significant part of which is the export of tourism services. The environment of the Greek tourism product is highly competitive (competition from other Mediterranean countries), continuously changing —as new destinations emerge— and politically and socially sensitive. The fact that Greece is included among the most significant tourist destinations worldwide is very encouraging; however, this should be supported by appropriate public and private actions. In this context, the "New Master Plan for Athens-Attica", the "New Master Plan for Thessaloniki" and the Spatial Plan for Tourism are among the public actions which aim to promote and further support tourism. On the other hand, coordinated actions by local stakeholders and tourism-related businesses, geared towards preserving and promoting the natural environment, enhancing the quality of services through training of tourism human resources, as well as respecting and promoting Greek culture, would ensure both the viability of tourism businesses and the sustainability of tourist destinations.

The present paper confirms that commitment to structural reforms that contribute to the modernisation of the tourism market, such as extended visiting hours in museums and archaeological sites, the promotion of the Greek tourism product in new markets and the opening-up of tourism-related professions, can strengthen tourism demand, while supporting the economy's productive structures and contributing to regional development. A step in this direction is the recent privatisation of the 14 regional airports, aimed to reinforce their competitive position and thereby increase international arrivals, given that the bulk of inbound tourists arrive in Greece by air. Furthermore, the upgrading and development of infrastructures such as marinas can help to increase sea and nautical tourism, further boosting tourist traffic in Greece. Last but not least, inadequate port facilities —starting with the port of Piraeus— and the absence of a national plan for the development of cruise tourism —especially homeporting cruises— deprive Greece of considerable potential gains in terms of foreign exchange inflows, consumer spending and jobs.

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THE DETERMINANTS OF UNEMPLOYMENT DYNAMICS IN GREECE

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1 INTRODUCTION

The high unemployment rate observed over a number of years is recognised as one of the major economic and social problems that the country is facing. The unemployment rate in Greece increased from around 10% in 2009 to 27.5% in 2013 and still fluctuates at a very high level (Q2 2015: 25.2%). According to the European Commission's autumn forecasts (European Commission 2015), the unemployment rate is projected to stand at approximately 25.7% in 2015 and marginally rise to 25.8% in 2016. Among age groups, the situation is clearly worse for young workers, who face unemployment rates close to 50%. It should be noted that more than two-thirds of the unemployed report to have been without a job for over one year. The failure to address the problem so far has led to the marginalisation of parts of society and, certainly, to a loss of human capital. Needless to note that high and persistent unemployment undermines the medium- to long-term outlook of the Greek economy and puts strain on the country's social security system and public finances.

In the light of the above, this study attempts to identify the factors that affect unemployment dynamics. Specifically, it examines the determinants of the variance of the unemployment rate, i.e. the role played by inflows and outflows of workers. This study also examines the relationship between unemployment and vacancies (Beveridge curve) in Greece in order to understand whether the recent rise in unemployment reflects solely cyclical and/or structural changes in the Greek economy.

According to previous studies by Shimer (2005) and Hall (2005), the outflow rate has been found to be the key determinant of unemployment dynamics. In particular, Shimer (2012) argues that since 1948 the outflow rate from unemployment has accounted for three fourths of the fluctuation in the unemployment rate in the United States, and the inflow rate to unemployment for one fourth. However, since 1990 the contribution of the outflow rate is estimated to have reached about 90 % of the variability of the US unemployment, which induced Shimer to conclude that the inflow rate is acyclic, i.e. it does not rise in periods of recession.

However, according to the results of the studies by Fujita and Ramey (2009) and Elsby, Michaels and Solon (2009) for the United States and Petrongolo and Pissarides (2008) and Smith (2011) for the United Kingdom, inflows to unemployment are quantitatively relevant for unemployment dynamics, contrary to what Shimer and other researchers maintained for the United States. In addition, Smith (2011), on the basis of UK data, shows that the inflow rate is the most relevant determinant of unemployment dynamics, while at times of declining unemployment the outflow rate matters the most for unemployment dynamics.

Reviewing OECD country data, Elsby, Hobijn and Sahin (2013) demonstrated that the monthly exit rate from unemployment stands at 20% in a group of countries defined as "Anglo-Saxon and Nordic", while it stands below 10% for a group of countries defined as "Continental Europe". Similarly, the monthly inflow rate is over 1.5% for the former group of countries, while it ranges between 0.5% and 1% for the latter, confirming that labour markets in Continental Europe are less flexible, thereby failing to facilitate labour restructur-

1 The author would like to thank Heather Gibson, Dimitris Malliaropulos, Franciskos Koutentakis, Manolis Mamatzakis, Kostas Milas, Hiona Balfoussia and Frangiskos Archontakis for their discussions and comments. He would also like to thank ELSTAT, specifically Stelios Zachariou, for the provision of Labour Force Survey data. The views expressed in this article are those of the author and do not necessarily reflect those of the Bank of Greece. Any errors or omissions are the responsibility of the author.

ing. In addition, according to the same study, the contribution of the total employment inflow rate (s) to the interpretation of unemployment variance is a mere 20% (and of the total unemployment outflow rate (f) 80%) in Anglo-Saxon countries characterised by more flexible forms of employment, compared to 50% and 50%, respectively, in Nordic and Continental Europe countries, where the structures in labour relations are more conservative.

Bonthuis, Jarvis and Vanhala (2013) examine the relationship between unemployment and vacancies in the euro area as a whole and at country level, in order to identify whether the recent rise in unemployment reflects cyclical and/or structural factors. According to the findings of the study, during the recent economic crisis there was an outward shift of the Beveridge curve in the euro area, but there is great heterogeneity at country level. For instance, there is an outward shift in the Beveridge curve for Spain and France and an inward shift for Germany. In the case of Greece, there is some evidence of an outward shift during the economic crisis.

Therefore, based on prior experience, it is very important to identify the determinants of unemployment movements. In particular, if changes in the inflow rate to unemployment are the most important factor behind unemployment fluctuation, then a pick-up in economic activity will contribute to the stabilisation and eventual decline of the unemployment rate. However, if changes in the outflow rate from unemployment matter as well, then economic recovery will result in lower unemployment only if it is associated with job creation. In addition, if there is an outward shift in the Beveridge curve, then this would imply growing mismatches in the labour market, possibly reflecting a rise in long-term unemployment.

We use data from ELSTAT's Labour Force Survey (LFS) for the period Q1 2001-Q2 2015 to investigate the determinants of unemployment dynamics in Greece. Then we calculate the inflow rate to and the outflow rate from unemployment, along with the contribution of these rates to unemployment variance. We then examine the relationship between unemployment and vacancies (Beveridge curve) to ascertain whether the rise in unemployment over the past few years reflects the effects of the economic cycle or whether it also implies a decline in the labour market's matching efficiency, which would signal the presence of structural weaknesses in the economy. The next step involves econometric examination of the effect of lower economic activity on the unemployment inflow and outflow rates and on the job vacancy rate to evaluate the effect on the unemployment rate, also reviewing the role of unemployment lag. Finally, we analyse the effect of structural changes in the labour market on the evolution of unemployment inflow and outflow rates.

2 UNEMPLOYMENT INFLOWS AND OUTFLOWS

To calculate unemployment inflows and outflows, we use aggregated LFS questionnaire data regarding the responses of participants on their current employment status and their status one year before (employed (E), unemployed (U), inactive (I)). Given that the analysis is based on aggregated questionnaire data, it approximates actual employment and unemployment flows.

In addition, data are affected both by classification errors, e.g. participants may consider themselves unemployed although they are classified as employed, and by recall error, i.e. participants might not recall their employment status one year before. Despite their disadvantages, aggregated data are considered reliable, since there is high correlation (98.1%) between actual unemployment and implied unemployment based on the LFS recall question.

Based on this information, we calculate quarterly flows for the three employment statuses.

For instance, the number of flows from unemployment at time t-1 (U_{t-1}) to employment at time t (E_t) is shown as $U_{t-1}E_t$. Dividing this by the number of unemployed at time t-1 (U_{t-1}), i.e. $U_{t-1}E_t/U_{t-1}$, we obtain the average quarterly probability of making the relevant transition from unemployment to employment.

Similarly, using seasonally adjusted data, we calculate the remaining probabilities (from employment to unemployment $E_{t-1}U_t/E_{t-1}$, from unemployment to non-participation in the labour force $U_{t-1}I_t/U_{t-1}$ etc.).

Then, building on Smith analysis (2011), we calculate the instantaneous transition rates, which record the average number of jobs gained or lost in the reviewed quarter.[2]

In more detail, λ_{t_UE} $(\lambda_{t\_UE})=-ln\,(1-\frac{U_{t-1}*E_t}{U_{t-1}})$, is the rate of transition from unemployment to employment (job finding rate) and λ_{t_EU} is the rate of transition from employment to unemployment (job separation rate). In order to calculate the total rate of transition to unemployment s_t (inflow rate), we take into account both the job separation rate (λ_{t_EU}) and the transition rate from employment (E) to inactivity (i.e. non-participation in the labour force, I) and then to unemployment (U).

Hence:

$$s_t=\lambda_{t\_EU}+\frac{\lambda_{t\_EI}*\lambda_{t\_IU}}{\lambda_{t\_IU}+\lambda_{t\_IE}} \qquad (1)$$

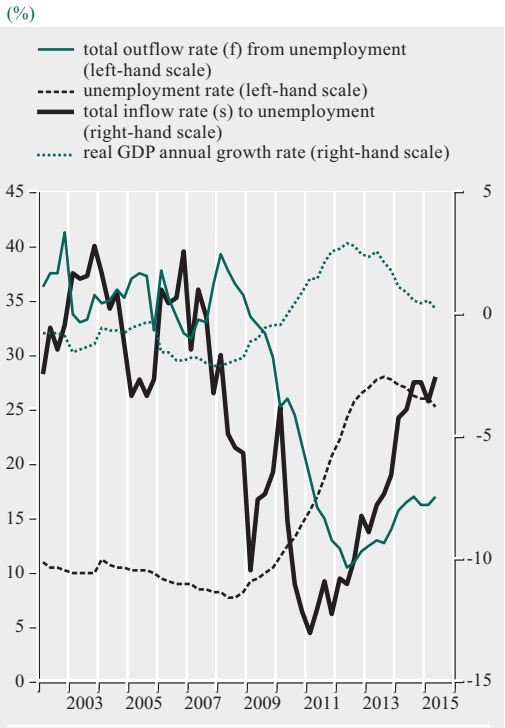
where the second term in equation (1) reflects the transition E→I→U. Similarly, the total outflow rate or job finding rate f_t is calculated as the sum of the job finding rate (λ_{t_UE}) and the transition rate to employment via I (non-participation in the labour force). Therefore:

$$f_t=\lambda_{t\_UE}+\frac{\lambda_{t\_UI}*\lambda_{t\_IE}}{\lambda_{t\_IU}+\lambda_{t\_IE}} \qquad (2)$$

where the second part of equation (2) reflects the transition U→I→E.

As shown in Chart 1, until the end of 2008 the total outflow rate (f) stood at 35% on average,

Chart 1 Total inflow rate to unemployment, total outflow rate from unemployment, unemployment rate and real GDP annual growth rate

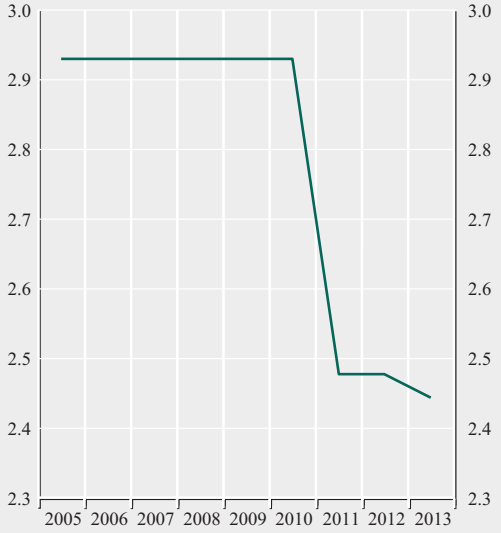


Source: Labour Force Survey, ELSTAT; author's calculations.

while the total inflow rate (s) was 3%. But from 2009 onwards, as unemployment rates started to rise and economic activity fell further, a considerable deceleration in the total job finding rate (f) and a corresponding acceleration in the job separation rate (s) were witnessed until the second quarter of 2012 (a period characterised by high political polarisation and two elections), when these two rates respectively reached their lowest and highest level (10% and 8% for the outflow rate and the inflow rate, respectively). Thereafter, although the unemployment rate kept rising (recording a peak in Q3 2013), developments in the two rates implied signs of improvement, with the f rate picking up to 17% and the s rate slowing down to 5% in Q2 2015, directly associated with the gradually declining recession.

2 See Koutentakis (2012) for an analysis on the basis of the study by Elsby, Michaels and Solon (2009) using OAED monthly data on employment flows.

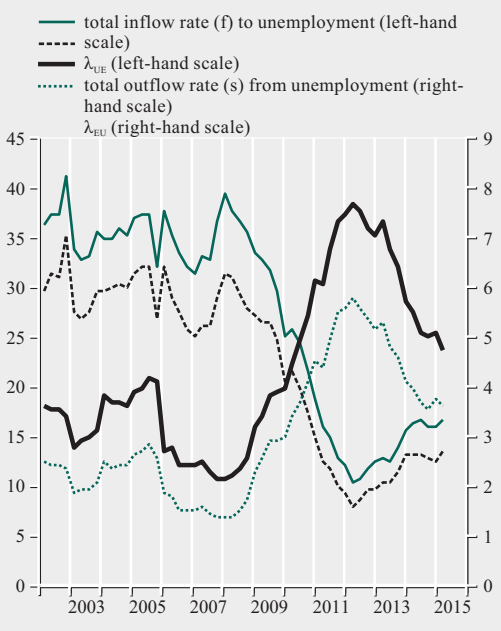
Chart 2 OECD's EPL index reflecting labour market flexibility in individual and collective dismissals



Source: OECD.
Note: Lower values reflect a more flexible labour market.

Chart 3 Job separation (λ_{EU}) and job finding (λ_{UE}) rates, total outflow rate (s) from unemployment and total inflow rate (f) to unemployment

(%)



Source: Labour Force Survey, ELSTAT; author's calculations.

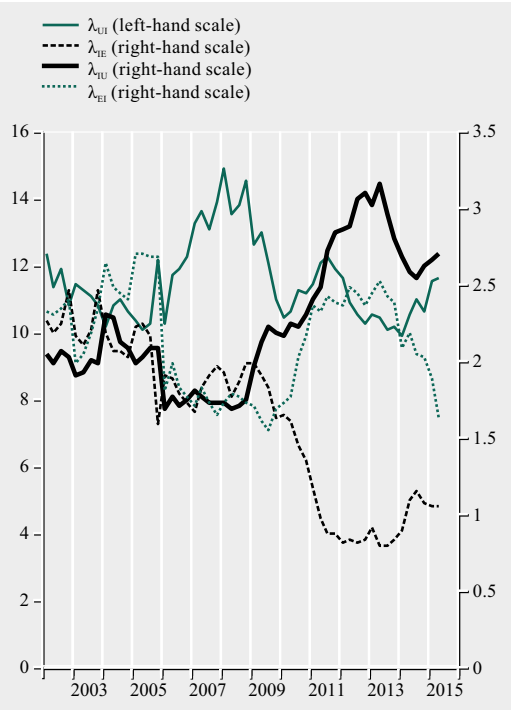
As noted in the *Interim Monetary Policy Report 2015* of the Bank of Greece (Special Feature IV.1), the evolution of these two rates (see Chart 1) is attributed both to cyclical and structural factors. The dramatic decline in GDP in the first years of the crisis (until the end of 2011) has negatively affected the labour market by raising the job separation rate and lowering the job finding rate.[3] The containment of uncertainty and the gradual normalisation of the economy after the two elections in mid-2012 have shaped more favourable job finding prospects, while they also contained the job separation rate. In the same period, important structural changes were implemented in the labour market, which helped strengthen its flexibility and have most probably affected the job finding and job separation rates. Increased labour market flexibility is reflected in the decline in OECD's EPL (Employment Protection Legislation) index, which reflects labour market inflexibility as regards constraints in individual and collective dismissals (see Chart 2). In more detail, the relaxation of restrictions in firing and hiring in 2010-2011 was accompanied by a pick-up in the job separation rate (s), while in parallel the decreased hiring and available job vacancies curbed the job finding rate (f). By contrast, subsequent reforms —relating e.g. to the reduction of employers' contributions in November 2012 and July 2014, the redetermination of minimum wages, changes in the context of collective bargaining, an enhanced role for firm-level agreements and the promotion of active labour market programmes— helped curb labour costs and led to a deceleration in the job separation rate (s) since end-2012. Moreover, in the same period, the new and more flexible labour market regime[4]

3 The dramatic fall in GDP in the first years of the crisis is also attributed to the fact that the first economic adjustment programme placed emphasis on fiscal adjustment and rapid containment of primary deficit. According to the IMF (2015), the primary balance as a percentage of GDP declined from -10.3% in 2009 to -3.0% in 2011 and then came to -1.4% in 2012, 1.0% in 2013 and 0.0% in 2014. Therefore, the bulk of the adjustment was implemented in 2010-2011, when the deepest recession was observed. Similarly, the cyclically adjusted primary balance as a percentage of potential GDP came from -13.2% in 2009 to -1.6% in 2011, 1.8% in 2012, 4.6% in 2013 and 3.2% in 2014.

4 Since new workers could now be employed with lower wages and less regulatory constraints as regards the possibility of dismissal.

Chart 4 Rates of transition into and out of the workforce

(%)



Source: Labour Force Survey, ELSTAT; author's calculations.

enabled a gradual acceleration in the job finding rate (f).

Examining the individual transition rates (see Chart 3), we come to the conclusion that the main determinant of the total job finding rate f is the rate of transition from unemployment to employment (λ_{UE}) and, similarly, the main determinant of the job separation rate s is the rate of transition from employment to unemployment (λ_{EU}). However, it is noted that as from 2009 the relevance of the transition from employment to unemployment via inactivity (E→I→U) for the determination of the total inflow rate (s) has increased. On the contrary, the transition from unemployment to employment via inactivity (U→I→E) has a smaller effect on the total outflow rate from unemployment (f). Indeed, as shown in Chart 4, the λ_{IU} and λ_{IE} rates changed from around 2% on average before the crisis to around 3% and 1%, respectively, during the crisis. Therefore, because of the crisis, persons who were previously inactive were forced to seek employment and, as a result, they were recorded as unemployed. In addition, the evolution of the transition rate from unemployment to inactivity (λ_{UI}) implies that there is limited discouraged worker effect in the course of the crisis. Nevertheless, there is a slight uptick in λ_{UI} from Q1 2014 until the end of the sample period.

3 UNEMPLOYMENT DYNAMICS

Following the analysis by Petrongolo and Pissarides (2008) and Smith (2011), we briefly describe the determinants of unemployment dynamics. Assuming that there are two states of employment, namely employed or unemployed, and using the instantaneous transition rates, the unemployment rate $u_t = \frac{U_t}{U_t+E_t}$ changes in continuous time as follows:

$$\dot{u}_t = s_t * e_t - f_t * u_t = s_t * (1-u_t) - f_t * u_t \quad (3)$$

where e_t is the employment rate. In a state of steady-state, $\dot{u}_t = 0$ and employment inflows and outflows are equal. Consequently, the steady-state unemployment rate is equal to:

$$u_{t\_ss} = \frac{s_t}{s_t + f_t} \quad (4)$$

If we add the option of inactivity (non-participation in the labour force, I), the dynamics of each employment state can be described as:

$$\dot{U}_t = \lambda_t^{EU} * E_t + \lambda_t^{IU} * I_t - (\lambda_t^{UE} + \lambda_t^{UI}) * U_t \quad (5)$$

$$\dot{E}_t = \lambda_t^{UE} * U_t + \lambda_t^{IE} * I_t - (\lambda_t^{EU} + \lambda_t^{EI}) * E_t \quad (6)$$

$$\dot{I}_t = \lambda_t^{UI} * U_t + \lambda_t^{EI} * E_t - (\lambda_t^{IU} + \lambda_t^{IE}) * I_t \quad (7)$$

In a state of steady-state, where $\dot{U}_t = \dot{E}_t = 0$, equations (5)-(7) may be expressed as $u_{t\_ss} \equiv \frac{U_{t\_ss}}{U_{t\_ss} + E_{t\_ss}}$, i.e. the steady-state unemployment rate u_{t_ss} is expressed as a function of the instantaneous transition rates λ. On the basis of the analysis by Petrongolo and Pissarides (2008) and Smith (2011), equation (4) can be written as follows:

$$\frac{\Delta u_{t\_ss}}{u_{t-1\_ss}} \approx C^{s}_{t\_ss} + C^{f}_{t\_ss} =$$

$$(1-u_{t-1\_ss}) * \frac{\Delta s_t}{s_{t-1}} - (1-u_{t-1\_ss}) * \frac{\Delta s_t}{s_{t-1}} \quad (8)$$

The percentage change in steady-state unemployment is allocated to the contribution of transition rates, namely:

$$\frac{\Delta s_t}{s_{t-1}} \equiv \frac{1}{s_{t-1}} [\Delta \lambda_t^{EU} + \Delta \left(\frac{\lambda_t^{EI} * \lambda_t^{IU}}{\lambda_t^{IU} * \lambda_t^{IE}} \right)] \quad (9)$$

In other words, the contribution of the total rate of transition to steady-state unemployment can be allocated to the direct transition from employment to unemployment ($\Delta \lambda_t^{EU}$) and the indirect transition via inactivity ($\left(\frac{\lambda_t^{EI} * \lambda_t^{IU}}{\lambda_t^{IU} * \lambda_t^{IE}} \right)$). The same method is used to calculate the contribution of the total rate of transition out of steady-state unemployment (f_t).

4 COVARIANCE CONTRIBUTIONS TO UNEMPLOYMENT VARIANCE

Equation (4) is the basis for examining the role of transition to and from unemployment rates as determinants of changes in the steady-state unemployment rate. Specifically, following the work of Smith (2011), Fujita and Ramey (2009) and Elsby, Hobijn and Sahin (2013), we calculate the contribution (β, covariance contribution) of the individual transition rates (s, f, λ_{t_EU} etc.) to the variance of the change in steady-state unemployment. Specifically, we calculate the following equations:

$$\beta_s = \frac{Covar\left(\frac{\Delta u_{t\_ss}}{u_{t-1\_ss}}, \frac{(1-u_{t-1ss}) * \Delta s_t}{s_{t-1}} \right)}{\mathrm{Var}\left(\frac{\Delta u_{t\_ss}}{u_{t-1\_ss}} \right)} \quad (10)$$

and

$$\beta_f = \frac{Covar\left(\frac{\Delta u_{t\_ss}}{u_{t-1\_ss}}, \frac{(1-u_{t-1ss}) * \Delta f_t}{f_{t-1}} \right)}{\mathrm{Var}\left(\frac{\Delta u_{t\_ss}}{u_{t-1\_ss}} \right)} \quad (11)$$

According to the analysis by Smith (2011) and Elsby, Hobijn and Sahin (2013), actual unemployment and steady-state unemployment rates may diverge when actual unemployment changes rapidly, as was the case in Greece during the crisis.[5] Taking into consideration the role of time lags in the evolution of unemployment (persistence effect), we repeat the previous analysis by calculating the contribution (β) of the individual rates of transition (s, f, λ_{t_EU} etc.) to the variance of the change in actual unemployment.

Specifically, when solving equation (3) as regards the rate of actual unemployment, the result is

$$u_t = \frac{s_t}{s_t + f_t} - \frac{\dot{u}_t}{s_t + f_t} \quad (12)$$

In other words, the importance of the rate of change in unemployment (the second value in the right-hand leg of equation (12)) for the evolution of the rate of actual unemployment will decline as the sum of the rates of transition (job turnover) increases. According to Smith's analysis (2011), the change in the rate of actual unemployment can be written as follows:[6]

$$\Delta u_t = \frac{\Delta u_{t\_ss}}{u_{t-1\_ss}} * \frac{\omega_t * s_{t-1}}{\omega^2{}_t + \omega_{t-1}} + \Delta u_{t-1} * \frac{\omega_t}{\omega^2{}_t + \omega_{t-1}} \quad (13)$$

where $\omega_t = s_t + f_t$. Namely, the change in actual unemployment is a function of the change in steady-state unemployment and the time lag of actual unemployment. Therefore, as the transition rates to and from unemployment increase, changes in actual unemployment and steady-state unemployment will approximate each other. Otherwise, past changes in actual unemployment and transition rates become more important.

The contributions of transition rates s and f to actual unemployment can be calculated as follows:

5 The actual unemployment rate is different from the steady-state unemployment rate, but the two series have a high correlation (90.4%).

6 Taking into consideration that $\dot{u}_t = \frac{du}{dt}$, we differentiate equation (12), thereby generating a second-order differential equation ($\frac{d^2u}{dt}$). Subsequently, this equation is expressed as a first-order differential equation as regards $\frac{du}{dt}$ and then as first-order difference equation (see Smith 2011).

$$C_t^s = C_{t\_ss}^s * \frac{\omega_t * s_{t-1}}{\omega^2_t + \omega_{t-1}} + C_{t-1}^s * \frac{\omega_t}{\omega^2_t + \omega_{t-1}} \quad (14)$$

$$C_t^f = C_{t\_ss}^f * \frac{\omega_t * s_{t-1}}{\omega^2_t + \omega_{t-1}} + C_{t-1}^f * \frac{\omega_t}{\omega^2_t + \omega_{t-1}} \quad (15)$$

where $C_{t\_ss}^s$ and $C_{t\_ss}^f$ have been defined in equation (8), while, by definition, $C_0^s = C_0^f = 0$. Moreover, the contribution of the initial state in period t=0 can be shown as follows:

$$C_t^0 = C_{t-1}^0 * \frac{\omega_t}{\omega^2_t + \omega_{t-1}} \quad (16)$$

while $C_0^0 = \Delta u_0 - \alpha \Delta u_{0\_ss} = u_0 - u_{0\_ss}$. The contributions (β) of the individual transition rates (s, f, λ_{t_EU} etc.) to the variance of the change in actual unemployment may be calculated using the equations.[7]

5 ESTIMATES OF THE CONTRIBUTION (B) OF THE UNEMPLOYMENT AND EMPLOYMENT TRANSITION RATES TO UNEMPLOYMENT VARIANCE

The analysis shows that 58% of the changes in the steady-state unemployment rate and 52% in the case of the actual unemployment rate can be explained by changes in the total inflow rate (s; see Table 1).[8] Moreover, changes in the job separation rate (λ_{t_EU}) account for around 39-40% of changes in unemployment. By contrast, the job finding rate (λ_{t_UE}) accounts for 35% and 39% of changes in steady-state and actual unemployment, respectively.

These findings are similar to the ones reported by Smith (2011) for the UK in 1988-2008, Hairault, Le Barbanchon and Sopraseuth (2015) for France in 1990-2002 and Daouli, Demoussis, Giannakopoulos and Lampropoulou (2015) for Greece in 1998-2013. In other words, contrary to the findings of Shimer (2005, 2012) for the United States, the job separation rate greatly affects unemployment variance in Greece, the UK and France.[9]

In order to verify whether the conclusions drawn from Table 1 are true throughout the reviewed period, we compute rolling 4-year betas (β_s, β_f, etc.) for each individual transition rate to the variance of steady-state unemployment.

From the beginning of the reviewed period until the end of 2012, the total unemployment

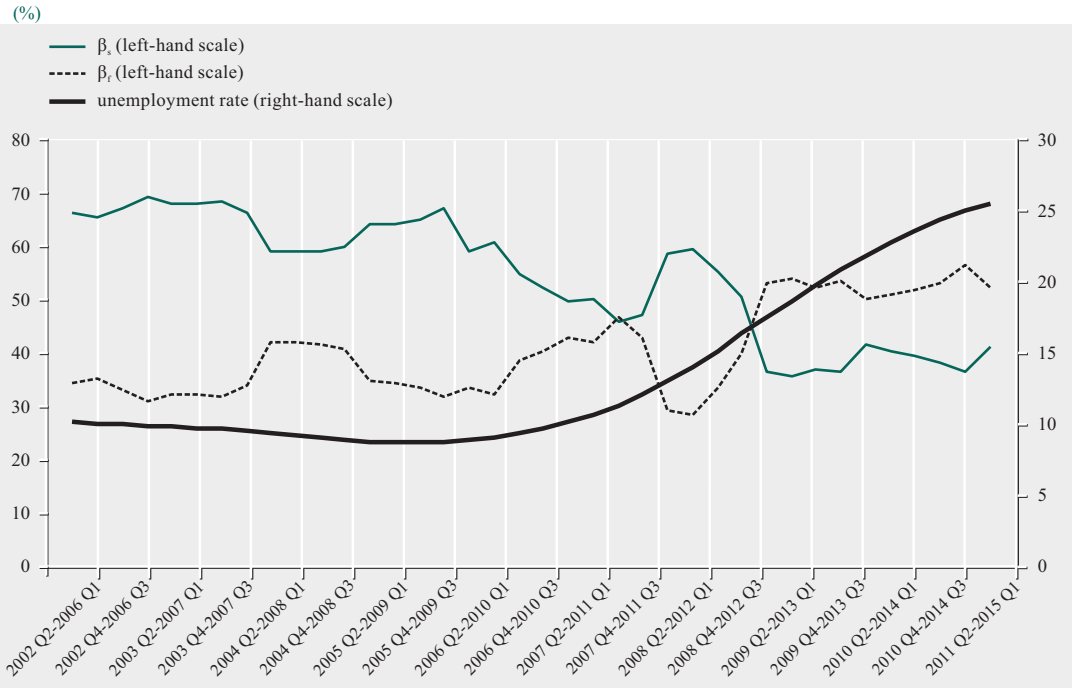
7 As discussed by Smith (2011), the sum of contributions may be different from one, due to approximation errors.
8 As with Smith's analysis (2011), in the case of actual unemployment, annual changes in unemployment are analysed to contain the great variance that characterises quarterly changes in transition rates.
9 According to Hairault, Le Barbanchon and Sopraseuth (2015), the outflow rate from unemployment is the dominant factor to explain unemployment dynamics in France the in period from 2004 to 2010.

Table 1 Covariance contributions to unemployment variance

β	Rate of transition	Steady-state unemployment	Actual unemployment rate
β_s	inflow rate to unemployment	0.58	0.52
β_f	outflow rate from unemployment	0.41	0.48
β_{EU}	job separation rate	0.39	0.40
β_{UE}	job finding rate	0.35	0.39
β_{EIU}	inflow via inactivity	0.19	0.12
β_{UIE}	outflow via inactivity	0.06	0.09

Notes: β_s (= β_{EU}+β_{EIU}) and β_f (=β_{UE}+ β_{UIE}) do not add up to one due to the approximation error. Rates of transition are calculated on the basis of Smith's methodology (2011). The steady-state unemployment level is calculated as s/(s+f). Period: Q1 2001-Q2 2015.

Chart 5 Rolling estimations of β_s and β_f and rolling average of the unemployment rate



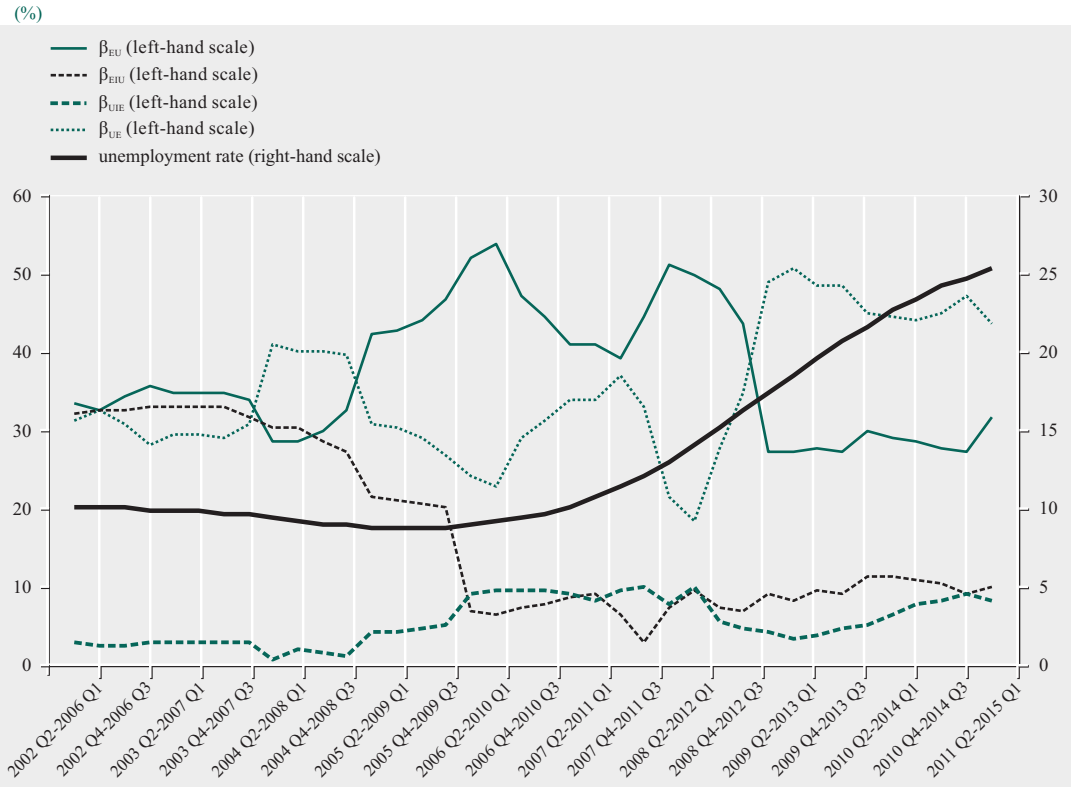
Source: Labour Force Survey, ELSTAT; author's calculations.
Note: Rolling 4-year estimations of β_s and β_f and rolling 4-year average of the unemployment rate. The horizontal axis shows each 4-year period.

inflow rate (s) played a primary role in the variance of unemployment, exactly as shown in Table 1 (see Chart 5). However, in the period from Q2 2009 to Q1 2013, which saw a sharp rise in the unemployment rate despite the gradual slowdown of recession, and when structural reforms in the labour market started to yield results, the total outflow rate (f) was better in explaining the variance of unemployment.

It is noted that, until early 2009, inflow and outflow rates had almost the same effect on unemployment variance (see Chart 6). Then, until late 2012, when the unemployment rate rose by over 15 percentage points, the greatest effect on unemployment variance came from the separation rate (λ_{EU}). This development reflects both the effect of recession and greater flexibility in dismissals as a result of structural changes. From Q1 2013 onwards, the greatest effect on unemployment variance, according to the findings of the study, came from the job finding rate (λ_{UE}). Containing uncertainty about the country's prospects and normalising economic conditions contributed to the gradual increase in job seeking (increased vacancies, hiring etc.). This development was assisted by the adoption of a more flexible legislative framework in labour law and the upgraded role of firm-level agreements that led to reduced nominal wages.

We then computed the contribution of rolling 4-year betas (β_s, β_f etc.) to actual unemployment variance (see Chart 7). The conclusions confirm the outcome of the analysis on the basis of steady-state unemployment. Specifically, the job separation rate mostly affected unemployment variance at the beginning of the crisis, but the situation was then reversed, with the job finding rate being more important. Data on actual unemployment

Chart 6 Rolling estimations of β_{EU} and $\beta U_{E,}$ β_{EIU} and β_{UIE} and rolling average of the unemployment rate



Source: Labour Force Survey, ELSTAT; author's calculations.
Note: Rolling 4-year estimations of β_s and β_f and rolling 4-year average of the unemployment rate. The horizontal axis shows each 4-year period.

imply that the turning point concerning the importance of the two rates (s and f) occurred in the period between Q3 2008 and Q2 2012, i.e. 3 months earlier than the turning point resulting from the analysis on the basis of steady-state unemployment (Q2 2009-Q1 2013). However, both periods cover the sharp increase in unemployment, of about 15 percentage points.

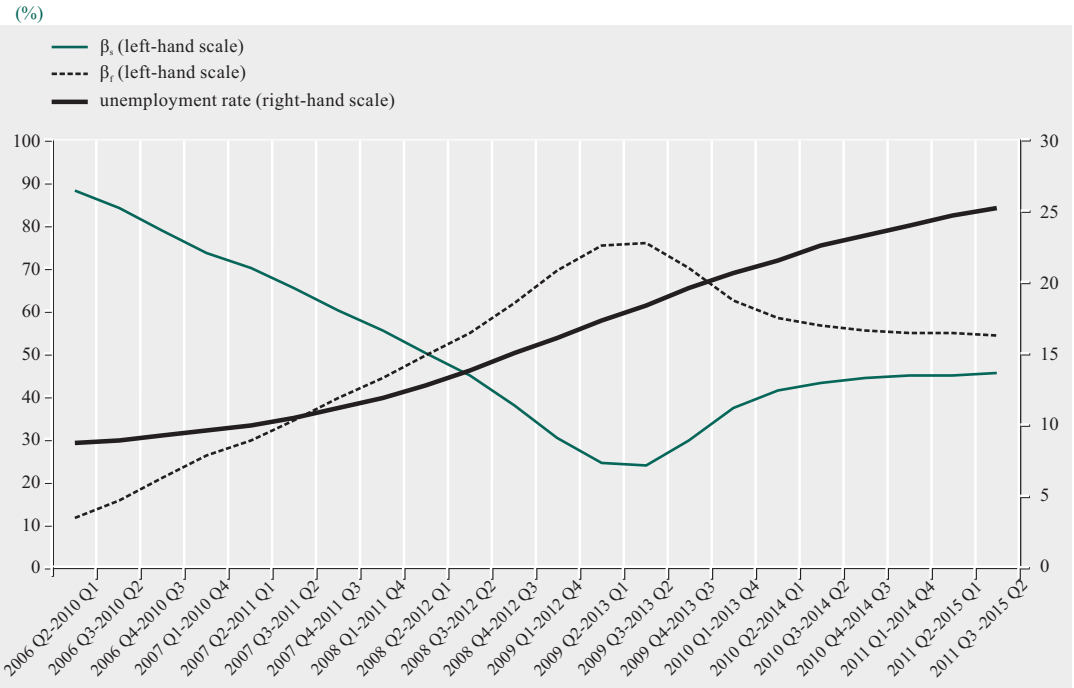
In conclusion, the findings of the study so far show that, in times of rising unemployment, the inflow rate to unemployment is the main determinant of the change in unemployment, reinforced in case of flexible labour relations. By contrast, in times of economic recession and declining unemployment, job finding plays a bigger role (also facilitated by flexible labour relations).

Needless to say that containing the job separation rate is not enough to reduce the unemployment rate; new jobs must also be created, thereby accelerating the fall in the unemployment rate. Otherwise, even under recessionary conditions where the job separation rate declines, there is a risk of persisting high unemployment rates for many years, which would negatively affect the Greek economy's current and future productive capacity (a situation described as "jobless recovery").

6 THE RELATIONSHIP BETWEEN THE JOB VACANCY RATE AND THE UNEMPLOYMENT RATE

The importance of the job finding rate is reflected in the evolution of the job vacancy

Chart 7 Rolling estimates of β_s and β_f from actual unemployment and rolling average of the unemployment rate



Source: Labour Force Survey, ELSTAT; author's calculations.
Note: Rolling 4-year estimations of β_s and β_f and rolling 4-year average of the unemployment rate. The horizontal axis shows each 4-year period.

rate,[10] which is an indicator of firms' demand for labour. According to the data presented in Chart 8, the increase in unemployment during the crisis was accompanied by a constant decrease in the job vacancy rate (that, however, had started in late 2006), which reached a trough in Q2 2013. Subsequently, it trended upwards in line with the slight decline in unemployment; nevertheless, it still remains at levels that are below those recorded in 2005-2010.[11]

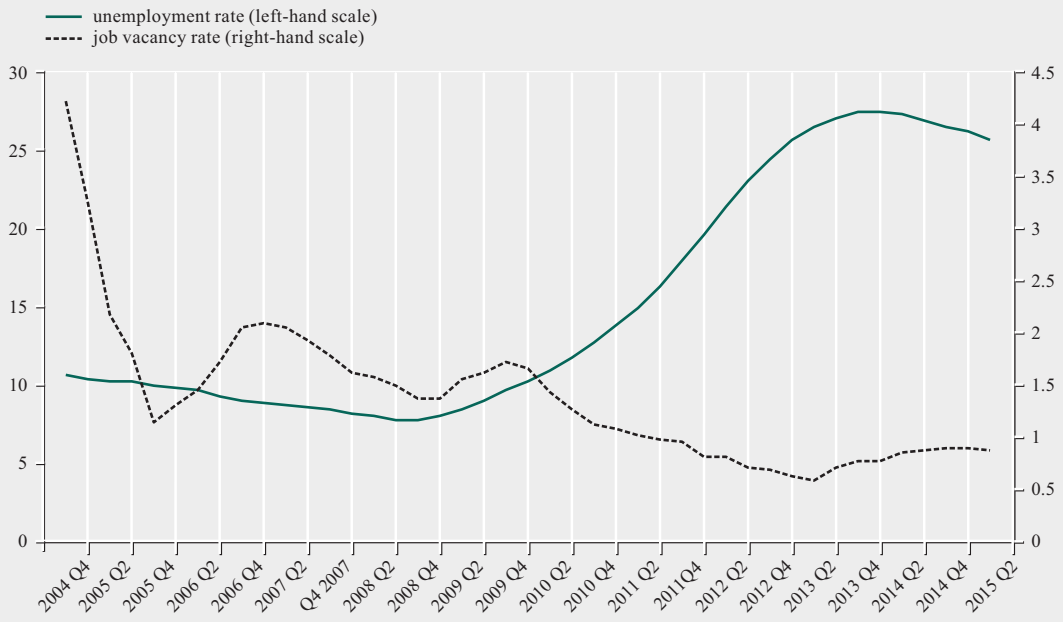
The relationship between job vacancies and unemployment is presented in the form of a Beveridge curve (see Charts 9 and 10), which reflects both the cyclical conditions and the efficiency with which the labour market matches unemployed workers and job vacancies. The picture that emerges from the start of the sample in 2004 until late 2009 is rather mixed. For instance, in 2004-2005 unemployment remained unchanged, despite the high job vacancy rate. This indicates the presence of structural unemployment, which is not related to cyclical economic conditions, but rather to the failure to match job vacancies and available skills of the unemployed.

A slight decline in unemployment was recorded in 2006-2008, with the job vacancy rate remaining at 1.5-2%, i.e. there was a parallel slight inward shift in the Beveridge curve. However, from late 2009 onwards, on account of the deteriorating economic conditions, the unemployment rate increased and the job vacancy rate decreased. There was an outward shift in the Beveridge curve (since over 10% unemployment corresponds now to a job vacancy rate of 1.1%, unlike e.g. Q1 2006 when

10 Job vacancy rate = posted vacancies/(posted vacancies + occupied posts).
11 The high vacancy rates in 2004-2005 also relate to the economic expansion on account of the Olympic Games. To control for seasonality, data are averages over four quarters, i.e. the observation for Q4 2004 is the average of the four quarters of 2004.

Chart 8 The relationship between job vacancies and unemployment

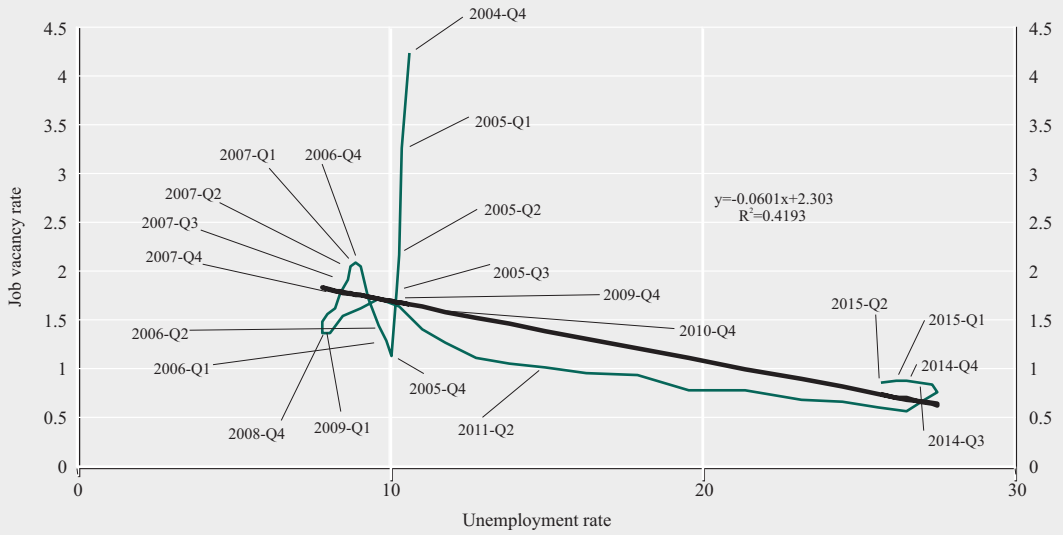
(%)



Source: Eurostat; author's calculations.
Notes: Job vacancy rate = posted vacancies/(posted vacancies+occupied posts), unemployment rate for ages 15-74. To control for seasonality, the values reported are averages over four quarters, i.e. the observation for Q4 2004 is the average of the four quarters of 2004.

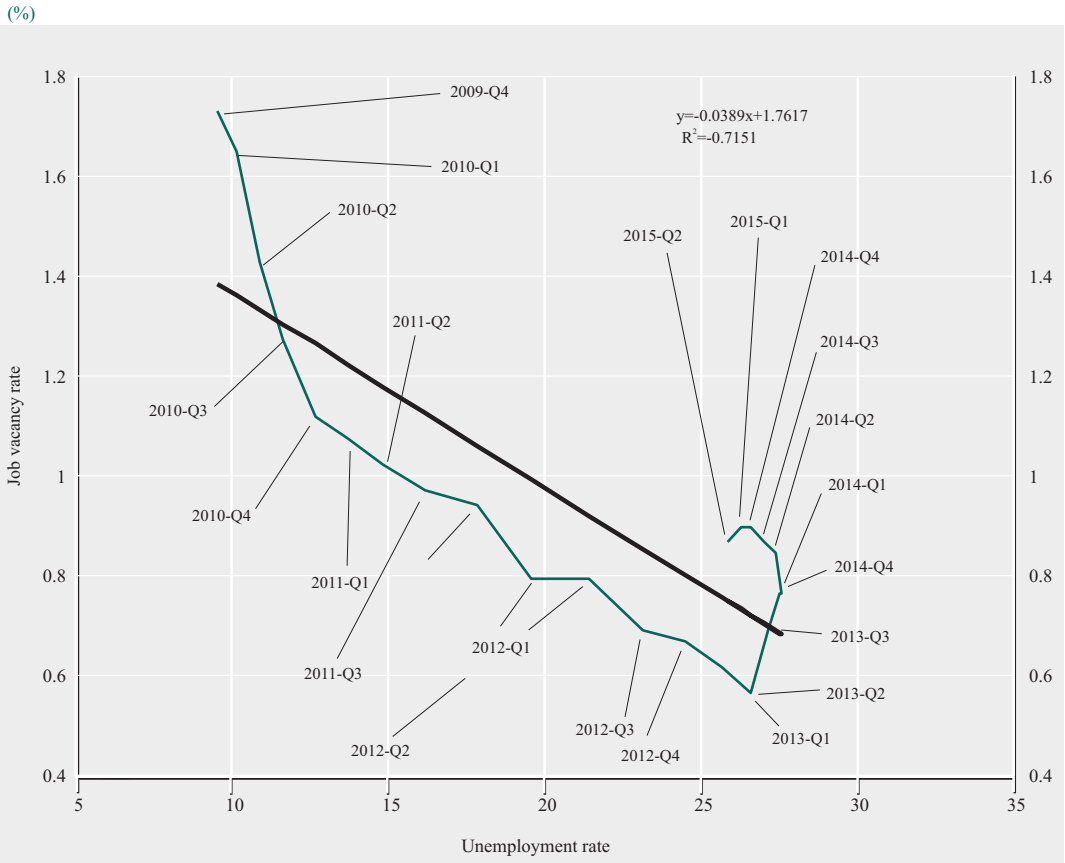
Chart 9 The Beveridge curve (Q4 2004-Q2 2015)

(%)



Source: Eurostat; author's calculations.
Note: To control for seasonality, the data are averages over four quarters, i.e. the observation for Q4 2004 is the average of the four quarters of 2004.

Chart 10 The Beveridge curve (Q4 2009-Q2 2015)



Source: Eurostat; author's calculations.

unemployment stood slightly below 10%) and the negative slope of the curve has been reduced (also shown by the trend lines in Charts 9 and 10). In addition, as the recession deepens, the economy moves along the Beveridge curve. Since 2013 the gradual deceleration in the unemployment rate and its subsequent gradual decline were accompanied by a higher job vacancy rate. This implies, first, that recession is gradually bottoming out.

However, a parallel outward shift of the Beveridge curve can also be seen since end-2013. In other words, whereas at the end of 2011 a job vacancy rate of 0.9% was associated with an unemployment rate of 17%, now it is associated with an unemployment rate of 25-26%. Despite the fact that reforms implemented since 2010-2011 in the labour market boosted the matching efficiency of job vacancies and unemployed persons, the restructuring of production in the economy in the past few years because of the recession (e.g. restructuring in required skills, sectoral and branch restructuring etc.) led to the emergence of structural unemployment. For instance, over two-thirds of the unemployed report to have remained in unemployment for over one year.

Therefore, policy interventions are needed to attract investment in order to boost the job creation rate. At the same time, the unemployed must streamline their skills, assisted by active education and employment policies, to improve their chance to find work in new sectors of economic activity that emerged through the crisis.

6.1 ECONOMETRIC ANALYSIS

Building on the work of Bonthuis, Jarvis and Vanhala (2013), we use econometric analysis to investigate the relationship between the unemployment rate and the job vacancy rate, i.e. the Beveridge curve. Specifically, we rely on seasonally adjusted data covering the period Q1 2004-Q2 2015.

The dependent variable is the unemployment rate. The key interpreting variables are: the lagged unemployment rate, the job vacancy rate, the squared job vacancy rate, a dummy variable called "decline in real GDP", which takes the value of 1 in periods when the annual change in real GDP is negative (reflecting periods of decline in economic activity) and 0 otherwise. We also use a dummy variable called "structural changes", reflecting the structural changes that took place in the labour market, as reflected in the EPL index of OECD (see Chart 2). This dummy variable equals 1 from 2004 to 2010, 2 from Q1 2011 to Q4 2012 and 3 from Q1 2013 to Q2 2015.[12] Therefore, higher values of the "structural changes" dummy variable are interpreted as more flexible conditions in the labour market.

On the basis of the results of the estimates presented in Table 2, we come to the following conclusions: a) There is a significant lag in the evolution of the unemployment rate (persistence), as shown by the statistically significant lagged coefficient of the unemployment rate (see columns 1-5). b) The job vacancy rate negatively affects the unemployment rate (see column 1), thereby confirming the negative relationship between the job vacancy rate and the unemployment rate. c) The positive and statistically important coefficient of the squared job vacancy rate implies the presence of a non-linear relationship between the job vacancy rate and the unemployment rate (see column 1). In other words, the response of the unemployment rate is milder when the job vacancy rate is high (as in 2004-2005) and stronger in periods of subdued demand for work and few job vacancies (as during the recent crisis). d) The positive and statistically significant coefficient of the dummy variable that records the period of decline in real GDP implies that during the crisis the Beveridge curve shifted to the right (see columns 2-5). e) The interaction of the dummy variable relating to the period of decline in real GDP with the job vacancy rate has a negative and statistically significant coefficient, implying that the negative Beveridge curve is due to the most recent crisis period (see columns 3 and 5).[13] f) The positive and statistically important coefficient of the dummy variable recording structural changes in the labour market implies that greater labour market flexibility contributed to an increase in unemployment and a shift of the Beveridge curve to the right (see columns 2-5). g) The interaction of the dummy variable relating to the period of structural changes with the job vacancy rate is negative, which is interpreted as an improvement in the effectiveness of the matching process in the period when structural changes took place in the labour market (see columns 4-5). In other words, an increase in the job vacancy rate leads to stronger decline in unemployment when labour relations are more flexible. It should be noted that the finding in column 5 is not statistically important when the interaction of the real GDP decline with the job vacancy rate is also taken into account, but the sign remains negative.

In conclusion, the results presented in Table 2 correspond to the analysis of Bonthuis, Jarvis and Vanhala (2013) and verify the presence of an inverse relationship between unemployment and vacancies, which is however observed mainly in the post-2008 period after the economic crisis began. Moreover, the decline in economic activity alongside a more flexible labour market have contributed to the outward

12 The OECD EPL index runs until 2013. In the analysis, we assume that any changes that took place until the end of 2013 and are reflected in the EPL index remain valid until the end of the available sample (Q2 2015), i.e. we assume that the EPL index did not improve further.

13 The same picture emerges from Charts 9 and 10 if we switch the y and x axes, i.e. if the unemployment rate is placed on the y axis and the job vacancy rate on the x axis.

Table 2 Beveridge curve estimations for Greece

	1	2	3	4	5
Dependent variable:	Unemployment rate				
Unemployment rate$_{t-1}$	0.967 (39.94)***	0.894 (25.58)***	0.895 (28.15)***	0.8857 (27.74)***	0.892 (27.07)***
Job vacancy rate$_t$	-1.342 (-2.24)**	-0.586 (-1.31)	-0.093 (-0.23)	-0.3623 (-0.76)	-0.068 (-0.16)
Job vacancy rate$_t$^2	19.878 (2.031)**	10.469 -1.41	2.588 -0.4	6.913 (0.91)	2.188 -0.33
Decline in real GDP$_t$		0.007 (3.91)***	0.017 (3.96)***	0.007 (3.54)***	0.0163 (3.17)***
Structural changes$_t$		0.061 (2.54)***	0.0567 (2.74)***	0.107 (2.56)**	0.071 (1.76)*
Job vacancy rate* Decline in real GDP$_t$			-0.8459 (-2.64)**		-0.767 (-2.12)**
Job vacancy rate* Structural changes$_t$				-4.381 (-1.86)*	-1.392 (-0.57)
Constant term	0.0217 (2.31)**	0.0152 (2.20)**	0.01 -1.47	0.0137 (2.12)**	0.01 -1.49
Number of observations	46	46	46	46	46
F-test	F(3.42) = 1371,26	F(5.40) = 1447,78	F(6.39) = 1525,63	F(6.39) = 1445,03	F(7.38) = 1291,98
(p-value)	(0.000)	(0.000)	(0.000)	(0.0000)	(0.000)
R^2	0.9921	0.9954	0.9959	0.9956	0.9959

Notes: OLS estimations. Standard errors are corrected for autocorrelation using the Newey-West procedure.
***, **, * statistically significant at a confidence level of 1%, 5% and 10%, respectively.

shift of the Beveridge curve. At the same time, there is evidence suggesting that structural changes have improved the matching process of job vacancies and the unemployed.

7 THE EFFECT OF A DECLINE IN ECONOMIC ACTIVITY ON JOB SEPARATION (S), FINDING (F) AND VACANCY RATES

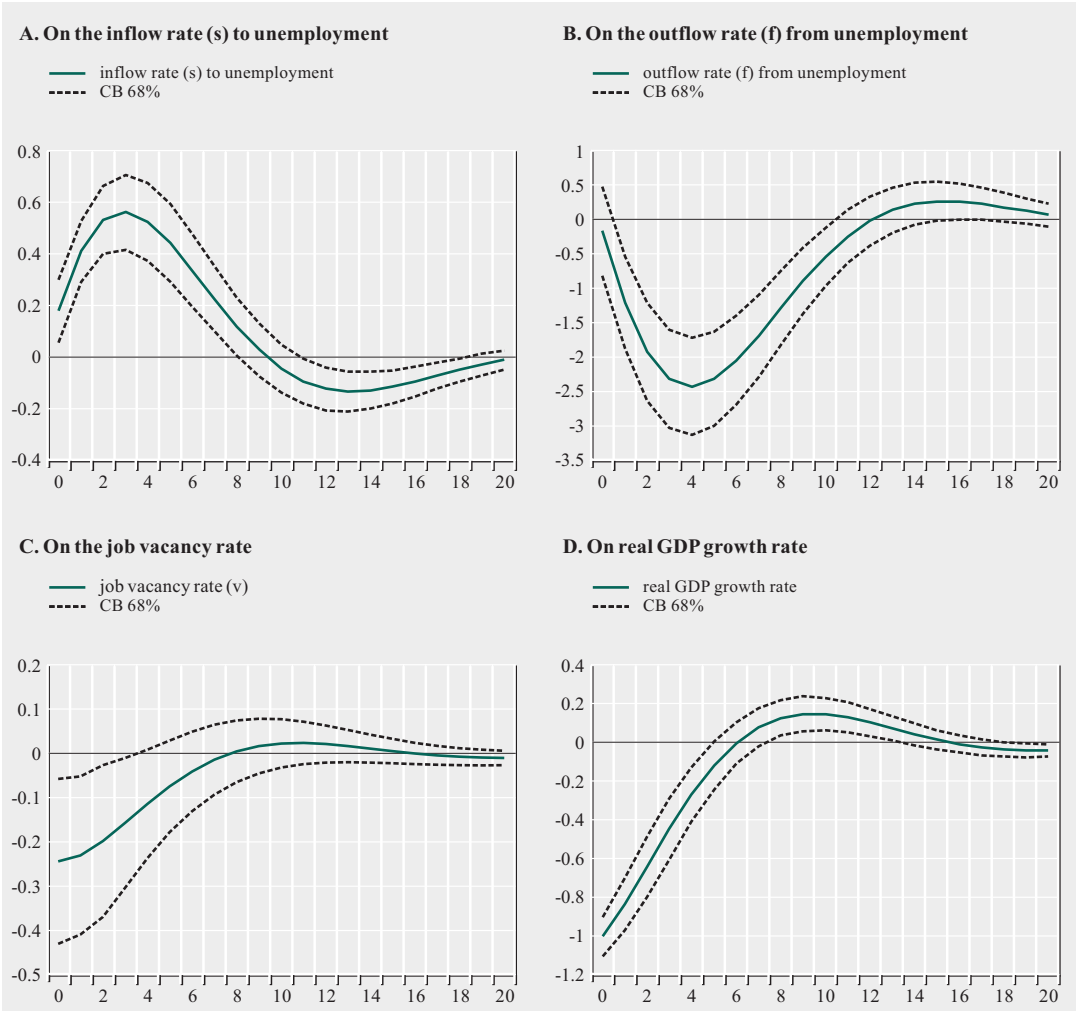
This section examines the effect of the decline in economic activity (as a result of an exogenous shock) on the job separation rate (s), the job finding rate (f) and the job vacancy rate (v).[14] According to the results, the decline in economic activity lasts for about 1.5 year and leads (see Charts 11A-14D) to: a) a decrease in the job vacancy rate for about 2 years (8 quarters), b) a significant fall in the job finding rate for about 3 years, and c) an increase in the employment exit rate for about 2.5 years, thereby leading to an increase in the unemployment rate. In other words, the decline in economic activity implies a downward movement on the Beveridge curve, since it leads to less job vacancies and higher unemployment. It should be pointed out that the decline in the job finding rate lasts for about half a year more than the increase in the job separation rate, which implies an increase in unemployment, even if flows from employment to unemployment stop.

The estimated effect on the (steady-state) unemployment rate of the fall in GDP is based on the changes of s and f rates, reflected in Charts 11A-11B, equation (3) and the alternative assumptions about average s and f val-

14 The analysis is based on structural vector autoregression (SVAR) with a lag, a dummy variable whose value is equal to 1 after Q2 2010 and the following seasonally-adjusted variables: the annual rate of change in real GDP, the job separation rate (s), the job finding rate (f) and the job vacancy rate (v) (see Tagkalakis 2015). The estimated effects shown are based on the assumption of an exogenous 1% fall in the rate of change in real GDP. The 68% confidence bands (CB) in the impulse responses of the reviewed variables are based on the bootstrap method (1,000 replications were performed).

Chart 11 Estimated effect of the decline in GDP

(percentage points)



Sources: Eurostat and ELSTAT; author's calculations.

ues in order to calculate the contributions of changes in s and f to the unemployment rate (three alternative assumptions are used; see Charts 12A-12C).[15] The key conclusions are:

- The increase in the unemployment rate lasts for about 2.5 years and is significantly higher when the weights of changes in s and f are based on average s and f values during the crisis (see Charts 12A-12B).

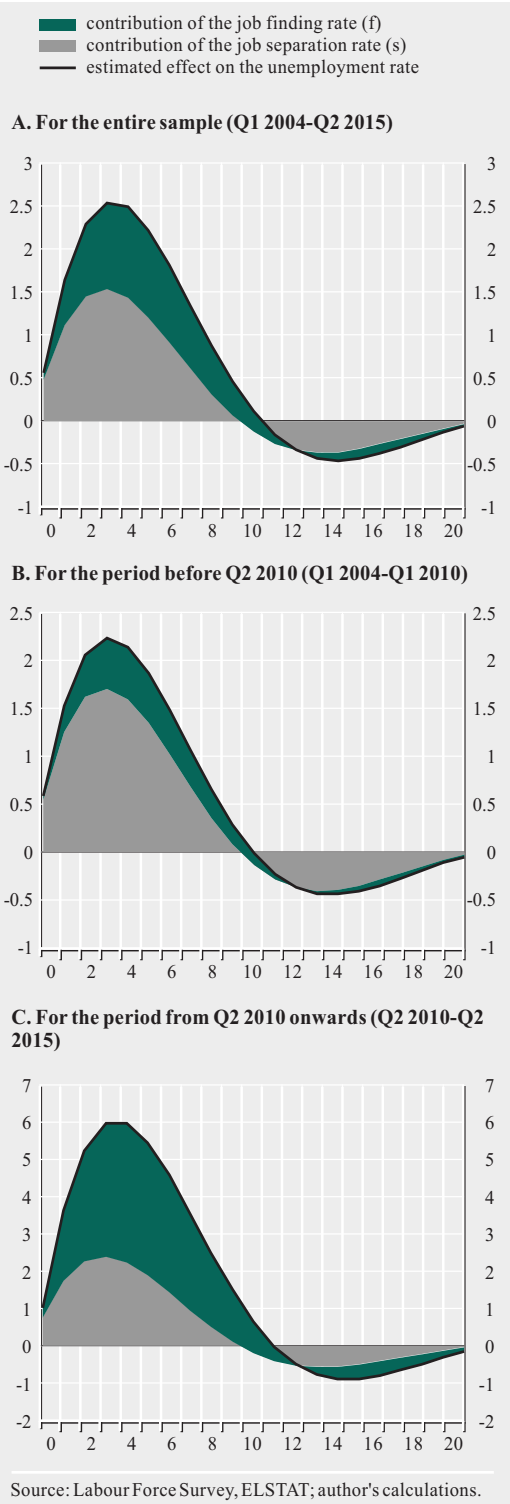
- The contribution of the job separation rate (s) is the main determinant of the increase in unemployment throughout the reviewed period and the pre-crisis period (see Charts 12A-12B).

- The contribution of the job finding rate (f) is the main determinant of the increase in

15 The impulse response of the unemployment rate (in a state of steady-state) to the change in GDP is calculated as follows: du(y)/dy=(du/ds)*ds/dy+(du/df)*df/dy, where ds/dy and df/dy are the impulse responses of s and f rates presented in Charts 11A-11B. Three scenarios were used to calculate du/ds, du/df: a) average s, f for the entire sample (see Chart 12A), b) average s, f for the period before Q2 2010 (see Chart 12B) and c) average s, f for the period since Q2 2010 (see Chart 12C).

Chart 12 Estimated effect on the (steady-state) unemployment rate from the decline in GDP and f, s contributions on the basis of f, s averages

(%)



Source: Labour Force Survey, ELSTAT; author's calculations.

unemployment during the crisis (Q2 2010-Q2 2015), while it has led to higher unemployment rates for 3 years (see Chart 12C).[16] This is consistent with corresponding findings by Hairault, Le Barbanchon and Sopraseuth (2015) for France.

Using the implied reactions of the (steady-state) unemployment rate and the contributions of the job separation and job finding rates shown in Charts 12A-12C, we come to the conclusion that the job finding rate accounts for 57% of unemployment variance in the last scenario concerning the crisis period, against 21% for the pre-2010 period (see Table 3).

Table 3 The contribution of separation and job finding rates of change to the fluctuation of unemployment (estimated indirect effect)

β	Q1 2004-Q2 2015	Q1 2004-Q1 2010	Q2 2010-Q2 2015
β_s	0.58	0.74	0.39
β_f	0.37	0.21	0.57

8 THE ROLE OF THE HYSTERESIS EFFECT IN THE CHANGE IN UNEMPLOYMENT

In line with the analysis by Barnichon and Garda (2015), this section examines the role of the hysteresis effect in the change in the unemployment rate following an exogenous increase in the job separation rate (s) which could be due to a decline in economic activity.[17] According to the results, the increase in the job sep-

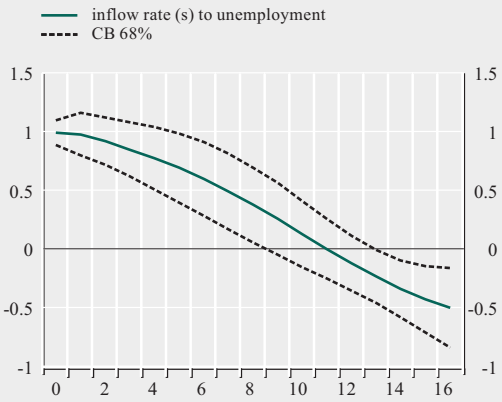
16 The analysis is based on the (simplistic) assumption that the estimates of ds/dy and df/dy that concern the entire sample remain valid during the crisis. Therefore, the different effect on the unemployment rate results indirectly from the use of different weights, which are based on the s, f values during the crisis.

17 The analysis is based on structural vector autoregression (SVAR) with a lag, a dummy variable whose value is equal to 1 after Q2 2010 and the following seasonally-adjusted variables: the annual rate of change in real GDP, the job separation rate (s), the job finding rate (f) and the job vacancy rate (v) (see Tagkalakis 2015). The estimated effects shown are based on the assumption of an exogenous 1% fall in the rate of change in real GDP. The 68% confidence bands (CB) in the impulse responses of the reviewed variables are based on the bootstrap method (1,000 replications were performed).

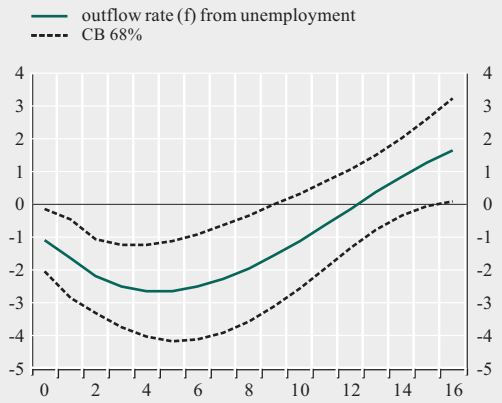
Chart 13 Estimated effect of an exogenous increase in the inflow rate to unemployment

(percentage points)

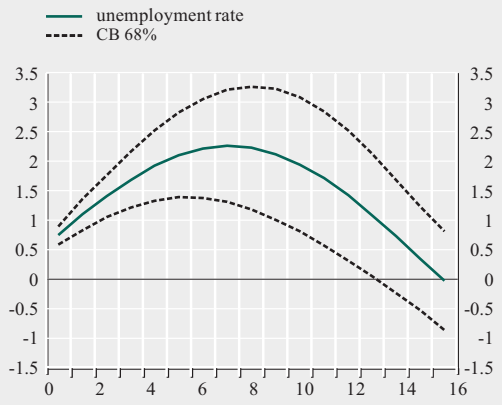
A. On the inflow rate (s) to unemployment



B. On the outflow rate (f) from unemployment



C. On the unemployment rate



Sources: Eurostat and ELSTAT; author's calculations.

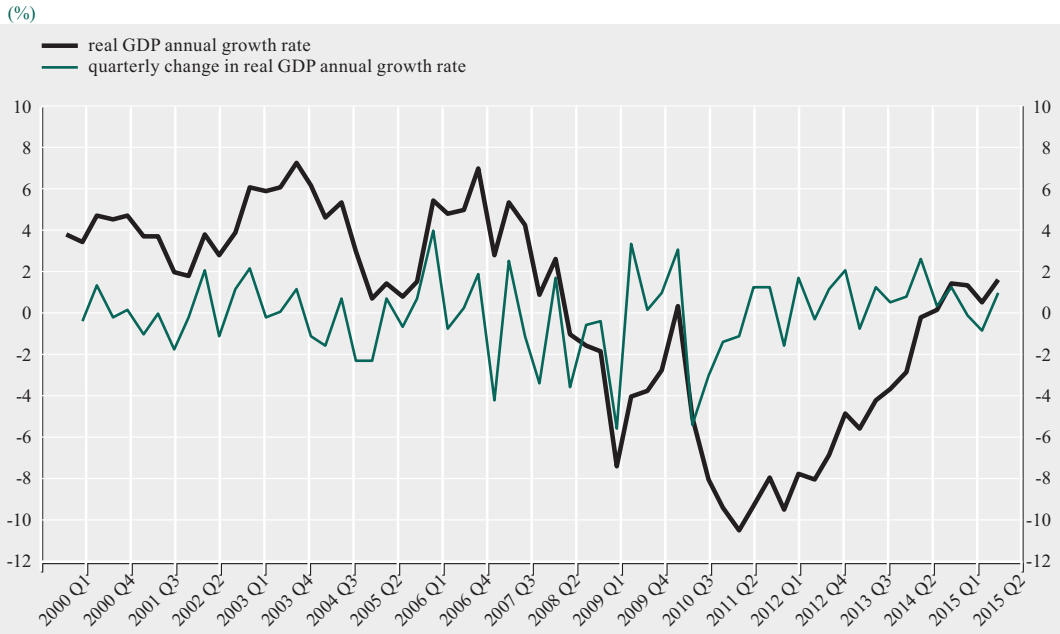
aration rate lasts for 11 quarters, while the decline in the job finding rate lasts 12 quarters (see Charts 13A-13C). In other words, the decline in the job finding rate increases the unemployment rate substantially and for a marginally longer period (1 quarter). However, according to Chart 13C, the unemployment rate is upwardly affected by the exogenous increase in the job separation rate (s) for a period of 15 quarters, i.e. about 1 year more than what is implied by changes in s and f rates. This is indicative of the persistence that characterises the change in the actual unemployment rate (persistence effects), above and beyond the changes in the estimated job separation and job finding rates.

9 A FIRST ECONOMETRIC ANALYSIS OF THE IMPACT OF STRUCTURAL REFORMS IN THE LABOUR MARKET ON THE JOB SEPARATION AND JOB FINDING RATES

According to the preceding analysis, the job separation and job finding rates have been significantly affected in the past few years both by cyclical and structural factors. The dramatic decline in economic activity in the first years of the crisis accelerated the job separation rate and decelerated the job finding rate (see section 7). The gradual improvement in economic conditions since early 2014 is estimated to have had exactly the opposite result. However, various structural interventions were made in the same period in the labour market, making it more flexible. Some of them are reflected in the path of OECD's EPL index (see Chart 2).

This section investigates the impact of structural changes in the labour market on the job separation rate (s) and the job finding rate (f). The analysis is based on a vector autoregression (VAR) with a lag and the following seasonally-adjusted variables: the annual rate of change in real GDP, the job separation rate (s) and the job finding rate (f). The "structural changes" dummy variable defined in section 6.1 is also used, reflecting the structural changes made in the labour market, as reflected in OECD's EPL index.

Chart 14 Evolution of the real GDP annual growth rate and its quarterly change



Source: ELSTAT; author's calculations.

The impact of structural changes on the evolution of s and f rates can vary depending on the state of the business cycle. Hence, the period Q1 2000-Q2 2015 is broken down into three subperiods, for each of which a dummy variable is constructed, equal to 1 in the reference period and 0 for the remaining period. Specifically, the following three dummy variables are constructed, reflecting: a) the deepening economic recession, i.e. when the annual real GDP growth rate is negative and deteriorates further from one quarter to the other, b) the gradual recovery, when the annual real GDP growth rate is negative but improves from one quarter to the next, and c) the times of economic expansion, when the real GDP growth rate is positive.

Chart 14 plots the annual real GDP growth rate and its quarterly change. The economy is in a state of deepening recession when both series shown in Chart 14 have negative values. The economy is in a state of gradual recovery (or decelerating recession) when the annual real GDP growth rate is negative but its quarterly change is positive.

Then the "structural changes" dummy variable is multiplied by the three dummy variables relating to the periods of deepening recession, gradual recovery and economic expansion and the three new dummy variables are incorporated in the VAR as exogenous variables. These three new variables are interpreted as structural changes that have taken place in periods of deepening recession, gradual recovery and economic expansion. Therefore, a value of 1 indicates lack of progress in structural changes, 2 indicates implementation of structural changes and 3 indicates accelerating structural changes in the labour market.

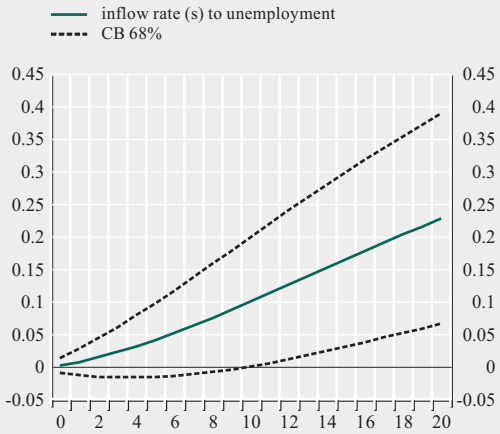
Following the analysis by Lutkepohl (2005), we employ cumulative dynamic multiplier functions, which measure the cumulative effect of a unit change in each of the exogenous variables on the endogenous variables of the VAR. The results of the exercise are shown in Charts 15A-15C and 16A-16C.[18]

18 The 68% confidence bands (CB) in the impulse responses of the reviewed variables are based on the bootstrap method (1,000 replications were performed).

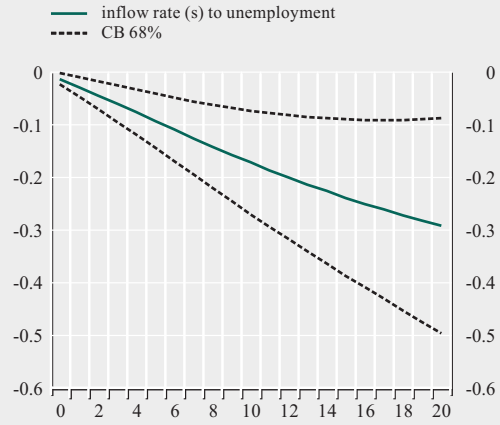
Chart 15 The cumulative effect of structural reforms on the inflow rate (s) to unemployment

(percentage points)

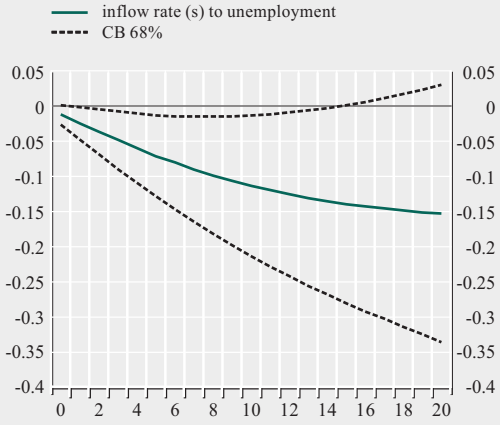
A. At times of deepening recession



B. At times of gradual recovery



C. At times of economic expansion

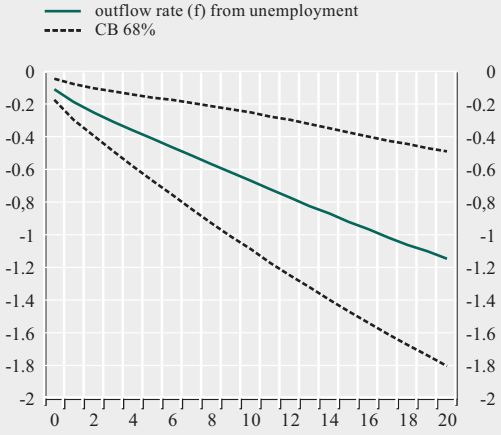


Sources: Eurostat and ELSTAT; author's calculations.

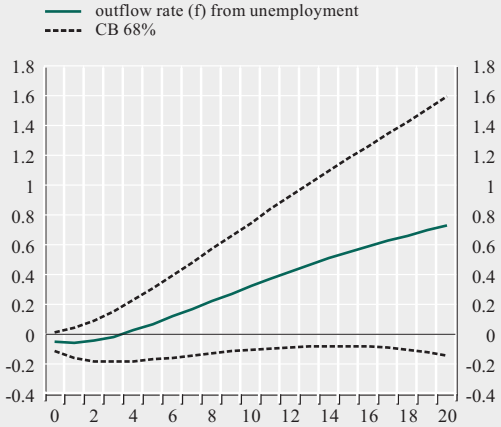
Chart 16 The cumulative effect of structural reforms on the outflow rate (f) from unemployment

(percentage points)

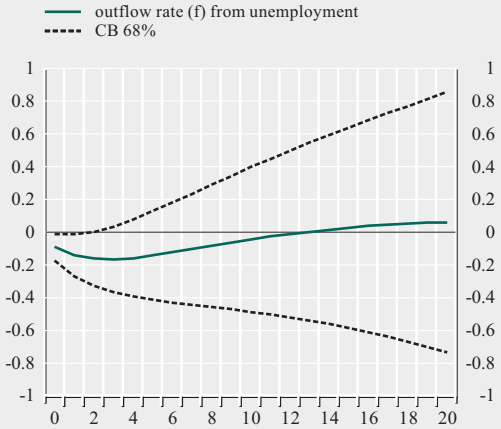
A. At times of deepening recession



B. At times of gradual recovery



C. At times of economic expansion



Sources: Eurostat and ELSTAT; author's calculations.

According to these results, structural changes at times of deepening recession increase the job separation rate (s) without improving the job finding rate (see Charts 15A and 16A). By contrast, in periods of gradual recovery of the economy (or decelerating recession), structural changes in the labour market boost the job finding rate (f) without leading to an increase in the job separation rate (see Charts 15B and 16B). Finally, in periods of economic expansion, structural changes in the labour market have limited effects which, after a period of 5 years (20 quarters), lead to a small decline in the job separation rate and a small increase in the job finding rate (see Charts 15C and 16C).

These results suggest that the structural labour market reforms that were undertaken at times of deep and accelerating recession contributed to an increase in the job separation rate (s), while those undertaken at times of recovery (decelerating recession) had a positive effect on the job finding rate (f).

In any event, these results represent a first effort to evaluate the reforms undertaken and should be seen as preliminary, since this analysis and the dummy variables used here cannot capture all structural interventions since 2010. These structural changes include the establishment of more flexible labour relations, cuts in employers' social security contributions, minimum wage setting, changes in the collective bargaining framework, the primacy given to firm-level agreements, active employment policies, reform in the pension system and, more recently (since 2013), reforms in the products and services markets.

10 SUMMARY AND CONCLUSIONS

Using data from ELSTAT's Labour Force Survey (LFS) and following the methodology of Smith (2011) and Petrongolo and Pissarides (2008), we examined the determinants of unemployment dynamics. Based on the results of the study, we come to the conclusion that the job separation rate has picked up since the onset of the crisis. This reflects the effect of recession and the establishment of more flexible labour relations since 2010, which facilitated dismissals. Lower hiring and available job vacancies curbed the job finding rate and subsequently led to higher unemployment rates.

Reduced uncertainty about the country's outlook and a normalisation of the economic conditions since mid-2012 contributed to a gradual increase in demand for labour. In this context, the structural changes that took place in 2012, relating among other things to the establishment of minimum wages, a reshaped framework for collective bargaining with primacy given to firm-level agreements and proactive employment policies, slowed the reduction of labour costs and contributed to a deceleration in the job finding rate (since 2012). At the same time, the new and more flexible labour market regime enabled a gradual acceleration in the job finding rate, as young workers could now be employed receiving lower wages and fired with fewer regulatory constraints.

Therefore, in periods of low economic activity, the transition from employment to unemployment represents the main component of the increase in the unemployment rate, whereas in periods of economic recovery the "job finding" factor becomes more important. It is clear, however, that restraining the job separation rate is not enough to lower the extremely high unemployment rate, since the negative effect of the job finding rate lasts longer because of the decline in economic activity. It is very important to create new jobs to tackle the problem. Otherwise, even in conditions of recovery, there is a risk of persisting high unemployment rates, with negative consequences for the Greek economy's productive capacity (a situation described as "jobless recovery").

Moreover, the outward shift of the Beveridge curve during the crisis and the increase in unemployment are consequences of the restructuring of production in the economy in

the years of the crisis from non-tradeables (e.g. construction) to tradeables. The reforms implemented since 2010 in the labour market support an effective matching of job vacancies and unemployed persons, as they increase the change in the unemployment rate after a change in the job vacancy rate. This implies that, in boom years when demand for labour increases, they facilitate new hirings, thereby leading to a faster reduction in unemployment.

Therefore, further policy interventions are needed both for firms to create new jobs and for the unemployed to improve the quality of labour supply.

New jobs can only be created by increasing domestic and foreign private investment. In order to help attract private investment, reforms could be expedited e.g. by upgrading the institutional and legal frameworks, improving the efficiency of public services, introducing a stable tax framework, eliminating restrictions in goods and services markets and, more generally, creating a business-friendly environment.[19] It is of paramount importance to lift capital controls and restore the economy's financing conditions.

Finally, emphasis should be placed on active employment policies and on the unemployed persons' apprenticeship and retraining. This would improve and renew their skills and knowledge, in order to increase their probability of absorption in the new extrovert sectors of economic activity that have emerged during the crisis.

19 It is estimated that the deregulation of goods and services markets will lead to price declines (because of lower profit margins due to increased competition), thereby boosting the real disposable income of households, which was affected in the past few years by the decrease in wages and the increase in taxation.

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THE GREEK PRIMARY SECTOR FROM 1995 TO 2014

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1 INTRODUCTION

The present study reviews developments in key variables of the Greek agricultural sector during the period 1995-2014, i.e. gross value added, gross investment and employment, also in comparison with the evolution of the corresponding aggregates in the economy as a whole.[1]

The period under review is divided into three subperiods: 1995-2000, 2001-2007 and 2008-2014. The criterion behind this division is that the first year of each subperiod marked a significant change in the Greek economy. Specifically, in 1995 Greece embarked on an effort to fulfil the Maastricht Treaty criteria for euro area participation (recording a high growth rate in 1996 as a result); in 2001 Greece joined the euro area; and 2008 saw the onset of the economic crisis.

The figures for Greece are compared with the corresponding averages of selected countries of Europe, the euro area and the Mediterranean, for which relevant data are available for all three economic aggregates and all three subperiods.

Moreover, the study discusses the evolution of the Common Agricultural Policy during the same period and investigates the impact of decisions taken and measures implemented under this policy on the variables in focus.

The study is structured in two parts. The first part reviews the changes in key aspects of the Common Agricultural Policy (CAP), in view of its relevance for the evolution of Greek agriculture since Greece joined the EEC. The second part presents the economic aggregates in terms of absolute levels, year-on-year changes, average annual growth rates and shares in the respective aggregates for the total economy, while also examining labour productivity and total factor productivity in the primary sector and in the economy as a whole.

2 THE COMMON AGRICULTURAL POLICY (CAP)

2.1 THE ORIGINS OF THE CAP: INTRODUCTION, STRUCTURE AND KEY PRINCIPLES

The Common Agricultural Policy began to feature as a topic in discussions among the then six Member States of the European Economic Community (EEC) in the late 1960s; it was launched in 1962.

The rationale behind the project related to the experience of significant food shortages in Europe following the devastation of agricultural land and infrastructure during World War II and its aftermath, which left the primary sector in ruins. Against this background, the founders of the (then) EEC identified a need for a common agricultural policy to support the agricultural sector which is constantly exposed to:

- weather conditions;
- plant and animal diseases;
- competition from non-Community countries.

This situation tended to result in price volatility, with negative effects on the economy as a whole: price hikes put a burden on consumers, while price decreases reduce the income of producers, who might even give up agricultural activity for a steady-income job.

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1 The data used in this article are from the Hellenic Statistical Authority (ELSTAT) regarding Greece and from Eurostat regarding European countries.

Moreover, the heterogeneity of production across countries, reflecting differences in climate and geomorphology, implied heterogeneous policy approaches and tools for the agricultural sector.

Thus, through the realisation of the need to establish a common agricultural policy, the two main objectives of such policy took shape[2]:

- to ensure adequate supply of good food at affordable prices for European consumers;

- to ensure a fair standard of living for European producers, motivating them to remain in the farming business.

With time, it became clear that the focus of the CAP had long been more on the latter objective than on the former, which reflected the balance of power between consumers and producers.

Based on these two main objectives, four key CAP principles were defined:

- *Market unity:* free movement of goods within the EEC, without tariffs or quantitative limits, and at the same price for the same product.

- *Community preference:* European products are given priority over products from outside the region. Imports are burdened by countervailing duties, while exports are subsidised.

- *Financial solidarity:* the costs entailed by the implementation of the CAP are covered by the Community budget, to which all Member States contribute their receipts from tariffs and countervailing duties.

- *Co-responsibility:* producers share part of the cost arising from agricultural output surpluses. Certain products, such as milk, cereals and olive oil, are typically produced in large quantities that cannot be fully absorbed at the high prices set on an annual basis. Any surplus quantity is absorbed, but at a price below the set price. This cost is indirectly shared with producers, who are obliged to accept lower guarantee prices whenever their production volumes exceed certain quotas.

Under the current set-up, the power to propose amendments to the CAP lies with the European Commission, which, following a public consultation, submits its proposals to the Council of Ministers for Agriculture and Fisheries, as well as to the European Parliament,[3] whose equal role is enshrined in the Treaty of Lisbon.[4] The European Parliament, representing European Union citizens, became part of the amendment process only recently, in 2013. Its involvement offers the necessary democratic legitimacy to CAP amendments; however, notwithstanding the intentions of Brussels, a powerful agricultural lobby is also a decisive factor in shaping agricultural policy. In the past few years, the reforms have been met with less resistance, as pressure is also exerted by social groups other than farmers, such as consumer associations and environmental organisations.

In the past, the CAP was funded by the European Agricultural Guidance and Guarantee Fund (EAGGF), established in 1962 and composed of the Guidance Section and the Guarantee Section.

The Guarantee Section financed expenditure for common purchases of products, subsidies, premiums, storage and withdrawal of products. The Guarantee Section financed structural policy measures. Its scope therefore included matters relating to the number of farmers and farms, equipment, training, manufacturing and marketing of agricultural products, as well as

2 See also Article 39 of the Consolidated version of the Treaty on the Functioning of the European Union, Official Journal of the European Union, 26.10.2012.
3 Article 43 of the Consolidated version of the Treaty on the Functioning of the European Union, Official Journal of the European Union, 26.10.2012.
4 Article 48 of the Treaty of Lisbon, Official Journal of the European Union, 17.12.2007.

agricultural infrastructure. Since 1993, structural policy funding has been placed under the Community Support Frameworks (CSFs), succeeded by the National Strategic Reference Framework (NSRF) and, subsequently, the Partnership Agreement.

The EAGGF was abolished in 2004 and was replaced by two new funds: the European Agricultural Guarantee Fund (EAGF), which finances market support measures, and the European Agricultural Fund for Rural Development (EAFRD), which finances rural development programmes, aiming to foster the competitiveness of agriculture, environmental protection and quality of life in rural areas. The establishment of the two new funds as part of the 2004 reform signalled the CAP's shift towards an agricultural sector that is more competitive and less protected by Community funds.

2.2 THE EVOLUTION OF THE CAP: POLICIES, CHALLENGES AND REFORMS

The first measure towards the creation of a common agricultural market was the abolition, in 1962, of tariffs on agricultural products traded between EEC Members States. A second measure was the setting of a *target price*, i.e. the maximum desirable price for a given product within the EEC. A third measure was the introduction of an *intervention price*/ *minimum import price*, which is lower than the target price, to ensure that internal prices (prices within the EEC) do not drop below a certain level. This price was accompanied by *countervailing duties* on imports, equal to the difference between the minimum import price and the (lower) import price at the EEC border. The minimum import price, at least for basic agricultural products, was set at a higher level than the international import price.

A fourth measure was the introduction of a *withdrawal price* for surplus quantities of perishable products. This is the price level below which producers will not sell, donating or burying their produce instead, so that the remaining quantity can be sold at the market price.

A fifth measure was the introduction of a *threshold price*. This is the minimum price above which imports from third countries are not subject to any restrictions or charges, given that, adding transport costs, this price is raised to match the target price.

As can be seen from the above-mentioned measures, the CAP, under pressure from farmers, was primarily geared to ensuring good prices for producers, whose output kept rising until the end of the 1980s, leading to ample availability of affordable farming products at food stores, but also to an accumulation of huge surpluses. This highlighted a need for action to match supply and demand for food, as overproduction coupled with price support policies in favour of producers —incompatible with free market rules— pushed Community expenditure on farmer support up to exorbitant levels, since the Community purchased surplus quantities from producers at high internal (Community) prices and sold them abroad at the prevailing low international prices.

The first attempt at reform was made in 1972. As early as 1968, Sicco Mansholt, European Commissioner for Agriculture, had acknowledged the limits of a price support policy. In a memorandum he sent to the Council of Ministers for Agriculture, he pointed out the need to reduce land under cultivation by at least 5 million hectares. He also noted that, despite an increase in production and permanent increases in Community expenditure, the standard of living of farmers had not improved. He therefore suggested that production methods should be reformed and modernised, and that small farms should be increased in size and the number of farmers should be reduced by 5 million. Lastly, he called on the Member States to limit direct support to unprofitable farms. Faced with angry reaction from producers, the Mansholt Plan, as it came to be known, was reduced to three European directives, con-

cerning the modernisation of agricultural holdings, the cessation of certain activities and the training of farmers.

The second reform started in 1984, when quota limits were imposed on dairy production, and was completed in 1988, with the introduction of a ceiling on Community expenditure to farmers. The declining power of farmers and the growing influence of environmentalists certainly played a role in this development. Above all, however, the reform was driven by financial concerns, given that overproduction had made the CAP overly expensive.

The third reform, the MacSharry Reform (named after the European Commissioner for Agriculture, Ray MacSharry), took place in 1992 and was the first serious reform of the CAP. It reduced the level of support by 29% for cereals and by 15% for beef. Additionally, it introduced incentives to withdraw land from production and limit stocking levels, as well as measures to encourage retirement and afforestation. The reduction in producers' income would be offset by support offered irrespective of production volumes. It was also agreed to replace countervailing duties on imports with standard tariffs and to limit subsidies on exports.

This third reform brought cereal prices closer to the equilibrium level, ensured greater transparency in agricultural support expenditure and laid the foundations for a decoupling of income support from production support.

The fourth reform, known as "Agenda 2000", took place in 1999 and most notably involved a splitting of the CAP into two pillars: production support (Pillar I) and rural development (Pillar II).

A system was set up to gradually replace the policy of price support for cereals, milk, dairy products and beef by policies of direct producer support. In addition, payments for large arable crops, such as cereals and oilseeds, were harmonised.

Agenda 2000 was a broader framework which also included the CAP. It referred to Community budgetary aggregates and became necessary due to the upcoming adoption of the single currency and EU enlargement with Central and Eastern European countries, several of which had sizeable agricultural sectors.

Thus, while the 1992 reform laid the groundwork for decoupling income support from production support, such decoupling was effectively introduced with the 1999 reform. This reform was largely the outcome of negotiations between the EU and the World Trade Organization, which sought and, to a significant degree, achieved a reduction of subsidies to EU exports in favour of exports from non-EU countries.

A key element of the fifth reform, which took place in 2003, was the unification of a significant part of the various activity-specific subsidies to producers into a single farm payment (SFP), decoupled from type or quantity of production.

SFP payments were based on the average level of subsidies received by individual farmers in the past three years. This provided a relatively *stable income basis*. On the other hand, as e.g. the single payment for the year 2003 was calculated as the average of the subsidies received in the preceding three-year period, i.e. 2000-2002, the scheme acted to perpetuate historical entitlements, which were particularly high for some (as certain crops were highly subsidised) and particularly low for others.

Exceptionally and as a transitional measure, the countries that joined the EU in 2004 and 2007 could opt for the Single Area Payment Scheme, involving payment of uniform amounts per hectare of agricultural land in the Member State concerned, up to a national ceiling resulting from the accession agreements.

The 2005-2006 period saw a reform in the sugar regime. Sugar beet is one of the crops subsidised under the CAP. The EU is the

largest sugar beet producer in the world, with an annual production of 17 million metric tonnes, competing with Brazil and India, i.e. the world leaders in sugar cane production.

In early 2006, the EU decided to reduce by 36% the guaranteed price for sugar within four years, starting in 2006, which resulted in a sharp drop in European sugar production in favour of developing countries.

Efforts to contain CAP spending continued into the following years. In 2007, the European Commission considered a proposal to apply a ceiling of GBP 300,000 on subsidies per farm. This would affect certain large farms in the United Kingdom, where over 20 farms were each receiving GBP 500,000 or more from the EU. Similar attempts had been made in the past but had been opposed by two powerful unions in the United Kingdom and the German Farmers' Union. Thus, efforts to contain Community payments to agriculture were unsuccessful.

2.3 THE 2013 REFORM

2.3.1 The key points of the reform

The latest reform took place in 2013 under EU Agriculture Commissioner Dacian Cioloş and applies for the period of 2014-2020.

The key points of this reform are the following:

1) The single payment is replaced by three new direct payments:

- the Basic Payment Scheme;
- the Greening Payment; and
- the Young Farmer Payment, targeting farmers of no more than 40 years of age who are setting up an agricultural holding in 2013 and onwards.

Farmers are eligible for greening payments if they:

- ensure crop diversification: two crops are required for arable land of over 10 hectares and at least three crops for arable land of over 30 hectares. The main crop may cover up to 75% of arable land and the two main crops together at most 95% of arable land;
- maintain existing permanent grassland;
- maintain an ecological focus area covering 5% of their arable land for farms exceeding 15 hectares (excluding permanent grassland and perennial crops); qualifying areas include hedgerows, trees, fallow land, landscape features, natural habitats, buffer strips, forests and nitrogen-fixing crops.

Coupled support is maintained for certain products, with a view to ensuring adequacy of supply, viability of the relevant processing industry, current account improvement, export orientation, lower consumer prices and better quality. Moreover, additional support may be granted for areas with natural constraints (as defined under Rural Development rules). For Greece, the amount of support ranges between a minimum of €250 and a maximum of €150,000 per farm.

2) Greece used the option to apply the basic payment scheme at regional level and allocate its national ceiling accordingly. In this regard, *three types of regions* were defined, based on agricultural land use:

- Region 1: grazing areas;
- Region 2: arable land;
- Region 3: tree plantations and vineyards.

The criterion of classification into these three regions is the declared land use in the previous year. Thus, an area declared as arable land in 2014 and as tree area in 2015 would be classified into Region 2 in 2015.

3) *Basic payment entitlements* per farmer are established, according to the number of eligi-

ble hectares, i.e. one payment entitlement per one hectare. For Greece, the minimum eligible farm size is set at 0.4 hectare and eligible for the Basic Payment Scheme in 2015 is any farmer who received a direct payment of at least €250 in 2013.

4) The concept of *internal convergence* is introduced. Payment entitlements with a unit value that is higher (lower) than 90% of the regional unit value will have their unit value decreased (increased) gradually until 2019, to cover at least one-third of the difference between their initial unit value and 90% of the regional unit value in 2019. It should be noted that greening payments are not subject to this requirement.

5) The concept of *active farmer* is introduced as a condition for access to the basic payment scheme:

- The definition of active farmer excludes persons whose agricultural areas are by majority naturally kept in a state suitable for cultivation or grazing and who do not carry out a minimum level of farming activity on such areas.

- Farmers who received €5,000 or less in direct payments in the previous fiscal year automatically qualify as active farmers, unless they are excluded under the previous paragraph.

- The main criterion to characterise natural or legal persons as active farmers is that direct payments represent at least 10% of their other non-agricultural gross (before taxes and expenses) income.

- Landowners who received direct payments of over €5,000 during the preceding fiscal year and who operate airports, railway services, waterworks, real estate services, permanent sport and recreational grounds are considered as active farmers if they provide verifiable evidence demonstrating any of the following:

(a) that the annual amount of direct payments is at least 5% of the total receipts obtained from non-agricultural activities in the most recent fiscal year for which such evidence is available;

(b) that the total agricultural income earned in the most recent fiscal year for which such evidence is available accounts for at least one-third of their total income for the same year;

(c) that their principal business or company object consist of exercising an agricultural activity.

The above requirements are assessed on an annual basis (and not only in the starting year 2015) on the basis of data maintained at the Ministry of Finance.

In particular for Greece, the "national envelope" under the CAP for 2015 (i.e. the total amount available to Greece according to CAP arrangements) is €2 billion and is allocated as follows:

Basic payment	1,080,000,000	54%
Green payment	600,000,000	30%
Coupled payments	180,000,000	9%
Natural constraints	100,000,000	5%
Young farmers	40,000,000	2%

For the entire 2014-2020 period, the total amount available to Greece is €19.5 billion, and its regional allocation is as follows:

Grazing areas	4,900,000,000	25%
Arable land	9,100,000,000	47%
Tree plantations	5,500,000,000	28%

It should be noted that a Ministerial Decision issued in 2015 provides for a 3% reduction of the national basic payment scheme ceiling

(bringing it down by some €33 million), for the purpose of building up a national reserve out of non-activated payment entitlements, which is to be used mainly to grant aid to new farmers.

2.3.2 An evaluation of the 2013 reform

Under the latest CAP reform:

i. For the first time, income support is aligned with actual production, as

(a) subsidies to farms declared as largely fallow land are discontinued;

(b) support to large businesses whose primary activity is other than agriculture is limited;

(c) the system of historical entitlements introduced in the 2000-2002 period, when support was coupled to the type and quantity of output rather than the size of the cultivated area, is abolished. This is the most fundamental CAP reform, adversely affecting the income of those farmers who had earned payment entitlements on the basis of their activity in the historical reference period, rather than their actual production in subsequent years.

ii. Incentives are provided to improve competitiveness, in terms of both product quality and consumer price: the abolition of historical entitlements and of payments to persons with little or no connection to agriculture is expected to foster a modern and innovative philosophy among those who wish to remain in the farming business.

iii. More support is given to poorer farmers, as the requirement of gradual convergence towards 90% of the regional average (it should be recalled that the regions are defined according to their agronomic rather than geographical characteristics) implies less disparity in the allocation of payments and is therefore in favour of less advantaged farm households.

iv. Respect for the environment is subsidised, in an aim to enhance environmental performance, which is expected to contribute to combating climate change and improving the quality of life in rural areas. In this context, farmers are incentivised to shift towards "green" agriculture by modernising methods of cultivation, thereby serving a dual goal of rural environment protection and better quality of consumer products.

v. Young and new farmers are favoured.

vi. The reform also favours the creation of large farms, as the payment ceiling (€150,000) is fairly high and clearly act an incentive formergers of small agricultural plots. At the same time, however, those that wish to retain a small farmer status are given incentives to turn to green agriculture and benefit from the Greening Payment Scheme.

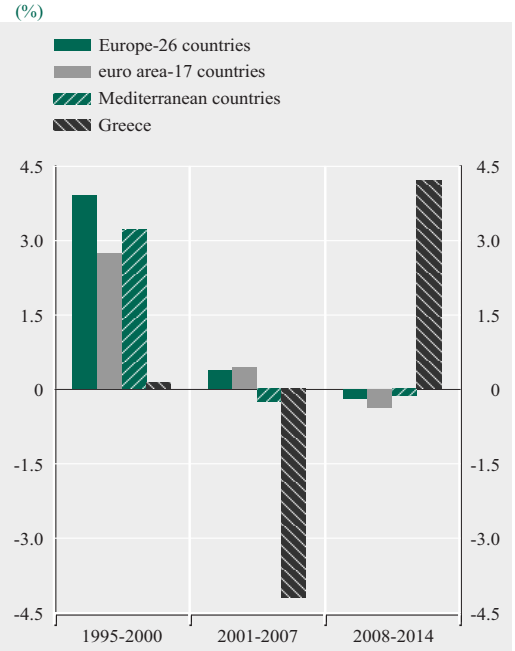
vii. The share of the CAP in the overall Community budget is further reduced, from 71% in 1984 to 42% in 2010 and 38% in 2013, of which 28% is intended for direct payments and 10% for rural development, i.e. economic, social and environmental development of the countryside.

3 THE EVOLUTION OF THE GREEK PRIMARY SECTOR

3.1 GROSS VALUE ADDED

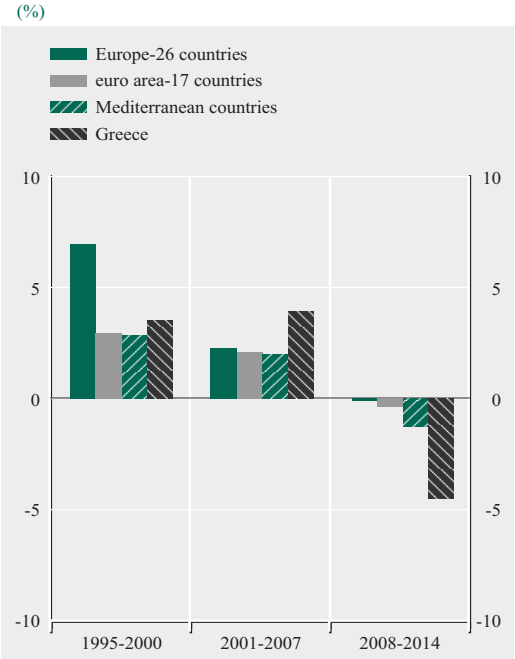
Charts 1a1 and 1a2 show the average annual rates of change in the gross value added (GVA) of the primary sector and of total economy. The growth rate of GVA in the primary sector appears to have been practically zero in 1995-2000, whereas the respective growth rate for total economy was 3.4%. In the 2001-2007 subperiod, this rate turned negative, to -4.2%, compared with a positive growth rate of 3.9% for GVA in total economy.

Chart 1a1 Average annual rates of change in the gross value added of the primary sector



Source: Calculations on Eurostat primary data; at constant 2010 prices.

Chart 1a2 Average annual rates of change in total gross value added

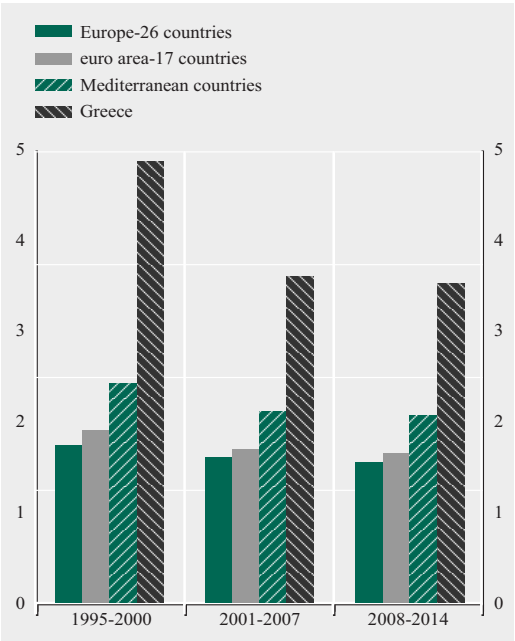


Source: Calculations on Eurostat primary data; at constant 2010 prices.

The largest declines are observed in 2006 and 2007 (due to space limitations, data for individual years are not shown here). These declines are obviously associated with the fact that the 2003 CAP reform, whereby, as already mentioned, a large part of payments are decoupled from the level of output and provided as income rather than as a percentage of the quantities produced, came into effect in Greece on 1 January 2006. Specifically, 65% of the subsidy was decoupled from the quantities produced and only 35% remained coupled to production, i.e. the cultivated area; this measure may have thus led to decommissioning of agricultural land and, consequently, to a decline in production.

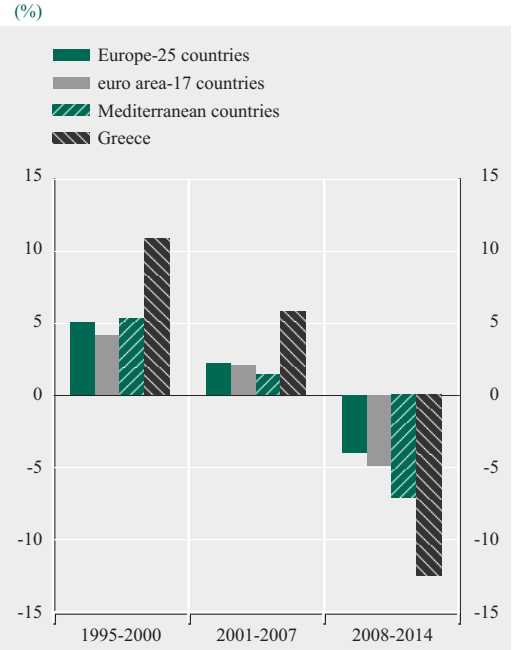
During the crisis, this picture was reversed: while the average annual rate of change in GVA in total economy was -4.5%, the respective rate for the primary sector was 4.2%, which is exceptionally high and reflects the marked upward trend of this aggregate from 2009 onwards.

Chart 1b Share of the primary sector gross value added in total value added



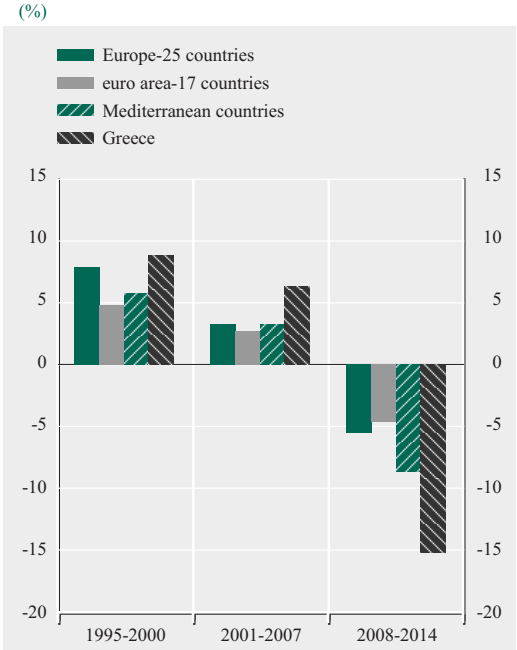
Source: Calculations on Eurostat primary data; at constant 2010 prices.

Chart 2a1 Average annual rates of change in gross fixed capital formation in the primary sector



Source: Calculations on Eurostat primary data; at constant 2010 prices.

Chart 2a2 Average annual rates of change in total gross fixed capital formation



Source: Calculations on Eurostat primary data; at constant 2010 prices.

Chart 1b shows the share of primary sector GVA in the total economy aggregate. High shares are recorded in all three subperiods under review, 4.9%, 3.6% and 3.5% respectively, compared with shares of around 2.0%, on average, for Europe, the euro area and Mediterranean countries.[5]

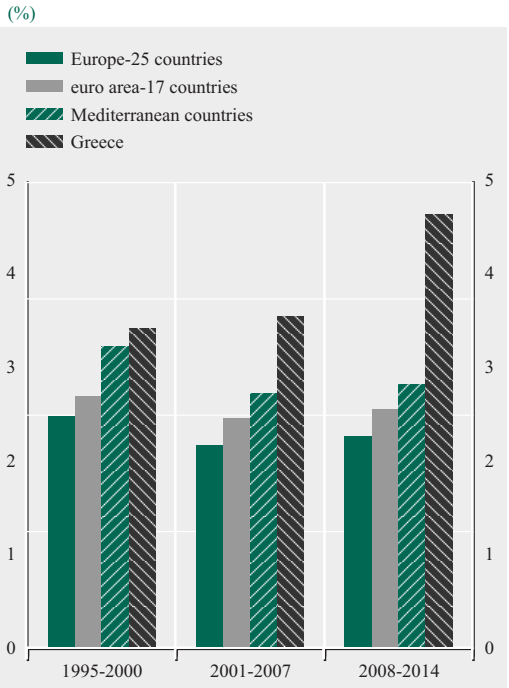
3.2 GROSS FIXED CAPITAL FORMATION

As shown in Charts 2a1 and 2a2, gross fixed capital formation in the primary sector grew strongly in the 1995-2000 subperiod, at an average annual rate of 10.6%, markedly higher than the corresponding rate for the economy as a whole (8.9%).

Growth in gross fixed capital formation remained strong during the next subperiod, although decelerating to 5.7% and being slightly below the respective figure for total economy, which also fell to 6.3%. In terms of individual years (not reported separately in the tables, due to space limitations), particularly strong increases were recorded in 1997, 1999, 2003 and 2007. The increases in the years 1997 and 1999 occurred during the implementation of Community Support Framework II (CSF II, also known as the Delors package, after the President of the European Commission in 1985-1995), a financing scheme covering the 1994-1999 period and designed to promote economic development in peripheral regions. The 2003 rise occurred during the implementation of CSF III (as part of which 13 regional operational programmes were drawn up, one for each Greek region) and Greece's preparations for the Athens 2004 Olympics. The substantial increase in 2007 emerged during the first year of implementation of CSF IV (also known as the National Strategic Reference Framework – NSRF), which, similarly as CSF III, focused on promoting the development of

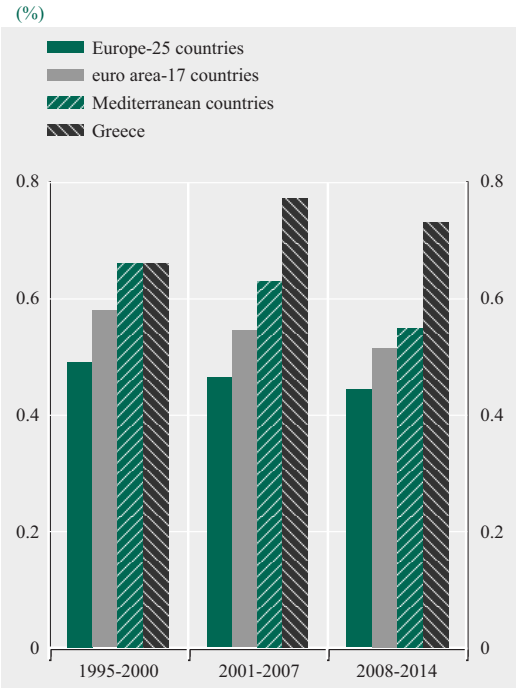
5 For more detailed data, see Tables 1a-1e in the Appendix, showing the respective shares for individual countries.

Chart 2b1 Share of gross fixed capital formation of the primary sector in total gross fixed capital formation



Source: Calculations on Eurostat primary data; at constant 2010 prices.

Chart 2b2 Share of gross fixed capital formation of the primary sector in Gross Domestic Product



Source: Calculations on Eurostat primary data; at constant 2010 prices.

peripheral regions by allocating 82.0% of funds to those areas.

Rural development policy 2007-2013 for Greece was centred around three key axes: improving competitiveness in the agricultural and forestry sectors; enhancing the environment and the countryside; and ameliorating the quality of life in rural areas. It was assisted by a fourth, horizontal axis, the LEADER programme.

The LEADER programme (an EU initiative tested as a tool for rural tourism development for the first time in 1991) provided agricultural regions with the opportunity to implement integrated and multi-sectoral local development strategies. These strategies are implemented through a "bottom-up" approach, whereby planning and implementation is undertaken by local action groups, involving public and private local actors that are active in the respective area and are familiar with its possibilities and challenges. LEADER actions are aimed to foster innovation; encourage the establishment and development of rural micro-businesses; support small tourism enterprises; increase the value added of agriculture and forestry; ensure the conservation and upgrading of rural heritage; support village renewal; promote cooperation and networking, etc.

The EU funding policy seems to have had a very positive effect on primary sector investment, particularly in 1995-2000, but also in 2001-2007, when investment, although rising at a decelerating rate, still remained significantly high.

This picture was totally reversed during the crisis (2008-2014), when the average annual growth rate of investment fell to -12.5% for the primary sector and even more strongly, to

-15.2%, for total economy. 2008 is the latest year to have seen a significant increase in agricultural investment, at a time when investment in total economy has already dropped considerably (following increases in 2006 and 2007, reflecting the strength of, mostly residential, construction activity).

In the same periods, the respective averages for the European, euro area and Mediterranean countries under review followed broadly the same pattern (high positive rates of change during the first subperiod, markedly lower —but still positive— rates in the second subperiod, strongly negative rates during the crisis), however at levels well below those of Greece.[6]

Charts 2b1 and 2b2 show the positive developments in the share of primary sector gross investment in total investment, as well as in gross domestic product (GDP), respectively, for Greece, Europe, the euro area and the Mediterranean countries. Investment in the Greek primary sector, as a percentage of total gross fixed capital formation, averaged 3.4% in 1995-2000 and 3.5% in 2001-2007; during the crisis subperiod, this share was not just maintained, but actually rose significantly, to 4.6%.[7]

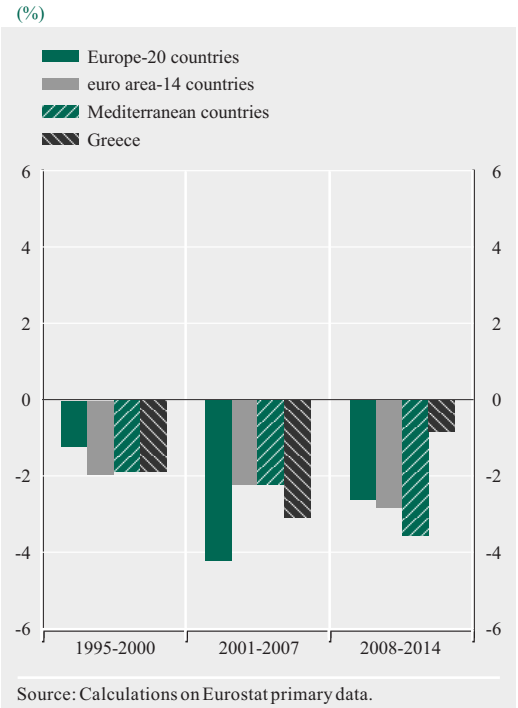
In general, the growth rate of investment and that of gross value added in the primary sector seem to have followed divergent paths. It is therefore rather safe to assume that, during the period under review, investment (or at least not all of it) did not benefit the primary sector but rather other activities.

3.3 EMPLOYMENT

Charts 3a1-1 and 3a1-2 show the average annual rates of change in employment in terms of hours worked, in both the primary sector

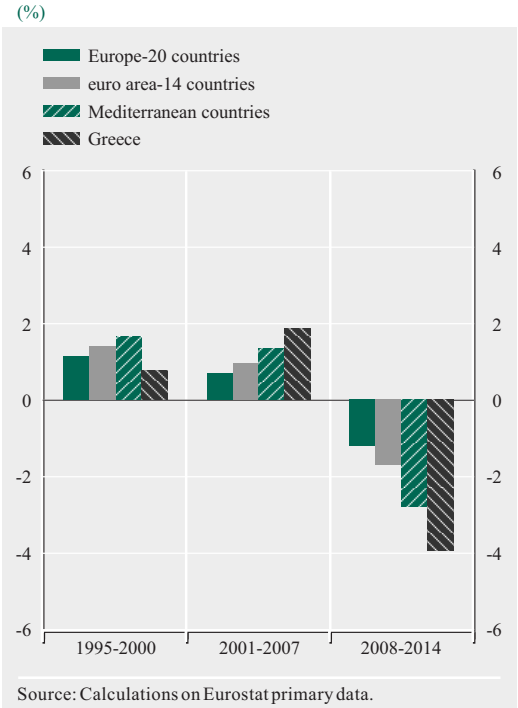
6 For more detailed, country-level data for each grouping, see Appendix, Tables 2a-2e.
7 The positive course of gross fixed capital formation in the primary sector is illustrated in the Appendix, Table 1b.

Chart 3a1-1 Average annual rates of change in employment in the primary sector



Source: Calculations on Eurostat primary data.

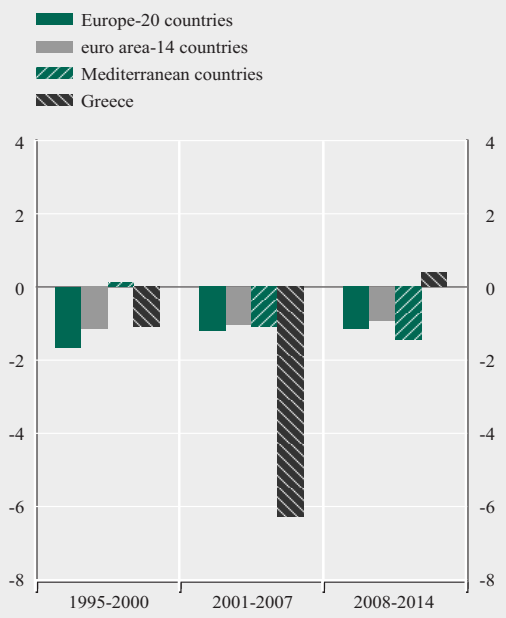
Chart 3a1-2 Average annual rates of change in employment in total economy



Source: Calculations on Eurostat primary data.

Chart 3a2-1 Average annual rates of change in hours worked by employees in the primary sector

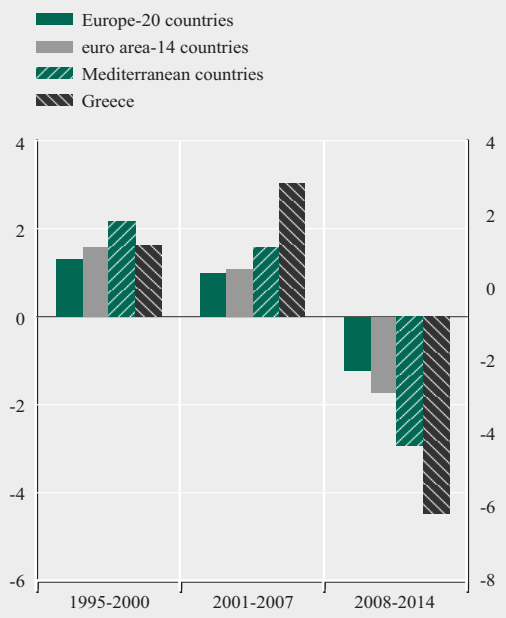
(%)



Source: Calculations on Eurostat primary data.

Chart 3a2-2 Average annual rates of change in hours worked by employees in total economy

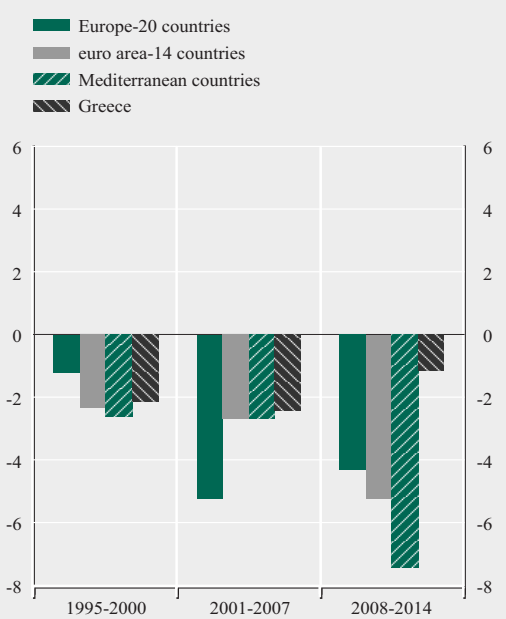
(%)



Source: Calculations on Eurostat primary data.

Chart 3a3-1 Average annual rates of change in hours worked by the self-employed in the primary sector

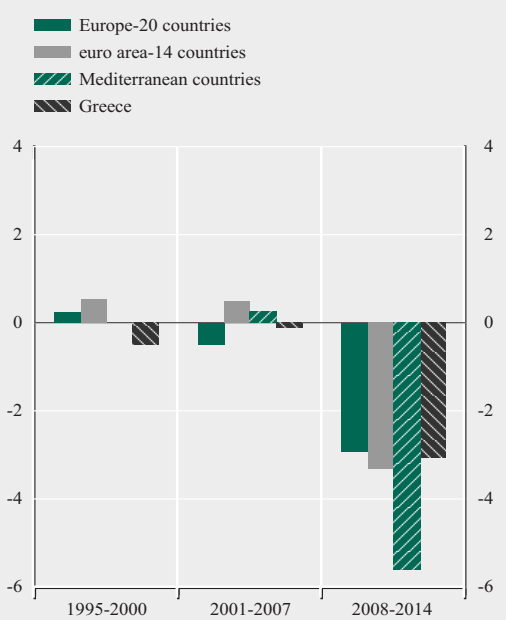
(%)



Source: Calculations on Eurostat primary data.

Chart 3a3-2 Average annual rates of change in hours worked by the self-employed in total economy

(%)



Source: Calculations on Eurostat primary data.

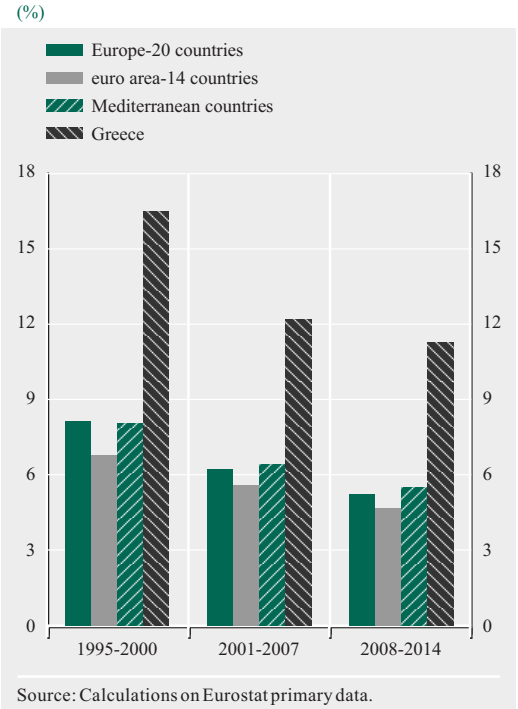
and the economy as a whole, during the subperiods reviewed. Negative average annual rates of change are observed for the primary sector in all three subperiods: -1.9% in 1995-2000, -3.1% in 2001-2007 and -0.8% in 2008-2014; in total economy, the respective rates of change are positive in the first two subperiods, i.e. 0.7% and 1.8%, but negative during the crisis (-4.0%). The primary sector aggregate followed the opposite path compared with that for total economy, which could suggest that a number of workers were forced by the crisis to shift away from the secondary and tertiary sectors towards the primary sector.

Charts 3a2-1, 3a2-2, 3a3-1 and 3a3-2 show changes in employment, broken down into dependent employment and self-employment. It is interesting to note that the rate of change in hours worked by employees in the primary sector is strongly negative (-6.3%) during the period from 2001 to 2007, as opposed to a markedly positive corresponding rate for the economy as a whole (3.0%), but also to a marginally negative rate (-1.1%) for the self-employed in the primary sector.

The strongly negative rate of change in hours worked mainly by employees probably does not so much reflect a reduced need for labour as a result of the implementation of the new CAP, but rather a shift of workers from agriculture to the secondary sector, mostly construction, which was experiencing a boom at the time, given also that higher pay and an urban way of life were unsurprisingly more attractive than living in a village and working on a field.

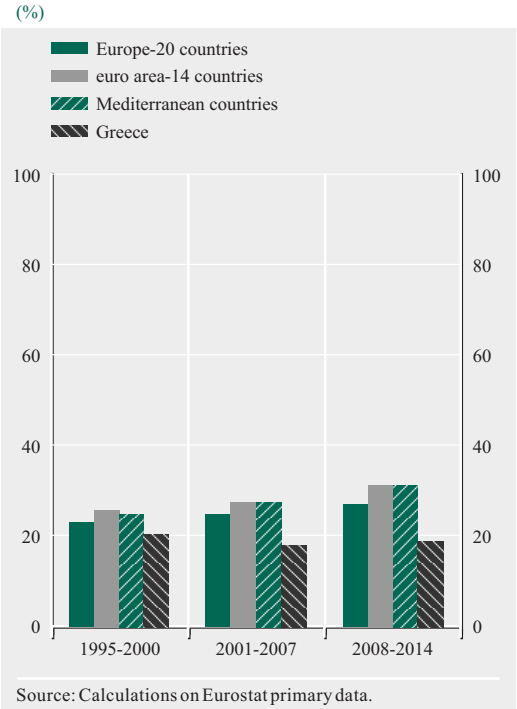
Chart 3b1 illustrates the share of primary sector employment in total employment, based on the hours worked, while Charts 3b2 and 3b3 provide a percentage breakdown of primary sector workers into employees and self-employed. In terms of total hours worked, the share of self-employment in total employment in Greece is very high, double the average for the European or the Mediterranean countries and more than double the euro area average.

Chart 3b1 Share of the primary sector in total economy in terms of hours worked



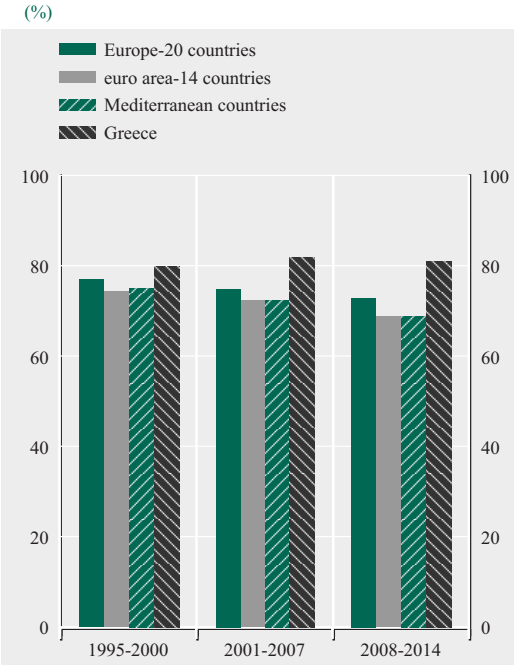
Source: Calculations on Eurostat primary data.

Chart 3b2 Share of employees in the primary sector in terms of hours worked



Source: Calculations on Eurostat primary data.

Chart 3b3 Share of the self-employed in the primary sector in terms of hours worked



Source: Calculations on Eurostat primary data.

The share of self-employment in primary sector employment is also quite high.[8]

Clearly, self-employment dominates in the primary sector, both in Greece and in the other groups of countries examined.

For the economy as a whole, Greece has by far the largest share of self-employed in total employment measured by total hours worked for the 1995-2000 period (43%), compared with shares of 21.2%, 23.9% and 25.3% for Europe, the euro area and Mediterranean countries, respectively. However, it should be noted that this share for Greece diminished to 38.3% in 2001-2007 and further to 36.4% in 2008-2014. Declines, albeit more moderate, are also observed for the other groups of countries examined.[9]

3.4 LABOUR PRODUCTIVITY

Charts 4a1 and 4a2 show the labour productivity ratio both in the primary sector and in total economy in terms of hours worked; Charts 4b1 and 4b2 show annual rates of change in the three subperiods under review.

In the 1995-2000 subperiod, Greece registered a positive rate of change in primary sector labour productivity (2.0%), which, however, was well below the corresponding rates (4.0%, 4.4% and 5.2%, respectively) for the groups of European, euro area and Mediterranean countries.

In total economy, labour productivity growth is also positive (2.9%) and significantly higher than in the primary sector, and also well above the respective figures for Europe (1.9%), the euro area (1.7%) and the Mediterranean countries (1.5%).

In the next period, however, labour productivity growth in the primary sector turned negative, to -1.1%. This negative outcome, as already noted in the discussion of gross value added, is not unrelated to the implementation of the CAP and the associated decoupling of support from the level of output, causing a decline in agricultural production. A similar drop can be observed for the Mediterranean countries excluding Portugal.

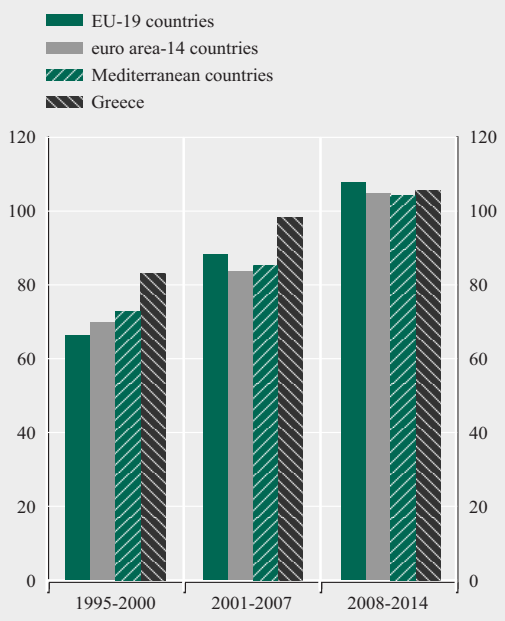
By contrast, in total economy labour productivity growth remained positive, albeit weakening to 2.2%, same as in the euro area, below the growth rate observed in the group of European countries (2.7%) and double that for the Mediterranean countries (1.1%).

8 See also the Appendix, Tables 3b2 and 3b3, showing the average annual rates of change in employees, as well as precise data on the percentage distribution of employees and the self-employed in the primary sector and in total economy.

9 Similar results emerge from an analysis in terms of headcount employment. The relevant data and charts are available from the author. Nevertheless, there is significant discrepancy between the two data series: 30.7% based on the hours worked and 35.2% based on headcount employment during 1995-2000. This discrepancy is also observed in the next two subperiods (26.1% and 25.0%, against 29.7% and 28.2%, respectively) and probably reflects the fact that self-employed workers in the primary sector (individual farmers or proprietors of agricultural businesses) retain their self-employment status irrespective of the actual hours worked, as the (self-)employed, i.e. the owner of an agricultural company, is registered as such (and is, thus, subject to the self-employed regime), even though no hours were worked.

Chart 4a1 Labour productivity-hours worked-primary sector

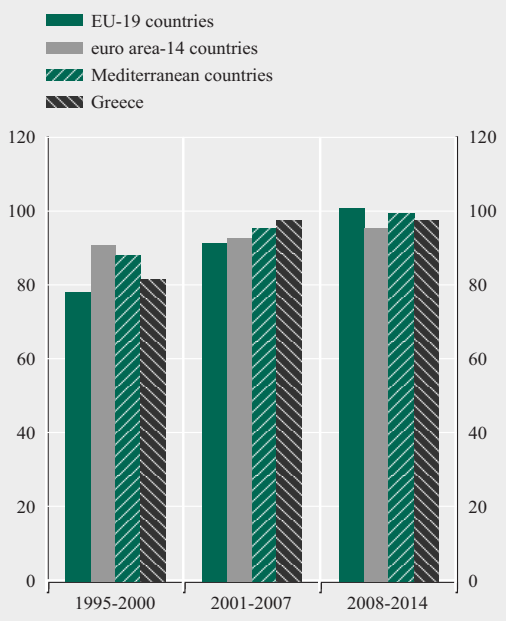
(%)



Source: Calculations on Eurostat primary data.

Chart 4a2 Labour productivity-hours worked-total economy

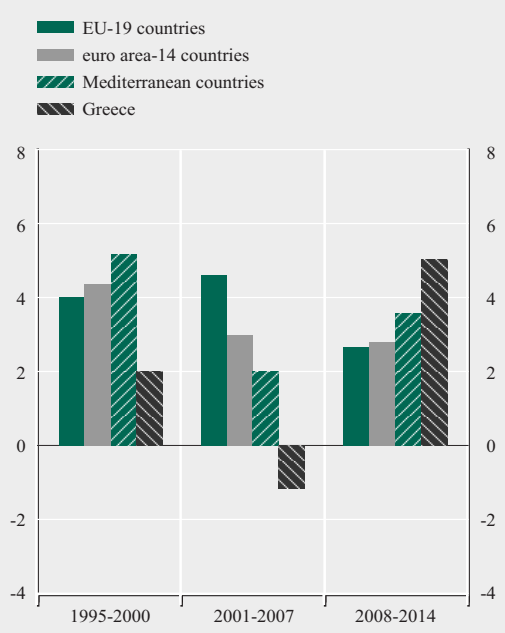
(%)



Source: Calculations on Eurostat primary data.

Chart 4b1 Average annual rates of change in labour productivity in the primary sector (hours worked)

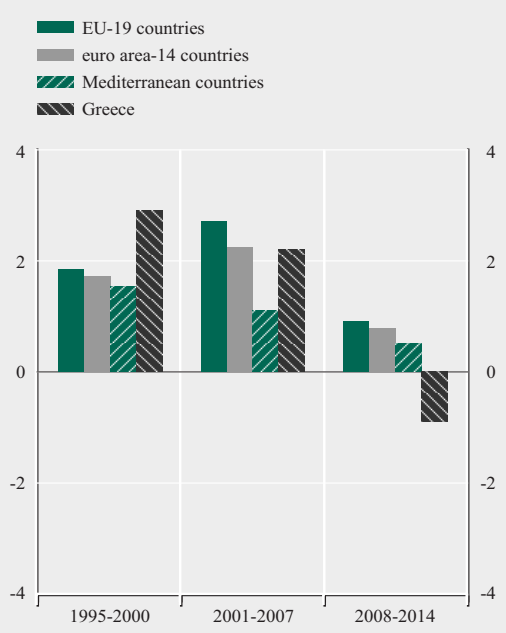
(%)



Source: Calculations on Eurostat primary data.

Chart 4b2 Average annual rates of change in labour productivity in total economy (hours worked)

(%)



Source: Calculations on Eurostat primary data.

This picture was fully reversed during the crisis. Labour productivity in the primary sector rose at an average rate of 5.1%, compared with averages of 3.6% for the Mediterranean countries, 2.8% for the euro area-16 and 2.7% for Europe-19. In total economy, labour productivity growth turned negative to -0.9%. The average rates of increase in primary sector labour productivity also declined in the groups of countries examined, standing at 0.9%, 0.8% and 0.5% for Europe, the euro area and the Mediterranean countries, respectively, in 2008-2014.[10,11]

3.5 PRODUCTION

Table 5a of the Appendix and Charts 5a1 and 5a2 show the average rates of change in farming and livestock production during the three subperiods under review.

In 1995-2000, the value of farming production at basic prices registered a positive rate of change (0.9%), while the respective rate for livestock production was marginally negative (-0.3%). The corresponding rates were 5.6% and 2.9% for Europe (27 countries, including non-EU Member States Switzerland and Norway), 3.7% and 0.6% for the euro area and 4.0% and 0.8% for the Mediterranean countries, respectively.

In the next subperiod (2001-2007), the rate of change in farming production turned significantly negative, to -2.3%, while that in livestock production remained unchanged from the preceding subperiod. Agricultural production growth weakened also in the other groups of countries, to a mere 0.2% for both farming and livestock in Europe-27, and 0.5% for farming and just 0.2% for livestock in the euro area. Lastly, in the Mediterranean countries, production growth stood at 0.1% for farming and 0.3% for livestock..

Obviously, the significantly negative rate for Greece, as well as the halting of the upward course of production growth for the three groups of countries, can be attributed to the implementation of the new CAP, launched in 2003 (in Greece, it took effect from 1 January 2006) and entailing a decoupling of the amount of subsidies from the level of production.

During the crisis subperiod, as is the case with all the economic aggregates discussed so far, the situation improved markedly. The rate of change in farming production came close to the level observed in 1995-2000 (0.7%); livestock production growth, on the other hand, turned negative (-1.1%). At the European level, the rate of change in farming production appears to have improved significantly (1.0%), while in livestock breeding the rate remained practically unchanged from the preceding subperiod. At the euro area level, the rate of change in farming production showed a slight improvement (0.8%), while in livestock breeding it fell to -0.2%. Lastly, at the Mediterranean level, the rates of change in farming and livestock breeding stood at 0.9% and 0.0%, respectively.

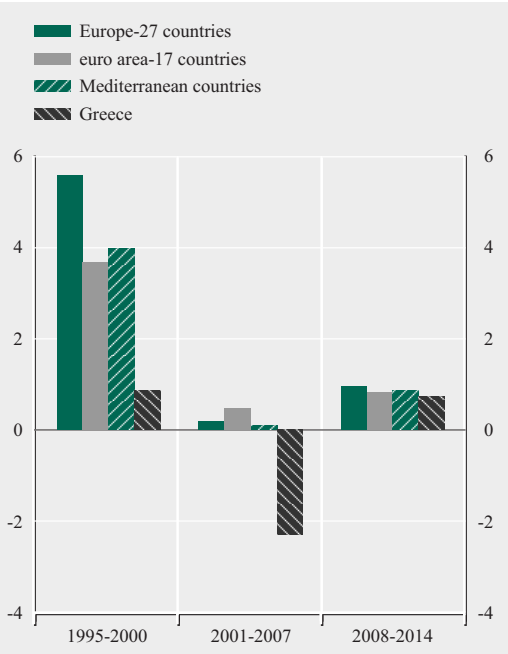
Table 5b of the Appendix shows the shares of individual countries in the Europe-27 aggregate farming and livestock production, respectively. Greece's share in farming production is significant (5.0%) in 1995-2000, dropping to 4.5% in the next subperiod (2001-2007) and to 4.1% during the crisis subperiod (2008-2014). It should be noted that in the first two subperiods Greece ranked 6th among the 27 countries of this group in terms of its share in agricultural production, while during the crisis it fell to eighth place (in terms of population, Greece ranks 9th).

By contrast, in terms of livestock production, Greece's share was less than half that of farming production (2.1%) during the first two subperiods, declining to 1.9% in the crisis subperiod. Accordingly, Greece fell from 12th place in 1995-2000 to 13th place in 2001-2007 and 2008-2014.

10 For more detailed data, see the Appendix, Tables 4a and 4b.
11 Same as in the analysis of employment, when labour productivity is measured on the basis of the number of workers, the results are similar to those derived on the basis of the hours worked. Detailed data are available from the author.

Chart 5a1 Average annual rates of change in farming production

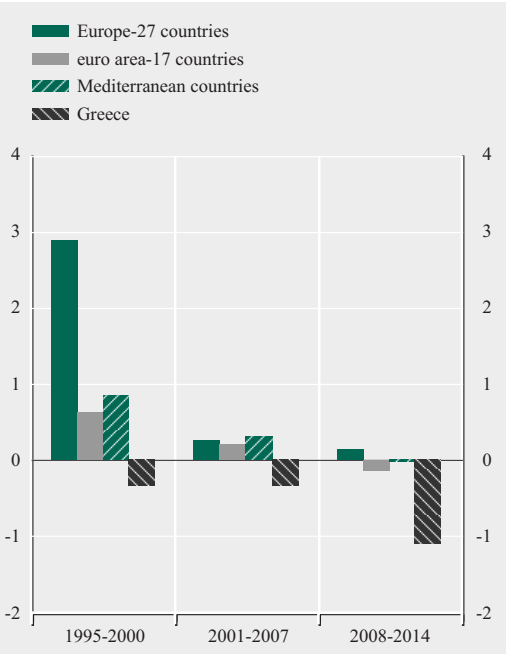
(%)



Source: Calculations on Eurostat primary data; value of production at basic prices; at constant 2005 prices.

Chart 5a2 Average annual rates of change in livestock production

(%)



Source: Calculations on Eurostat primary data; value of production at basic prices; at constant 2005 prices.

Table 5c of the Appendix shows the respective shares in the euro area aggregate. It appears that in all three periods under review Greece ranked 5th in terms of farming, while it ranked 9th, 7th and 8th in terms of livestock breeding, respectively (regarding population, Greece ranks 6th).

Lastly, Table 5d of the Appendix shows the shares at the Mediterranean level. Greece steadily ranks 4th —second to last— in terms of both farming and livestock breeding, which could be reasonably expected, given its much smaller size relative to Spain, France or Italy and its low ranking within that group (again 4th) in terms of population.

3.6 SUBSIDIES

Table A shows the average rates of change in subsidies. In 1995-2000, subsidies to Greek farming recorded a positive growth rate of 2.4%, well below the rates for European, euro area and Mediterranean countries (6.8%, 6.9% and 7.0%, respectively). By contrast, for livestock subsidies the rate of change was zero, compared with -3.4%, -3.8% and 0.4% for European, euro area and Mediterranean countries, respectively.

In the next subperiod (2001-2007), the rate of change in subsidies to farming was strongly negative, -6.4%, for Greece, with the respective European, euro area and Mediterranean figures remaining practically unchanged. For livestock subsidies, on the other hand, Greece's rate became marginally negative, standing at -0.1%, compared with strongly positive levels for the European, euro area and Mediterranean countries (6.9%, 8.4% and 9.5%, respectively).

It should be noted that, as was also the case in the analysis of the level of production, the sharp drop in subsidies is attributable to the CAP reform and the associated shift from production support to producer support.

Table A

	Farming production			Livestock production		
	Average annual rates of change in subsidies (%)					
	1995-2000	2001-2007	2008-2014	1995-2000	2001-2007	2008-2014
Greece	*2.4*	*-6.4*	*4.8*	*0.0*	*-0.1*	*-11.1*
Europe-19 countries	*6.8*	*0.1*	*-2.4*	*-3.4*	*6.9*	*-3.8*
Euro area-12 countries	*6.9*	*0.3*	*-2.4*	*-3.8*	*8.4*	*-4.4*
Mediterranean countries	*7.0*	*-0.1*	*-2.5*	*0.4*	*9.5*	*-5.2*

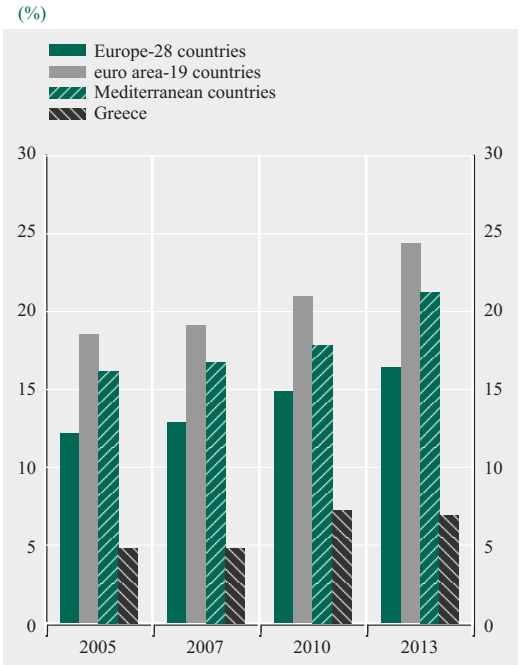
Source: Calculations on Eurostat primary data; at constant 2005 prices.

Lastly, in 2008-2014, the rate of change in farming subsidies not only returned to positive territory, but also stood at double the level recorded in 1995-2000, reaching 4.8%, while the European, euro area and Mediterranean countries experienced marked declines (-2.4%, -2.4% and -2.5%, respectively).[12] By contrast, livestock subsidies dropped very sharply for Greece (-11.1%) and quite strongly for European, euro area and Mediterranean countries (-3.8%, -4.4% and -5.2%, respectively).

3.7 AGRICULTURAL HOLDING SIZE

Chart 6 shows the average agricultural area per holding. We can see that in 2005 the average agricultural area per holding in Greece is just 4.8 hectares, compared with 12.2 hectares for the group of 28 European countries, 18.5 hectares for the euro area and 16.2 hectares for the Mediterranean countries. In the next year, i.e. 2007, the average agricultural area remained practically unchanged in Greece, while it increased by 6.1%, 3.8% and 3.1%, respectively, at the European, euro area and Mediterranean level. In 2010, the average agricultural area rose sharply from 4.8 to 7.2 hectares, or by 51.3%, in Greece, while less sharp but still substantial rises of 15.4%, 9.2% and 6.9%, respectively, were seen at the European, euro area and Mediterranean level. In 2013 (the last year for which data are available) the average agricultural area per holding in Greece seems to have declined from 7.2 to 6.9 hectares or by 4.4%, in contrast with substantial increases of 10.7%, 16.1% and 18.7%, respectively, observed at the European, euro area and Mediterranean level.[13]

Chart 6 Average size of agricultural holdings which include a utilised agricultural area[1] (2005-2007-2010-2013)



Source: Calculations on Eurostat primary data.
1 Agricultural area in hectares; 1 hectare = 10 stremma.

12 For the full data, see the Appendix, Tables 6a-6e.
13 For the full data, see the Appendix, Tables 7a-7d, which also show country-level data on the number of agricultural holdings, agricultural land used and percentage shares in the relevant aggregates of the different groups examined. These data confirm that Greece has a very high number of agricultural holdings compared mainly with the euro area countries.

3.8 IMPORTS AND EXPORTS

Tables B and C show the rates of change in trade volumes for total economy and for the food, beverages and tobacco industry. Imports of food, beverages and tobacco grew strongly in 2001-2007, both in Greece (5.1%) and in the EU, euro area and Mediterranean countries (6.9%, 5.7% and 3.6%, respectively), while total imports also rose sharply, by 4.7% in Greece and by 7.9%, 6.4% and 4.1%, respectively, in the EU, the euro area and the Mediterranean countries.

This pattern was fully reversed in 2008-2014. Total imports in Greece changed by -5.8%, while food, beverages and tobacco imports fell more moderately (-3.3%). Much less sharp declines were seen at the EU, euro area and Mediterranean level, -0.5%, -1.0% and -2.9%, respectively, for total imports, while food, beverages and tobacco imports rose by 2.1% and 1.8%, respectively, in the EU and the euro area and fell marginally (-0.1%) in the Mediterranean countries.

Turning to exports, Greek exports of food, beverages and tobacco rose by a remarkable 13.8% between 2000 and 2001 (EU: 6.1%, euro area: 5.8%, Mediterranean countries: 4.5%), before weakening to 1.5% in 2001-2007, compared with agricultural export growth rates of 8.0%, 7.2% and 3.6% for the EU, euro area and Mediterranean countries, respectively.

Table B

	World trade volume index-Imports (base year 2010=100)					
	Total			Food-beverages-tobacco		
	Average annual rate of change (%)					
	2000-2001	2001-2007	2008-2014	2000-2001	2001-2007	2008-2014
Greece	*0.1*	*5.1*	*-5.8*	*3.4*	*4.7*	*-3.3*
Europe-27 countries	*2.5*	*6.9*	*-0.5*	*5.8*	*7.9*	*2.1*
Euro area-19 countries	*1.8*	*5.7*	*-1.0*	*4.5*	*6.4*	*1.8*
Mediterranean countries	*0.0*	*3.6*	*-2.9*	*4.0*	*4.1*	*-0.1*

Source: Calculations on Eurostat primary data.

Table C

	World trade volume index-Exports (base year 2010=100)					
	Total			Food-beverages-tobacco		
	Average annual rate of change (%)					
	2000-2001	2001-2007	2008-2014	2000-2001	2001-2007	2008-2014
Greece	*1.2*	*4.6*	*3.5*	*13.8*	*1.5*	*0.8*
EU-27 countries	*2.9*	*6.5*	*1.7*	*6.1*	*8.0*	*6.8*
Euro area-19 countries	*2.9*	*5.6*	*1.2*	*5.8*	*7.2*	*6.3*
Mediterranean countries	*1.3*	*2.9*	*1.4*	*4.5*	*3.6*	*2.5*

Source: Calculations on Eurostat primary data.

Greece's agricultural export performance deteriorated further in 2008-2014, when the growth rate of food, beverages and tobacco exports decelerated to 0.8%, compared with 6.8%, 6.3% and 2.5% in the EU, euro area and Mediterranean countries, respectively.

The picture is much better for Greece in terms of total exports, which rose at a rate of 4.5% in 2001-2007, below the rates observed for the EU and the euro area (6.5% and 5.6%, respectively), but well above that for the Mediterranean countries (2.9%).

This comparatively better picture for Greece continued through the crisis subperiod (2008-2014), with its total exports growing by 3.5%, whereas the respective growth rates for the EU, the euro area and the Mediterranean countries fell to 1.7%, 1.2% and 1.4%, respectively.

Greece's exports-to-imports ratio shows a marked improvement in 2008-2014, mainly in terms of total trade, with the relevant index rising by 9.9%, but also in terms of food, beverages and tobacco trade, for which the positive change reached 4.2%. In both cases, the improvement largely reflects lower imports.[14]

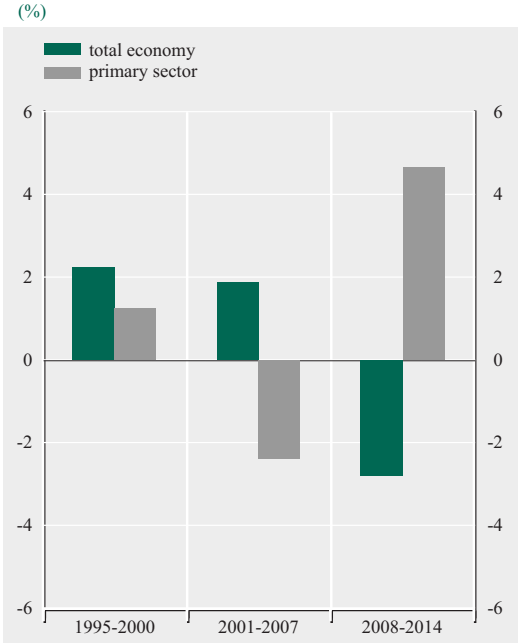
3.9 TOTAL FACTOR PRODUCTIVITY – GREECE

Chart 7 shows the average annual rates of change in total factor productivity (TFP) in total economy and in the primary sector. In 2001-2007, the primary sector registered a markedly negative average annual rate of change in TFP, due to exceptionally strong negative changes in 2006 (-14.7%) and 2007 (-12.6%).

A turnaround can be seen in the next subperiod: TFP growth in the primary sector was not only positive but also as high as 4.6%. This strong rebound mainly occurred during the years 2010, 2012 and 2014, when primary sector TFP grew by 5.8%, 12.6% and 13.5%, respectively.

In terms of the economy as a whole, the pattern is different, as TFP shows a positive growth rate in the first two subperiods (2.2%

Chart 7 Total factor productivity-Greece
Average annual rate of change



Source: Calculations on primary data; Ameco Database for total economy; ELSTAT for the primary sector.

and 1.8%, respectively), before falling to a negative level (-2.8%) in 2008-2014.

4 SUMMARY OF FINDINGS

From the above examination of data on the Greek primary sector, some key features and trends emerge. First, the sector's high employment rate —relative to that for the economy as a whole— which is significantly higher than the respective rates for the EU, the euro area and the Mediterranean countries examined. On the other hand, its labour productivity shows weak and often negative annual rates of change during most of the 1995-2007 period, although it increased considerably in the crisis subperiod.

Second, a strong increase in gross value added during the crisis subperiod (2008-2014): the

14 For tha full data and for information on import and export values, see the Appendix, Tables 8a1-8b3, 9a1-9b3 and 10.

GVA growth rate is notably high, in sharp contrast with the negative averages for Europe-26, euro area-17 and the Mediterranean countries. It should be noted that, in the same subperiod, GVA in the Greek economy as a whole declined by an annual average of -4.5%, in contrast with the European and euro area counterparts, which fell broadly in line with the primary sector GVA declines. For the group of Mediterranean countries, the primary sector appears, as in the case of Greece, to be more resilient than the economy as a whole.

Third, a comparatively high average annual growth rate of gross fixed capital formation during the first two subperiods, 1995-2000 and 2001-2007, more than double those of European, euro area and Mediterranean countries. However, in 2008-2014 this rate not only became negative, but was also much stronger than the negative averages recorded in the European, euro area and, especially, Mediterranean countries. Still, the decline in primary sector gross capital formation is smaller than that for the economy as a whole.

Fourth, which is particularly interesting, the very small average size of agricultural holding, which explains the very high rate of employment (predominantly self-employment) in the primary sector.

Fifth, and also very interesting, a positive export-to-import value ratio for food, beverages and tobacco, in contrast with a negative ratio for the economy as a whole.

Lastly, it should be pointed out that the implementation of the reformed CAP in Greece as from 1.1.2006, entailing a decoupling of subsidies from production, has had a negative effect on the level of agricultural output.

To sum up, despite its weaknesses as described above, the Greek primary sector has shown remarkable resilience during the crisis. The new CAP, which will remain in effect until 2020, favours, in addition to big farms, those young and new farmers and small farmers who turn to modern, high-quality and specialised crops or to the so-called "green" agriculture. If its young workforce and significant capital stock can become a critical mass for a truly quality-oriented and modernised agricultural production, the sector could in the coming years become an engine of growth and pave the way for better performance of the Greek economy.

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APPENDIX

Table 1a

	Gross value added in the primary sector			Total gross value added		
	Average annual rates of change (%)					
	1995-2000	2001-2007	2008-2014	1995-2000	2001-2007	2008-2014
Belgium	2.6	3.2	-2.0	2.7	2.3	0.6
Czech Republic	-1.5	-2.6	1.8	1.6	4.9	0.1
Denmark	2.7	0.3	3.2	3.1	1.4	-0.2
Germany	1.2	2.3	-4.1	2.1	1.6	0.6
Estonia	9.3	2.1	5.9	6.2	7.5	0.5
Ireland	-0.5	-2.5	4.0	9.1	5.1	1.1
Greece	*0.1*	*-4.2*	*4.2*	*3.4*	*3.9*	*-4.5*
Spain	7.3	0.3	0.4	3.9	3.4	-1.1
France	2.7	0.3	0.6	2.9	1.8	0.4
Croatia	1.6	1.6	-5.8	3.4	4.8	-2.6
Italy	2.1	-0.4	-0.4	1.9	1.1	-1.3
Cyprus	-0.2	-3.4	0.0	3.8	4.0	-2.0
Latvia	0.3	3.3	2.7	5.3	9.2	-0.6
Lithuania	-0.7	1.6	2.1	4.7	8.3	0.3
Hungary	-0.3	-1.7	-3.1	3.2	3.6	0.0
Netherlands	0.9	1.9	0.9	4.3	2.0	0.0
Austria	1.2	1.5	-0.9	3.0	2.5	0.4
Portugal	-1.3	0.1	0.0	3.7	1.1	-1.2
Romania	-6.2	-4.9	2.5	-1.0	6.3	0.0
Slovenia	0.9	1.1	-0.8	4.1	4.7	-0.9
Slovakia	-4.0	5.3	5.8	1.0	6.6	1.2
Finland	-0.1	1.2	2.9	5.2	3.1	-1.3
Sweden	0.1	4.0	-0.9	3.8	3.3	1.1
United Kingdom	3.7	0.5	1.5	3.6	2.7	0.9
Norway	-0.5	5.1	3.7	3.5	2.1	0.8
Switzerland	3.3	-0.2	0.5	2.6	2.3	1.3
Europe-26 countries	*3.9*	*0.4*	*-0.2*	*6.8*	*2.3*	*-0.2*
Euro area-17 countries	*2.7*	*0.4*	*-0.4*	*2.9*	*2.0*	*-0.5*
Mediterranean countries	*3.2*	*-0.2*	*-0.1*	*2.8*	*2.0*	*-1.2*

Source: Calculations on Eurostat primary data; at constant 2010 prices.

Table 1b

	Share of gross value added of the primary sector in total gross value added (%)		
	1995-2000	2001-2007	2008-2014
Belgium	0.9	0.9	0.8
Czech Republic	2.6	2.2	1.8
Denmark	1.5	1.4	1.2
Germany	0.9	0.8	0.8
Estonia	3.6	2.8	3.2
Ireland	2.4	1.4	1.1
Greece	*4.9*	*3.6*	*3.5*
Spain	3.3	2.8	2.6
France	2.0	1.8	1.7
Croatia	6.0	5.2	4.6
Italy	2.2	2.0	2.0
Cyprus	4.2	3.1	2.4
Latvia	5.2	4.2	4.1
Lithuania	6.1	3.7	3.4
Hungary	4.5	4.0	4.0
Netherlands	2.1	1.8	1.9
Austria	1.7	1.5	1.5
Portugal	2.8	2.3	2.3
Romania	9.6	7.8	6.2
Slovenia	3.0	2.3	2.0
Slovakia	3.2	3.4	3.5
Finland	3.1	2.5	2.8
Sweden	1.8	1.7	1.6
United Kingdom	0.9	0.8	0.8
Norway	1.5	1.4	1.8
Switzerland	0.9	0.8	0.7
Europe-26 countries	*1.8*	*1.6*	*1.6*
Euro area-17 countries	*1.9*	*1.7*	*1.7*
Mediterranean countries	*2.4*	*2.1*	*2.1*

Source: Calculations on Eurostat primary data; at constant 2010 prices.

Table 1c

	Gross value added in the primary sector			Total gross value added		
	Europe 26 - Share per country (%)					
	1995-2000	2001-2007	2008-2014	1995-2000	2001-2007	2008-2014
Belgium	1.3	1.4	1.4	2.7	2.7	2.8
Czech Republic	1.5	1.5	1.3	1.0	1.1	1.2
Denmark	1.5	1.6	1.4	1.9	1.8	1.8
Germany	9.7	9.7	9.7	20.6	19.7	19.9
Estonia	0.2	0.2	0.2	0.1	0.1	0.1
Ireland	1.2	1.1	0.9	0.9	1.2	1.3
Greece	*4.4*	*4.0*	*3.6*	*1.6*	*1.8*	*1.6*
Spain	13.4	14.0	13.7	7.5	8.2	8.2
France	16.6	16.5	17.0	15.3	15.3	15.3
Croatia	1.0	1.0	1.0	0.3	0.3	0.3
Italy	16.5	15.8	15.2	13.8	13.1	12.0
Cyprus	0.3	0.3	0.2	0.1	0.1	0.1
Latvia	0.3	0.3	0.4	0.1	0.1	0.1
Lithuania	0.5	0.5	0.5	0.2	0.2	0.2
Hungary	1.6	1.8	1.8	0.7	0.7	0.7
Netherlands	5.3	5.4	5.7	4.6	4.7	4.8
Austria	2.0	2.0	2.1	2.2	2.2	2.2
Portugal	2.1	2.0	1.9	1.4	1.4	1.3
Romania	4.2	4.0	3.9	0.8	0.8	1.0
Slovenia	0.4	0.4	0.3	0.2	0.3	0.3
Slovakia	0.7	0.9	1.2	0.4	0.4	0.5
Finland	2.2	2.1	2.4	1.3	1.4	1.4
Sweden	2.5	2.8	2.9	2.5	2.6	2.8
United Kingdom	6.8	6.9	6.8	13.8	13.9	14.0
Norway	2.0	2.1	2.8	2.4	2.4	2.5
Switzerland	1.8	1.7	1.7	3.5	3.4	3.6
Europe-26 countries	*100.0*	*100.0*	*100.0*	*100.0*	*100.0*	*100.0*

Source: Calculations on Eurostat primary data; at constant 2010 prices.

Table 1d

	Gross value added in the primary sector			Total gross value added		
	Euro area 17 - Share per country (%)					
	1995-2000	2001-2007	2008-2014	1995-2000	2001-2007	2008-2014
Belgium	1.7	1.9	1.9	3.7	3.7	3.8
Germany	12.6	12.7	12.6	28.2	27.0	27.6
Estonia	0.2	0.2	0.3	0.1	0.1	0.2
Ireland	1.6	1.4	1.2	1.3	1.7	1.8
Greece	*5.7*	*5.2*	*4.6*	*2.2*	*2.5*	*2.2*
Spain	17.4	18.4	17.9	10.2	11.2	11.4
France	21.5	21.6	22.2	21.0	21.0	21.2
Italy	21.3	20.6	19.9	18.9	18.0	16.6
Cyprus	0.4	0.3	0.3	0.2	0.2	0.2
Latvia	0.4	0.5	0.5	0.1	0.2	0.2
Netherlands	0.7	0.6	0.6	0.2	0.3	0.3
Austria	6.9	7.0	7.5	6.3	6.5	6.6
Poland	2.7	2.7	2.8	3.0	3.0	3.1
Portugal	2.7	2.6	2.4	1.9	1.9	1.8
Slovenia	0.5	0.5	0.4	0.3	0.3	0.4
Slovakia	0.9	1.2	1.5	0.5	0.6	0.7
Finland	2.8	2.8	3.2	1.8	1.9	1.9
Euro area-17 countries	*100.0*	*100.0*	*100.0*	*100.0*	*100.0*	*100.0*

Source: Calculations on Eurostat primary data; at constant 2010 prices.

Table 1e

	Gross value added in the primary sector			Total gross value added		
	Mediterranean countries - Share per country (%)					
	1995-2000	2001-2007	2008-2014	1995-2000	2001-2007	2008-2014
Greece	*8.3*	*7.6*	*6.9*	*4.1*	*4.5*	*4.1*
Spain	25.4	26.9	26.6	18.8	20.5	21.4
France	31.3	31.7	33.1	38.7	38.5	39.9
Italy	31.1	30.1	29.7	34.9	33.0	31.3
Portugal	4.0	3.7	3.6	3.5	3.4	3.4
Mediterranean countries	*100.0*	*100.0*	*100.0*	*100.0*	*100.0*	*100.0*

Source: Calculations on Eurostat primary data; at constant 2010 prices.

Table 2a

	Gross fixed capital formation in the primary sector			Total gross fixed capital formation		
	Average annual rates of change (%)					
	1995-2000	2001-2007	2008-2014	1995-2000	2001-2007	2008-2014
Belgium	-0.5	9.0	4.6	3.6	3.1	0.3
Bulgaria	-12.3	-6.4	1.8	17.6	14.4	-6.1
Czech Republic	-7.4	3.3	6.1	1.7	5.5	-2.0
Denmark	3.7	4.4	-10.7	6.0	3.9	-1.8
Germany	-0.1	3.6	-3.1	2.3	0.8	0.6
Estonia	11.9	8.9	-1.1	7.9	15.8	-2.0
Ireland	1.0	1.2	-11.6	11.8	7.9	-2.6
Greece	*10.6*	*5.7*	*-12.5*	*8.9*	*6.3*	*-15.2*
Spain	7.1	1.8	-3.0	7.1	6.0	-9.2
France	2.7	0.1	-1.2	4.4	2.7	-1.2
Italy	5.0	1.7	-6.1	3.7	2.1	-5.4
Cyprus	3.7	-14.2	-11.3	-0.6	8.9	-13.8
Latvia	23.3	42.3	-3.9	20.8	15.1	-5.4
Lithuania	18.9	3.0	15.1	10.1	15.7	-2.9
Hungary	5.2	-3.7	2.8	7.7	4.2	-1.1
Netherlands	5.3	2.1	-0.5	5.3	1.7	-2.5
Austria	0.9	0.0	-1.2	3.1	1.3	-0.4
Poland	7.0	6.0	4.8	11.1	6.9	2.6
Portugal	6.3	-0.7	-3.3	9.0	-1.4	-8.7
Romania	-2.6	18.1	32.7	1.4	18.5	-9.6
Slovenia	-3.2	2.5	-4.8	8.7	6.1	-7.8
Slovakia	-17.4	3.9	-9.4	-5.8	5.8	-1.5
Finland	7.3	1.4	-2.2	8.4	3.1	-3.2
Sweden	5.3	3.8	-3.8	5.6	4.7	0.8
Norway	-1.0	-3.1	-4.0	5.3	7.0	1.4
Europe-25 countries	*4.9*	*2.1*	*-4.0*	*7.8*	*3.2*	*-5.6*
Euro area-17 countries	*4.1*	*1.9*	*-5.0*	*4.8*	*2.7*	*-4.6*
Mediterranean countries	*5.2*	*1.3*	*-7.1*	*5.8*	*3.3*	*-8.7*

Source: Calculations on Eurostat primary data; at constant 2010 prices.

Table 2b

	Gross fixed capital formation in total gross fixed capital formation			Gross fixed capital formation as a percentage of Gross Domestic Product		
	Share of the primary sector (%)					
	1995-2000	2001-2007	2008-2014	1995-2000	2001-2007	2008-2014
Belgium	0.8	0.7	1.3	0.2	0.2	0.3
Bulgaria	5.7	4.4	5.2	0.8	0.9	1.2
Czech Republic	2.8	2.2	2.8	0.8	0.6	0.7
Denmark	3.9	3.7	2.8	0.7	0.7	0.5
Germany	1.6	1.6	1.7	0.3	0.3	0.3
Estonia	4.7	4.9	5.6	0.9	1.3	1.4
Ireland	5.5	1.8	2.3	1.2	0.4	0.5
Greece	*3.4*	*3.5*	*4.6*	*0.7*	*0.8*	*0.7*
Spain	2.0	1.4	1.8	0.5	0.4	0.4
France	3.4	2.7	2.6	0.7	0.6	0.6
Italy	3.7	3.8	3.5	0.7	0.8	0.7
Cyprus	3.2	2.1	0.7	0.7	0.5	0.1
Latvia	2.1	4.9	7.4	0.3	1.3	1.7
Lithuania	7.6	7.5	7.8	1.2	1.5	1.5
Hungary	4.8	4.1	4.3	1.0	0.9	0.9
Netherlands	3.2	3.1	3.7	0.7	0.7	0.8
Austria	3.8	3.1	3.4	1.0	0.8	0.8
Poland	5.8	5.8	5.5	1.1	1.0	1.1
Portugal	2.5	2.6	2.8	0.6	0.6	0.5
Romania	0.2	0.6	0.4	0.0	0.1	0.1
Slovenia	3.8	2.9	3.0	0.9	0.7	0.7
Slovakia	2.8	2.8	2.7	0.8	0.7	0.6
Finland	4.3	4.1	3.8	1.0	0.9	0.8
Sweden	2.2	2.2	2.1	0.5	0.5	0.5
Norway	3.1	2.2	1.8	0.6	0.4	0.4
Europe-25 countries	*2.5*	*2.2*	*2.3*	*0.5*	*0.5*	*0.4*
Euro area-17 countries	*2.7*	*2.4*	*2.5*	*0.6*	*0.5*	*0.5*
Mediterranean countries	*3.2*	*2.7*	*2.8*	*0.7*	*0.6*	*0.5*

Source: Calculations on Eurostat primary data; at constant 2010 prices.

Table 2c

	Gross fixed capital formation in the primary sector			Total gross fixed capital formation		
	Europe 25 - Share per country (%)					
	1995-2000	2001-2007	2008-2014	1995-2000	2001-2007	2008-2014
Belgium	0.9	0.9	1.7	3.3	3.2	3.6
Bulgaria	0.3	0.5	0.8	0.2	0.3	0.4
Czech Republic	1.6	1.4	2.0	1.6	1.6	1.8
Denmark	2.8	3.0	2.1	2.0	2.0	2.0
Germany	14.3	13.7	14.9	25.5	21.3	23.3
Estonia	0.1	0.3	0.4	0.1	0.2	0.2
Ireland	2.1	1.1	1.3	1.1	1.6	1.5
Greece	*2.2*	*2.9*	*2.6*	*1.7*	*2.1*	*1.5*
Spain	6.7	6.4	7.3	9.5	11.8	10.5
France	22.0	19.1	19.6	17.9	18.1	19.4
Italy	20.0	22.1	17.2	14.9	14.9	13.0
Cyprus	0.2	0.1	0.0	0.1	0.2	0.2
Latvia	0.1	0.4	0.6	0.1	0.2	0.2
Lithuania	0.4	0.6	0.8	0.1	0.2	0.3
Hungary	1.4	1.5	1.5	0.8	0.9	0.9
Netherlands	6.8	6.9	8.1	6.0	5.5	5.8
Austria	4.3	3.5	3.9	3.1	2.8	2.9
Poland	4.6	4.9	7.0	2.2	2.1	3.3
Portugal	1.7	1.8	1.5	1.9	1.7	1.4
Romania	0.1	0.2	0.2	0.8	1.1	1.5
Slovenia	0.4	0.4	0.4	0.3	0.4	0.3
Slovakia	0.6	0.6	0.7	0.6	0.6	0.7
Finland	2.6	2.8	2.6	1.7	1.7	1.8
Sweden	2.3	2.8	2.9	3.0	3.2	3.7
Norway	2.8	2.1	2.2	2.5	2.5	3.3
Europe-25 countries	*100.0*	*100.0*	*100.0*	*100.0*	*100.0*	*100.0*

Source: Calculations on Eurostat primary data; at constant 2010 prices.

Table 2d

	Gross fixed capital formation in the primary sector			Total gross fixed capital formation		
	Euro area 17 - Share per country (%)					
	1995-2000	2001-2007	2008-2014	1995-2000	2001-2007	2008-2014
Belgium	1.1	1.1	2.1	3.8	3.7	4.3
Germany	16.8	16.4	18.4	29.1	24.6	28.1
Estonia	0.2	0.4	0.5	0.1	0.2	0.2
Ireland	2.5	1.3	1.6	1.3	1.9	1.8
Greece	*2.5*	*3.5*	*3.2*	*2.0*	*2.4*	*1.8*
Spain	7.9	7.7	8.9	10.9	13.6	12.5
France	25.9	22.8	24.1	20.4	21.0	23.3
Italy	23.6	26.4	21.2	17.0	17.2	15.6
Cyprus	0.2	0.1	0.0	0.2	0.2	0.2
Latvia	0.1	0.5	0.7	0.1	0.2	0.2
Lithuania	0.5	0.7	0.9	0.2	0.3	0.3
Netherlands	8.0	8.2	10.0	6.8	6.4	6.9
Austria	5.1	4.2	4.8	3.6	3.2	3.5
Portugal	2.0	2.1	1.8	2.2	2.0	1.7
Slovenia	0.5	0.5	0.5	0.4	0.4	0.4
Slovakia	0.7	0.8	0.9	0.7	0.7	0.8
Finland	3.0	3.3	3.2	1.9	2.0	2.1
Euro area-17 countries	*100.0*	*100.0*	*100.0*	*100.0*	*100.0*	*100.0*

Source: Calculations on Eurostat primary data; at constant 2010 prices.

Table 2e

	Gross fixed capital formation in the primary sector			Total gross fixed capital formation		
	Mediterranean countries - Share per country (%)					
	1995-2000	2001-2007	2008-2014	1995-2000	2001-2007	2008-2014
Greece	*4.1*	*5.6*	*5.6*	*3.8*	*4.3*	*3.4*
Spain	12.8	12.3	15.1	20.8	24.2	23.1
France	42.1	36.5	43.2	39.2	37.3	46.5
Italy	38.2	42.3	37.6	32.6	30.6	30.8
Portugal	3.3	3.4	3.2	4.2	3.6	3.2
Mediterranean countries	*100.0*	*100.0*	*100.0*	*100.0*	*100.0*	*100.0*

Source: Calculations on Eurostat primary data; at constant 2010 prices.

Table 3a1

	Hours worked in the primary sector			Hours worked in total economy		
	Average annual rates of change (%)					
	1995-2000	2001-2007	2008-2014	1995-2000	2001-2007	2008-2014
Czech Republic	-2.6	-4.5	0.0	-0.6	0.5	-0.5
Denmark	-3.7	-3.7	-1.5	1.7	0.3	-0.8
Germany	-4.0	-3.0	-1.7	0.0	0.0	0.1
Ireland	-3.0	-2.0	-1.1	4.9	2.9	-2.0
Greece	*-1.9*	*-3.1*	*-0.8*	*0.7*	*1.8*	*-4.0*
Spain	-0.7	-2.9	-2.1	4.0	3.0	-3.0
France	-2.4	-2.8	-1.6	0.7	0.3	-0.3
Italy	-2.9	-0.7	-1.6	0.9	1.1	-1.5
Cyprus	1.3	-1.4	0.3	1.5	2.2	-2.0
Lithuania	-2.7	-7.3	-1.7	0.0	1.8	-2.9
Netherlands	1.6	-2.1	-0.9	2.2	0.5	-0.5
Austria	-1.7	-2.3	-3.2	1.2	0.4	-0.3
Portugal	-0.5	-2.9	-4.0	2.4	-0.2	-2.9
Romania	0.4	-7.9	-3.3	-1.2	-1.9	-2.0
Slovenia	-5.3	-5.6	-2.3	-0.7	0.6	-1.2
Slovakia	-10.0	-6.2	-2.0	-1.2	1.0	-0.5
Finland	-2.9	-2.0	-2.1	1.9	0.9	-0.8
Sweden	-2.8	-2.8	2.9	0.8	0.4	0.6
United Kingdom	-5.1	0.3	3.5	0.9	0.7	0.9
Norway	-2.6	-4.2	-1.7	1.4	1.5	0.7
Europe-20 countries	*-1.3*	*-4.2*	*-2.6*	*1.1*	*0.7*	*-1.2*
Euro area-14 countries	*-2.0*	*-2.2*	*-2.8*	*1.3*	*0.9*	*-1.7*
Mediterranean countries	*-1.9*	*-2.2*	*-3.6*	*1.6*	*1.3*	*-2.8*

Source: Calculations on Eurostat primary data.

Table 3a2

	Hours worked by employees in the primary sector			Hours worked in total economy		
	Average annual rates of change (%)					
	1995-2000	2001-2007	2008-2014	1995-2000	2001-2007	2008-2014
Czech Republic	-3.9	-5.7	-1.7	-1.2	0.6	-0.3
Denmark	-1.6	-2.1	0.3	1.9	0.5	-0.7
Germany	-2.1	-0.5	0.8	-0.2	-0.1	0.3
Ireland	-0.1	-1.9	2.3	5.8	3.2	-1.9
Greece	*-1.1*	*-6.3*	*0.4*	*1.6*	*3.0*	*-4.5*
Spain	3.9	-0.4	0.1	5.0	3.6	-3.1
France	1.1	-0.9	-0.1	1.1	0.4	-0.5
Italy	-2.3	-0.2	-0.4	1.2	1.2	-1.5
Cyprus	0.4	2.1	-2.6	1.5	2.9	-1.9
Lithuania	2.0	0.0	-2.4	1.1	2.9	-2.9
Netherlands	1.9	-0.5	0.0	2.7	0.3	-0.8
Austria	0.3	1.8	2.2	1.0	0.6	0.0
Portugal	-3.3	-1.0	-0.1	2.5	0.3	-2.5
Romania	-4.4	0.2	-6.9	-2.5	1.7	-1.8
Slovenia	-3.4	-7.6	-3.7	0.2	1.3	-1.6
Slovakia	-10.9	-8.4	-2.5	-1.9	0.1	-0.3
Finland	-0.8	1.3	0.5	2.3	1.1	-0.8
Sweden	0.0	0.4	3.4	1.0	0.5	0.7
United Kingdom	-0.8	-0.1	2.8	1.6	0.6	0.6
Norway	-0.9	-2.3	2.4	1.8	1.7	0.8
Europe-20 countries	*-1.7*	*-1.2*	*-1.1*	*1.3*	*1.0*	*-1.2*
Euro area-14 countries	*-1.1*	*-1.0*	*-0.9*	*1.6*	*1.1*	*-1.7*
Mediterranean countries	*0.1*	*-1.1*	*-1.4*	*2.1*	*1.6*	*-2.9*

Source: Calculations on Eurostat primary data.

Table 3a3

	Hours worked by the self-employed in the primary sector			Hours worked by the self-employed in total economy		
	Average annual rates of change (%)					
	1995-2000	2001-2007	2008-2014	1995-2000	2001-2007	2008-2014
Czech Republic	2.5	-1.1	3.9	2.6	0.1	-1.4
Denmark	-4.6	-4.6	-2.9	0.0	-1.6	-1.0
Germany	-4.8	-4.3	-3.3	0.8	0.5	-1.2
Ireland	-3.6	-2.0	-1.8	1.7	1.8	-2.3
Greece	*-2.1*	*-2.4*	*-1.1*	*-0.5*	*-0.1*	*-3.1*
Spain	-3.1	-4.7	-3.9	0.1	0.1	-2.2
France	-3.2	-3.4	-2.2	-1.5	0.0	0.8
Italy	-3.1	-0.9	-2.2	0.5	0.9	-1.5
Cyprus	1.5	-2.5	1.3	1.6	0.5	-2.2
Lithuania	-4.2	-10.3	-1.2	-4.2	-3.1	-3.0
Netherlands	1.5	-2.9	-1.4	0.3	1.6	1.0
Austria	-1.9	-2.6	-3.7	2.0	-0.2	-1.7
Portugal	0.2	-3.3	-5.1	2.3	-2.3	-4.8
Romania	1.0	-8.9	-2.9	0.9	-8.1	-2.4
Slovenia	-5.4	-5.5	-2.3	-3.2	-1.9	0.4
Slovakia	0.3	7.8	-0.7	4.4	6.0	-1.3
Finland	-3.5	-3.0	-3.2	0.1	-0.2	-1.0
Sweden	-4.3	-5.2	2.3	-0.6	0.0	-1.4
United Kingdom	-8.9	0.8	4.2	-3.1	1.2	2.4
Norway	-2.9	-4.8	-3.0	-2.0	-0.4	-0.6
Europe-20 countries	*-1.1*	*-5.2*	*-4.3*	*0.3*	*-0.5*	*-2.9*
Euro area-14 countries	*-2.3*	*-2.7*	*-5.2*	*0.6*	*0.5*	*-3.3*
Mediterranean countries	*-2.6*	*-2.7*	*-7.3*	*0.0*	*0.3*	*-5.5*

Source: Calculations on Eurostat primary data.

Table 3b1

	Total hours worked			Total hours worked by employees			Total hours worked by the self-employed		
	Share of the primary sector in total economy per country (%)								
	1995-2000	2001-2007	2008-2014	1995-2000	2001-2007	2008-2014	1995-2000	2001-2007	2008-2014
Czech Republic	5.3	4.1	3.5	5.0	3.8	2.9	6.5	5.6	6.4
Denmark	4.9	3.8	3.0	1.8	1.5	1.5	30.2	23.6	19.0
Germany	2.8	2.2	2.0	1.0	0.9	0.9	12.4	9.2	7.6
Ireland	9.6	7.1	6.0	2.1	1.5	1.4	36.7	29.8	25.9
Greece	*16.6*	*12.2*	*11.3*	*5.9*	*3.6*	*3.4*	*30.7*	*26.1*	*25.0*
Spain	7.8	5.6	4.6	3.4	2.8	2.7	24.4	18.9	14.7
France	6.0	4.9	4.0	1.5	1.4	1.3	31.1	26.7	20.4
Italy	7.3	6.2	5.6	2.9	2.5	2.5	15.8	13.5	12.0
Cyprus	11.0	9.7	8.3	3.1	3.2	3.1	29.0	24.9	25.5
Lithuania	18.3	14.0	8.8	5.5	4.5	4.1	65.9	58.3	44.2
Netherlands	3.7	3.4	3.0	1.4	1.3	1.3	12.8	12.1	9.5
Austria	10.3	8.7	6.9	0.7	0.7	0.8	47.4	39.7	33.5
Portugal	12.4	10.4	9.0	2.9	2.4	2.3	47.0	42.8	41.0
Romania	40.4	31.9	27.2	7.9	5.5	3.4	89.1	86.8	84.7
Slovenia	18.0	12.8	9.9	1.9	1.1	0.7	67.2	56.1	44.8
Slovakia	8.5	5.0	3.6	8.9	5.1	3.4	5.6	4.2	4.4
Finland	9.8	7.6	6.4	2.3	2.2	2.3	41.8	35.1	28.5
Sweden	3.9	3.2	3.0	1.5	1.5	1.6	31.8	26.0	24.1
United Kingdom	2.2	1.6	1.8	1.2	1.0	1.0	7.8	5.6	6.8
Norway	6.2	4.6	3.3	1.5	1.1	1.0	45.0	37.6	28.6
Europe-20 countries	*8.2*	*6.2*	*5.2*	*2.4*	*1.9*	*1.7*	*29.7*	*23.7*	*20.1*
Euro area-14 countries	*6.8*	*5.6*	*4.7*	*2.3*	*2.0*	*1.9*	*21.3*	*17.7*	*14.8*
Mediterranean countries	*8.1*	*6.4*	*5.5*	*2.7*	*2.3*	*2.2*	*23.9*	*20.0*	*17.0*

Source: Calculations on Eurostat primary data.

Table 3b2

	Total hours worked by employees			Total hours worked by the self-employed		
	Shares of employees and the self-employed in the primary sector (%)					
	1995-2000	2001-2007	2008-2014	1995-2000	2001-2007	2008-2014
Czech Republic	78.9	73.3	67.0	21.1	26.7	33.0
Denmark	31.8	36.0	44.1	68.2	64.0	55.9
Germany	30.9	34.0	39.0	69.1	66.0	61.0
Ireland	17.3	17.4	18.3	82.7	82.6	81.7
Greece	*20.2*	*18.2*	*19.0*	*79.8*	*81.8*	*81.0*
Spain	34.6	42.1	49.2	65.4	57.9	51.7
France	20.8	24.5	27.8	79.2	75.5	72.2
Italy	26.0	27.3	30.7	74.0	72.7	69.3
Cyprus	19.9	23.3	28.4	80.1	76.7	71.6
Lithuania	23.9	26.2	40.7	76.1	73.8	59.3
Netherlands	29.2	32.1	34.5	70.8	67.9	65.5
Austria	5.6	6.8	9.4	94.4	93.2	90.6
Portugal	18.7	18.9	21.5	81.3	81.1	78.5
Romania	11.7	11.5	8.9	88.3	88.5	91.1
Slovenia	7.8	6.7	5.8	92.2	93.3	94.2
Slovakia	92.0	85.9	75.2	8.0	14.1	24.8
Finland	19.4	24.0	29.6	80.6	76.0	70.4
Sweden	36.3	43.6	51.6	63.7	56.4	48.4
United Kingdom	48.6	53.6	46.4	51.4	46.4	53.6
Norway	21.0	22.1	28.6	79.1	78.0	71.4
Europe-20 countries	*23.1*	*25.0*	*27.0*	*76.9*	*75.0*	*73.1*
Euro area-14 countries	*25.7*	*27.5*	*31.1*	*74.3*	*72.5*	*69.0*
Mediterranean countries	*24.9*	*27.6*	*31.2*	*75.1*	*72.4*	*69.0*

Source: Calculations on Eurostat primary data.

Table 3b3

	Employees			Self-employed		
	Percentage breakdown of hours worked by employees and the self-employed in total economy (%)					
	1995-2000	2001-2007	2008-2014	1995-2000	2001-2007	2008-2014
Czech Republic	82.9	80.2	81.7	17.1	19.8	18.3
Denmark	88.8	89.7	91.1	11.2	10.3	8.9
Germany	84.4	83.9	84.3	15.6	16.1	15.7
Ireland	78.4	80.2	80.9	21.6	19.8	19.1
Greece	*57.0*	*61.7*	*63.6*	*43.0*	*38.3*	*36.4*
Spain	79.0	82.9	84.1	21.0	17.1	16.1
France	84.7	86.0	85.8	15.3	14.0	14.2
Italy	65.7	66.6	67.6	34.3	33.4	32.4
Cyprus	69.8	70.2	76.6	30.2	29.8	23.4
Lithuania	78.9	82.2	88.2	21.1	17.8	11.8
Netherlands	79.6	81.1	79.7	20.4	18.9	20.3
Austria	79.5	79.6	81.4	20.5	20.4	18.6
Portugal	78.6	80.3	82.8	21.4	19.7	17.2
Romania	60.0	67.4	70.8	40.0	32.6	29.2
Slovenia	75.3	78.7	79.2	24.7	21.3	20.8
Slovakia	87.9	83.3	80.0	12.1	16.7	20.0
Finland	81.1	83.6	84.1	18.9	16.4	15.9
Sweden	92.2	93.1	94.0	7.8	6.9	6.0
United Kingdom	85.6	86.7	85.9	14.4	13.3	14.1
Norway	89.1	90.4	91.7	10.9	9.6	8.3
Europe-20 countries	*78.8*	*80.3*	*81.1*	*21.2*	*19.7*	*18.9*
Euro area-14 countries	*76.1*	*77.2*	*78.0*	*23.9*	*22.8*	*22.0*
Mediterranean countries	*74.7*	*76.8*	*77.8*	*25.3*	*23.2*	*22.2*

Source: Calculations on Eurostat primary data.

Table 4a

	Labour productivity-Hours worked					
	Primary sector			Total economy		
	1995-2000	2001-2007	2008-2014	1995-2000	2001-2007	2008-2014
Czech Republic	68.7	96.7	103.0	67.6	87.5	101.1
Denmark	58.5	78.5	89.0	88.0	95.1	99.2
Germany	72.8	95.4	110.3	85.8	95.8	101.3
Ireland	81.5	87.1	97.4	73.0	86.6	100.8
Greece	*83.3*	*98.3*	*105.2*	*82.1*	*97.8*	*98.1*
Spain	69.0	83.0	103.8	92.2	93.2	101.4
France	63.7	78.6	100.8	85.0	96.3	100.9
Italy	83.3	91.0	103.5	96.9	100.2	100.0
Cyprus	112.6	106.2	101.0	82.5	92.9	100.3
Lithuania	47.5	57.9	106.7	54.2	79.7	105.1
Netherlands	75.2	81.8	99.7	86.0	96.0	100.3
Austria	67.8	80.0	109.4	82.4	92.7	100.8
Portugal	75.6	81.5	100.8	85.2	92.5	100.6
Romania	62.5	95.0	117.8	56.6	80.9	107.6
Slovenia	56.8	79.4	99.2	71.9	90.8	101.8
Slovakia	32.9	71.9	124.8	63.1	81.7	101.9
Finland	62.7	76.5	105.3	80.7	95.3	100.1
Sweden	65.6	92.1	97.7	78.9	94.2	100.1
United Kingdom	96.9	128.4	113.2	82.0	95.1	99.9
EU-19 countries	*66.1*	*87.9*	*108.0*	*78.6*	*91.8*	*101.1*
Euro area-14 countries	*70.2*	*84.0*	*104.7*	*91.5*	*93.3*	*96.1*
Mediterranean countries	*72.4*	*85.0*	*104.0*	*88.3*	*96.0*	*100.2*

Source: Calculations on Eurostat primary data.

Table 4b

	Labour productivity-Hours worked					
	Primary sector			Total economy		
	Average annual rates of change (%)					
	1995-2000	2001-2007	2008-2014	1995-2000	2001-2007	2008-2014
Czech Republic	1.1	1.9	1.8	2.4	4.3	0.4
Denmark	6.6	4.1	4.7	1.3	1.5	0.5
Germany	5.4	5.5	-2.4	1.9	1.3	0.6
Ireland	-1.3	-0.5	5.1	5.3	2.4	2.6
Greece	*2.0*	*-1.1*	*5.1*	*2.9*	*2.2*	*-0.9*
Spain	8.0	3.3	2.6	0.1	0.5	1.7
France	5.2	3.1	2.2	2.2	1.5	0.7
Italy	5.1	0.4	1.3	1.1	0.0	0.1
Cyprus	-1.5	-2.0	1.2	2.3	1.8	0.2
Lithuania	-0.9	9.7	2.2	4.5	6.4	2.5
Netherlands	-0.7	4.1	1.8	2.1	1.4	0.2
Austria	3.0	3.9	2.4	1.8	1.9	0.6
Portugal	-0.9	3.1	4.3	1.6	1.3	1.0
Romania	-6.5	3.3	6.0	0.9	8.1	2.4
Slovenia	6.5	7.1	1.6	5.0	4.0	0.0
Slovakia	8.4	12.2	8.0	3.6	5.7	1.8
Finland	3.0	3.3	5.1	3.1	2.3	-0.2
Sweden	2.9	7.0	-3.7	2.7	2.8	0.5
United Kingdom	12.4	0.2	-1.9	2.3	2.1	0.0
EU-19 countries	*4.0*	*4.7*	*2.7*	*1.9*	*2.7*	*0.9*
Euro area-14 countries	*4.4*	*3.0*	*2.8*	*1.7*	*2.2*	*0.8*
Mediterranean countries	*5.2*	*2.0*	*3.6*	*1.5*	*1.1*	*0.5*

Source: Calculations on Eurostat primary data.

Table 5a

	Farming production			Livestock production		
	Average annual rates of change (%)					
	1995-2000	2001-2007	2008-2014	1995-2000	2001-2007	2008-2014
Belgium	12.1	5.4	-0.2	1.7	0.1	1.0
Bulgaria	-7.6	-4.3	1.5	-1.6	-2.2	-5.8
Czech Republic	0.3	0.0	2.9	-2.2	-0.1	-1.5
Denmark	2.8	0.2	0.6	1.2	0.5	2.2
Germany	2.9	1.4	0.6	0.6	-0.2	-1.7
Estonia	1.9	3.7	4.5	-2.1	1.7	3.9
Ireland	1.8	-3.3	3.3	-0.4	-2.6	1.1
Greece	*0.9*	*-2.3*	*0.7*	*-0.3*	*-0.3*	*-1.1*
Spain	12.0	1.6	2.9	2.2	2.0	0.8
France	2.6	0.2	1.1	0.3	-0.6	-0.1
Italy	1.5	-0.6	-1.9	0.7	0.0	-0.4
Latvia	-7.2	8.3	3.7	-9.2	2.9	3.7
Lithuania	3.4	8.0	5.1	-2.5	4.9	0.8
Luxembourg	2.8	0.1	0.0	1.4	0.0	1.5
Hungary	-4.6	-2.9	0.1	2.0	-2.5	-0.5
Netherlands	2.5	1.1	0.7	-1.1	0.9	0.7
Austria	-0.8	0.6	-0.2	1.8	0.4	0.8
Poland	-5.3	2.2	1.6	-2.7	3.1	2.1
Portugal	5.5	-1.8	2.0	0.9	0.7	-1.0
Romania	-5.9	-4.8	2.5	-3.9	-0.6	-1.3
Slovenia	0.7	3.9	1.0	1.0	-0.3	-1.5
Slovakia	-4.6	-0.3	1.6	0.0	-0.1	-4.8
Finland	2.2	2.3	-3.7	-3.4	1.6	0.5
Sweden	1.8	1.1	3.7	0.0	-0.7	0.2
United Kingdom	0.4	-0.4	1.2	-1.3	0.4	1.2
Norway	1.5	-1.7	-4.1	-0.5	-0.8	0.5
Switzerland	0.9	0.1	0.5	-0.5	0.3	0.8
Europe-27 countries	*5.6*	*0.2*	*1.0*	*2.9*	*0.2*	*0.1*
Euro area-17 countries	*3.7*	*0.5*	*0.8*	*0.6*	*0.2*	*-0.2*
Mediterranean countries	*4.0*	*0.1*	*0.9*	*0.8*	*0.3*	*0.0*

Source: Calculations on Eurostat primary data; value of production at basic prices; at constant 2005 prices.

Table 5b

	Farming production			Livestock production		
	Europe 27 - Share per country (%)					
	1995-2000	2001-2007	2008-2014	1995-2000	2001-2007	2008-2014
Belgium	1.0	1.6	1.5	2.6	2.6	2.7
Bulgaria	0.9	0.9	1.0	1.1	0.8	0.6
Czech Republic	1.0	0.9	1.0	1.2	1.2	1.1
Denmark	1.3	1.4	1.4	3.2	3.4	3.5
Germany	9.6	10.1	10.5	13.3	13.4	13.9
Estonia	0.1	0.1	0.1	0.2	0.2	0.2
Ireland	0.8	0.8	0.7	3.2	2.9	2.6
Greece	*5.0*	*4.5*	*4.1*	*2.1*	*2.1*	*1.9*
Spain	13.2	15.3	16.1	9.2	10.2	10.8
France	21.6	20.1	19.8	17.7	17.1	16.5
Italy	16.5	15.6	13.9	9.7	9.8	9.9
Latvia	0.1	0.2	0.2	0.2	0.2	0.3
Lithuania	0.4	0.4	0.6	0.4	0.5	0.5
Luxembourg	0.1	0.1	0.1	0.1	0.1	0.1
Hungary	1.7	1.7	1.8	1.7	1.6	1.4
Netherlands	5.9	6.0	6.1	6.2	5.9	6.3
Austria	1.2	1.2	1.3	1.8	1.9	2.0
Poland	3.8	3.8	4.3	4.7	5.2	5.7
Portugal	2.0	2.1	2.0	1.7	1.7	1.7
Romania	3.9	4.3	4.6	3.1	3.1	2.4
Slovenia	0.3	0.3	0.3	0.4	0.4	0.3
Slovakia	0.4	0.4	0.4	0.6	0.6	0.4
Finland	0.7	0.7	0.7	1.5	1.5	1.5
Sweden	1.0	1.0	1.0	1.5	1.5	1.5
United Kingdom	4.8	4.3	4.3	8.4	8.0	8.0
Norway	0.8	0.8	0.7	1.9	1.8	1.8
Switzerland	1.8	1.6	1.6	2.2	2.3	2.3
Europe-27 countries	*100.0*	*100.0*	*100.0*	*100.0*	*100.0*	*100.0*

Source: Calculations on Eurostat primary data; value of production at basic prices; at constant 2005 prices.

Table 5c

	Farming production			Livestock production		
	Euro area 17 - Share per country (%)					
	1995-2000	2001-2007	2008-2014	1995-2000	2001-2007	2008-2014
Belgium	1.2	2.0	1.9	3.7	3.6	3.8
Germany	12.1	12.8	13.4	18.8	18.8	19.3
Estonia	0.1	0.1	0.2	0.3	0.3	0.3
Ireland	1.1	1.0	1.0	4.6	4.1	3.6
Greece	*6.4*	*5.7*	*5.2*	*2.9*	*2.9*	*2.7*
Spain	16.7	19.2	20.6	13.0	14.4	15.0
France	27.4	25.4	25.2	24.9	24.1	23.0
Italy	20.9	19.6	17.8	13.7	13.8	13.8
Latvia	0.2	0.2	0.3	0.3	0.3	0.4
Lithuania	0.5	0.5	0.7	0.6	0.7	0.7
Luxembourg	0.1	0.1	0.1	0.1	0.1	0.2
Netherlands	7.5	7.5	7.8	8.7	8.3	8.9
Austria	1.6	1.5	1.6	2.6	2.7	2.7
Portugal	2.5	2.6	2.5	2.3	2.5	2.4
Slovenia	0.3	0.3	0.3	0.5	0.5	0.5
Slovakia	0.5	0.5	0.5	0.9	0.8	0.6
Finland	0.9	0.9	0.9	2.1	2.1	2.1
Euro area-17 countries	*100.0*	*100.0*	*100.0*	*100.0*	*100.0*	*100.0*

Source: Calculations on Eurostat primary data; value of production at basic prices; at constant 2005 prices.

Table 5d

	Farming production			Livestock production		
	Mediterranean countries - Share per country (%)					
	1995-2000	2001-2007	2008-2014	1995-2000	2001-2007	2008-2014
Greece	*8.6*	*7.8*	*7.3*	*5.2*	*5.1*	*4.8*
Spain	22.6	26.5	28.9	22.9	25.0	26.4
France	37.1	35.0	35.4	43.8	41.8	40.4
Italy	28.3	27.1	24.9	24.0	23.9	24.2
Portugal	3.4	3.6	3.5	4.1	4.3	4.2
Mediterranean countries	*100.0*	*100.0*	*100.0*	*100.0*	*100.0*	*100.0*

Source: Calculations on Eurostat primary data; value of production at basic prices; constant 2005 prices.

Table 6a

	Farming production			Livestock production		
	Average annual rates of change in subsidies (%)					
	1995-2000	2001-2007	2008-2014	1995-2000	2001-2007	2008-2014
Belgium	3.3	-0.8	9.2	-2.4	0.8	-3.5
Czech Republic	16.1	-4.1	-1.1	1.5	1.8	-1.2
Denmark	0.1	-1.8	-41.8	-3.9	-1.7	-14.4
Greece	*2.4*	*-6.4*	*4.8*	*0.0*	*-0.1*	*-11.1*
Spain	25.4	2.6	0.5	4.6	25.9	-9.1
France	3.2	-0.4	-7.6	-0.7	-1.2	-1.2
Italy	0.6	-1.9	-0.5	0.7	0.0	-2.1
Latvia	-21.0	11.5	3.4	20.4	0.6	5.1
Lithuania	2.7	49.8	4.9	-27.5	133.0	0.3
Hungary	-5.9	-1.0	-2.6	2.3	-3.2	-1.2
Netherlands	1.3	4.5	1.1	-9.6	-1.0	-2.4
Austria	-4.0	2.0	4.2	5.8	0.4	0.0
Portugal	8.2	5.4	3.0	-6.9	0.6	-5.0
Slovenia	2.0	5.0	-10.5	2.1	-0.4	0.0
Finland	4.3	2.7	-1.7	-14.8	7.1	1.2
Sweden	2.1	-4.1	2.4	2.6	-1.2	0.8
United Kingdom	1.0	-3.4	-10.7	-0.6	2.3	-1.1
Norway	2.9	-11.4	-0.7	-1.6	-5.2	0.4
Switzerland	-0.3	5.6	3.8	0.8	0.1	0.0
Europe-19 countries	*6.8*	*0.1*	*-2.4*	*-3.4*	*6.9*	*-3.8*
Euro area-12 countries	*6.9*	*0.3*	*-2.4*	*-3.8*	*8.4*	*-4.4*
Mediterranean countries	*7.0*	*-0.1*	*-2.5*	*0.4*	*9.5*	*-5.2*

Source: Calculations on Eurostat primary data; at constant 2005 prices.

Table 6b

	Farming production			Livestock production		
	Europe 19 - Share of subsidies per country (%)					
	1995-2000	2001-2007	2008-2014	1995-2000	2001-2007	2008-2014
Belgium	0.1	0.1	0.1	1.7	1.5	1.4
Czech Republic	0.0	0.0	0.0	0.3	0.4	0.4
Denmark	0.0	0.0	0.0	0.5	0.4	0.3
Greece	*11.8*	*9.5*	*8.5*	*3.2*	*3.4*	*2.3*
Spain	23.5	31.4	36.1	13.4	24.3	29.4
France	46.9	42.1	37.8	35.3	33.4	30.4
Italy	11.2	9.7	9.2	6.0	6.4	6.1
Latvia	0.2	0.3	0.4	0.2	0.3	0.3
Lithuania	0.1	0.7	1.6	0.4	0.4	0.1
Hungary	1.8	2.2	2.9	1.5	1.5	1.2
Netherlands	0.3	0.4	0.4	13.0	5.6	5.3
Austria	0.1	0.1	0.1	1.7	2.0	2.0
Portugal	2.0	2.1	2.7	3.5	3.4	2.9
Slovenia	0.3	0.3	0.3	0.5	0.6	0.6
Finland	2.3	2.6	2.5	5.7	5.4	7.0
Sweden	0.1	0.1	0.1	1.2	1.4	1.3
United Kingdom	0.2	0.2	0.1	3.1	3.2	3.0
Norway	1.2	0.8	0.6	11.2	9.0	8.2
Switzerland	0.2	0.2	0.3	0.3	0.3	0.4
Europe-19 countries	*100.0*	*100.0*	*100.0*	*100.0*	*100.0*	*100.0*

Source: Calculations on Eurostat primary data; at constant 2005 prices.

Table 7a

	Agricultural holdings which include a utilised agricultural area							
	Number of agricultural holdings which include a utilised agricultural area				Utilised agricultural area[1]			
	2005	2007	2010	2013	2005	2007	2010	2013
	Absolute numbers							
Belgium	50,620	47,120	41,910	37,340	1,385,580	1,374,430	1,358,020	1,307,900
Bulgaria	520,530	481,920	357,340	244,860	2,729,390	3,050,740	4,475,530	4,650,940
Czech Republic	41,180	38,490	22,580	25,950	3,557,790	3,518,070	3,483,500	3,491,470
Denmark	51,270	44,200	40,510	37,380	2,707,690	2,662,590	2,646,860	2,619,340
Germany	388,610	369,210	297,720	282,160	17,035,220	16,931,900	16,704,040	16,699,580
Estonia	27,690	23,260	19,460	18,750	828,930	906,830	940,930	957,510
Ireland	132,590	128,050	139,760	139,560	4,219,380	4,139,240	4,991,350	4,959,450
Greece	*828,160*	*854,120*	*716,870*	*703,590*	*3,983,790*	*4,076,230*	*5,177,510*	*4,856,780*
Spain	1,062,810	1,029,990	967,290	944,300	24,855,130	24,892,520	23,752,690	23,300,220
France	561,560	521,960	506,620	463,710	27,590,940	27,476,930	27,837,290	27,739,430
Italy	1,725,590	1,677,770	1,615,590	1,009,440	12,707,850	12,744,200	12,856,050	12,098,890
Cyprus	44,850	39,860	38,370	35,150	151,500	146,000	118,400	109,330
Latvia	128,130	107,490	83,070	80,720	1,701,680	1,773,840	1,796,290	1,877,720
Lithuania	252,880	230,200	199,650	171,730	2,792,040	2,648,950	2,742,560	2,861,250
Luxembourg	2,440	2,290	2,180	2,060	129,130	130,880	131,110	131,040
Hungary	662,370	565,950	534,020	453,090	4,266,550	4,228,580	4,686,340	4,656,520
Malta	10,880	10,780	12,190	9,000	10,250	10,330	11,450	10,880
Netherlands	80,350	74,940	70,630	65,790	1,958,060	1,914,330	1,872,350	1,847,570
Austria	170,060	164,550	149,090	139,610	3,266,240	3,189,110	2,878,170	2,726,890
Poland	2,465,830	2,380,120	1,498,660	1,421,560	14,754,880	15,477,190	14,447,290	14,409,870
Portugal	322,620	274,190	303,870	263,580	3,679,590	3,472,940	3,668,150	3,641,590
Romania	4,121,250	3,851,790	3,724,330	3,563,770	13,906,700	13,753,050	13,306,130	13,055,850
Slovenia	77,140	75,300	74,460	72,280	485,430	488,770	482,650	485,760
Slovakia	66,360	66,520	23,720	22,050	1,879,490	1,936,620	1,895,500	1,901,610
Finland	70,250	67,860	63,470	54,130	2,263,560	2,292,290	2,290,980	2,257,630
Sweden	75,010	72,160	70,360	66,550	3,192,450	3,118,000	3,066,320	3,035,920
United Kingdom	248,420	209,030	182,660	181,690	15,956,960	16,043,160	16,881,690	17,096,170
Norway	51,790	48,430	44,830	42,120	1,035,400	1,031,990	1,005,940	987,120
Europe-28 countries	*14,241,240*	*13,457,550*	*11,801,210*	*10,551,920*	*173,031,600*	*173,429,710*	*175,505,090*	*173,774,230*
Euro area-19 countries	*6,003,590*	*5,765,460*	*5,325,920*	*4,514,950*	*110,923,790*	*110,546,340*	*111,505,490*	*109,771,030*
Mediterranean countries	*4,500,740*	*4,358,030*	*4,110,240*	*3,384,620*	*72,817,300*	*72,662,820*	*73,291,690*	*71,636,910*

Source: Eurostat.
1 Agricultural area in hectares; 1 hectare equals 10 stremma.

Table 7b

	Average size of agricultural holdings which include a utilised agricultural area[1]							
	2005	2007	2010	2013	2005	2007	2010	2013
	Absolute numbers				Changes against the previous year under review (%)			
Belgium	27.4	29.2	32.4	35.0	-	6.6	11.1	8.1
Bulgaria	5.2	6.3	12.5	19.0	-	20.7	97.8	51.7
Czech Republic	86.4	91.4	154.3	134.5	-	5.8	68.8	-12.8
Denmark	52.8	60.2	65.3	70.1	-	14.1	8.5	7.2
Germany	43.8	45.9	56.1	59.2	-	4.6	22.3	5.5
Estonia	29.9	39.0	48.4	51.1	-	30.2	24.0	5.6
Ireland	31.8	32.3	35.7	35.5	-	1.6	10.5	-0.5
Greece	*4.8*	*4.8*	*7.2*	*6.9*	-	*-0.8*	*51.3*	*-4.4*
Spain	23.4	24.2	24.6	24.7	-	3.3	1.6	0.5
France	49.1	52.6	54.9	59.8	-	7.1	4.4	8.9
Italy	7.4	7.6	8.0	12.0	-	3.1	4.8	50.6
Cyprus	3.4	3.7	3.1	3.1	-	8.4	-15.8	0.8
Latvia	13.3	16.5	21.6	23.3	-	24.3	31.0	7.6
Lithuania	11.0	11.5	13.7	16.7	-	4.2	19.4	21.3
Luxembourg	52.9	57.2	60.1	63.6	-	8.0	5.2	5.8
Hungary	6.4	7.5	8.8	10.3	-	16.0	17.5	17.1
Malta	0.9	1.0	0.9	1.2	-	1.7	-2.0	28.7
Netherlands	24.4	25.5	26.5	28.1	-	4.8	3.8	5.9
Austria	19.2	19.4	19.3	19.5	-	0.9	-0.4	1.2
Poland	6.0	6.5	9.6	10.1	-	8.7	48.2	5.2
Portugal	11.4	12.7	12.1	13.8	-	11.1	-4.7	14.5
Romania	3.4	3.6	3.6	3.7	-	5.8	0.1	2.5
Slovenia	6.3	6.5	6.5	6.7	-	3.1	-0.1	3.7
Slovakia	28.3	29.1	79.9	86.2	-	2.8	174.5	7.9
Finland	32.2	33.8	36.1	41.7	-	4.8	6.9	15.5
Sweden	42.6	43.2	43.6	45.6	-	1.5	0.9	4.7
United Kingdom	64.2	76.8	92.4	94.1	-	19.5	20.4	1.8
Norway	20.0	21.3	22.4	23.4	-	6.6	5.3	4.4
Europe-28 countries	*12.2*	*12.9*	*14.9*	*16.5*	-	*6.1*	*15.4*	*10.7*
Euro area-19 countries	*18.5*	*19.2*	*20.9*	*24.3*	-	*3.8*	*9.2*	*16.1*
Mediterranean countries	*16.2*	*16.7*	*17.8*	*21.2*	-	*3.1*	*6.9*	*18.7*

Source: Calculations on Eurostat primary data.
1 Agricultural area in hectares; 1 hectare equals 10 stremma.

Table 7c1

	Number of agricultural holdings with utilised agricultural area				Utilised agricultural area[1]			
	2005	2007	2010	2013	2005	2007	2010	2013
	Europe 28 - Share per country (%)							
Belgium	0.36	0.35	0.36	0.35	0.80	0.79	0.77	0.75
Bulgaria	3.66	3.58	3.03	2.32	1.58	1.76	2.55	2.68
Czech Republic	0.29	0.29	0.19	0.25	2.06	2.03	1.98	2.01
Denmark	0.36	0.33	0.34	0.35	1.56	1.54	1.51	1.51
Germany	2.73	2.74	2.52	2.67	9.85	9.76	9.52	9.61
Estonia	0.19	0.17	0.16	0.18	0.48	0.52	0.54	0.55
Ireland	0.93	0.95	1.18	1.32	2.44	2.39	2.84	2.85
Greece	*5.82*	*6.35*	*6.07*	*6.67*	*2.30*	*2.35*	*2.95*	*2.79*
Spain	7.46	7.65	8.20	8.95	14.36	14.35	13.53	13.41
France	3.94	3.88	4.29	4.39	15.95	15.84	15.86	15.96
Italy	12.12	12.47	13.69	9.57	7.34	7.35	7.33	6.96
Cyprus	0.31	0.30	0.33	0.33	0.09	0.08	0.07	0.06
Latvia	0.90	0.80	0.70	0.76	0.98	1.02	1.02	1.08
Lithuania	1.78	1.71	1.69	1.63	1.61	1.53	1.56	1.65
Luxembourg	0.02	0.02	0.02	0.02	0.07	0.08	0.07	0.08
Hungary	4.65	4.21	4.53	4.29	2.47	2.44	2.67	2.68
Malta	0.08	0.08	0.10	0.09	0.01	0.01	0.01	0.01
Netherlands	0.56	0.56	0.60	0.62	1.13	1.10	1.07	1.06
Austria	1.19	1.22	1.26	1.32	1.89	1.84	1.64	1.57
Poland	17.31	17.69	12.70	13.47	8.53	8.92	8.23	8.29
Portugal	2.27	2.04	2.57	2.50	2.13	2.00	2.09	2.10
Romania	28.94	28.62	31.56	33.77	8.04	7.93	7.58	7.51
Slovenia	0.54	0.56	0.63	0.68	0.28	0.28	0.28	0.28
Slovakia	0.47	0.49	0.20	0.21	1.09	1.12	1.08	1.09
Finland	0.49	0.50	0.54	0.51	1.31	1.32	1.31	1.30
Sweden	0.53	0.54	0.60	0.63	1.85	1.80	1.75	1.75
United Kingdom	1.74	1.55	1.55	1.72	9.22	9.25	9.62	9.84
Norway	0.36	0.36	0.38	0.40	0.60	0.60	0.57	0.57
Europe-28 countries	*100.00*	*100.00*	*100.00*	*100.00*	*100.00*	*100.00*	*100.00*	*100.00*

Source: Calculations on Eurostat primary data.
1 Agricultural area in hectares; 1 hectare equals 10 stremma.

Table 7c2

	Number of agricultural holdings with utilised agricultural area				Utilised agricultural area[1]			
	2005	2007	2010	2013	2005	2007	2010	2013
	Euro area 19 - Share per country (%)							
Belgium	0.84	0.82	0.79	0.83	1.25	1.24	1.22	1.19
Germany	6.47	6.40	5.59	6.25	15.36	15.32	14.98	15.21
Estonia	0.46	0.40	0.37	0.42	0.75	0.82	0.84	0.87
Ireland	2.21	2.22	2.62	3.09	3.80	3.74	4.48	4.52
Greece	*13.79*	*14.81*	*13.46*	*15.58*	*3.59*	*3.69*	*4.64*	*4.42*
Spain	17.70	17.86	18.16	20.91	22.41	22.52	21.30	21.23
France	9.35	9.05	9.51	10.27	24.87	24.86	24.96	25.27
Italy	28.74	29.10	30.33	22.36	11.46	11.53	11.53	11.02
Cyprus	0.75	0.69	0.72	0.78	0.14	0.13	0.11	0.10
Latvia	2.13	1.86	1.56	1.79	1.53	1.60	1.61	1.71
Lithuania	4.21	3.99	3.75	3.80	2.52	2.40	2.46	2.61
Luxembourg	0.04	0.04	0.04	0.05	0.12	0.12	0.12	0.12
Malta	0.18	0.19	0.23	0.20	0.01	0.01	0.01	0.01
Netherlands	1.34	1.30	1.33	1.46	1.77	1.73	1.68	1.68
Austria	2.83	2.85	2.80	3.09	2.94	2.88	2.58	2.48
Portugal	5.37	4.76	5.71	5.84	3.32	3.14	3.29	3.32
Slovenia	1.28	1.31	1.40	1.60	0.44	0.44	0.43	0.44
Slovakia	1.11	1.15	0.45	0.49	1.69	1.75	1.70	1.73
Finland	1.17	1.18	1.19	1.20	2.04	2.07	2.05	2.06
Euro area - 19 countries	*100.00*	*100.00*	*100.00*	*100.00*	*100.00*	*100.00*	*100.00*	*100.00*

Source: Calculations on Eurostat primary data.
1 Agricultural area in hectares; 1 hectare equals 10 stremma.

Table 7c3

	Number of agricultural holdings with utilised agricultural area				Utilised agricultural area[1]			
	2005	2007	2010	2013	2005	2007	2010	2013
	Mediterranean countries - Share per country (%)							
Greece	*18.40*	*19.60*	*17.44*	*20.79*	*5.47*	*5.61*	*7.06*	*6.78*
Spain	23.61	23.63	23.53	27.90	34.13	34.26	32.41	32.53
France	12.48	11.98	12.33	13.70	37.89	37.81	37.98	38.72
Italy	38.34	38.50	39.31	29.82	17.45	17.54	17.54	16.89
Portugal	7.17	6.29	7.39	7.79	5.05	4.78	5.00	5.08
Mediterranean countries	*100.00*	*100.00*	*100.00*	*100.00*	*100.00*	*100.00*	*100.00*	*100.00*

Source: Calculations on Eurostat primary data.
1 Agricultural area in hectares; 1 hectare equals 10 stremma.

Table 7d

	Agricultural holdings with utilised agricultural area							
	Number of agricultural holdings with utilised agricultural area				Utilised agricultural area[1]			
	2005	2007	2010	2013	2005	2007	2010	2013
	Changes against the previous year under review (%)							
Belgium	-	-6.9	-11.1	-10.9	-	-0.8	-1.2	-3.7
Bulgaria	-	-7.4	-25.9	-31.5	-	11.8	46.7	3.9
Czech Republic	-	-6.5	-41.3	14.9	-	-1.1	-1.0	0.2
Denmark	-	-13.8	-8.3	-7.7	-	-1.7	-0.6	-1.0
Germany	-	-5.0	-19.4	-5.2	-	-0.6	-1.3	0.0
Estonia	-	-16.0	-16.3	-3.6	-	9.4	3.8	1.8
Ireland	-	-3.4	9.1	-0.1	-	-1.9	20.6	-0.6
Greece	-	*3.1*	*-16.1*	*-1.9*	-	*2.3*	*27.0*	*-6.2*
Spain	-	-3.1	-6.1	-2.4	-	0.2	-4.6	-1.9
France	-	-7.1	-2.9	-8.5	-	-0.4	1.3	-0.4
Italy	-	-2.8	-3.7	-37.5	-	0.3	0.9	-5.9
Cyprus	-	-11.1	-3.7	-8.4	-	-3.6	-18.9	-7.7
Latvia	-	-16.1	-22.7	-2.8	-	4.2	1.3	4.5
Lithuania	-	-9.0	-13.3	-14.0	-	-5.1	3.5	4.3
Luxembourg	-	-6.1	-4.8	-5.5	-	1.4	0.2	-0.1
Hungary	-	-14.6	-5.6	-15.2	-	-0.9	10.8	-0.6
Malta	-	-0.9	13.1	-26.2	-	0.8	10.8	-5.0
Netherlands	-	-6.7	-5.8	-6.9	-	-2.2	-2.2	-1.3
Austria	-	-3.2	-9.4	-6.4	-	-2.4	-9.8	-5.3
Poland	-	-3.5	-37.0	-5.1	-	4.9	-6.7	-0.3
Portugal	-	-15.0	10.8	-13.3	-	-5.6	5.6	-0.7
Romania	-	-6.5	-3.3	-4.3	-	-1.1	-3.2	-1.9
Slovenia	-	-2.4	-1.1	-2.9	-	0.7	-1.3	0.6
Slovakia	-	0.2	-64.3	-7.0	-	3.0	-2.1	0.3
Finland	-	-3.4	-6.5	-14.7	-	1.3	-0.1	-1.5
Sweden	-	-3.8	-2.5	-5.4	-	-2.3	-1.7	-1.0
United Kingdom	-	-15.9	-12.6	-0.5	-	0.5	5.2	1.3
Norway	-	-6.5	-7.4	-6.0	-	-0.3	-2.5	-1.9
Europe-28 countries	-	*-5.5*	*-12.3*	*-10.6*	-	*0.2*	*1.2*	*-1.0*
Euro area-19 countries	-	*-4.0*	*-7.6*	*-15.2*	-	*-0.3*	*0.9*	*-1.6*
Mediterranean countries	-	*-3.2*	*-5.7*	*-17.7*	-	*-0.2*	*0.9*	*-2.3*

Source: Calculations on Eurostat primary data.
1 Agricultural area in hectares; 1 hectare equals 10 stremma.

Table 8a1

	World trade volume index-Imports (base year 2010=100)					
	Total			Food-beverages-tobacco		
	2000	2001-2007	2008-2014	2000	2001-2007	2008-2014
Belgium	79.1	93.7	102.9	81.9	91.8	104.3
Bulgaria	39.6	64.1	113.7	23.1	44.3	106.9
Czech Republic	44.7	70.2	101.5	41.2	66.3	104.3
Denmark	86.8	100.2	105.6	73.2	87.8	102.0
Germany	79.6	86.3	99.9	79.1	88.1	101.0
Estonia	61.2	92.8	116.6	43.2	68.2	112.3
Ireland	121.7	124.9	103.5	62.8	82.3	104.2
Greece	*95.0*	*109.7*	*97.5*	*78.3*	*94.1*	*95.8*
Spain	88.2	103.2	98.5	72.0	90.8	98.7
France	102.1	101.1	100.0	84.2	90.3	101.4
Italy	93.0	101.2	94.3	77.8	89.3	97.6
Cyprus	61.1	79.8	87.6	47.0	63.5	98.1
Latvia	47.2	84.9	118.4	33.8	57.6	110.9
Lithuania	42.7	80.4	112.6	26.8	48.4	115.3
Luxembourg	71.2	94.2	102.1	76.6	86.0	99.2
Hungary	55.9	80.0	104.8	34.4	62.5	102.7
Malta	89.3	80.4	108.0	67.0	79.7	107.9
Netherlands	73.8	85.0	101.4	71.7	85.8	102.5
Austria	80.5	93.6	101.6	59.9	79.4	102.1
Poland	48.9	67.9	102.5	39.6	54.7	105.1
Portugal	84.8	90.2	95.7	63.1	76.3	98.2
Romania	36.5	71.4	105.9	30.4	58.7	109.3
Slovenia	58.0	77.4	102.9	38.6	56.9	98.1
Slovakia	35.1	60.9	107.2	29.4	50.9	103.4
Finland	86.5	100.5	103.2	56.2	72.7	105.5
Sweden	81.1	86.2	99.0	53.7	73.8	105.7
United Kingdom	99.6	106.5	100.4	75.1	91.6	102.3
EU-27	*72.0*	*88.4*	*103.2*	*56.3*	*73.8*	*103.5*
Euro area-19	*78.0*	*92.0*	*101.7*	*62.3*	*77.5*	*102.2*
Mediterranean countries	*92.6*	*101.1*	*97.2*	*75.1*	*88.2*	*98.3*

Source: Eurostat.

Table 8a2

	World trade volume index-Exports (base year 2010=100)					
	Total			Food-beverages-tobacco		
	2000	2001-2007	2008-2014	2000	2001-2007	2008-2014
Belgium	77.8	92.6	102.3	78.3	88.2	102.7
Bulgaria	45.7	69.1	112.7	20.0	37.2	106.0
Czech Republic	40.1	65.4	105.4	38.8	62.3	112.4
Denmark	85.4	97.4	102.9	84.5	92.9	98.1
Germany	70.9	87.0	102.7	59.6	74.6	101.9
Estonia	44.7	68.8	112.7	21.3	51.4	114.8
Ireland	93.3	101.9	98.2	91.9	97.3	102.8
Greece	*72.1*	*79.1*	*107.2*	*71.6*	*79.7*	*98.4*
Spain	79.6	90.1	107.0	74.5	86.7	106.6
France	107.0	106.2	100.9	91.6	92.8	101.0
Italy	99.5	104.3	102.7	75.4	84.4	100.6
Cyprus	41.2	74.9	112.6	47.9	74.1	114.0
Latvia	33.8	57.7	116.1	9.4	31.8	124.8
Lithuania	31.0	61.7	112.6	16.0	39.2	120.8
Luxembourg	55.7	90.0	102.5	64.1	78.0	97.5
Hungary	43.9	70.2	103.0	49.3	63.2	101.2
Malta	108.7	95.4	97.9	3.6	23.3	172.5
Netherlands	64.8	79.5	101.1	76.4	86.4	100.1
Austria	72.4	91.5	103.1	49.2	78.7	103.4
Poland	35.9	61.3	106.5	24.6	49.4	110.2
Portugal	79.4	90.3	106.8	46.0	63.6	106.1
Romania	38.7	61.4	105.8	9.1	19.5	119.6
Slovenia	48.2	70.8	104.9	29.7	47.3	96.2
Slovakia	30.7	53.3	110.2	20.8	46.9	115.1
Finland	106.6	113.9	103.5	69.7	86.0	104.3
Sweden	87.5	93.4	99.9	41.0	62.4	104.9
United Kingdom	119.1	113.3	104.3	92.9	89.6	101.6
EU-27	*67.2*	*83.0*	*105.4*	*50.3*	*66.2*	*108.8*
Euro area-19	*72.2*	*86.6*	*105.0*	*55.3*	*70.7*	*108.9*
Mediterranean countries	*87.5*	*94.0*	*104.9*	*71.8*	*81.4*	*102.5*

Source: Eurostat.

Table 8a3

	World trade volume index-Exports/Imports (base year 2010=100)					
	Total			Food-beverages-tobacco		
	2000	2001-2007	2008-2014	2000	2001-2007	2008-2014
Belgium	98.4	98.9	99.4	95.6	96.1	98.5
Bulgaria	115.4	109.3	99.1	86.6	85.7	98.0
Czech Republic	89.7	92.4	103.6	94.2	93.1	107.5
Denmark	98.4	97.5	97.6	115.4	106.4	96.2
Germany	89.1	100.5	102.7	75.3	84.3	100.9
Estonia	73.0	73.6	96.4	49.3	74.4	101.3
Ireland	76.7	81.8	95.5	146.3	118.7	98.7
Greece	*75.9*	*72.1*	*113.7*	*91.4*	*85.0*	*103.7*
Spain	90.2	87.8	109.4	103.5	95.9	108.2
France	104.8	105.1	100.9	108.8	102.9	99.6
Italy	107.0	103.2	109.2	96.9	94.6	103.1
Cyprus	67.4	91.1	134.7	101.9	116.5	116.1
Latvia	71.6	68.3	97.8	27.8	52.2	109.6
Lithuania	72.6	76.7	99.8	59.7	78.1	103.3
Luxembourg	78.2	94.5	100.3	83.7	90.7	98.2
Hungary	78.5	86.8	98.4	143.3	107.5	98.5
Malta	121.7	118.8	91.9	5.4	27.0	152.5
Netherlands	87.8	93.4	99.6	106.6	100.7	97.7
Austria	89.9	97.5	101.3	82.1	98.4	101.2
Poland	73.4	89.2	103.7	62.1	88.1	104.0
Portugal	93.6	100.0	112.0	72.9	82.4	108.0
Romania	106.0	89.2	100.2	29.9	33.2	107.9
Slovenia	83.1	90.6	102.0	76.9	81.4	97.9
Slovakia	87.5	86.9	102.3	70.7	87.8	110.1
Finland	123.2	113.9	100.2	124.0	118.9	99.2
Sweden	107.9	108.6	100.9	76.4	83.8	99.0
United Kingdom	119.6	106.6	103.9	123.7	98.5	99.3
EU-27	*91.9*	*93.9*	*102.8*	*85.6*	*88.2*	*104.4*
Euro area-19	*90.8*	*93.9*	*104.3*	*85.6*	*89.8*	*105.8*
Mediterranean countries	*94.3*	*93.7*	*109.1*	*94.7*	*92.2*	*104.5*

Source: Eurostat.

Table 8b1

	World trade volume index-Imports (base year 2010=100)					
	Total			Food-beverages-tobacco		
	Average annual rate of change (%)					
	2000-2001	2001-2007	2008-2014	2000-2001	2001-2007	2008-2014
Belgium	2.4	5.0	-0.1	3.7	3.0	0.9
Bulgaria	15.9	13.8	-0.2	20.3	17.9	4.4
Czech Republic	13.9	11.3	1.3	6.6	13.7	2.7
Denmark	2.1	5.2	-1.8	4.5	5.5	-0.5
Germany	-1.6	4.3	0.6	1.4	3.7	0.9
Estonia	2.3	12.9	2.2	6.7	14.5	3.6
Ireland	2.4	1.4	-2.7	12.4	5.8	2.6
Greece	*0.1*	*5.1*	*-5.8*	*3.4*	*4.7*	*-3.3*
Spain	0.3	5.4	-2.6	9.3	5.0	-0.7
France	-1.9	1.2	-1.5	0.4	2.4	1.1
Italy	1.2	2.9	-3.0	1.4	3.5	1.0
Cyprus	9.7	6.9	-6.5	4.7	9.8	0.3
Latvia	12.5	16.4	2.0	10.9	15.4	4.5
Lithuania	19.7	13.9	1.7	6.3	18.9	6.4
Luxembourg	13.1	5.1	-3.2	-1.8	4.1	1.6
Hungary	6.3	10.2	0.7	11.6	15.7	1.4
Malta	-19.1	4.1	6.0	-0.6	7.1	2.8
Netherlands	0.9	5.2	0.1	8.1	3.6	1.3
Austria	4.1	3.8	-0.3	8.7	6.6	1.7
Poland	3.7	11.1	1.1	4.0	12.2	4.5
Portugal	0.6	3.3	-1.5	7.0	5.1	1.7
Romania	19.2	17.7	-1.3	29.9	15.0	1.9
Slovenia	1.9	10.4	-0.7	2.6	14.3	0.7
Slovakia	16.2	14.9	3.2	17.0	15.2	4.8
Finland	-1.3	5.7	-2.7	4.3	7.2	3.5
Sweden	-8.1	6.0	-0.6	7.3	7.9	3.4
United Kingdom	0.9	2.0	-0.6	5.3	4.3	0.9
EU-27	*2.5*	*6.9*	*-0.5*	*5.8*	*7.9*	*2.1*
Euro area-19	*1.8*	*5.7*	*-1.0*	*4.5*	*6.4*	*1.8*
Mediterranean countries	*0.0*	*3.6*	*-2.9*	*4.0*	*4.1*	*-0.1*

Source: Eurostat.

Table 8b2

	World trade volume index-Exports (base year 2010=100)					
	Total			Food-beverages-tobacco		
	Average annual rate of change (%)					
	2000-2001	2001-2007	2008-2014	2000-2001	2001-2007	2008-2014
Belgium	2.8	4.8	0.6	2.0	3.4	1.0
Bulgaria	11.2	9.9	5.8	7.5	14.9	10.7
Czech Republic	13.2	13.1	2.8	4.9	14.1	6.0
Denmark	2.3	3.7	-0.9	1.8	2.6	-0.2
Germany	4.1	6.3	0.3	4.4	6.5	2.5
Estonia	1.1	13.4	4.7	46.9	17.5	9.1
Ireland	9.3	0.2	-0.4	-5.0	3.7	2.5
Greece	*1.2*	*4.6*	*3.5*	*13.8*	*1.5*	*0.8*
Spain	3.0	3.4	3.4	7.4	2.7	3.6
France	-0.4	0.2	-0.8	-4.3	1.6	1.4
Italy	2.2	2.1	-1.1	4.1	3.3	2.1
Cyprus	10.9	12.9	5.4	13.2	10.3	6.1
Latvia	10.1	14.9	6.8	68.1	24.8	16.4
Lithuania	26.5	13.5	5.4	20.6	24.4	12.0
Luxembourg	21.5	8.5	-3.2	6.6	3.9	2.5
Hungary	11.2	13.2	0.2	13.8	7.0	4.3
Malta	-19.9	4.2	-3.2	41.7	51.6	28.6
Netherlands	3.7	6.2	1.0	2.5	3.3	1.0
Austria	6.5	5.5	0.4	15.0	9.5	1.7
Poland	12.3	14.1	4.4	12.6	18.3	9.4
Portugal	0.8	4.8	1.9	3.5	10.7	4.3
Romania	9.8	12.1	5.8	38.5	17.4	21.4
Slovenia	6.0	12.4	1.8	7.7	16.9	2.2
Slovakia	10.1	16.9	4.9	10.1	23.6	9.2
Finland	-1.4	3.1	-3.6	9.2	5.1	1.7
Sweden	-8.2	5.1	-1.5	8.5	10.8	5.0
United Kingdom	-2.5	-0.9	0.2	-7.3	1.2	2.4
EU-27	*2.9*	*6.5*	*1.7*	*6.1*	*8.0*	*6.8*
Euro area-19	*2.9*	*5.6*	*1.2*	*5.8*	*7.2*	*6.3*
Mediterranean countries	*1.3*	*2.9*	*1.4*	*4.5*	*3.6*	*2.5*

Source: Eurostat.

Table 8b3

	World trade volume index-Exports/Imports (base year 2010=100)					
	Total			Food-beverages-tobacco		
	Average annual rate of change (%)					
	2000-2001	2001-2007	2008-2014	2000-2001	2001-2007	2008-2014
Belgium	0.4	-0.2	0.6	-1.6	0.4	0.2
Bulgaria	-4.1	-3.4	6.0	-10.7	-2.6	6.0
Czech Republic	-0.6	1.5	1.5	-1.6	0.4	3.2
Denmark	0.2	-1.4	0.9	-2.6	-2.7	0.4
Germany	5.8	1.9	-0.3	3.1	2.7	1.5
Estonia	-1.1	0.5	2.4	37.7	2.6	5.3
Ireland	6.8	-1.2	2.4	-15.4	-2.0	-0.2
Greece	*1.2*	*-0.5*	*9.9*	*10.1*	*-3.0*	*4.2*
Spain	2.8	-1.9	6.2	-1.7	-2.2	4.4
France	1.5	-1.0	0.8	-4.6	-0.8	0.3
Italy	1.0	-0.8	2.0	2.7	-0.2	1.0
Cyprus	1.2	5.6	12.7	8.1	0.5	5.8
Latvia	-2.1	-1.3	4.7	51.4	8.1	11.3
Lithuania	5.6	-0.4	3.7	13.4	4.6	5.3
Luxembourg	7.5	3.2	0.0	8.5	-0.2	0.9
Hungary	4.7	2.7	-0.5	2.0	-7.5	2.9
Malta	-0.9	0.1	-8.7	42.6	41.5	25.1
Netherlands	2.7	1.0	0.9	-5.3	-0.2	-0.3
Austria	2.3	1.6	0.7	5.8	2.8	0.0
Poland	8.3	2.8	3.2	8.2	5.5	4.7
Portugal	0.2	1.5	3.5	-3.3	5.4	2.5
Romania	-7.8	-4.7	7.2	6.7	2.0	19.1
Slovenia	4.1	1.8	2.5	5.1	2.2	1.6
Slovakia	-5.4	1.8	1.7	-5.8	7.3	4.2
Finland	-0.1	-2.5	-0.9	4.8	-2.0	-1.7
Sweden	-0.1	-0.8	-0.9	1.2	2.7	1.6
United Kingdom	-3.4	-2.8	0.9	-12.0	-3.0	1.4
EU-27	*0.8*	*0.0*	*2.4*	*1.1*	*0.7*	*4.5*
Euro area-19	*1.7*	*0.4*	*2.5*	*1.7*	*1.3*	*4.1*
Mediterranean countries	*1.3*	*-0.5*	*4.4*	*0.5*	*-0.4*	*2.5*

Source: Eurostat.

Table 9a1

	World trade value index-Imports (base year 2010=100)					
	Total			Food-beverages-tobacco		
	2000	2001-2007	2008-2014	2000	2001-2007	2008-2014
Belgium	81.8	86.2	104.6	82.5	87.8	106.8
Bulgaria	77.1	83.7	105.7	74.3	78.7	106.4
Czech Republic	80.5	85.7	104.4	75.5	81.6	105.9
Denmark	89.2	91.9	104.7	91.8	91.5	106.2
Germany	83.3	87.8	105.4	81.6	84.9	106.3
Estonia	80.9	86.1	106.7	85.2	90.4	107.0
Ireland	99.4	96.1	106.5	95.2	95.8	107.1
Greece	*72.9*	*80.7*	*105.9*	*82.4*	*88.0*	*106.4*
Spain	76.6	83.7	106.4	83.2	87.8	106.4
France	77.7	83.7	105.9	81.0	85.6	105.6
Italy	75.5	80.6	105.0	85.3	88.1	107.2
Cyprus	82.8	86.9	105.7	86.6	90.1	104.9
Latvia	81.1	85.1	107.3	87.0	89.9	108.0
Lithuania	73.1	77.0	108.0	81.9	83.9	105.5
Luxembourg	90.8	94.4	105.9	85.9	91.7	105.2
Hungary	93.0	94.1	101.7	80.5	86.0	106.6
Malta	106.4	98.4	106.0	85.1	86.6	105.6
Netherlands	82.6	83.7	104.4	82.3	82.9	105.9
Austria	80.5	86.1	105.2	82.3	86.3	105.7
Poland	80.0	84.6	104.7	77.0	81.9	105.2
Portugal	82.9	88.4	105.0	87.7	90.9	105.6
Romania	81.0	86.3	105.3	88.9	88.1	108.7
Slovenia	79.6	85.0	103.1	78.8	85.0	107.8
Slovakia	79.5	86.8	102.9	82.2	88.8	104.4
Finland	80.6	84.4	105.2	86.4	86.5	104.2
Sweden	84.4	86.7	103.9	86.5	86.3	102.6
United Kingdom	85.0	86.3	105.4	92.8	91.0	105.1
EU-27	*82.9*	*86.7*	*105.2*	*84.1*	*87.3*	*106.0*
Euro area-19	*82.2*	*86.1*	*105.4*	*84.4*	*87.8*	*106.1*
Mediterranean countries	*77.1*	*83.4*	*105.6*	*83.9*	*88.1*	*106.2*

Source: Eurostat.

Table 9a2

	World trade value index-Exports (base year 2010=100)					
	Total			Food-beverages-tobacco		
	2000	2001-2007	2008-2014	2000	2001-2007	2008-2014
Belgium	84.8	89.4	103.8	85.3	89.9	106.3
Bulgaria	70.4	76.6	104.3	83.3	84.0	106.6
Czech Republic	77.7	86.6	104.0	75.1	82.2	107.8
Denmark	89.3	91.9	104.7	92.2	93.0	105.7
Germany	86.4	90.0	103.8	85.9	89.0	107.3
Estonia	82.8	86.4	104.5	85.3	88.9	106.9
Ireland	101.1	97.4	101.5	91.1	94.0	107.2
Greece	*81.8*	*85.7*	*104.8*	*83.3*	*88.8*	*105.8*
Spain	81.6	87.1	103.4	80.1	85.9	102.5
France	84.0	88.4	104.1	84.9	89.6	108.5
Italy	77.4	84.4	105.0	78.0	86.0	106.5
Cyprus	84.7	91.0	104.1	68.5	79.5	101.7
Latvia	76.4	83.7	105.1	73.9	83.7	107.8
Lithuania	77.4	81.6	108.5	76.9	84.0	104.2
Luxembourg	113.6	108.3	103.2	101.0	98.7	109.0
Hungary	95.7	93.9	101.6	81.1	88.9	111.4
Malta	80.9	76.6	100.6	114.2	103.4	104.9
Netherlands	90.0	89.3	104.9	82.2	85.8	105.9
Austria	88.1	90.9	103.2	86.8	88.2	104.9
Poland	78.6	85.9	102.8	81.5	86.1	106.0
Portugal	88.9	91.4	104.4	90.2	92.3	104.5
Romania	74.8	83.7	104.9	80.8	86.0	107.9
Slovenia	82.5	88.7	102.7	76.2	83.2	109.7
Slovakia	84.9	92.7	102.8	90.1	98.3	102.5
Finland	88.7	88.7	103.1	83.6	85.5	107.8
Sweden	89.3	89.6	102.1	87.8	90.3	102.8
United Kingdom	82.7	86.1	104.8	91.0	93.6	105.6
EU-27	*85.0*	*88.4*	*103.8*	*84.8*	*88.8*	*106.2*
Euro area-19	*85.8*	*88.9*	*103.9*	*84.7*	*89.0*	*106.0*
Mediterranean countries	*82.7*	*87.4*	*104.3*	*83.3*	*88.5*	*105.6*

Source: Eurostat.

Table 9a3

	World trade value index-Exports/Imports (base year 2010=100)					
	Total			Food-beverages-tobacco		
	2000	2001-2007	2008-2014	2000	2001-2007	2008-2014
Belgium	103.7	103.7	99.4	103.4	102.4	99.5
Bulgaria	91.3	91.5	98.7	112.1	107.0	100.2
Czech Republic	96.5	101.1	99.7	99.5	100.7	101.9
Denmark	100.1	100.0	100.0	100.4	101.6	99.7
Germany	103.7	102.7	98.6	105.3	104.8	101.1
Estonia	102.3	100.5	98.0	100.1	98.3	99.9
Ireland	101.7	101.3	95.6	95.7	98.1	100.0
Greece	*112.2*	*106.4*	*99.0*	*101.1*	*101.0*	*99.4*
Spain	106.5	104.2	97.4	96.3	97.8	96.5
France	108.1	105.8	98.5	104.8	104.6	102.7
Italy	102.5	104.9	100.1	91.4	97.7	99.4
Cyprus	102.3	104.7	98.7	79.1	88.2	97.0
Latvia	94.2	98.3	98.0	84.9	93.1	99.7
Lithuania	105.9	106.2	100.5	93.9	100.1	98.7
Luxembourg	125.1	115.0	97.7	117.6	107.7	103.4
Hungary	102.9	99.8	99.8	100.7	103.2	104.5
Malta	76.0	77.8	94.8	134.2	119.4	99.3
Netherlands	109.0	106.7	100.6	99.9	103.5	100.0
Austria	109.4	105.7	98.3	105.5	102.2	99.3
Poland	98.3	101.6	98.3	105.8	105.2	100.9
Portugal	107.2	103.6	99.4	102.9	101.6	99.0
Romania	92.3	96.9	99.5	90.9	97.8	99.2
Slovenia	103.6	104.5	99.6	96.7	97.9	101.6
Slovakia	106.8	106.8	100.0	109.6	110.9	98.3
Finland	110.0	105.2	98.2	96.8	98.8	103.4
Sweden	105.8	103.4	98.4	101.5	104.7	100.1
United Kingdom	97.3	99.8	99.4	98.1	102.9	100.4
EU-27	*102.8*	*102.2*	*98.7*	*101.0*	*101.9*	*100.2*
Euro area-19	*104.8*	*103.6*	*98.7*	*100.6*	*101.5*	*99.9*
Mediterranean countries	*107.3*	*105.0*	*98.9*	*99.3*	*100.6*	*99.4*

Source: Eurostat.

Table 9b1

	World trade value index-Imports (base year 2010=100)					
	Total			Food-beverages-tobacco		
	Average annual rate of change (%)					
	2000-2001	2001-2007	2008-2014	2000-2001	2001-2007	2008-2014
Belgium	1.5	2.1	1.3	3.4	1.7	2.3
Bulgaria	0.0	4.0	0.9	2.8	2.8	2.4
Czech Republic	2.7	2.0	1.7	4.2	2.2	2.7
Denmark	0.6	0.9	2.1	0.3	-0.1	3.3
Germany	2.5	2.0	1.5	3.4	1.3	2.9
Estonia	1.7	2.5	1.6	4.5	1.6	1.4
Ireland	-0.2	0.0	2.1	1.5	0.9	1.6
Greece	*2.1*	*3.5*	*1.5*	*2.3*	*2.3*	*1.8*
Spain	1.8	3.2	1.9	2.5	1.6	2.1
France	1.9	2.6	2.3	3.6	1.5	2.7
Italy	0.8	3.0	1.8	2.9	1.4	1.7
Cyprus	0.7	2.4	1.4	3.0	1.2	1.6
Latvia	0.5	2.8	1.3	3.1	1.3	1.8
Lithuania	-0.4	3.7	1.7	4.0	1.4	1.6
Luxembourg	0.0	1.6	1.9	4.2	0.7	2.5
Hungary	1.4	0.7	0.3	3.5	1.7	1.9
Malta	-5.2	-0.3	1.0	3.3	0.8	1.6
Netherlands	-2.3	2.2	1.9	1.0	1.2	2.8
Austria	2.5	2.3	1.7	3.8	1.4	2.3
Poland	1.9	2.4	1.5	6.2	1.5	2.4
Portugal	1.8	2.3	1.1	3.6	1.2	0.9
Romania	2.6	2.2	1.7	3.8	0.9	1.7
Slovenia	1.3	2.8	1.0	4.6	2.1	2.4
Slovakia	2.5	2.8	0.3	3.3	2.2	0.5
Finland	-1.0	3.1	1.5	-1.0	1.1	2.2
Sweden	-2.5	2.3	1.8	-2.0	1.1	3.1
United Kingdom	0.8	1.3	3.2	-0.2	0.6	2.9
EU-27	*0.7*	*2.2*	*1.6*	*2.7*	*1.4*	*2.1*
Euro area-19	*0.5*	*2.3*	*1.5*	*2.9*	*1.4*	*2.0*
Mediterranean countries	*1.7*	*2.9*	*1.7*	*3.0*	*1.6*	*1.8*

Source: Eurostat.

Table 9b2

	World trade value index-Exports (base year 2010=100)					
	Total			Food-beverages-tobacco		
	Average annual rate of change (%)					
	2000-2001	2001-2007	2008-2014	2000-2001	2001-2007	2008-2014
Belgium	1.8	1.9	1.1	5.0	1.2	2.1
Bulgaria	-1.7	5.2	1.3	3.1	1.4	1.7
Czech Republic	4.5	2.5	1.7	4.7	2.9	1.2
Denmark	1.7	0.8	1.7	6.5	-0.8	2.3
Germany	2.5	1.2	2.1	3.6	1.3	2.0
Estonia	6.3	1.2	1.5	7.5	1.3	1.1
Ireland	1.1	-0.8	1.1	4.0	0.8	2.3
Greece	*-0.4*	*2.6*	*0.9*	*1.8*	*1.8*	*2.5*
Spain	1.3	2.5	1.2	4.2	1.5	2.0
France	2.0	1.8	1.5	2.6	2.0	1.5
Italy	2.7	2.8	2.3	5.0	1.9	2.4
Cyprus	2.7	2.3	-0.9	3.5	3.9	1.7
Latvia	1.8	3.9	1.3	4.9	3.4	1.4
Lithuania	-1.6	3.7	1.8	7.7	2.4	1.7
Luxembourg	-1.1	-0.8	0.1	1.1	-0.8	4.1
Hungary	0.2	-0.3	1.6	6.9	2.4	1.0
Malta	-3.3	0.4	3.4	-2.5	-2.3	2.1
Netherlands	-1.6	1.3	1.6	3.0	1.4	3.2
Austria	1.1	1.5	0.9	1.8	1.3	1.6
Poland	4.3	2.5	1.1	3.8	2.4	1.3
Portugal	1.3	1.2	1.7	2.7	0.6	1.7
Romania	2.9	3.3	1.9	4.2	2.2	1.8
Slovenia	2.8	2.1	0.9	3.5	2.5	3.0
Slovakia	-0.2	3.0	0.1	7.5	1.2	-2.6
Finland	-1.9	2.2	1.3	3.6	1.0	2.2
Sweden	-2.5	1.5	1.3	1.8	0.6	3.2
United Kingdom	1.0	1.9	2.6	3.1	0.7	3.0
EU-27	*1.0*	*1.8*	*1.4*	*3.8*	*1.3*	*1.9*
Euro area-19	*0.7*	*1.8*	*1.3*	*3.4*	*1.3*	*2.0*
Mediterranean countries	*1.4*	*2.2*	*1.5*	*3.2*	*1.5*	*2.0*

Source: Eurostat.

Table 9b3

	World trade value index-Exports/Imports (base year 2010=100)					
	Total			Food-beverages-tobacco		
	Average annual rate of change (%)					
	2000-2001	2001-2007	2008-2014	2000-2001	2001-2007	2008-2014
Belgium	0.3	-0.2	-0.2	1.5	-0.5	-0.2
Bulgaria	-1.6	1.1	0.3	0.3	-1.4	-0.6
Czech Republic	1.8	0.5	0.1	0.4	0.7	-1.4
Denmark	1.1	-0.1	-0.4	6.2	-0.6	-0.9
Germany	0.0	-0.8	0.6	0.2	0.0	-0.9
Estonia	4.5	-1.2	-0.1	2.9	-0.3	-0.4
Ireland	1.3	-0.7	-1.0	2.4	-0.1	0.6
Greece	*-2.4*	*-0.9*	*-0.5*	*-0.5*	*-0.5*	*0.7*
Spain	-0.5	-0.7	-0.7	1.7	-0.2	-0.1
France	0.1	-0.8	-0.8	-1.0	0.5	-1.2
Italy	2.0	-0.2	0.5	2.1	0.5	0.6
Cyprus	2.0	-0.1	-2.3	0.5	2.6	0.1
Latvia	1.4	1.1	0.0	1.8	2.1	-0.3
Lithuania	-1.1	0.0	0.1	3.5	0.9	0.1
Luxembourg	-1.1	-2.4	-1.7	-3.0	-1.5	1.6
Hungary	-1.2	-1.0	1.3	3.4	0.6	-1.0
Malta	2.0	0.7	2.4	-5.6	-3.1	0.5
Netherlands	0.7	-0.8	-0.3	2.0	0.2	0.3
Austria	-1.3	-0.7	-0.8	-1.9	-0.1	-0.7
Poland	2.3	0.0	-0.4	-2.3	0.8	-1.1
Portugal	-0.4	-1.1	0.6	-1.0	-0.7	0.8
Romania	0.4	1.1	0.2	0.3	1.3	0.1
Slovenia	1.5	-0.6	-0.1	-0.9	0.3	0.6
Slovakia	-2.7	0.2	-0.2	4.1	-1.0	-3.0
Finland	-0.9	-0.9	-0.2	4.6	-0.1	0.0
Sweden	0.0	-0.7	-0.4	3.8	-0.5	0.1
United Kingdom	0.1	0.6	-0.5	3.3	0.1	0.2
EU-27	*0.2*	*-0.4*	*-0.2*	*0.9*	*0.0*	*-0.2*
Euro area-19	*0.1*	*-0.5*	*-0.2*	*0.5*	*-0.1*	*0.0*
Mediterranean countries	*-0.3*	*-0.7*	*-0.2*	*0.2*	*-0.1*	*0.2*

Source: Eurostat.

Table 10a

	Trade balance (value in € million) EU-27					
	Total			Food-beverages-tobacco		
	2000	2001-2007	2008-2014	2000	2001-2007	2008-2014
Belgium	11,758.0	15,149.6	9,264.0	2,592.0	2,989.7	3,973.9
Bulgaria	-1,832.0	-3,805.4	-4,895.1	143.0	97.7	342.9
Czech Republic	-3,119.0	-463.6	8,967.3	-451.0	-809.1	-1,081.4
Denmark	6,210.0	6,707,9	9,150.6	5,228.0	5,246.0	5,257.4
Germany	59,130.0	146,391.0	175,953.0	-10,445.0	-8,648.3	-5,364.1
Estonia	-1,168.0	-2,087.1	-1,264.6	-176.0	-216.9	-254.1
Ireland	28,553.0	33,113.3	37,823.1	3,578.0	3,122.3	2,746.7
Greece	*-23,558.0*	*-31,300.1*	*-27,591.3*	*-1,391.0*	*-2,082.0*	*-1,836.6*
Spain	-44,274.0	-65,632.4	-46,246.4	1,754.0	1,187.0	5,047.7
France	-12,266.0	-20,825.0	-72,659.0	9,742.0	8,883.3	9,953.7
Italy	1,907.0	-2,994.7	1,080.0	-5,578.0	-5,835.6	-4,872.9
Cyprus	-2,955.0	-3,879.0	-4,635.7	-284.0	-375.0	-667.1
Latvia	-1,443.0	-2,906.1	-2,402.1	-287.0	-302.3	-85.0
Lithuania	-1,826.0	-3,105.3	-2,299.4	-80.0	129.1	639.0
Luxembourg	-3,140.0	-2,975.9	-5,121.4	-620.0	-737.7	-937.7
Hungary	-4,308.0	-2,937.4	4,664.7	1,156.0	1,096.3	2,032.1
Malta	-1,040.0	-924.4	-1,643.4	-233.0	-236.1	-348.0
Netherlands	16,092.0	31,854.4	49,649.9	13,683.0	15,515.1	19,894.7
Austria	-5,071.0	-1,277.7	-5,646.6	-667.0	-108.0	-277.4
Poland	-18,711.0	-13,827.6	-11,426.7	-282.0	1,237.7	4,341.1
Portugal	-16,878.0	-17,689.7	-16,302.0	-2,821.0	-2,975.6	-2,956.9
Romania	-2,962.0	-9,824.4	-10,546.3	-639.0	-1,242.3	-922.0
Slovenia	-1,491.0	-907.3	-190.4	-278.0	-437.3	-785.7
Slovakia	-1,005.0	-1,895.4	996.3	-350.0	-454.6	-955.3
Finland	12,624.0	8,376.1	-766.9	-1,039.0	-1,317.4	-2,384.1
Sweden	15,432.0	15,290.0	6,507.6	-2,308.0	-2,896.3	-4,435.9
United Kingdom	-67,813.0	-103,619.0	-127,734.3	-11,783.0	-16,998.1	-22,036.4

Source: Eurostat.

Table 10b

	Trade balance (value in € million) Euro area-19					
	Total			Food-beverages-tobacco		
	2000	2001-2007	2008-2014	2000	2001-2007	2008-2014
Belgium	11,758.0	15,149.6	9,264.0	2,592,0	2,989.7	3,973.9
Germany	59,130.0	146,391.0	175,953.0	-10,445.0	-8,648.3	-5,364.1
Estonia	-1,168.0	-2,087.1	-1,264.6	-176.0	-216.9	-254.1
Ireland	28,553.0	33,113.3	37,823.1	3,578.0	3,122.3	2,746.7
Greece	*-23,558.0*	*-31,300.1*	*-27,591.3*	*-1,391.0*	*-2,082.0*	*-1,836.6*
Spain	-44,274.0	-65,632.4	-46,246.4	1,754.0	1,187.0	5,047.7
France	-12,266.0	-20,825.0	-72,659.0	9,742.0	8,883.3	9,953.7
Italy	1,907.0	-2,994.7	1,080.0	-5,578.0	-5,835.6	-4,872.9
Cyprus	-2,955.0	-3,879.0	-4,635.7	-284.0	-375.0	-667.1
Latvia	-1,443.0	-2,906.1	-2,402.1	-287.0	-302.3	-85.0
Lithuania	-1,826.0	-3,105.3	-2,299.4	-80.0	129.1	639.0
Luxembourg	-3,140.0	-2,975.9	-5,121.4	-620.0	-737.7	-937.7
Malta	-1,040.0	-924.4	-1,643.4	-233.0	-236.1	-348.0
Netherlands	16,092.0	31,854.4	49,649.9	13,683.0	15,515.1	19,894.7
Austria	-5,071.0	-1,277.7	-5,646.6	-667.0	-108.0	-277.4
Portugal	-16,878.0	-17,689.7	-16,302.0	-2,821.0	-2,975.6	-2,956.9
Slovenia	-1,491.0	-907.3	-190.4	-278.0	-437.3	-785.7
Slovakia	-1,005.0	-1,895.4	996.3	-350.0	-454.6	-955.3
Finland	12,624.0	8,376.1	-766.9	-1,039.0	-1,317.4	-2,384.1

Source: Eurostat.

WORKING PAPERS (JULY – DECEMBER 2015)

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CONTENTS

Financial conditions and economic activity: the potential impact of the targeted longer-term refinancing operations (TLTROs)

Working Paper No. 194
Hiona Balfoussia and Heather D. Gibson

The study explores the relationship between financial conditions and real economic activity in the euro area as a whole and for Greece in particular. We use a financial conditions index (see Angelopoulou et al. 2014) which is constructed using a wide range of prices, quantities, spreads and survey data in line with theory. We update the indices and use them within a VAR framework to estimate the potential impact of the TLTROs on aspects of economic activity. Our results suggest that financial conditions do have a significant effect on economic activity and thus the TLTROs, to the extent that they are designed to improve financial conditions, will provide a boost to the real economy.

Steady-state priors and Bayesian variable selection in VAR forecasting

Working Paper No. 195
Dimitrios P. Louzis

The study proposes methods for estimating Bayesian vector autoregressions (VARs) with an automatic variable selection and an informative prior on the unconditional mean or steady-state of the system. We show that extant Gibbs sampling methods for Bayesian variable selection can be efficiently extended to incorporate prior beliefs on the steady-state of the economy. Empirical analysis, based on three major US macroeconomic time series, indicates that the out-of-sample forecasting accuracy of a VAR model is considerably improved when it combines both variable selection and steady-state prior information.

The distributional consequences of the stabilization and adjustment policies in Greece during the crisis, with the use of a multisectoral computable general equilibrium model

Working Paper No. 196
Stavros Zografakis and Alexandros Sarris

The paper investigates quantitatively the economic implications of the various stabilization and adjustment policies, adopted by the Greek government in the period 2008-2013, to deal with the unsustainable public finances. To this end a static computable general equilibrium model is presented, which is capable of simulating the main macroeconomic and especially distributional aspects of the Greek crisis that has afflicted the country since 2008. The model is designed to explore in a comparative static manner the outcomes of different policies, and has considerable sectoral and distributional detail. The model is fitted to a 2004 social accounting matrix that includes much detail about the relevant economic actors. Policy simulations are made under a closure rule that seems to fit the Greek economy during the crisis. Simulations of the large shocks that have affected Greece between 2008-2013 indicate that the model reproduces the main

outcomes of the economy during the implementation of the policy package adopted during the crisis, and indicates that the package adopted has been very regressive. The policy simulations suggest that the mixture of policies adopted during the stabilization programme by the Greek government has resulted in a large GDP decrease, a large employment decline, and as a painful consequence, a substantial decrease in the public sector deficit, but at the cost of very large decreases in private real incomes and an even larger increase in income inequality. It remains to be seen whether there can be other policy packages that can achieve similar public sector deficit reductions without the adverse income and distributional implications.

The macroeconomic impact of structural reforms in product and labour markets: trade-offs and complementarities

Working Paper No. 197
Dimitris Papageorgiou and Evangelia Vourvachaki

This paper studies the impact of product and labour market structural reforms and the effects of their joint implementation with alternative debt consolidation strategies. The set-up is a DSGE model calibrated for the Greek economy. The results show that structural reforms produce important long-run GDP gains that materialise earlier, the faster the reforms are implemented. When implemented jointly with fiscal consolidations, structural reforms may amplify the short-run costs of fiscal tightening. The GDP dynamics depend on the fiscal instrument used for public debt consolidation. In the long run, however, there are complementarity gains irrespective of the fiscal instrument used.

Determinants of euro-area bank lending margins: financial fragmentation and ECB policies

Working Paper No. 198
Helen Louri and Petros M. Migiakis

In the present paper we study the determinants of the margins paid by euro-area non-financial corporations (NFCs) for their bank loans on top of the rates they earn for their deposits (bank lending margins). We use panel VAR techniques, in order to test for causality relationships and produce impulse response functions for eleven euro area countries from 2003:1 to 2014:12. The countries are separated to two groups (distressed and non-distressed), in order to examine for heterogeneities in the relationships between lending margins, the period is also separated with reference to the peak of the global financial crisis (before and after the collapse of Lehman in September 2008). We find that significant heterogeneities existed even before the global financial crisis and remained in its aftermath, although the magnitude and the direction of the effects exercised by the explanatory variables have changed. Furthermore, apart from finding that market concentration and the prudence of banks' management increase the lending margins NFCs pay for their loans, there is evidence of substitution effects between financing obtained from banks and corporate bond markets. The provision of ample liquidity from the ECB in the aftermath of the global financial crisis was found to be effective only for the core countries, suggest-

ing that further policy actions are needed in order to reduce the fragmentation of bank lending and promote financial integration to the benefit of the euro-area real economy.

The effectiveness of the ECB's Asset Purchase Programs from 2009 to 2012

Working Paper No. 199
Heather D. Gibson, Stephen G. Hall and George S. Tavlas

We examine the impact of the ECB's Securities Market Programme (SMP) and the ECB's two Covered Bond Purchase Programmes (CBPPs) on sovereign bond spreads and covered bond prices, respectively, for five euro-area stressed countries – Greece, Ireland, Italy, Portugal, and Spain. Our data are monthly and cover the period from 2004M01 through 2014M07. In contrast to previous studies, we use actual, confidential, intervention data. Our results indicate that the respective asset purchase programmes reduced sovereign spreads and raised covered bond prices. The quantitative effects of the programmes were modest in magnitude, but nevertheless significant. We also provide a simple theoretical model that explains why official asset purchases can reduce a country's default-risk spreads.

Credit-less recoveries: the role of investment-savings imbalances

Working Paper No. 200
Hiona Balfoussia and Dimitris Malliaropulos

This paper argues that the investment–savings imbalances of households and companies play an important role in determining the probability that an economy experiences a credit-less recovery, following a recession. The investment–savings gap determines the need for "external" finance of the private sector in the form of either bank credit or capital market financing. Using a broad dataset covering 96 countries and 272 recovery episodes, we provide empirical evidence that credit-less recoveries are indeed associated with both low and declining financing needs of the private sector, as proxied by the investment-savings gap at the trough of the recession and its adjustment during the downturn. We show that this reflects a rebalancing of wealth towards financial assets during the downturn which can subsequently be used to finance real investment during the recovery stage, even in the absence of positive bank credit flows. Lastly, we provide empirical evidence that, controlling for the change in investment-savings imbalances, economies whose economic downturn was preceded by a credit boom are more likely to experience a credit-less recovery.

Who exports high-quality products? Some empirical regularities from Greek exporting firms

Working Paper No. 201
Sarantis Kalyvitis

This study assesses the quality of Greek exports and links the estimates with exporters' characteristics. Export quality in manufacturing is estimated to have fallen by 1% per year on average for the period 1998-2010, but recovered in 2011 and 2012 when export quality displayed

a cumulative rise of 25.7%, yielding a cumulative rise of 9.2% for the entire period 1998-2012. Export quality in agriculture displays a slightly upward trend with the average annual rise over the period 1998-2012 amounting to 1.6%. Linking the quality estimates at the product level with exporting firms in the manufacturing sector shows that higher product quality is associated with firms that have a higher share of their wage bill paid to skilled workers. This positive relationship stems from firms with higher skilled to unskilled employment ratios, rather than higher wage skill premia, and is more pronounced in large and rich destinations.

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